



Kizazi Kijacho: A Randomised Controlled Trial of Parenting and Unconditional Cash Transfers in Tanzania

Baseline report

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About Thrive

Thrive is a large-scale, multi-country research and policy programme which aims to build an understanding of Early Childhood Development (ECD) service delivery models, at scale, and how they can transform to significantly improve childhood health, nutrition, education and wellbeing outcomes in low- and middle-income countries. Thrive seeks comprehensive, practical answers about how ECD systems innovate, improve, and better serve children and communities.

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Partners



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Foreword

We know that the first 1000 days period of a child's life – from conception until age 2 – is significant for human development and is often thought of as the first “window of opportunity” for parents and society to help a child reach its developmental potential. Although the importance is well understood, there are still major unknowns about the design of cost-effective and sustainable services that help parents and other caregivers provide nurturing conditions for children to thrive.

As in many countries in Sub-Sahara Africa (SSA), the population of Tanzania is young, the group of children in their early years of life is large, and many of these children do not reach their development potential. According to the 2022 Demographic and Health Survey (DHS), three out of ten Tanzanian children under-five are stunted and more than half the children aged 24-59 months are not developmentally on track in health, learning and psychosocial wellbeing. Limited access to quality healthcare persists despite improvements in maternal services, indicating potential issues with healthcare infrastructure and accessibility.

In this context, we started the Kizazi Kijacho programme to focus on establishing facts about the constraints to child development and the effectiveness of potential policy tools to alleviate or relax these barriers. To this end, we aim to use a combination of quantitative and qualitative methods, collect information, and conduct research across Tanzania. We have gathered a distinguished group of researchers representing seven different research institutes, spanning six countries and four continents. We work with an impressive implementation team in Tanzania, to increase our knowledge base on early childhood development, existing constraints, and innovative ECD solutions.

In this report, we focus on presenting the design and baseline findings of a state-of-the-art Randomised Controlled Trial (RCT) launched in October 2022 in the Dodoma region of Tanzania. We obtained several important findings, most notably that a significant number of community health workers (CHWs) report too high workload. On average, CHWs report to be responsible for 90 families at any point in time, and to work 26 hours per week (either in community or at a health facility), which is 10 hours per week more than what they would if they were given a choice. More than one in five CHWs reported their CHW workload to be challenging. Moreover, the majority of households in the Dodoma region have very basic living conditions, with minimal amenities and assets. The reported food consumption indicates that about half of the households consume below the food poverty line and that diets are not sufficiently diverse.

Despite the challenges, we are hopeful about the opportunities to improve on the conditions for children growing up in Tanzania. Not only has the government of Tanzania shown promising initiative through the introduction of the National Multi-Sectoral Policy (NM-ECDP) and the establishment of the national task force for ECD, but we have also through the work on this, been amazed by the strength that parents show. The attention and care that Tanzanian mothers and fathers are able to give to their children in the first 1000 days is both impressive and promising for the future. We therefore believe, that should appropriate policies be put in place, Tanzania's young demographic profile may turn into a blessing: The region could reap a demographic dividend if scalable policy programs to promote child development are implemented. We hope that our research programme will contribute to the understanding of the challenges and the identification of appropriate policies.

Prof. Ingvild Almås, Dr. Bet Caeyers, Dr. Ester Elisaria, Dr. Honorati Masanja

Kizazi Kijacho Leadership Team.

Preface

This report gives a comprehensive overview of the background, objectives, study design, planned activities and baseline findings of the *Kizazi Kijacho* Randomised Controlled Trial (RCT) in the Dodoma region of Tanzania. The RCT aims to test the relative effectiveness of three different packages of Early Childhood Development (ECD) interventions during children's 'first 1000 days', that is, from conception until age two. The set of interventions that will be evaluated include (i) a parenting programme delivered by Community Health Workers who are supported by an innovative digital app; (ii) An Unconditional Cash Transfer (UCT) programme; and (iii) a programme combining the parenting and the UCT interventions.

The intention of this report is to describe the setting in which the 27-month-long RCT activities are being conducted. We aim to give the reader a good understanding of the evaluation problem, the study design and the distinction between the different RCT study arms. We explain the sampling and randomisation strategy, the data collection process and the outcomes on which impact will be evaluated. We also take this opportunity to introduce research questions and analysis, other than impact evaluation assessments, that are planned for within the *Kizazi Kijacho* research agenda. An important objective of the report is to use the baseline data to describe the setting in which children in the Dodoma region are born today and to motivate the importance of the parenting and UCT interventions in such a context. Importantly, we also present the results of balance tests conducted to test the validity of the RCT study design, to make sure that prior to the start of the intervention activities there were no systematic differences between the different RCT study groups. Balance is an important prerequisite for the study to be able to attribute any future differences between the study groups to the RCT treatments.

The *Kizazi Kijacho* RCT is a collaboration between the IIES/Stockholm University, Ifakara Health Institute, Chr. Michelsen Institute, FAIR/Norwegian School of Economics, Yale University, University of Chile, EGPAF, D-Tree International and EDI Global. It is generously funded by the Swedish Research Council, Research Council of Norway, European Research Council, Conrad N. Hilton Foundation and Thrive/UK Aid. The views expressed in this report are, however, those of the authors and do not necessarily reflect the views of the funders or of the other institutions mentioned here. All respondents agreed to participate in the surveys and were assured of the confidentiality of any identifying information gathered. This research was approved by the Swedish Ethics Review Authority (Number: 2022-01356-01), as well as the NHH IRB (Number: 43/22), the IRB at University of Chile (Number: 060), Tanzania's National Institute for Medical Research - NIMR (Number: NIMR/HQ/R.8c/Vol.I/2430) and Tanzania Commission for Science and Technology - COSTECH (Number: RCA 2022/250).

Executive Summary

Launched in October 2022, shortly after the introduction of Tanzania’s National Multi-Sectoral Early Childhood Development Programme (NM-ECDP), the *Kizazi Kijacho* research programme aims to gain evidence on how to improve early childhood development (ECD) outcomes in Tanzania, recognising the crucial impact of the first 1000 days of a child’s life.

Child development challenges persist in low- and middle-income countries, and statistics from recent demographic health surveys in Tanzania are particularly concerning: 30 percent of children experience stunting, and a significant number fail to meet developmental milestones by 59 months. *Kizazi Kijacho* programme aims to address these issues and address significant knowledge gaps in scalable and sustainable ECD strategies in such settings.

This baseline report describes the study design of The Randomized Controlled Trial (RCT) component of the *Kizazi Kijacho* study, and describes the setting in which the RCT was launched. The RCT is conducted in Tanzania’s Dodoma Region and involves a large-scale study tracking pregnant mothers and their families, with the goal of assessing the relative cost-effectiveness of different bundles of ECD interventions in improving child development, nutritional status and caregiver wellbeing. The Dodoma region was selected due to its alignment with the programme's objectives and the partner's experience. In particular, the study encompasses three targeted interventions, each initiating during pregnancy:

- 1. Parenting intervention:** This holistic intervention combines the Care for Child Development (CCD) package by UNICEF/WHO with elements of the Reach Up parenting programme, tailored to the Tanzanian context. Delivered by existing Community Health Workers supported by an innovative digital app, the intervention aims to enhance caregiver skills in creating a nurturing care environment for children. In addition to health and nutrition counselling, the curriculum includes early learning stimulation and responsive caregiving messaging to improve child development. It is implemented through home visits and group sessions, spanning 27 months, until age two.
- 2. Unconditional Cash Transfers (UCT):** This intervention – from pregnancy until age 1 – entails bi-monthly unconditional mobile money transfers to households, randomly targeted to either the mother or the father. This financial support aims to alleviate economic barriers, empowering families to invest in their children's wellbeing, ultimately contributing to improved child outcomes in this study. The transfer amounts vary to different groups within the intervention to allow for a nuanced examination of how financial resources impact household behaviours and child outcomes.
- 3. Combined approach (Parenting + UCT):** This combined approach explores how nurturing caregiving skills from the parenting programme, combined with financial

support from UCTs, impact family dynamics and child development more than each intervention alone. The study aims to uncover potential synergies for lasting improvements in child wellbeing and family resilience.

As a result, the study includes four main RCT study groups: Control, Parenting Only, Parenting and UCT, and UCT Fixed, with an additional UCT Varied group for parametric analysis.

The primary focus of the RCT is to assess the relative effectiveness of these interventions on child development. To do this, it will measure children's cognitive and speech and language development using direct assessment and parental report, and nutritional assessments using anthropometric measures.

The study goes beyond child development and delves into parental behaviour and practices, including financial and non-financial investments in child development. Financial investments will be measured for example by changes in food consumption and non-food purchases, while non-financial investments will for example involve studying how much time parents spend on various activities with their children and the quality of that time spent. The research will also investigate potential drivers of parental behaviour, such as parental preferences, beliefs, empowerment, intimate partner violence, and mental wellbeing. Social norms related to parenting and gender will be studied along with the impact of income sharing within households. This exploration aims to understand the broader context influencing child development, as well as mechanisms of impact of the different RCT interventions.

The baseline survey for the programme – which aimed to interview household heads, mothers, fathers, community leaders, CHWs and health dispensary officials – registered 3588 pregnant mothers and their families, across 387 communities and 258 health dispensaries, across all eight district councils in the Dodoma region. It was conducted methodically in batches across different districts to ensure randomness and mitigate biases. Overall, the survey went very smoothly, apart from challenges faced in reaching fathers, particularly in the early stages. Balance tests confirm the robustness of the randomisation process, affirming the integrity of the RCT study design.

The baseline data reveal some significant insights. Health dispensaries, typically serving two communities, grapple with challenges such as unstable electricity and limited resources for complex childbirths. CHWs, pivotal to the programme, tend to work long hours and often find their workload demanding. Most communities are predominantly rural, facing notable issues with accessibility, migration, and variable access to education and healthcare services. Household analysis indicates an average family size of four, living under basic conditions with limited assets. Dietary patterns emerged as reliant on cereals and vegetables, indicating a lack of diversity. Financial support beyond TASAF is minimal, highlighting the critical potential of the UCT intervention.

While it is too early to conclude a great deal about the potential of the *Kizazi Kijacho* parenting and UCT intervention activities, initial findings from the baseline survey underscore these interventions' potential in addressing ECD challenges in Tanzania.

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Abbreviations

ANC	Antenatal care
CCD	Care for Child Development
CREDI	Caregiver Reported Early Development Instrument
CES-D	Center for Epidemiologic Studies Depression Scale
CHWs	Community Health Workers
CAPI	Computer-assisted personal interviewing
DHS	Demographic Health Surveys
CHMT	District Council Health Management Team
DCs	District councils
DDH	District hospital
ECD	Early Childhood Development
EGPAF	Elizabeth Glaser Pediatric Aids Foundation
EDD	Expected date of delivery
FCI	Family Care Indicators
HCWs	Health Care Workers
HCS	Health centre
HDs	Health dispensaries
HOME	Home Observation for the Measurement of the Environment
IPV	Intimate Partner Violence
LOs	Listing Officers
LLAs	Local Listing Assistants
LMIC	Low-and middle-income country
MNCH	Maternal, Newborn and Child Health
MUAC	Mid Upper Arm Circumference
NIMR	National Institute for Medical Research
NM-ECDP	National Multi-Sectoral ECD Policy
NCF	Nurturing Care Framework
OLS	Ordinary Least Squares
PNC	Postnatal care
PPE	Pre-Primary education
RCT	Randomised Controlled Trial
RCH	Reproductive and Child Health
SEM	Structural Equation Modelling
TASAF	Tanzania Social Action Fund
TZS	Tanzanian shilling
UCT	Unconditional Cash Transfer

1 Introduction



Poor developmental outcomes for children under five can last a lifetime and perpetuate an inter-generational cycle of poverty and marginalisation. The need for action is widely recognised, but it is not yet matched by a requisite understanding of the process of, and barriers to, improving child development *at scale* in low-and middle-income country (LMIC) settings. In view of this challenge, the *Kizazi Kijacho* ('Next Generation') research programme collects and analyses novel experimental and longitudinal data from Tanzania to yield actionable evidence for policy makers, donors and practitioners about the design of cost effective, scalable, sustainable, integrated Early Childhood Development (ECD) programmes, from the prenatal period to age two – the 'first 1,000 days'.

Kizazi Kijacho is led by IIES/Stockholm University (Sweden), in collaboration with Chr. Michelsen Institute (Norway), Ifakara Health Institute (Tanzania), Yale University, University of Chile and FAIR/Norwegian School of Economics, and implementation partners Elizabeth Glaser Pediatric Aids Foundation (EGPAF), D-Tree International and EDI Global. The programme is generously funded by the Swedish Research Council, Norwegian Research Council, European Research Council, Thrive/UK International Development and Conrad N. Hilton Foundation. The Randomised Controlled Trial (RCT) discussed in this baseline report is registered at ClinicalTrials.gov ID NCT05598970 and ethical approval was obtained from the Swedish Ethical Review Authority, from NHH-IRB, from IRB at University of Chile, from Tanzania's National Institute for Medical Research (NIMR) and COSTECH.

Kizazi Kijacho programme activities include a large-scale nationally representative longitudinal study on the lives of children (from pregnancy) across Tanzania and a clustered

multi-arm RCT in the Dodoma region. In this report we discuss the design and baseline findings of the RCT study component. The multi-arm clustered RCT has recruited 3588 pregnant mothers and their families living in 387 communities in the catchment areas of 258 health dispensaries (HDs) across all eight district councils (DCs) in the Dodoma region (Dodoma City, Mpwapwa, Kondoa DC, Kondoa TC, Chamwino, Chemba, Bahi and Kongwa) in Tanzania. The programme aims to follow this study sample for 27 months, from pregnancy until the children in the study sample are, on average, two years old.

The primary objective of the trial is to test the relative cost-effectiveness of (i) a parenting intervention (**Parenting**) in which Community Health Workers (CHWs) are guided by an innovative digital application to help provide caregivers with continuous support in all aspects of nurturing care (i.e. health, nutrition, early learning, responsive care giving, safety and security); (ii) a mobile unconditional cash transfer (**UCT**) programme (randomised to the mother or the father), which aims to relax financial resource constraints; and (iii) a programme combining the digitally supported parenting intervention and the mobile unconditional cash transfers (**Parenting + UCT**). The parenting intervention is scheduled to run from pregnancy until age two, whereas the UCT programme is scheduled to run from pregnancy until age one.

We have completed a baseline survey, carried out between October and December 2022, prior to the start of the intervention activities (during pregnancy). The results are presented in this report. We are aiming to do a first follow-up survey and child assessment when the average child in the study sample is one year old (February to May 2024) and another survey and child assessment when the average child is two years old (February to May 2025). Preregistered primary outcomes in the trial are children’s cognitive and speech and language development, and child nutritional status. Other outcomes of interest include – among others – child socio-emotional status, child rearing practices (e.g. use of health services, child diets, stimulation, responsive caregiving, etc.), household decision making and caregiver wellbeing.

The outline of the report is as follows. First, in [Section 2 we provide](#) a background and motivation for the project, including the challenges related to ECD in LMICs generally, and in Tanzania specifically. We also briefly summarise existing evidence on whether and how parenting and cash transfer programmes are able to address these challenges. [In Section 3](#), we discuss the Tanzania health system, the Tanzania Social Action Fund (TASAF) transfer programme, and the geography in which our study is embedded. [Section 4 describes](#) the parenting and cash interventions in detail and discusses the Theory of Change for the RCT intervention activities. [Section 5 discusses the study](#) design including the ‘evaluation problem’, the study arms, the randomisation, the listing activities, the sampling strategy and the final study design. [In Section 6](#), we discuss the programme’s child development measures, the measures of parental behaviour and its drivers. [In Section 7](#), we discuss the timeline for the data collection, the survey team and survey questionnaires, the sample size and the purpose and results of the balance tests. [Section 8 describes the baseline](#) data focusing on the characteristics of HDs, CHWs, communities, and households. It also discusses mother and father characteristics and discusses some differences between these spouses. [Section 9 concludes this report](#).

2 Background

According to the Lancet series on child development (Grantham-McGregor et al., 2007; Walker et al., 2011; Black et al., 2016) and the World Bank (Narayan et al., 2018), many poor children do not reach their full developmental potential in LMICs. Not only is this seen as unfair for the relevant children and the families, but it is also inefficient for already poor societies as it can jeopardise economic growth. The recent Demographic Health Surveys (DHS) report confirms that Tanzania is certainly not an exception (Ministry of Health [Tanzania] and ICF, 2022). The report reveals a complex landscape of ECD challenges in Tanzania, spanning health, nutrition, education, and overall wellbeing for children. Limited access to quality healthcare persists despite improvements in maternal services, indicating potential issues with healthcare infrastructure and accessibility. Importantly, the report reveals that 3 out of 10 Tanzanian children under five are stunted and that more than half the children aged 24-59 months are not developmentally on track in health, learning and psychosocial wellbeing.

A highly influential evidence base from small-scale, well-controlled efficacy studies in LMICs demonstrates the significant effectiveness of home-visit and community group-based parenting interventions on ECD, in particular psychosocial interventions encouraging early childhood stimulation practices (Grantham-McGregor et al., 2020). However, the success of these programmes critically hinges on an intense level of training, mentoring and supervision of CHWs that is difficult to sustain when transitioning to scale. Moreover, traditional health service delivery in most LMICs relies on paper-based tools for scheduling, service delivery and reporting. CHWs, especially those charged with providing holistic integrated ECD services, are responsible for completing complex tasks and following advanced protocols, resulting in situations in which protocols are rarely followed (Kruk et al., 2018) leading to inaccurate diagnoses and inadequate care. Reporting is often too aggregated, i.e. number of clients reached, and fails to show more granular details of the CHW visits (i.e. referral completion) that could provide insight into the quality and overall impact of the programme. When transitioning to scale, these factors are likely to result in families not receiving the care they need, when they need it. A critical gap in knowledge is how to design programmes that are able to sustain a sufficiently high level of monitoring and guidance at minimal costs to replicate and sustain significant impacts observed in smaller pilot studies.

To address this first knowledge gap, we have designed a holistic parenting programme which empowers CHWs in the use of a contextually appropriate digital tool, which provides continuous live support in delivering high-quality, respectful, and standardised complex multi-sectoral ECD services, tailored to pregnant women and caregivers.

Cash transfer programmes constitute alternative – or complementary – policies to parenting programmes to meet the needs of families with young children. In general, cash transfer programmes have become popular policy tools to mitigate poverty, improve nutrition and child development, and have been widely adopted by LMICs (BASTAGLI et al., 2019; Honorati et al., 2015). Such programmes have shown positive effects on schooling, child development, health and nutrition (Attanasio et al., 2012; Attanasio and Lechene, 2014b; Evans and Popova, 2017; Fernald et al., 2009; Hoddinott and Bassett, 2008; Macours et al., 2012; Mills et al.,

2018). Many of these analyses show positive effects in the short run (see e.g. Fiszbein et al., 2009; Haushofer and Shapiro, 2016) and some of this research also indicates that these programmes have positive long lasting effects (see e.g. Bazzi et al., 2015; Meghir and Pistaferri, 2011; Millán et al., 2019, 2020; Parker and Ryu, 2023, for a discussion on the life-cycle effects of transfers). The context, modality and multifaceted conditionality, as well as the targeting of particular groups or individuals, are important dimensions determining potential success of such programmes (Banerjee et al., 2015; Baird et al., 2011).

Traditional cash programmes to a large extent have been conditional cash programmes, where cash was allocated *if* certain conditions were met (such as sending a child to school or other). Recently, we have seen a push to make some of these transfers unconditional. A prominent example is the GiveDirectly programme in Kenya, where substantial amounts of cash were given to farmers on needs based eligibility criteria. That is, if you were poor enough – in particular if you did not have a thatch roof – you would receive a substantial amount of money from GiveDirectly. The farmers could then use the money in the way they wanted. The first evaluation of this programme was very favourable, stating that income, consumption and nutrition increased as a result of the programme (Haushofer and Shapiro, 2016; Almås et al., 2019). Arguments in favour of unconditional cash transfers schemes are that they are less costly and easier to implement as it is quite costly to follow up on conditions within the programmes, they may be more effective because parents may be more informed about needs and returns, and it may be less intrusive as it will respect the choices made freely by parents. However, the contra-arguments may be that parents may not be sufficiently informed or motivated to make the best choices, hence conditional programmes may be more effective in promoting child development.

In the *Kizazi Kijacho* research programme, we have included unconditional cash transfers. The first reason for doing so is to have a benchmark to study the effectiveness of the parenting programme. As the parenting programme involves more than just the monetary costs, such as the use of human capital, it is reasonable from a policy perspective to compare it to the effects of just giving cash to the families, which is less involved. Second, we randomise whether mothers or fathers are targeted, to be able to inform about any differential effects of such targeting. The comparison between the cash transfer programme and the parenting programme will help enlighten us about whether the constraints to child development that parents face are mostly financial or non-financial. It may be that for some dimensions of child development the financial constraints are more important and that for other constraints, the non-financial barriers that can be lifted with the parenting programme, are more important. The unconditional cash transfers and the parenting programme make us able to study this. Third, parents may be both financially and non-financially constrained so that it is only when we combine the UCT with the parenting programme that we see significant effects of the programme. We therefore include the combined treatment to be able to speak to that.

For all arms, the parenting, the cash transfer, and the combined treatment, we will study whether and how child development is affected, but we will also study mechanisms at play, and in particular study effects on parental behaviour such as investments, and potential drivers such as parental preferences, motivation and beliefs about returns to investments in child development (including time investments and financial investments).

3 Study setting



In this subsection we describe the context in which the *Kizazi Kijacho* RCT was launched: Tanzania's health system – in particular, the role of its CHWs and Health Care Workers (HCWs) – and TASAF, Tanzania's flagship social protection scheme. We conclude this section by describing the *Kizazi Kijacho* RCT's geographical study area.

Tanzania's health system

Similar to other countries in sub-Saharan Africa, Tanzania's public health care system is hierarchically organised. The type of health facility closest to the community is the HD, which makes referrals to a Health Centre (HCs), which in turn make referrals to the District Hospital (DH), if and when needed. The formal distinction between HDs and HCs is that HDs only provide out-patient care, whereas a HC is expected to provide around-the-clock care to communities. Therefore, any condition that requires in-patient care is referred from dispensaries to the nearest HC. In reality, however, the distinction is less clear as many dispensaries also provide in-patient child and maternal health services. HDs – through their government employed professional HCWs and volunteer CHWs – are frontline in providing primary curative and preventative child and maternal health services in Tanzania.

CHWs are for most Tanzanian children and their caregivers – in particular those in the hardest-to-reach communities – the only entry point to, and interface with, the broader health system. All (male and female) CHWs – of all adult ages – reside in the community that they serve or in a nearby community, and are nominated by the communities themselves. Most of them have completed primary education and some have completed Form IV (lower secondary education) or more. Once selected, they are trained for three weeks (two weeks in-class and one week practice) by the District Council Health Management Team (CHMT) according to a national, integrated Maternal, Newborn and Child Health (MNCH) package. CHWs are expected to be mentored and supervised by clinic-based HCWs, who in turn are expected to be supported by the district Reproductive and Child Health (RCH) coordinator at the CHMT. Unlike professional HCWs who work at the health facilities, CHWs are currently not on the national government payroll. CHMTs are encouraged to pay CHWs a stipend but this is not enforced. Hence, not all officially registered CHWs are currently actively working.

At present, the role of a CHW in Tanzania is focused on providing information, education and basic counselling on MNCH – primarily through home visits but also at the HD or HC – from pregnancy until the child is five years old. However, since the launch of Tanzania's National Multi-Sectoral ECD Policy (NM-ECDP) in December 2021, the Government of Tanzania is keen to leverage CHW's unique position in the community to integrate Nurturing Care Framework (NCF) (WHO, UNICEF, World Bank Group, 2018) components other than health and nutrition – i.e. early learning, responsive care giving and child safety and security – into the CHW's work package. There is however no evidence available on whether and how to effectively and sustainably do this. The *Kizazi Kijacho* research programme aims to provide evidence to inform the government in this decision.

Tanzania Social Action Fund - TASAF

TASAF has been in operation since 2000. It is Tanzania's flagship social protection scheme aiming to increase family income and consumption, improve families' ability to cope with shocks and enhance and protect human capital of children among the poorest populations. One component of TASAF is its Productive Social Safety Net (PSSN) scheme, which consists of (i) a basic UCT targeted to the poorest and most marginalised populations (ii) a Conditional Cash Transfer (CCT) - provided in addition to the basic UCT, conditional on having children and using health and education services and (iii) a public work scheme, targeted to disadvantaged families with members capable of doing physical work. Whereas the bi-monthly basic UCT amount is fixed, the UCT amount depends on the number and age of children. At the onset of the study, the minimum and maximum bi-monthly cash amount transferred to a family with at least one child under five stood at, respectively, 44,000 Tanzanian shilling (TZS) (US\$18) and TZS 110,000 (US\$44) and TASAF's coverage was about 15% of the Tanzanian population nationwide.

Geographical study area

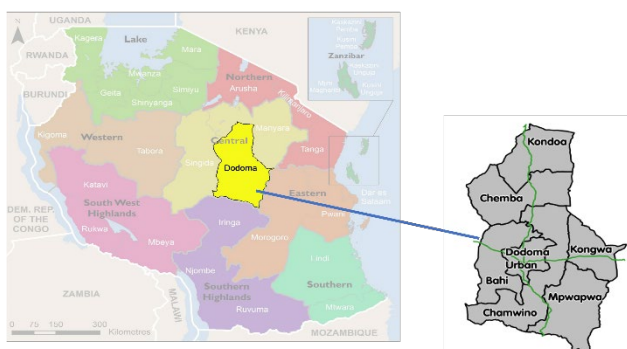


Figure 1 : Kizazi Kijacho RCT study area

The *Kizazi Kijacho* RCT is set in the Dodoma region of Tanzania (see Figure 1 for location), a region where EGPAF, the parenting programme implementing partner, has substantial experience and networks but where at baseline CHWs had not yet provided any Care for Child Development (CCD) services other than health and nutrition (e.g. child stimulation) and where CHWs had not yet been supported by a digital application in the

delivery of ECD services. The study population (that is, the population from which the study sample is drawn – see Section 5.3) includes all women who were pregnant at baseline (October-December 2022), living in communities served by all public HDs with at least one officially registered CHW, across all eight district councils (DCs) in the Dodoma region: Bahi, Chemba, Chamwino, Mpwapwa, Kongwa, Kondoa DC, Kondoa TC and Dodoma City.

4 Interventions

Parenting intervention

Background



The parenting intervention evaluated in this study is based on (i) the CCD package developed by UNICEF/WHO and (ii) the Reach Up early childhood parenting programme originally developed by Sally Grantham-McGregor and further adapted by D-Tree International, EGPAF and the research team to the Tanzanian context. The CCD curriculum aims to improve caregiver skills in creating a nurturing care environment for children, that is, an environment that is safe, secure, healthy, nutritious, and rich in early learning opportunities. The early learning stimulation component of the curriculum originates from the Jamaica stimulation intervention/Reach Up early childhood parenting programme designed in the 1970s-1980s, aiming to build parental skills to promote child development by increasing levels of psychosocial stimulation of children and strengthening the mother-child relationship. The original Reach Up intervention had significant positive impacts on children's levels of cognitive functioning, mental health, social behaviour, educational and labour market outcomes both in the short, medium and longer term (Grantham-McGregor et al. (1991), Grantham-McGregor and Smith (2016)). Moreover, the Reach Up intervention has been implemented in several LMICs and has been found to benefit child development and home stimulation and to be adaptable across cultures and delivery methods (Jervis et al.

(2023)). The intervention has also been adapted for delivery through small groups which could further reduce costs and enhance the dissemination of good child rearing practices and women empowerment (Grantham-McGregor et al. (2020), Mehrin et al. (2022)).

Intervention modality and duration

The *Kizazi Kijacho* Parenting intervention is delivered through a combination of monthly individual home counselling visits and monthly in-community group-based stimulation sessions, delivered by existing CHWs, who in turn are mentored by existing professional HCWs based at the HD. The Parenting intervention is novel in providing support in all aspects of nurturing care (i.e. health, nutrition, early learning, responsive care giving, safety and security), through an innovative digital application which is used to guide and support the CHWs in service delivery. The eight DCs in Dodoma were divided into three batches (Batch 1, Batch 2 and Batch 3), which were used to sequence the training and roll-out of all intervention activities. The Parenting intervention will be implemented for 27 months, from pregnancy until the children in the study sample are on average two years old.

Implementation team

The parenting intervention is overseen by EGPAF and D-tree International and is delivered by 154 CHWs and 88 HCWs under supervision of district level CHMT and CHW coordinators. CHWs are the frontline implementers of the *Kizazi Kijacho* parenting intervention. They conduct home visits to register beneficiaries, provide counselling to *Kizazi Kijacho* beneficiaries as per the guidance in the app, conduct group sessions to caregivers on a monthly basis and (prompted by the app) make referrals when necessary. CHWs also assist caregivers in the development of play material for conducting the individual visits and group sessions. In line with the official recommendations of the Ministry of Health in Tanzania, CHWs working for *Kizazi Kijacho* are paid a stipend of TZS 50,000 (US\$22) which is paid at the month end. The EGPAF team includes two full-time project officers – based in the Dodoma region - who are the day-to-day in-field coordinators of the project, and the link between the CHW, HCWs and the *Kizazi Kijacho* project. They work closely with the HCWs and the CHWs by conducting phone and physical mentorship and supportive supervision visits.

Beneficiary selection and recruitment

All sampled households in the Parenting and Parenting + UCT treatment communities have been invited by their respective CHW to participate in the Parenting intervention. For most of its activities, the Parenting intervention mainly targets the primary caregiver of the child, that is, the biological mother during pregnancy and the primary caregiver after birth. The primary caregiver is defined as being the person who spends most time with the child and is responsible for taking care of the child's most basic needs and wellbeing. This tends to be the biological mother of the child but need not be. However, upon every home visit, the primary caregiver and the CHW are encouraged to engage the father of the target child in the counselling.

Home visits



The individual home visit curriculum covers several components: (i) antenatal care (ANC) support during pregnancy, postnatal care (PNC) support during the first five weeks after birth and child health counselling from birth, based on the existing government CHW handbook for health and nutrition *Bango Kitita*. This component in the curriculum includes among other modules an ANC/PNC/child danger sign check list; ii) early learning child-stimulating interactions and activities based on the Reach Up curriculum; and iii) nutritional education to produce positive changes in food choice, preparation and storage and child health care practice designed by EGPAF. The aim of the stimulation activities is to improve levels of interaction and attachment between mothers, fathers and their infants, creating a more stimulating environment for the child and thriving his or her expected level of development. The nutritional education curriculum is designed to provide crucial information on healthy child diets through interactive dialogue and discussion, and ultimately to lead to improved child nutrition and growth. The individual home visits follow the following visit schedule:

- Six months pregnant: ANC visit 1.
- Seven months pregnant: ANC visit 2.
- Nine months pregnant: ANC visit 3.
- 24 hours after birth: PNC visit 1 + Child visit 1.
- 3rd day after birth: PNC visit 2 + Child visit 2.
- 8th day after birth: PNC visit 3 + Child visit 3.
- Three weeks: PNC visit 4 + Child visit 4.
- Five weeks: PNC visit 5 + Child visit 5.
- Monthly visits from month 3-24: Child visit 6-26.

Group sessions

The in-community group sessions start from when the average child in the study sample is six months old, and continue until the average child is 24 months old (one session per month). Each group targets a maximum of eight children. In case the number of families served by a CHW is larger than eight, the CHW conducts two separate group sessions per month. Whereas the individual visits cover all aspects of nurturing care (health, nutrition, early learning, responsive care giving, safety and security), the main focus of the group sessions is on the practice of early learning child-stimulating interactions and activities and nutrition. Unlike individual home visit counselling, the group sessions start with a free play slot, enabling children to explore play materials and develop creativity. Culturally adapted songs are included at the beginning and at the end of each session to transmit some specific insight about health, safety, father engagement, or stimulation. The curriculum maintains a structured approach to the individual home visit, incorporating developmental activities based on locally available or low-cost materials, emphasising the interaction between mothers and children, and supporting mothers in promoting their child's development. Socio-emotional activities, such as sharing and taking turns, are included for older children within the group. As children participating in the group sessions have different ages, there is a need to adjust the curriculum to suit children of varying developmental stages participating in group sessions. Each activity in the curriculum has two versions: younger and older group. The first group is tailored for younger children, specifically those aged four to five months in the first group session. The second group is designed for older children, particularly those aged six to eight months in the first group session. The activities in both groups are essentially similar in the way that they must address the same development area, varying the difficulty level.

Training

The parenting programme training activities are led by EGPAF, in collaboration with D-Tree and the regional and district level CHMT coordinators. We refer to Table 1 for an overview of the training schedule. After an initial nine days of in-class training focusing on the home visit curriculum, each CHW goes for 10 days practice in their respective communities under supervision of the project officers and HCWs, followed by two-day refresher training in class. This initial training period is followed by one additional two-day long refresher training, before the introduction of the first three-day long group curriculum training. This is followed by two additional refresher trainings before the end of the project intervention activities in February 2025. Given that the intervention employed existing CHWs already expected to be trained in the government's national integrated MNCH training package, the *Kizazi Kijacho* CHW training focuses on the Care for Child Development package and the use of the digital app.

Table 1: Parenting Training Schedule

Batch	First training (1:1 counselling training)	Refresher training after in-community practice session	Refresher training during implementation period 1	Group Curriculum training	Refresher training during implementation period 2	Refresher training during implementation period 3
Batch 1 CHWs/HCWs trainings	19-28 September 2022	17-18 October 2022	12-13 April 2023	24-26 August 2023	31 January -3 February 2023	16-17 September 2024
Batch 1 CHWs/HCWs trainings	19-28 October 2022	14-55 November 2022	14-15 April 2023	28-30 August 2023	5-8 February 2023	18-19 September 2024
Batch 1 CHWs/HCWs trainings	16-25 November 2022	12-13 December 2022	17-18 April 2023	31 August – 2 September 2023	12-15 February 2024	20-21 September 2024

Parenting intervention equipment

The CHWs are provided with the following equipment to support them in service provision:

- A mobile phone with the *Kizazi Kijacho* app installed;
- CHW *Kizazi Kijacho* individual and group handbooks. These handbooks complement the existing government CHW handbook *Bango Kitita*. These also include guidelines on how to develop toys using locally available materials;
- CHW individual and group flipbooks. These contain summary messages/pictures for use during the actual counselling sessions. The *Kizazi Kijacho* digital app refers to the flipbook pages when complementary messaging is needed; and
- a backpack and T-shirt.

Supervision and mentorship

The monitoring system of the parenting intervention engages actors at the local, regional, district and organisational levels, making use of digital and in-person monitoring schedules and following an extensive tracking system and feedback sharing mechanisms among several teams. The feedback is shared following both the top-down and bottom-up approach to achieve maximum synergy between the actors (see Figure 2). At the government level, the regional CHW coordinator is the custodian of the programme, working closely with district CHW coordinators and the two EGPAF officers, to ensure successful implementation of the intervention activities. This is achieved through both physical and phone call supportive supervision. Both the regional and district CHW coordinators participate in the programme's quarterly supervision organised by EGPAF officers. The district CHW coordinators work closely with the HCWs at the HD, providing HCWs with supportive supervision as required and overseeing all CHW and HCW replacements. HCWs are direct Supervisors to CHWs; they are expected to conduct physical mentorship visits on a monthly basis at community level and provide support to all CHWs in their duty of care, whenever needed. HCWs are also responsible for organising monthly meetings with CHWs at the HD for implementation progress review and documentation. HCWs use the *Kizazi Kijacho* dashboard to remotely track CHW performance and identify CHWs in need of support. Upon

each in-community CHW observation visit, HCWs record the observed activities of the CHWs using a purposefully-designed digital tool (Survey CTO collect) against a standardised checklist tracking CHW competence and intervention fidelity.

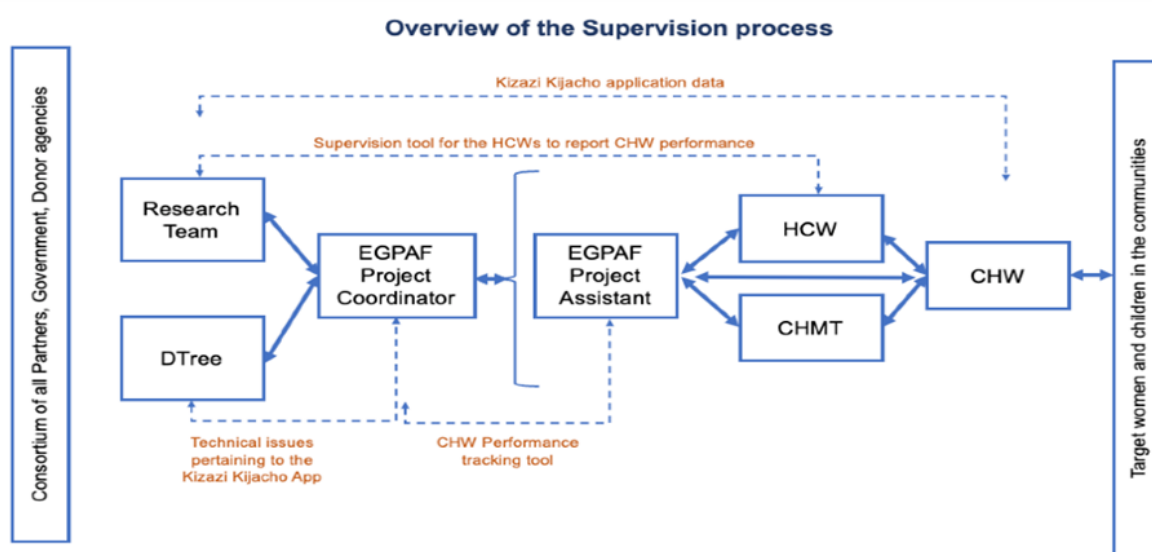


Figure 2: Supervision system

Unconditional Cash Transfers

The UCT intervention implementation activities are overseen by EGPAF and delivered in the UCT and Parenting + UCT treatment communities, using mobile money. In this section we explain the protocol that was followed to select, recruit and disburse the UCT beneficiaries and to set up and monitor the UCT implementation process.

Selection and training of UCT implementation team

To avoid contamination of the RCT study design, the UCT implementation team was set up as a completely separate team to the team implementing and overseeing the Parenting treatment activities. EGPAF was responsible for the training of the UCT implementation team – 11 staff in total – and for monitoring their progress throughout the intervention. The training of the UCT implementation team took place in two stages; five staff were trained on 15 December 2022 and an additional six staff were trained on 8 February 2023.

UCT beneficiary selection

All sampled households in the UCT eligible treatment communities were eligible to receive the bi-monthly UCT. UCT eligible households differ, however, regarding which household member was targeted and invited to receive the UCT. Within the UCT + Parenting treatment communities, the UCT was always targeted to the mother of the target child (that is, the woman who was pregnant at baseline). Within the UCT treatment communities, the transfer was randomly targeted either to the mother or the father of the target child. If the target child

did not have a father as a member of the same household, the UCT targeting the father was instead given to the male partner of the pregnant woman. If no male partner was present, the UCT was given to the male household head. If there was no male household head, the money was transferred to the female household head, irrespective of whether this was the mother of the target child. We used the baseline data to determine who to target the UCT to in a particular household.

Informing UCT implementation team of beneficiary selection

After completion of all baseline surveys in a particular district Batch, EDI Global – the company in charge of baseline data collection – shared with EGPAF a list of all sampled households in the UCT eligible treatment communities, including details on: the targeted beneficiary name; their phone number; the transfer amount; whether the target beneficiary was the father/partner/household head/mother; the community/mtaa (a city block in urban areas), village, district and contact details of the Village Local Chairperson. This list was shared with EGPAF four to five days before the mobilisation of beneficiaries in each community.

UCT participation invitation

Selected beneficiaries were notified and invited to participate in the UCT intervention through a phone call. Following a detailed script, the UCT implementation team explained to the beneficiaries: that the UCT programme was being implemented as part of a research programme (not mentioning that it was a programme on ECD to avoid any labelling effect); that they were eligible because of the fact that there was a pregnant woman in their family, and they live in a community selected to participate in the UCT programme; the UCT amount that they would receive – either TZS 32,000, TZS 77,000 or TZS 109,000 (depending on which treatment group the household got randomly assigned to) –; the frequency and number of the transfers (six bi-monthly transfers in total); and the UCT delivery mode (mobile transfers). It was also explained to the targeted beneficiary that in case they did not have a mobile phone with a mobile money account, they could nominate someone of their choice to receive the money on their behalf, conditional on the beneficiary being physically there herself/himself at the time of registration. To secure the integrity of the research design, the UCT implementation was instructed not to give any further information to the beneficiary other than the content described in the script.

UCT registration

All UCT beneficiaries were invited to register in person in the community at a pre-specified moment in time. They would only be registered (i) if the name on the beneficiary list held by EGPAF officers matched the name on the ID presented by the registrant, (ii) if the beneficiary phone number was verified and confirmed, and (iii) if the registrant was willing to sign a consent form (approved by the ethics boards in Tanzania, Sweden and Norway) confirming consent to participate in the study. During registration, EGPAF officers provided the beneficiaries with an information sheet giving information about who to contact in case of any change in phone number, nominated contacts, absent transfers, complaints and other issues relating to the UCT transfers. In cases where the beneficiary nominated another

person to receive the money on their behalf, the EGPAF officer called the nominated person and followed a specific script to explain to this person that s/he had been nominated to receive a UCT on behalf of a beneficiary name and to request that the person help deliver the cash transfer to the beneficiary

UCT payments and monitoring

Within a week after the mobilisation process was completed, EGPAF's Finance Team was expected to send the first mobile money transfers to the recipients. The bi-monthly UCT amount transferred to a particular beneficiary depends on which treatment group the beneficiary's residence community has been randomly assigned to – either TZS 32,000, TZS 77,000 or TZS 109,000 (see Section 5.6). The mobile money transfers were expected to be sent to all communities from the same batch at once on the same day or over a span of two days. The UCT implementation team were requested to properly account for all rolled out transfers using a monitoring spreadsheet, detailing the ID and names of beneficiaries, transfer amounts, the date at which each transfer was made and whether the number belonged to a nominated person or the target beneficiary. The monitoring spreadsheet also contains information on challenges faced, if any. The UCT implementation team will also undertake spot back-checks on a randomly selected number of beneficiaries to learn whether the transfers were received by the numbers they were sent to and if the details of target beneficiaries/nominated persons have been recorded correctly by the team. They will also help in monitoring issues or complaints arising from the receipt of cash.

Programme Theory of Change

Figure 3 gives a systematic overview of the Theory of Change through which we expect the Parenting and the UCT intervention activities to ultimately improve child outcomes by age one and age two, in particular: child nutrition, socio-emotional development and cognitive and speech and language development. Both UCT and Parenting interventions are expected to improve child outcomes through changes in parental behaviour and improvements in child investments. However, whether and how changes in parental behaviour materialise by one intervention and/or the other will depend on what parenting barriers parents in the study context are facing. If barriers to making child investments are mainly financial, then UCT is expected to directly improve parental behaviour and child investments and the Parenting intervention on its own is not expected to change much. However, if any particular type of child investment or parental behaviour is hindered by any obstacle that is non-financial in nature (e.g. community trust in the health system, parental knowledge on the importance of ECD, parental preferences and beliefs about ECD, social norms, etc.) then UCT on its own may not be sufficient to improve child outcomes and the Parenting treatment may help.

In Section 6 on Outcomes and Measurement we will come back to the Theory of Change and will discuss in more detail the different outcomes we expect the interventions to impact on and how we will measure these.

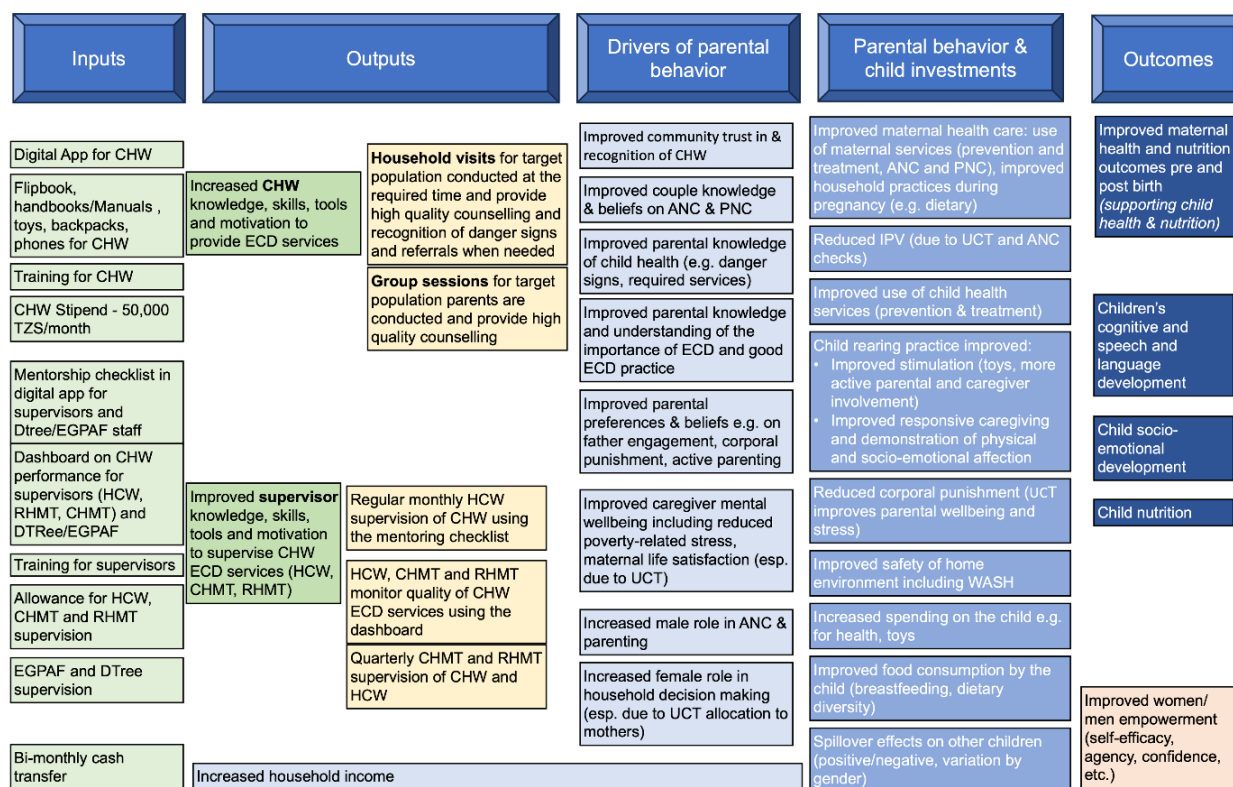


Figure 3: Kizazi Kijacho RCT Theory of Change

(developed by Kate Gooding and Georgina Rawle at Thrive/Oxford Policy Management)

5 Study design

Evaluation problem

To measure the causal effect of the interventions on child development and other outcomes of interest, we would ideally compare the outcomes for those who receive a particular intervention (the treatment group) across two states of the world; (i) where they receive the intervention and (ii) where they do not receive the intervention (i.e. the group's counterfactual). However, as it is impossible to observe outcomes for the same group of children in two states of the world, the core evaluation problem is to come up with the best possible estimate for (ii) the counterfactual. RCTs are designed to address this challenge. Groups are randomly allocated to either receive a treatment (treatment group) or not to receive a treatment (control group). The random assignment implies that, prior to the treatment, statistically there should be no systematic differences between the treatment and control group. Hence, at the end of the intervention period, measures of outcomes in the control group are a good approximation of what outcomes in the treatment group would have been, had they not been subject to treatment. Therefore, in an RCT study design, a ex-post comparison of outcomes between the treatment and control group provides a valid estimate of the causal effect of the intervention. This is the approach we adopt to evaluate the effects on child development of the Parenting intervention, the UCT and the programme combining the two interventions.

Study arms

The clustered multi-arm RCT has four main study arms:

- The **Control group** of communities will not receive any intervention through the project, but we collect the same observational data for them as for the other groups. Caregivers continue benefiting from any existing CHW and HCW service (see Section 3), which currently are largely focused on maternal and child health and nutrition. The control group will serve as a reference group to identify the causal effects of the three treatment groups;
- In the **Parenting-only** treatment group of communities, existing CHWs and HCWs are trained by CHMTs (supported by EGPAF officers) to use an innovative digital app (developed by D-Tree International) for the delivery of integrated ECD services to pregnant mothers and young caregivers, from pregnancy until the child is two years old. Through frequent home visits and community group sessions over a period of 27 months, CHWs provide tailored ECD counselling (e.g. prompting messages tailored to child age and triggering follow-up visits conditional on changing conditions), covering all aspects of the NCF (Health, Nutrition, Responsive Caregiving, Early Learning, Safety and Security). Real time data, including information on visit attendance, activities conducted and CHW observations, are recorded by the CHWs in each visit using the app. This information is displayed on a dashboard, used by CHW Supervisors to monitor performance remotely and provide support when needed. The app is mainland Tanzania's first digital solution to support CHWs in ECD service provision with this level

of decision support and tailored care. For more information on the app, the curriculum and the protocol, see Section 4.1.

- In the **Parenting + UCT** treatment group of communities, pregnant women in the study sample receive, in addition to the Parenting treatment, a bi-monthly unconditional mobile money transfer of TZS 77,000 (US\$33) from pregnancy over a period of 15 months until the average child in the sample is one year old (six transfers in total);
- In the **UCT Fixed** treatment group of communities, families do not receive the *Kizazi Kijacho* Parenting treatment, but instead receive a fixed bi-monthly unconditional mobile money transfer, each of TZS 109,000 (US\$47), over a period of 15 months, from pregnancy until the average child in the sample is one year old (six transfers in total). The bi-monthly cash transfer equals the sum of (i) the average of maximum and minimum bi-monthly cash transfer amounts disbursed per family under TASAF – TZS 77,000 (US\$33) – and (ii) the bi-monthly cost per additional family of delivering a parenting intervention – TZS 32,000 (US\$14). The transfers are randomly allocated to mothers and fathers/spouses within each community, where in half of the eligible households, the mothers receive the transfer and in the other half, the fathers/spouses (or household head where the father/spouse is not available) receive the transfer.

In addition to these four main study arms, the study has another UCT treatment study group in which the levels of the cash amounts vary across communities. In this **UCT Varied** treatment group, communities are randomised to receive one of the following bi-monthly unconditional mobile money transfer amounts: TZS 32,000 (US\$14), TZS 77,000 (US\$33) or TZS 109,000 (US\$47) from pregnancy over a period of 15 months until the children in the study sample are on average one year old (six transfers in total). Just as in the UCT Fixed treatment group, the transfers are randomly assigned between mothers and fathers/spouses within each community, where in half of the eligible households in the community, the mothers receive the transfer and in the other half, the fathers/spouses (or household head where the father/spouse is not available) receive the transfer. The data on the TZS 77,000 cash amount sub-group will be pooled together with the data on the UCT Fixed treatment group, to increase power in the RCT impact assessment analysis. The data on the other sub-groups in this study arm will, however, not be used in the RCT evaluation. Instead, they will be used in parametric analysis to study household sensitivity to varying levels of income shocks.

Randomisation

Figure 4 presents the ex-ante RCT design, as it was intended prior to when the survey teams started visiting the communities to recruit the baseline study sample. In this section we explain how ex-ante we selected 393 communities and 259 HDs to participate in the study and how these were randomly allocated to the different study groups. Later on, in Section 7, we discuss how the reality in the field led to a slight change in the RCT study design. In Section 5.6 we provide an updated version of Figure 4 where we present the adjusted final study design.

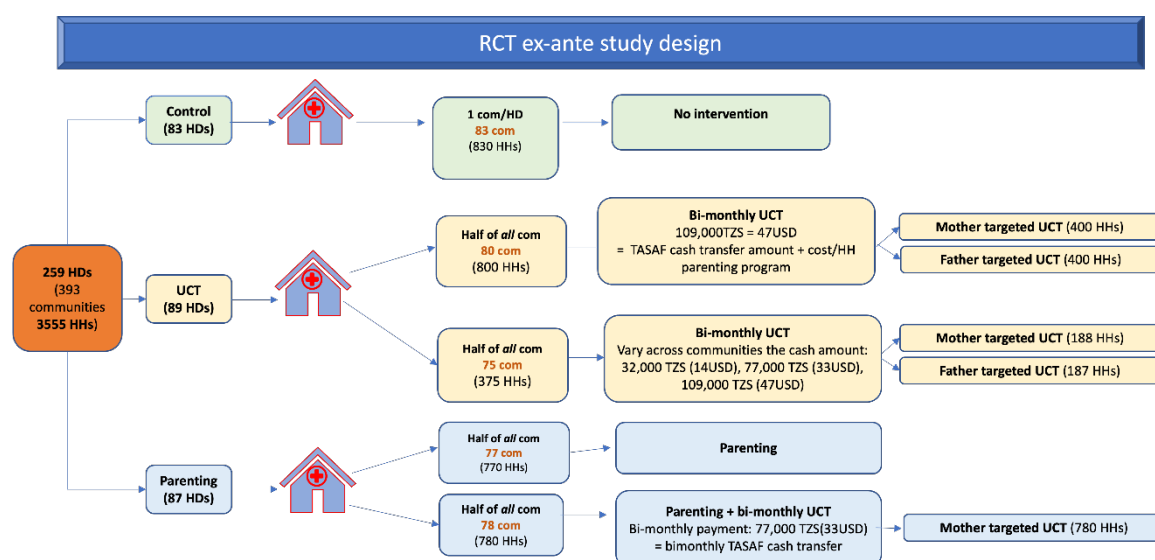


Figure 4: Kizazi Kijacho ex-ante RCT study design

The randomisation of study communities to the different study arms was carried out in the following steps:

- 1. Identification population of HDs:** First, we established a list of all eligible HDs in the Dodoma region, i.e. public HDs with at least one officially registered CHW. This process involved liaison with each of eight DC administrations in the Dodoma region, followed by a verification phone survey conducted by EDI Global from 12 to 22 August 2022. The verification exercise was to confirm basic information on each of the 319 HDs provided to us by the district officials. A total of 290 HDs were confirmed to be potentially eligible. For each of these, we confirmed the list of communities served and the list of associated CHWs. To further consolidate the list of HDs and the corresponding communities, EDI Global cleaned the dataset by linking the villages/mtaas identified during the phone verification exercise to an existing administrative database available in Tanzania.¹ At the end of this process, a total of 259 HDs were confirmed to be eligible to participate in the study.
- 1. Randomisation of HDs:** Next, these 259 study HDs were randomised to either (i) the Control group (83 HDs), (ii) the UCT-only group (89 HDs), or (iii) the group receiving the Parenting treatment (87 HDs). This stage in the randomisation process was stratified by DC and by whether there is more than one village or mtaa served by the HD. Note that the reason for randomising parenting treatment at the HD level is because CHWs working for the same HD frequently meet and discuss their work and, therefore, randomisation across communities within the same HD catchment area could have contaminated the RCT study design.
- 2. Selection villages/mtaas:** Next, in the 83 Control HDs, one village/mtaa in the catchment area with at least one officially registered CHW was randomly sampled to participate in the study. In the 89 UCT-only HDs and the 88 Parenting HDs, all villages/mtaas (with at least one officially registered CHW) in their catchment areas were included to participate in the study. In total, this step in the process resulted in the recruitment of 393 study villages/mtaas in the study sample.

¹ Tanzania Communications Regulatory Authority, Website: <https://www.tcr.a.go.tz/services/publication-of-postcode-list>

3. **Selection CHWs and study communities:** Within each of these study villages/mtaas, one officially registered CHW was randomly selected to participate in the study and his/her CHW catchment area was included in the study sample. Hence, in this study, a 'study community' is defined as a CHW catchment area. The study community could be the entire village/mtaa or a sub-village/mtaa, depending on the size of the village/mtaa and the number of CHWs working in the village/mtaa.
4. **Randomising UCT Fixed versus UCT Varied:** Within the UCT only group (155 study communities across 89 HDs), study communities were randomly assigned, stratified by the HD, to: (i) the UCT-only fixed amount treatment arm (80 communities) and (ii) the UCT only vary amount treatment arm (75 communities).
5. **Randomising Parenting only versus Parenting + UCT:** Finally, in the Parenting group (155 communities across 87 HDs), study communities were randomly assigned, stratified by HD, to: (i) the Parenting only treatment arm (77 communities) and (ii) the Parenting and UCT treatment arm (78 communities).

Through this process, a total of 259 HDs and 393 communities were identified to participate in the study.

Listing activities

To identify the population of households from which to draw the study sample, starting one month prior to the baseline data collection EDI Global conducted a simplified, partial listing activity in the sampled study communities which continued throughout the duration of the baseline data collection. In this listing exercise, a household was deemed eligible to participate in the study if it was expected that at the time of the scheduled baseline survey visit:

- the household lived in the catchment area of a CHW sampled for the study;
- a pregnant woman (target mother) was living in the household;
- the pregnant woman was at least 18 years old;
- the listed pregnant woman was between 20 and 32 weeks pregnant at the time of the baseline survey visit to the community. However, to ensure a sufficient number of pregnancies in the study communities, later on in the data collection process this protocol was adjusted to also include pregnancies with 16 weeks of gestational age; and
- no other pregnant women had already been sampled for the same household.

Ahead of the start of the fieldwork, EDI Global established a listing team for the project to oversee the listing of study eligible households. The listing team consisted of 393 Local Listing Assistants (LLAs), 12 Listing Officers (LOs) and a phone verification team.

Network of LLAs and LOs: To support the listing activities, the project hired a network of 393 LLAs, one from each sampled community to conduct the registration of eligible pregnancies within the study area. The 393 LLAs were managed by 12 LOs who were trained in the purposes of the fieldwork, the use of computer-assisted personal interviewing (CAPI) tools

and how to recruit LLAs in the selected communities. The LOs travelled to each sampled community between September and October 2022 to reconfirm the details of the selected CHWs in-person (with a special focus on the catchment area that the selected CHW would serve households in), as well as to find the most suitable person in the locality to conduct the listing exercise. When hiring an LLA, the LOs observed the following criteria:

- He/she should not be a CHW. This was important to ensure that there is no significant bias resulting from the sampled CHW having control over what kind of households with pregnancies are selected for the study.
- He/she should be an adult (at least 18 years of age), healthy and literate.
- He/she must be a reputable person within the community, who would know the boundaries of the community in question and the administrative sub-units within it. Accordingly, priority was also given to individuals from the same sub-village/mtaa as the CHW catchment area.
- He/she should be able to read the informed consent to pregnant women when asking their preliminary consent to participate in study. The consents would be sought further by the LOs and later during the physical visits by the data collection team during the baseline survey.
- He/she should be able to closely liaise with the health facility staff responsible for supporting pregnancies in the community.
- Whenever possible the traditional midwives who were not CHWs were considered for the LLA job as preferred candidates. The schoolteachers and local leaders were also considered for the task if they met the criteria mentioned above.
- For smooth communication, candidates with a smart phone for communication via WhatsApp were also preferred.

The selected LLA received short training from the respective LO on the key parameters of the study, how to read a clinic card and coordinate with the health facility, and principles of ethical conduct around data privacy and informed consent. In order to avoid anticipation of benefits from any CHWs or other officials, throughout the introduction the listing and baseline data collection teams only referred to the study as a longitudinal survey. To further reduce the chances of inadvertently hedging expectations in the communities, the details of the interventions and the list of treatment/control geographies and beneficiaries were at no point shared with the EDI Global data collection teams.

Phone Verification teams: As per the initial field-plan, EDI Global set up a separate Phone Verification team, tasked with calling the listed respondents directly and verifying the pregnancy information included in the papers submitted by the LLAs. However, due to difficulties in reaching the listed respondents in time as well as the fact that a number of households did not have access to a mobile phone, the phone verification exercise was later assumed by the LOs who would call the LLAs to reconfirm the submitted information on paper before submitting the corresponding data using CAPI.

While the listing protocols outlined at the outset yielded a number of eligible households to survey in the beginning, as the fieldwork progressed a number of challenges got raised that called for revisions to the listing protocols. The main challenges to accommodate included the following.

Challenge: Unreliability of the indicators capturing the CHW catchment area

While upon initial scoping exercises the 'subvillage' that a CHW was assigned by the sampled HD appeared to be an adequate proxy for the catchment area of the CHW, it soon became clear that this protocol was not always suitable for the sampled communities. First, while a particular CHW may be officially assigned to cover all of the households in a given subvillage or village, in practice the catchment area where s/he usually works is often defined more informally based on convenience, distance and conversations with other CHWs within the village on who should cover which area. Second, on the ground there was a great deal of confusion on the exact boundaries of the subvillages, as there was often disagreement between the HD officials, the CHW, the LLAs hired for listing as well as the sampled respondents from the households – all of which could not be easily cleared up a priori given the lack of a reliable reference. All of this meant that from the listing data alone, the sampling approach could not reliably tell apart households that were inside or outside of a given CHW's catchment area.

Protocol change: Before visiting any households, the survey teams were asked to consult the sampled HD on the location and reachability of each listed household in the community. This would ensure that the households selected for the study were indeed households served by the sampled CHW. As a rule of thumb, the survey teams were asked to only survey households that lay within about 30 minutes of walking distance of the sampled CHW's residence, or of the area where s/he normally carried out her visits. While this change was implemented from the first day of the baseline fieldwork (26 September), this change in listing protocol did mean that a bulk of the listed data collected prior to the start of the baseline survey (from early September onward) would include many households that do not satisfy the location criteria.

Challenge: Biased gestational ages in the listing data

As outlined above, the listing approach aimed to ensure that each selected pregnant woman was between 20 and 32 weeks of pregnancy at the time of the baseline survey. However, in about 47% of the cases, the listed pregnant women did not have an accurate idea of how many weeks pregnant they were in reality. Overall, there was a general downward bias in their self-reported estimates which resulted in many households turning out to be ineligible by the time the survey teams reached them.

While initially the expected date of delivery (EDD) appeared to be a more reliable measure of gestational age, given that it is read off of the clinic card that is filled by a health professional, in practice a number of women who were expected to be within the eligible stage of pregnancy at visitation had already given birth by the time the Enumerators reached the household. Upon additional feedback from the survey teams, it turned out that many women were incentivised to report a later start of the pregnancy than accurate. Many reported that initially they may be uncertain of being pregnant or apprehensive about disclosing their pregnancy in their community. However, when they registered their pregnancy at a later stage with a health official, there was a general impression that health officials would disapprove of how late the women would report their pregnancy and possibly

expect more dismissive treatment. Accordingly, there was a downward bias even in the gestational ages predicted based on the EDD data reported.

Protocol change: Given the high number of ‘ineligible pregnancies’, the eligibility criteria was updated to 16 to 32 weeks of pregnancy at the time of the survey. While these change did not remedy the reliability of the listing data, it did increase the number of replacement households that the survey teams could approach for an interview in case their target households turned out to be ineligible. This change was implemented from 11 November 2022.

Challenge: Low number of eligible households to match productivity and sampling targets

Given the challenges outlined above and the resulting need for a high number of replacement households, towards the end of the data collection in the first batch of villages it became clearer that the current listing data would not yield a sufficient number of eligible households on the ground to match the survey targets. More specifically, while in many villages there were a large number of eligible replacements identified, in many other villages with the expected rate of replacements we anticipated meeting less than 50% of the targets without sufficient room to oversample in other villages. Given that the bulk of the listing activity carried out by the network of LLAs was conducted between September and October with the majority of listed pregnancies falling between 28-32 weeks of gestational age, by November the ‘quality’ or rather ‘usability’ of the listing data had further deteriorated as most pregnancies were deemed ineligible by the later stages of fieldwork.

Protocol change: In order to further boost the listing data, the field teams were asked to spend additional time on registering new pregnancies in the communities where we expected to hit a low number of households. This protocol change was partly implemented towards the end of the data collection in the first batch of the sampled communities and more generally in batches two and three from 29 November onwards. Specifically, before conducting any surveys in a community, an Enumerator would be asked to identify additional pregnancies by visiting that community. When the listing data was submitted, the Data Processing team would re-run the sampling do-files for the given week and re-share the survey targets with the team, now with the newly identified households included. Generally speaking, the newly submitted pregnancies were more reliable targets than the ones collected by the LLAs between September and October 2022.

Overall, starting from the beginning of the listing process until its completion, a total of 8,317 pregnant mothers got listed, of which 4606 (55%) were confirmed to be eligible to participate in the survey upon the time when the baseline survey team visited the respective communities.

Sampling strategy

The objective in the study design was to randomly sample on average ten pregnant women to participate in the study in all the study groups, apart from the UCT Varied study group where the target sample size was five pregnant women per community. The protocol requested the survey teams to over-sample pregnant women in communities where there was abundance of pregnant women to compensate for a shortage of women in other communities in the same district. To ensure that the selected CHW would indeed be expected to serve the households in the sample, the sampling procedure put significant emphasis on sampling households only from the CHW's catchment area.

To achieve these targets, using the listing data, for each week of fieldwork the Data Processing Team would produce a sample of target households as well as replacements from the eligible pool of households given that week. This is important, given how the timeline of the survey was affecting the pool of eligible households at the time of data collection; for instance, a pregnant woman with an expected gestational age of 30 weeks on 3 October would no longer be eligible if the survey team were to visit her household three weeks later.

Before attempting to visit any households, the survey teams were asked to confirm in the local HD and with the village leaders where the targeted households could be found within the village. Any households that were deemed to lie too 'far' from the sampled CHW's supposed catchment were replaced by other eligible households based on a randomised order. Where possible, the Enumerators would also call the households ahead of time using the telephone numbers provided from the listing data, in order to confirm the availability of the target mother as well as the father and/or household head for a survey.

The data collection team would on average spend one to two days on data collection per village in a single visit. During that time, they would aim to maximise interviews to reach the target sample within each household including any replacements required. The full household was replaced if one of the following cases arose:

- The household head or the sampled pregnant woman refused for any survey activities to be conducted in the household.
- At least one of the surveys for the Household Questionnaire, Mother Questionnaire (Visit 1) and Mother Questionnaire (Visit 2) could not be completed (e.g. because of respondent unavailability after three attempts, the respondent moved away, or the respondent was travelling for the duration of the survey).
- The household was found not eligible, as the information from listing data proved inconsistent with eligibility criteria - i.e. different pregnancy status (given birth or suffered a miscarriage) or progress (not 20-32 weeks pregnant).
- Key respondents of pregnant woman or household head were not possible or fit to be interviewed (i.e. because of mental illness or disease, death or moving away) during the assigned one to two days of the field team's visitation schedule.
- The household was located too far from the corresponding CHW's 'catchment area' (more than 30 minutes of walking).

In cases where the household head had consented to the survey, but did not have time to complete the 'Household head' interview, the 'Household' interview was completed with the target mother herself. Furthermore, in cases where the biological father or the partner of the target mother (living in the same household) was not available in the time of the survey, the household would be considered completed as long as the 'Household', 'mother 1' and 'Mother 2' surveys were completed. In the first few weeks of survey however, this protocol resulted in a low number of 'Father' surveys completed, exacerbated by the fact that in 16% of the sample, there was a biological father/partner living in the same household as the target mother. A new protocol was implemented from 5 November onwards according to which in the absence of a biological father/partner to the target mother upon two visits, a male household head (i.e. father, brother or grandfather of the target mother) could be considered as a respondent for the 'Father' survey.

As a part of the sampling process, for each week a series of target and replacement households were identified in the key communities that the survey teams could visit. However, in cases where the target number surveys could not be completed in a given community after two visits, the survey teams were instructed to oversample households in other communities within the same district. The teams tried to make sure that in case there was a lag of completed households from villages with a target sample of ten households, they would oversample the required number from villages that also had a target of ten households (hence preserving a desired sample size across sampling arms). However, this protocol had not been entirely clear to the survey teams during the first half of the data collection, which meant that Enumerators were initially compensating for a shortage in sample size in communities with a target sample of ten by recruiting more households in communities with a target sample of five. This malpractice was halted as soon as the team became aware of it, but it did lead to a slight distortion in the sample size composition during the early field work. However, despite these incidences, as shown in Section 7.4, the total sample size and community average sample size composition across study arms in the overall sample turned out exactly as intended.

Final study design

Once data collection work started and more accurate information was collected about the communities, we had to slightly adjust the ex-ante RCT design to reflect the realities on the ground. Specifically, we had to (i) change the treatment status of one Control HD and its community to Parenting treatment as it turned out that the community was served by a CHW also working at a Parenting treatment HD (ii) drop four communities (one of each of the five study groups, apart from Parenting + UCT) because they appeared to be the same as another community already on the list (but which had erroneously been given the same name during survey preparation work, despite the phone verification calls); (iii) drop one additional Parenting-only community as it did not exist; and (iv) drop one final UCT Varied community because no pregnant women were present in the community at the time of baseline survey.

Despite the drop in the number of study communities from 393 communities to 387 communities, the survey teams kept the same overall sample size target of 3555

households, managing to even exceed this target by recruiting 3585 families. The final RCT study design, including an indication of HD, community and household sample sizes actually achieved by study arm, is shown in Figure 5. In Section 7 we provide more information on the data collection process and outcomes, including information on total and community average sample sizes by study group and by district.

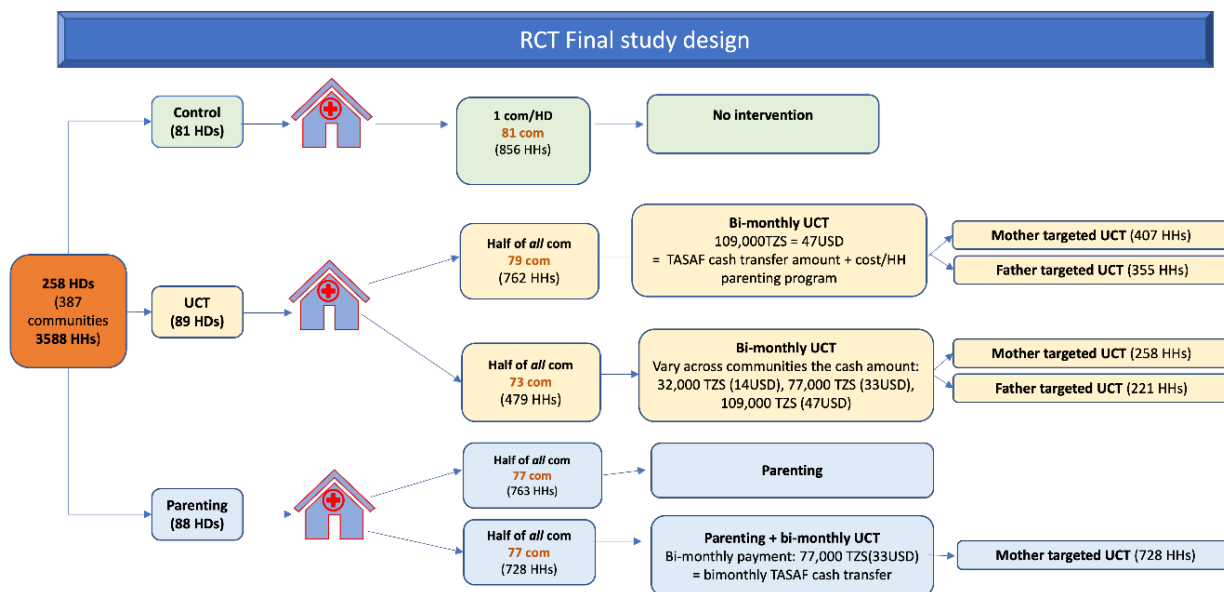


Figure 5: Kizazi Kijacho Final RCT study design

6 Outcomes and measurement



The RCT offers the opportunity to significantly improve our understanding of the child development process, and our knowledge of how to influence this process in a scalable and sustainable way. It allows us to study causal effects of the parenting programme, the cash transfer programme, and a programme combining these two, on a large set of outcomes, at different stages in the programme's Theory of Change (see Section 4). We can study the effects on different dimensions of child development, both cognitive and non-cognitive; we can study impacts on parental behaviour, including financial and non-financial investment in child development; and finally, we can study how changes in parental behaviour and practices come about by studying changes in potential drivers for behavioural responses, such as parental preferences, beliefs and empowerment. In this section we outline in more detail the main outcomes of interest in the programme's Theory of Change and describe how we plan to measure these in the planned follow-up surveys.

Child development

First and foremost, a primary objective is to assess the relative effectiveness of the RCT interventions on child development. As specified in the trial's pre-analysis plan NCT05598970, in the main impact evaluation paper we will focus on assessing impacts of the interventions on the following **primary outcomes**:



- **Children’s cognitive and speech and language development:** We will measure cognitive and language development using direct assessment and parental reports. For direct assessment, we will use the cognition, receptive and expressive language sub-scales of the Bayley Scales of Infant and Toddler Development 3rd edition (Bayley-III; Bayley, 2006), suitably adapted for the context. For parental reports, we will use the cognition and receptive and expressive language sub-scales of the Caregiver Reported Early Development Instrument (CREDI) (McCoy, Marcus and Gunther, 2018). We will also use a short version of the MacArthur-Bates Communicative Development Inventory (Jackson-Maldonado et al., 2013) to measure expressive language.
- **Children’s nutritional status:** Weight and height will be measured to obtain the height-for-age-z-scores and weight-for-height-z-scores, standard measures outlined by WHO (WHO, 2006). We will also measure Mid Upper Arm Circumference (MUAC) and test for the presence of edema.

We plan to aggregate the measurement of outcomes using Structural Equation Modelling (SEM) to get latent factor(s) that summarise effectively the information given by the individual items. And we plan to combine direct assessment and parental reports as well as the different child development domains and nutritional outcomes if the fit of the model(s) are better than using the original scoring techniques.

At trial registration, we further pre-specified the following **secondary child outcome**:

- **Children’s socio-emotional development:** Socio-emotional development will be assessed using direct assessment and parental report. For direct assessment, we will use the Griffiths Developmental Scale III (Griffiths, 1970) personal-social-emotional subtest, suitably adapted for the context. For parental reporting, we will use selected items of the CREDI, which is already adapted for Tanzanian context and is free to use.

We will also study how impacts vary by household and parental background characteristics (including parental education) and by gender of the child. When studying the impact of the treatments (Parenting, UCT, and Parenting + UCT), we will control for a set of observable household characteristics and family background variables to increase precision of the estimates. The set of observables we plan to control for consists of district, tester ID, gender of the child, and maternal education. We also pre-specified that in addition, the estimation will control for any potential imbalances between treatments arms and between treatments arms and the Control group. We look at whether we have such potential imbalances in Section 8.

Power calculations

A sample of on average nine target children (assuming 10% attrition over a period of two years) in each of approximately 80 study communities in each study group, gives 80% power for a two-tail tests of size 5%, allowing us to detect improvements in child development outcomes larger than 24-39% of a standard score, assuming intra-cluster correlations between 0.08 and 0.3 for any pairwise comparison with the control group.

Parental behaviour and practices

Guided by the programme Theory of Change (Section 4), we will in subgroups analyse and identify the channels through which programme impacts (if any) materialise. To start, we will measure and observe any changes in parental behaviour, and in particular study whether and how child investments, are affected by the different treatment arms. Investment in children can be divided into (at least) two types: financial- and non-financial investment. These investments can affect (at least) three dimensions of child development: health, nutrition and learning.

Financial investment

We will measure changes in food consumption and food shares allocated to target children and we will use nutrient tables to convert food into calories and other nutrients. We will also measure non-food purchases for children under five in the household including detailed information on health (e.g. medicines, admissions to hospitals, medical treatments, etc.) and education expenditures (e.g. enrolment in childcare centres), as well as purchase of learning material (e.g. toys, books) and a long list of non-food items and services (e.g. glycerine, Vaseline, sleeping mats, mosquito net, footwear, garments, transportation, etc.).

Non-financial investment

We will study in detail how much time mothers and fathers spend on various activities (both during weekdays and weekend days), in particular i) playing/singing/reading books/telling stories/studying/doing homework with their own children, as well as ii) caring for their own children (bathing, dressing, putting them to sleep, feeding, etc.). We will consider time spent collectively on all children as well as the target child in particular. We will also study changes in time spent on other activities, including for example income generating activities and leisure time.

Additionally, we will measure the presence of toys and learning materials in the house and other aspects of the child's environment. This will be assessed using the Family Care Indicators (FCI), developed by UNICEF (Kariger, et al, 2012), and selected subscales of the Home Observation for the Measurement of the Environment (HOME; Bradley, 2014) and the Parental Style (PSQ; Bornstein et al, 1996) for assessing social and didactic interactions. Finally, we will measure use of maternal and child health services, which are often provided free of charge in Tanzania. We will study whether the financial and non-financial child investments are affected by the different treatments and we will study, in the same way as for child development outcomes, whether there are differential effects of the treatments. We will also study whether there are heterogeneous impacts of the treatments based on the gender of the child, as well as observable household characteristics at baseline such as number of older siblings, religion, mother empowerment, expenditure and rural/urban status. In the analysis of child investments, we will also be interested in studying potential spillover effects on siblings. For the households where the target child has one or more sibling(s), does the treatments create any spillovers? And if so, are these positive or negative? And, are these dependent on the gender of the child?

Drivers of parental behaviour



Next, we will study potential drivers of parental behaviour and study how these drivers may be influenced by the treatments. In addition to measuring ECD knowledge, we will use innovative measures of father and mother ECD preferences and beliefs, women empowerment, intimate partner violence, father and mother mental wellbeing and social norms.

Parental preferences and beliefs

First, we will study parental beliefs about the returns to child development and particularly human capital formation. At baseline, we elicited mothers' beliefs on effects of parental investment (using the techniques developed in Attanasio et al. (2019)) on child's future language skills. In the follow-up surveys we will measure the same with a few extensions, and for both mothers and fathers. Second, in the follow-up surveys we will study parental preferences, in particular parental resource allocation preferences. We will use versions of an instrument that we had already piloted in Tanzania, inspired by the much-used dictator games in experimental economics (Engle et al., 2011; Forsythe et al., 1994).

At baseline, we included the following version of this survey instrument (the results of which are discussed in Section 8):

Imagine that YOU were to receive a transfer of TZS 150,000 every month on top of your current household income.

Imagine that you can freely decide how to spend your money without taking account of any other's views, so none of your family members could complain, get angry, control your decision

or punish you in any way for your decision. However, keep in mind that the money MUST be spent every period and cannot be saved for future spending.

Imagine that the child from your pregnancy has turned five years old for this exercise. Use these 75 beads, where each bead represents TZS 2,000, and this cardboard with different expenditure options and family members (for mother, for father, for your child).

For each expenditure option, distribute the beads such that they represent how you would like to spend the money. This might not be how your household would actually end up spending the money, but it should be the same as how YOU would spend it if you could decide freely.

There are three expense options that are common for the whole household, not divided between the household members (e.g. rent or electricity).

See Almås et al. (2022) for a full description of the approach that was followed, and see also Almås, Attanasio and Jervis (2022) for a discussion of how to use the results from this instrument in the analysis of household allocations. Further, see Cherchye et al. (2021) and Ringdal and Sjursen (2021) for the use of similar approaches to elicit tastes for child investment and own consumption in couples in experimental settings in Kenya and Tanzania, respectively.

We will study both allocation preferences across goods and allocation preferences across different individuals in the household. We will study whether the parenting treatment and cash treatments change these preferences (looking at mothers mainly, but also fathers as a secondary outcome). In the follow up surveys, we will make some changes to the preference elicitation and expand it to also measure willingness to pay for a child-specific good and adults' goods (including both a good that we expect that the mothers will like and a good that we expect the fathers to like), respectively, inspired by the work of Dizon-Ross and Jayachandran (2023). We will not cover the details of this in this baseline report, but will elaborate on this in later publications.

Women empowerment



The RCT design will allow us to study how cash transfers targeted at mothers (versus fathers) affect woman empowerment and child development. Many cash transfer schemes across the world target women (Fiszbein et al., 2009). There are two main arguments for that. First, the *maternal argument* states that women are more likely than men to spend money on goods and services that benefit children. Second, the *empowerment argument* states that targeting women will empower them and hence improve gender equality. While these arguments are often used when designing policy, the empirical evidence is scarce. As we have randomised whether men or women receive the unconditional cash transfer, we will be able to test both these arguments, by measuring child development as well as female power in household decision making and compare across gender of recipient.

We measure female empowerment in two ways. First, we use the novel measurement instrument developed by Almås et al. (2018). By measuring willingness to pay for resources paid to themselves instead of their spouse, a measure of power in the household decision making is constructed. Second, we use a modified version of the more standard decision-making questions that are included in e.g. the DHS surveys. These questions ask the respondents to indicate who typically makes decisions across different domains in the household setting.

Intimate Partner Violence

UCTs have previously been shown to reduce Intimate Partner Violence (IPV) (Buller et al., 2018). However, the impact of UCTs delivered through digital means has not been well-examined (Mc-Dougal et al., 2019). Further, many UCTs are bundled with other interventions and it is therefore unclear whether the observed effects come from the cash transfer alone or the combination of interventions (Buller et al., 2018). IPV has not been widely studied as a potential outcome of ECD interventions. IPV could become more observable when pregnant women receive timely healthcare and their health is being monitored on a regular basis by CHWs. Moreover, improved healthcare access through CHWs can increase the likelihood of IPV victims in seeking care and protection (McCloskey et al., 2016).

Further, IPV can have differential impacts if UCTs are targeted to men versus women. Even though evidence on targeted UCTs on women have shown a reduction in IPV, evidence on targeted UCTs to men is limited and is even scarcer in case of digital cash transfers (for an exception, see Haushofer et al. (2019)). Studying the differential impact of targeted UCTs on IPV in Tanzania is quintessential both to add to the evidence of digital UCTs on IPV and further to reflect on the impact of targeting. We aim to investigate the effect of a UCT on the prevalence and acceptance of sexual, physical, psychological, and economic violence. To measure IPV, we use the WHO's framework. This framework includes specific questions about the events of controlling behaviour, economic, psychological, physical, and sexual violence in the last 12 months and their frequency.

Women are usually thought to be the victim of IPV, however women can also be the perpetrator of violence. Thus, understanding the bi-directionality of IPV is important to develop IPV-prevention programmes. We lack data on the prevalence of IPV against men in many countries, including Tanzania. In Kenya, 65% of men report to have experienced psychological violence, 6% physical violence, and 4% sexual violence (Haushofer et al.,

2020). In Uganda, Waila et al. (2022) use the DHS and show that 25% of men report psychological violence, 12% physical violence, and 6% sexual violence.

We aim to provide evidence on the prevalence of IPV against men using the WHO's framework, including specific questions about controlling behaviour, economic, psychological, physical, and sexual violence. Further, we will estimate the effect of receiving a cash transfer on the prevalence of IPV against men.

Parental mental health and wellbeing

Maternal depression has been suggested as a risk factor for the socio-emotional and cognitive development of children (Cummings and Davies, 1994). This risk may be particularly pressing in low-income households such as those in our study sample, where the prevalence of depression is typically higher, and access to psychiatric treatment is lower, compared to higher-income households (Bromet et al., 2011; Lund et al., 2010; De Quidt and Haushofer, 2017).

There are many possible channels as to which mother – or father – depression could be a barrier to child development. Mothers' (and fathers') beliefs about the future may be altered with depression (De Quidt and Haushofer, 2016), which may in turn lower investments into child development. Depression could also alter allocation preferences within the household, and in our pilot, we saw that mother depression and allocation of resources to children (elicited by the novel survey instrument discussed above), was significantly negatively associated (Almås et al., 2022). This negative association may not indicate any causal relationship between the two – there could be a third factor, such as partner violence, bad behaviour, or poor economic conditions, that cause both mother depression and poor allocation of resources to children. And if the association constitutes a causal relationship it is also not clear which direction the causality goes. Even so, it is interesting to start from this association and to try to understand the effects depression may have on child development. Parental depression could also affect time use with children, and also a sway in household decision making.

We will measure mother and father depression and discuss the association between depression and child development. We will study whether any of our treatments, i.e., the parenting programme and/or cash transfer scheme, or the combined treatments, has a significant impact on measured depression. As poverty and scarcity causes stress, and depression is more prevalent among poorer population groups (Mullainathan and Shafir, 2013; De Quidt and Haushofer, 2016), we hypothesise that cash transfers to the household can lead to decreased depression rates. Moreover, as the parenting programme is meant to provide counselling, and empower the mothers to take care of themselves and the child, we also hypothesise that the parenting programme may lead to lower maternal depression rates.

We will measure depression using the Center for Epidemiologic Studies Depression Scale (CES-D 10; Radloff (1977)). The CES-D has been used successfully across wide age ranges and is sensitive to changes in caregiver depressive symptoms after interventions (Lewinsohn et al. (1997), Pinquart and Sörensen (2003)).

Social norms

We will study social norms related to parenting as well as gender. The role of social norms for individual and collective decision-making has received increased attention in economics recently (Bursztyn et al., 2020; Field et al., 2021). There are two aspects of social norms that matter for behavioural responses – including child investments – both of which we search to measure in this project:

1. what the social norm(s) is(are); and
2. the weight attached to these norms (or the disutility derived from not obeying to it (them)).

We search to measure the first dimension, at both baseline and follow-up, using mainly a method inspired by Bursztyn et al. (2020). Specifically, we randomly divide the study sample into two groups, one where we ask about own beliefs about what parents should and should not do ('ought to do', i.e. first order beliefs). In the other group, we ask about what they believe that others believe that parents ought to do (second order beliefs). We elicit first and second order beliefs about:

- father engagement;
- corporal punishment; and
- female mobility and labour market participation.

Additionally, we will use a vignette design to study the role of active parenting (stimulation). After presenting the respondents with two hypothetical families ('scenarios'), we will ask what they believe would be the most common practice in their community and then ask what family scenario they think would be better for the child in terms of its future outcomes.

Finally, through this study, we seek to understand how important the identified social norms are for parental behaviour. We will seek to develop an information treatment based on the identified norms at baseline and then see if, and to what extent, this affects actual behaviour. If funding allows, we may also include laboratory experiments to identify this.

Household decision making

The ultimate goal of this programme is to build a model to better understand household decision making, and to investigate how this in turn affects child development. This complex analysis, will make use of several building blocks from this study: the direct elicitation of preference parameters, beliefs and decision-making power, the exogenous variation in cash and potentially that of parenting. We will also make use of modelling tools from the literature on household decision making. As building blocks for the full model, we will study the following in separate sub-analyses:

- **Is income share a valid distribution factor?:** In order for income share to be a valid distribution factor, it should affect the decision-making power in the household, but not preferences or beliefs. We can test this with our set-up: we can investigate whether households where mothers are targeted with the cash transfer have a smaller willingness to pay to have control over resources than the mothers in households where males are targeted with the cash transfer, and at the same time, neither beliefs nor preferences are shifted with such targeting. We will compare follow-up measures of

decision-making power, preferences and beliefs, between transfer receiving women in the treatment group to non-transfer receiving women in the father treatment group (using ANCOVA to increase precision).

- **Establishing the link between elicited allocation preferences and the theoretical model:** From the experiment, we will have information about actual consumption shares as well as preferences for such shares. This is information that has not to date been available when estimating e.g. the collective model of household decision-making. The standard way of estimating preferences for consumption is through demand system estimation (see, e.g. Deaton and Muellbauer, 1980a,b). Such demand system estimations have been brought to the estimation of the collective model: Chiappori and Ekeland (2009) suggest to use the Linear Expenditure System (Stone, 1954) in an estimation of consumption in a collective model, whereas Attanasio and Lechene (2014a) suggest to use the QUAIDS system (Banks et al., 1996; Deaton and Muellbauer, 1980a). We will here benefit from the teams extensive experience in estimating demand systems (Attanasio and Lechene, 2002, 2014a; Almås, 2012; Almås and Johnsen, 2018; Almås et al., 2019; Almås and Kjelsrud, 2017). We will work out exactly how to incorporate the novel instruments on actual and hypothetical consumption into a demand system estimation in the collective model, and exactly which assumptions can be relaxed with these new measures. The ultimate goal is to be able to estimate an integrated model and keep as much flexibility as possible in terms of functional form assumptions.
- **Deriving the link between the incentivised elicitation of empowerment and the weight in decision-making in the collective model:** The willingness to pay measure reveals power in decision-making. However, the exact functional form for which one can use the willingness to pay measure in the collective model is not trivial and has not yet been derived. In this part of the analysis, we will seek to derive this relationship. To this end, we will use the definition of willingness to pay, namely the following indifference condition: if you pay your willingness to pay, you are equally well off with both alternatives: paying and receiving the money; not paying and spouse receiving the money. This condition gives an implicit relationship between the derivative of the utility function with respect to money for the household and that with respect to the weight in decision-making. Even so, the exact mapping from willingness to pay to the weight in decision-making is not directly observable and it has to be worked out; and some functional form assumptions will have to be adopted. We will seek to derive this relationship keeping the maximum level of flexibility.
- **Using elicited beliefs and observed financial- and non-financial investment in child development to estimate the human capital production function:** In this part of the project, we will build on the seminal work by Cunha et al. (2013, 2020) and Attanasio et al. (2019) and use the suggested instrument to measure beliefs about returns to human capital investment in Tanzania. In this part of the analysis, it is useful to extend the framework by considering human capital production as a function of both financial resource and time used by parents on child development, e.g. reading or talking (Attanasio et al., 2020,?; Cunha et al., 2010; Cunha and Heckman, 2008; Heckman et al., 2013, 2020; Todd and Wolpin, 2003). Parents are endowed with beliefs about the process of child development, which do not necessarily coincide with the real human capital formation process. Using the elicited beliefs and functional form assumptions in the model, we will estimate the believed human capital production function which is the basis for parental decision-making. We will also be interested in differences in beliefs of mothers and fathers and whether such differences relate to initial conditions, returns to financial or returns to time investments (or their interactions). As we will elicit different dimensions of beliefs, we will be able to study beliefs about trade-offs between different investments in child development. In particular, we will be interested in studying whether

mothers and fathers have different beliefs about the trade-offs between spending money and time on nutrition versus education.

- **Estimating Engel curves:** The first estimation of household behaviour is simply estimating consumption shifting/Engel curves. For this, we expect it to be quite useful to have the additional treatment variation – the varying UCT amounts. Recall that for parts of the UCT sample, we vary whether the UCT is low (about US\$14), medium (about US\$33), or high (about US\$47) which will enable us to study the effects at different levels of transfers. We can use this variation to estimate demand systems and speak to e.g. the discussion about whether poverty traps exists in this setting.
- **Estimating a complete model of household decision making:** We will put all the pieces together and use all the directly elicited key parameters as well as their derived relations to the theoretical framework together with survey data on consumption, prices, time use and child development measures, to estimate a full model of household decision making. In the structural estimation, we will use both actual consumption shares and the preference parameters, combined with price information, parental beliefs about how investments translate into child development, as well as the weights in decision making identified from the empowerment measure to estimate the proposed model. The benefit of the use of direct measures is that less structural assumptions are needed, and therefore, the direct measures of latent factors allow the identification of more realistic models, which in our case comes from data collected through this project. For the estimation of the structural model, we will use the structure of the collective model and assume that all allocations are efficient. With this model at hand, we can answer questions to inform policy. For example: how should we design a programme if we want to improve child development in general, or for particular groups in the society? Further, how should we design policies to equalise within and across households in a country?
- **Including social norms in the household decision making model:** This requires novel theoretical and structural work, and this will be informed by the data collected on social norms for mothers and for the fathers in the communities.

7 Data collection



The baseline survey was conducted from 26 September 2022 until 20 December 2022, by Tanzania-based Mathematica company EDI Global. In line with the roll out of the Parenting intervention, the baseline survey was rolled out in batches, starting with Batch 1 (Chamwino, Mpwapwa, Kondo TC), followed by Batch 2 (Bahi, Dodoma city and Kondo DC) and finishing with Batch 3 (Chemba and Kongwa). Moreover, within districts, survey visits were randomised, both in terms of interviewer allocation and in terms of timing, to avoid any systematic relationship between interviewer effects and time effects with RCT treatment status.

Table 2 provides a brief overview of the main baseline survey parameters. Successful survey data on 3,588 households, 387 CHWs, 387 market price questionnaires and 258 health facilities were collected across eight survey questionnaires by six survey teams, each consisting of six Enumerators and one Supervisor. In this section, we provide more detail on how these results were achieved, on how the sample size composition looks like (by district, by questionnaire and by study group) and on how this compares to the target sample size as intended by study design.

Table 2: Baseline survey instruments

Baseline survey data parameters	
Region and country	Dodoma region, Tanzania
DCs	Dodoma City, Mpwapwa, Chamwino, Chemba, Kondo DC, Kondo TC and Kongwa, Bahi
Number of communities	387
Number of households	3588
Number of HDs	258
Number of CHWs	387
Date of fieldwork – Listing	5 Sept 2022 – 3 October 2022
Date of fieldwork – Baseline surveys	26 Sept 2022 – 3 October 2022
Number of LOs	12
Number of Supervisors	6
Number of Enumerators	36
Questionnaire language	Swahili
Number of survey instruments	8
Average time to complete one household (all questionnaires combined)	3.5
Average number of completed households per day per Enumerator	2

Timeline

Table 3 shows the main activities and the timeline that was followed to prepare for and implement the baseline survey.

Table 3: Baseline survey timeline

Kizazi Kijacho Baseline survey timeline	
Survey preparation, recruitment, and logistics	29 June 2022 – 24 August 2022
Listing Enumerator training	1 September 2022 – 2 September 2022
Listing Enumerator fieldwork	5 September 2022 – 3 October 2022
Fieldwork piloting	6 September 2022 – 8 September 2022
Supervisors training	13 September 2022 – 14 September 2022
Enumerators training and outdoor practice	15 September 2022 – 23 September 2022
Main data collection (baseline data collection)	26 September – 20 December 2022
Batch 1 communities	26 September – 14 November
Batch 2 communities	10 October – 12 December
Batch 3 communities	21 November – 20 December
Final data cleaning	2 January 2023 – 20 January 2023

Survey team setup and training

The baseline survey project team was made up of two team leaders, overseeing one project coordinator, one listing coordinator and two data processing officers. The field team consisted of six Supervisors, 36 Enumerators, 12 LOs and nine phone survey Enumerators. Each Supervisor was responsible for one team during the day, made up of six Enumerators. Listing training took place 2-3 September 2022, where the listing team were trained in how to approach HDs to verify CHW catchment areas, on how to recruit and manage LLAs and on how to verify pregnancies listed by the listing assistants on the ground. The listing training was followed by a two-day Supervisor training and an eight-day Enumerator training, on 13-14 Sept and 15-23 September, respectively. The training included an examination containing questions about the tools and overall protocol; the scores of these contributed to the overall assessment on which final trainees were contracted for the field work.

Survey questionnaires

Table 4 gives an overview of all questionnaires used during the baseline survey, with an indication of the targeted respondent and content. All survey tools were configured in the SurveyCTO CAPI software. All questionnaires were intensively piloted for six weeks in Tanzania, during a smaller scale complementary project run by the same research team prior to the start of the *Kizazi Kijacho* programme

Table 4: Baseline survey instruments

Name	Respondent	Minutes	Content
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Household	Head of household	85	<ul style="list-style-type: none"> ✓ Household demographics ✓ Household roster ✓ Sibling education ✓ Dwelling information and energy use ✓ Amenities, assets, and land ownership ✓ Water and sanitation practice 	<ul style="list-style-type: none"> ✓ COVID-19 experience ✓ Household income, credit and transfers ✓ Household shocks ✓ Detailed food and non-food expenditures ✓ Intra-HH food sharing
Mother visit 1	Pregnant woman	55	<ul style="list-style-type: none"> ✓ Mother demographics ✓ Mother education ✓ Mother health ✓ Mother pregnancy, antenatal care, and postnatal care history ✓ Mother use of time ✓ Mother social networks ✓ Mother information and communication 	<ul style="list-style-type: none"> ✓ Mother use of mobile money ✓ Mother work activities and income ✓ Mother savings ✓ Mother financial remuneration ✓ Mother food consumption outside the home ✓ Social norms ✓ Mother depression scale
Mother visit 2	Pregnant woman	40	<ul style="list-style-type: none"> ✓ Household allocation game ✓ Mother cognitive test (Ravens) 	<ul style="list-style-type: none"> ✓ Household decision making ✓ Bargaining power task
Father	Father target child or spouse/partner pregnant woman	30	<ul style="list-style-type: none"> ✓ Father demographics ✓ Father education ✓ Father health ✓ Father work activities and income 	<ul style="list-style-type: none"> ✓ Father savings ✓ Father information and communication ✓ Father food consumption outside the home ✓ Household allocation game
CHW	CHW	15	<ul style="list-style-type: none"> ✓ CHW demographics ✓ CHW education and work experience 	<ul style="list-style-type: none"> ✓ CHW work coverage and workload ✓ CHW non-CHW related work

Table 4: Baseline survey instruments (contd.)

Name	Respondent	Minutes	✓ Content	✓
HD	Group of key functionaries of HD	40	<ul style="list-style-type: none"> ✓ HD location and operational information (staffing, opening hours, etc.) ✓ HD profile of CHWs HD amenities and infrastructure	<ul style="list-style-type: none"> ✓ HD maternity services ✓ HD obstetric and neonatal care ✓ HD equipment and supplies
Community	Group of community leaders	55	<ul style="list-style-type: none"> ✓ Community demographics ✓ Access to education and childcare services ✓ Access to health services ✓ Access to commercial services 	<ul style="list-style-type: none"> ✓ Community support programmes ✓ Community organisation ✓ Community migration
Market price	Two to five local vendors at local market	63	<ul style="list-style-type: none"> ✓ Price questionnaire on 33 consumption items 	<ul style="list-style-type: none"> ✓

Sample size

Table 5 shows, in total and by district, the total sample size achieved by the end of the baseline data collection process, in terms of number of HDs, communities and households registered and surveyed. In total, the survey teams successfully recruited 258 HDs, 387 communities and 3588 households to participate in the baseline study. Table 5 also shows that there is quite a bit of spread in the number of study communities served by a HD in the study sample, ranging from one community per HD to eight, with an average of two. This means that on average a HCW at the HD would be supervising two CHWs, some would only be supervising only one CHW and others would be supervising eight CHWs. This is likely to affect supervision and CHW performance, which is something that will be considered in a planned process evaluation of the *Kizazi Kijacho* parenting intervention.

Table 5: Sample size by district

	# HDs	# Communities	# Households	# Communities/ CHWs per HD			# Households per Community		
				Min	Max	Mean	Min	Max	Mean
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TOTAL SAMPLE	258	387	3588	1	8	2	1	20	9
BATCH 1									
Chamwino	45	50	486	1	3	1	1	20	10
Mpwapwa	42	62	534	1	3	1	1	20	9
Kondoa TC	5	12	105	1	4	2	6	13	9
BATCH 2									
Bahi	34	38	394	1	3	1	5	13	10
Dodoma city	28	50	444	1	7	2	2	14	9
Kondoa DC	25	48	447	1	5	2	4	15	9
BATCH 3									
Chemba	29	65	592	1	8	2	2	20	9
Kongwa	50	62	586	1	3	1	5	15	10

Table 6 compares the total sample size to the expected target number and for each one of the eight survey questionnaires gives an overview of the number of interviews successfully completed. The teams managed to register a slightly higher number of households than expected (3588 instead of 3555). For most of these households apart from three, the teams managed to complete the household survey with the household head. Similarly, the pregnant women themselves were available for most scheduled 'mother visit 1' and 'mother visit 2' interviews, apart from five women who were unavailable at the time of the baseline survey. As explained in Section 5.5, the survey teams faced significant challenges in reaching fathers, however, especially at the beginning of the data collection process in Batch 1

districts (Chamwino, Mpwapwa and Kondoa TC). This challenge is reflected in Table 6, showing that only 81% of the target number of father surveys was completed. Furthermore, one health facility survey could not be completed because the facility had not yet started operation at the time of the baseline survey, although it was expected to operate soon, hence was kept in the study.

Table 6: Sample size by survey instrument

Survey instrument	Target	Completed	%
	(1)	(2)	(3)
TOTAL no. of households RECRUITED in study sample	3555	3588	101%
No. of households with HOUSEHOLD Questionnaire completed	3555	3585	101%
No. of households with FATHER Questionnaire completed	3555	2869	81%
No. of households with MOTHER VISIT 1 Questionnaire completed	3555	3583	101%
No. of households with MOTHER VISIT 2 Questionnaire completed	3555	3583	101%
No. of households with HOUSEHOLD, MOTHER 1 and MOTHER 2 questionnaires completed	3555	3580	101%
No. of households with ALL Questionnaires (Household, Mother 1, Mother 2, Father) completed	3555	2864	81%
No. of community Questionnaires completed	387	387	100%
No. of CHWs Questionnaires completed	387	387	100%
No. of HD Questionnaires completed	258	257	100%
No. of Market Price Questionnaires	387	387	100%

Finally, Table 7 and Table 8 show, respectively, the total sample size and the community average sample size, by district and by study arm. The results in Table 8 confirm that, overall, the survey teams successfully achieved the objective of sampling on average five households per community in the UCT Varied treatment arm (note that they achieved a slightly higher number) and on average 10 households in all other four study arms. However, the results also confirm the issue we discussed in Section 5.5, that is, that during the first half of the data collection process (Batch 1 and partially Batch 2) the survey teams - unaware of any wrongdoing - took advantage of the relatively lower sample size requirement in the UCT Varied study group by oversampling in those communities to compensate for a shortage of pregnant women in the other study groups. As discussed, this malpractice was flagged and halted during data collection but as shown in Table 7 this does affect the sample size distribution particularly in Batch 1 and to some extent also in Batch 2. If the latter imbalance in sample size is linked to any systematic differences in recruitment selection procedures or in any underlying household characteristics, then we would expect

this imbalance in sample size to also be reflected in imbalances in baseline characteristics which as we show in Section 7.5 is not the case. We therefore do not consider this to be a serious issue. For more detailed information on the implementation of the baseline survey (e.g. protocols followed, quality assurance checks conducted, etc.), we refer to the *Kizazi Kijacho* Baseline survey Project Completion Report available from the authors on request.

Table 7: Average sample size per community

	TOTAL SAMPLE	Control	UCT Fixed	UCT Varied	Parenting	Parenting + UCT
	(1)	(2)	(3)	(4)	(5)	(6)
TARGET SAMPLE	3555	830	800	375	770	780
ACTUAL SAMPLE	3585	856	762	479	763	728
BATCH 1						
Chamwino	486	154	79	74	73	106
Mpwapwa	534	130	107	86	116	95
Kondoa TC	105	13	19	13	36	24
BATCH 2						
Bahi	394	124	100	36	61	73
Dodoma city	444	92	110	65	104	73
Kondoa DC	447	75	76	71	128	97
BATCH 3						
Chemba	592	98	152	71	114	157
Kongwa	586	170	119	63	131	103

Table 8: Average sample size per community

	TOTAL SAMPLE	Control	UCT Fixed	UCT Varied	Parenting	Parenting + UCT
	(1)	(2)	(3)	(4)	(5)	(6)
TARGET SAMPLE	9	10	10	5	10	10
ACTUAL SAMPLE	9	11	10	7	10	10
BATCH 1						
Chamwino	10	11	10	8	9	10
Mpwapwa	9	10	8	7	10	9
Kondoa TC	9	13	10	7	9	8
BATCH 2						
Bahi	10	10	11	9	10	10
Dodoma city	9	10	9	6	10	9
Kondoa DC	9	11	10	8	10	9
BATCH 3						
Chemba	9	11	10	5	10	9
Kongwa	10	11	11	5	10	10

Balance tests

The critical assumption underlying our ability to use the RCT design to identify causal impacts is that in the absence of the *Kizazi Kijacho* interventions the different RCT and study groups would have statistically similar outcomes. This is not something we can test directly, but we can provide supportive evidence of the validity of this assumption by testing whether at baseline there were any significant differences between the study groups in a range of observable variables. If randomisation was successful, we would expect there not to be any systematic differences.

To test for this, we estimate an Ordinary Least Squares (OLS) regression of a set of observable family characteristics on three different treatment strata (Parenting, UCT and Parenting + UCT, where the UCT group includes both the UCT Fixed and the UCT Varied group). Results of these balance tests are reported in a series of tables in Section 8. For each regression (one for each family characteristic), we report the p-value for the statistical test that the means are similar between the different study groups (the F-test). The p-value tells us the probability that a difference as big as the one we observe could be due to chance if, in reality, no difference was present. Therefore, the higher the p-value the more similar the study groups are, statistically speaking, for that particular outcome.

We ran balance tests on 160 individual variables, and of these we observed statistical differences between study groups at the five percentage level only for seven number of characteristics (4.4%). This is less than the 5% of incidences we would expect to see if there were differences in the sample by chance. We can therefore conclude that, overall, the balance analysis clearly indicates that the randomisation was successful and, therefore, that the integrity of the RCT study design is maintained.

8 Baseline findings



We now turn to the baseline data to sketch a picture of the context in which the RCT Parenting and UCT interventions were launched. We start with presenting some basic characteristics of the HDs and affiliated CHWs in our study sample, followed by a discussion of the profile of communities and households served by these health service providers. We conclude with a discussion of baseline characteristics of (pregnant) women and their spouses in our study population, where we also highlight some interesting differences between these partners.

Health dispensary characteristics



As shown in Table 9, a HD in the Dodoma region – across all DCs – serves on average two communities and is open six days per week. On average, a total of seven personnel are working at the HD, of which three are professional HCWs (some of which will be participating as Supervisors in the *Kizazi Kijacho* Parenting intervention) and four are actively working (CHWs). The majority of HDs are connected to Tanesco’s grid, that is, Tanzania’s national electric supply company, especially in Kongwa, Dodoma City and Mpwapwa. However, many HDs do not have stable electricity supply – we see that in Chemba, Kongwa and Mpwapwa, more than 30 percent of HDs reported power cuts of more than two consecutive hours on at least one day in the week before the survey. Most HDs except for those in Bahi and Chemba have an improved toilet and an improved water source as main source of water.²

Table 10 gives a brief overview of the status of essential maternal and child health services provision at baseline in the study area. In the Dodoma region, nearly all HDs - frontline in providing primary curative and preventative child and maternal health services in Tanzania (see Section 3.1) - offer child delivery services, with the average HD being equipped with one maternity bed. However, only very few are sufficiently equipped to deal with complicated deliveries. Only half of all HDs offer instrumental delivery (e.g. ventouse, forceps) and virtually none offer blood transfusion or C-sections. For the three months prior to the survey, out of a total of 33 children delivered at a HD, on average two got referred to another health facility and nearly zero HDs reported any child or maternal deaths during or shortly after delivery of these children.

² Improved water source is defined by running water, a public tap/standpipe, a borehole well, a protected source, rain water or bottled water. Improved toilet is defined by a washable pit latrine with slab, a Ventilated Improved Pit (VIP), a flush toilet, a pour flush, a flush toilet or an ECOSAN toilet which does not flush to an open drain.

Table 9: Health dispensary characteristics - Basic info

	Total N = 258	Bahi N = 34	Chamwin o N = 44	Chemb a N = 28	Dodoma City N = 28	Kondoa DC N = 25	Kondoa TC N = 5	Kongwa N = 50	Mpwapwa N = 43
Average no. of communities served by the HD	1.6	1.5	1.5	2.1	1.7	1.9	1.8	1.4	1.7
Average no. of days per week that HD is open	5.9	6.1	6.6	5.4	5.3	5.6	6.6	5.4	6.2
Average total no. of personnel working at HD	7.4	10.5	5.0	8.4	9.1	7.9	12.8	6.7	5.7
Average total no. of healthcare workers working at HD	2.9	2.7	2.6	2.7	4.3	3.6	4.0	2.2	2.5
Average total no. of CHWs officially associated with HD (not necessarily active)	5.2	8.9	3.2	6.2	4.0	5.0	8.2	4.6	5.1
Average total no. of CHWs actively working with HD	4.2	6.1	2.6	5.2	3.8	4.4	8.2	3.6	3.9
Main source of electricity is Tanesco Main electricity (%)	82.1	85.3	68.2	60.7	89.3	72.0	80.0	100.0	88.4
Electricity interrupted more than two consec. hrs on at least one day (%)	23.0	2.9	22.7	32.1	3.6	8.0	0.0	40.0	37.2
Improved water source as main source of water (%)	87.9	73.5	97.7	75.0	92.9	96.0	100.0	90.0	86.0
Improved toilet (%)	88.7	79.4	93.2	78.6	100.0	84.0	80.0	98.0	83.7

N = Number of study sample HDs in district

Table 10: Health dispensary characteristics – Service provision

	Total N = 258	Bahi N = 34	Chamwino N = 44	Chemba N = 28	Dodoma City N = 28	Kondoa DC N = 25	Kondoa TC N = 5	Kongwa N = 50	Mpwapwa N = 43
% HDs that offer instrumental delivery (ventouse, forceps)	46.7	52.9	31.8	28.6	46.4	64.0	40.0	54.0	51.2
% HDs that offer blood transfusion	1.6	2.9	0.0	0.0	3.6	4.0	0.0	0.0	2.3
% HDs that offer C-section	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% HDs that have maternity waiting room	28.6	28.1	26.2	25.0	44.0	48.0	60.0	16.0	24.4
% HDs that have a maternity delivery room	98.8	93.8	100.0	100.0	96.0	100.0	100.0	100.0	100.0
Average no. of children delivered at HF in last three months (incl. still births)	32.7	36.9	35.0	37.0	22.2	31.6	15.8	38.8	25.6
Average no. of children that died during delivery in last three months	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average no. of children that died after delivery in last three months	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Average no. of mothers who died during delivery in last three months	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average no. of deliveries that got referred to another facility in last three months	1.7	1.9	1.9	1.0	1.1	1.3	0.8	1.3	3.0

Community Health Worker characteristics



Table 11 and Table 12 describe the profile of the representative sample of CHWs in our study. The Ministry of Health in Tanzania aims for half of all CHWs to be male and the other half to be female. Indeed, this is reflected in our sample, with 50% of all CHWs being female and 50% being male. A typical CHW in the study population is 41 years old, Christian, has completed Primary education and is married with children. A 27% of CHWs is Muslim, most of whom are working in Kondoa District or Chemba. Nearly one in three CHWs in the Dodoma region has completed Lower Secondary education (Form IV) or more, with Dodoma City being the district with the highest proportion of educated CHWs: 46% have completed Form IV and 16% have completed higher secondary education (Standard VI).

Table 12 presents statistics on the work experience and workload of the CHWs in the study region. The vast majority (84%) of CHWs works both at a health facility and in community - only 15% does community work only. A typical CHW is responsible for two communities, simultaneously serving on average 90 families at any point in time. To deliver the services (at HD and in community) the CHW works on average 26 hours per week, out of which 10 hours at a health facility and 16 hours in community. The total number of hours of CHW work (26 hours) is substantially higher than the total number of hours that the average CHW would desire to work if given a choice, which was reported to be 16 hours. This might explain the finding that less than half of all CHWs reported to find the CHW workload to be very manageable. One in five CHWs reported to find the workload somewhat or very challenging.

The latter observation could at least partially be explained by the fact that CHWs do on average 27 hours per week of non-CHW related work, in addition to their work as CHW. Non-CHW related work include work as paid employee (also including paid apprenticeship, paid domestic work or paid farm work), work (paid or non-paid) for a family owned non-agricultural business or doing household agricultural activities (farming, raising livestock, etc.). One in ten reported to be working as such a paid employee. Overall, CHWs in the Dodoma region earn on average TZS 42,000 (US\$17) in cash per week for doing non-CHW related work. This is probably a welcome salary for many CHWs given that three out of four

CHWs in the sample reported not to be paid for the work they do as a CHW. Those 25% of CHWs that are paid for their work reported to earn on average TZS 75,000 per month.

Table 11: Community Health Worker characteristics – Basic

	Total N = 387	Bahi N = 38	Chamwino N = 50	Chemba N = 65	Dodoma City N = 50	Kondoa DC N = 48	Kondoa TC N = 12	Kongwa N = 62	Mpwapwa N = 62
Average age CHW	40.8	36.9	43.6	39.4	37.3	44.1	46.9	41.6	40.6
% CHWs who are female	50.1	60.5	38.0	44.6	60.0	39.6	66.7	53.2	53.2
% CHWs who are Muslim	27.1	2.6	6.0	52.3	12.0	93.8	91.7	4.8	3.2
% CHWs who are Christian	72.9	97.4	94.0	47.7	88.0	6.2	8.3	95.2	96.8
% CHWs who have completed primary education or more	96.9	100.0	82.0	100.0	96.0	100.0	100.0	100.0	98.4
% CHWs who have completed lower secondary education or more	28.4	31.6	26.0	36.9	46.0	16.7	16.7	16.1	29.0
% CHWs who have completed higher secondary education or more	6.2	2.6	10.0	7.7	16.0	2.1	0.0	3.2	3.2
% CHWs who are married	78.6	84.2	74.0	73.8	64.0	93.8	83.3	79.0	82.3
% CHWs who have children	94.1	94.7	90.0	95.4	82.0	95.8	100.0	100.0	96.8

N = Number of study communities in district

Table 12: Community Health Worker characteristics – Workload

	Total N = 387	Bahi N = 38	Chamwino N = 50	Chemba N = 65	Dodoma City N = 50	Kondoa DC N = 48	Kondoa TC N = 12	Kongwa N = 62	Mpwapwa N = 62
% CHWs who were working ONLY at health facility	1.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	3.2
% CHWs who were working ONLY in community	15.2	5.3	6.0	21.5	10.0	54.2	0.0	6.5	8.1
% CHWs who were working BOTH at health facility AND community	83.7	94.7	92.0	78.5	88.0	45.8	100.0	93.5	88.7
No. communities typically served by the average CHW	2.4	1.9	2.4	2.8	1.5	2.1	1.8	2.7	2.8
No. families served by average CHW per community	41.3	19.2	44.5	42.3	30.1	50.6	62.5	42.9	47.4
Total no. families served by average CHW in any community	90.3	36.9	93.4	107.9	47.8	99.2	105.5	107.9	108.6
Average total no. hrs/week worked as CHW (at HF + in community)	26.0	33.8	28.4	15.3	33.0	16.9	12.5	30.2	30.5
No. hours/week average CHW typically worked at health facility	10.4	12.3	14.0	3.8	17.3	6.6	5.0	9.2	13.1
Total no. hrs average CHW did community work (excl work at HF)	15.6	21.5	14.4	11.5	15.7	10.3	7.5	21.0	17.3
No. of hrs/week of CHW work that the average CHW would desire if given choice	16.2	13.4	20.3	12.0	19.1	16.0	17.7	13.3	19.5
% CHWs who thought CHW workload was very manageable	44.2	50.0	40.0	35.4	66.0	77.1	8.3	37.1	24.2
% CHWs who thought CHW workload was somewhat manageable	32.6	36.8	38.0	36.9	20.0	14.6	50.0	29.0	45.2
% CHWs who thought CHW workload was somewhat/very challenging	22.2	13.2	20.0	27.7	12.0	8.3	41.7	33.9	27.4

Table 12: Community Health Worker characteristics – Workload (contd.)

	Total N = 387	Bahi N = 38	Chamwino N = 50	Chemba N = 65	Dodoma City N = 50	Kondoa DC N = 48	Kondoa TC N = 12	Kongwa N = 62	Mpwapwa N = 62
No. of hours/week average CHW typically works on non-CHW related work	26.9	22.3	29.9	31.6	18.4	18.1	42.4	30.2	29.4
% CHWs doing any paid work as employee other than CHW work in last 12 months	10.9	7.9	14.0	9.2	18.0	18.8	16.7	1.6	8.1
TZS amount the average CHW typically earns per week for non-CHW related work	41860.6	12105.3	73120.0	43292.3	43500.0	40229.2	66666.7	42516.9	27871.0
% CHWs who were not paid/worked voluntarily as CHW	73.6	97.4	82.0	46.2	72.0	62.5	100.0	72.6	87.1
Average monthly CHW salary/stipend – of those who reported to be paid for CHW work	74931.4	70000.0	84222.2	72428.6	98428.6	56388.9	.	90294.1	44000.0

Community characteristics



The survey team administered the questionnaire to a group of local leaders in the village or mtaa where the study community (i.e. CHW catchment area) is located. In rural areas, this included the village chairperson and the village executing officer, as well as other members from the village council. In urban areas the survey teams interviewed the mtaa chairperson and other local leaders. In both rural and urban areas, they interviewed the ward executive officer. They also aimed to include a health worker and school principal in the discussion. The questionnaire was administered in group to these people, not individually, in both in rural and urban areas.

In Table 13 we observe that, respectively, 10% and 12% of the communities in our sample are located in an urban or semi-urban area. Most of these urbanised communities are in Dodoma City Council or Kondoa Town Council. The communities in the other six DCs are pre-dominantly rural, in particular communities in Bahi, Chemba and Kondoa DC. On average, a community in the Dodoma region hosts 768 families and 3530 people, of which 70% of the male population and 22% of the female population typically temporarily migrate for more than one month each year. Less than half of all communities have access to a paved road. It is therefore unsurprising that the main route to Dodoma City – on average about three hours distance away using the communities' most commonly used mode of transport – was inaccessible for one month on average in the year prior to the survey, mainly during the rainy season. Community accessibility is particularly bad in Chamwino, Kondoa and Mpwapwa DCs.

Now turning to education in Table 14, nearly all communities across all districts in the region have easy access to Pre-Primary Education (PPE) and Primary Education, with nine in ten communities having a PPE or Primary school located within the community boundaries. The average travel time to the nearest PPE and Primary school is therefore relatively short, 12 minutes and 13 minutes one way, respectively. Only half of all communities report to have access to any Secondary school (one in four has access to a secondary school located in the same community). Those who do have access to a Secondary school report an average travel time of 40 minutes one way. Close to zero communities have access to any nursery or childcare centre.

Table 15 shows that the one way journey to the nearest HD, HC and hospital - using the most commonly used mode of transport - takes on average, respectively, 24 minutes, 31 minutes and 20 minutes. An important observation for the RCT study design is that virtually none of the communities in the region reported to have received any support in training of CHWs in the 12 months preceding the baseline survey visit, not in health and nutrition nor in ECD. This finding stresses the need and importance of programmes such as the *Kizazi Kijacho* Parenting intervention.

Table 13: Community characteristics

	Total N = 387	Bahi N = 38	Chamwino N = 50	Chemba N = 65	Dodoma City N = 50	Kondoa DC N = 48	Kondoa TC N = 12	Kongwa N = 62	Mpwapwa N = 62
% comms in urban area	10.1	0.0	2.0	1.5	60.0	0.0	16.7	0.0	8.1
% comms in semi-urban area	12.4	5.3	20.0	1.5	28.0	4.2	33.3	12.9	11.3
% comms in rural area	77.5	94.7	78.0	96.9	12.0	95.8	50.0	87.1	80.6
Average no. people living in community	3529.7	5297.9	4626.8	2633.5	2307.3	3137.5	3215.1	4398.1	2982.7
Average no. households living in community	767.8	1165.7	982.8	569.9	608.7	564.0	590.8	883.5	762.6
% comms where men temporarily migrate more than one month each year	70.0	84.2	80.0	44.6	40.0	79.2	75.0	91.9	74.2
% comms where women temporarily migrate more than one month each year	22.0	34.2	30.0	15.4	6.0	25.0	25.0	37.1	9.7
% comms that have access to paved road	48.6	55.3	38.0	32.3	92.0	41.7	66.7	59.7	25.8
Average distance from Dodoma city - travel hours using most common transport	3.2	2.5	2.7	3.6	0.8	4.3	2.8	3.0	4.8
Average no. months in past year main route was inaccessible	1.4	0.7	2.0	1.2	0.4	2.0	2.6	1.2	1.6
Average no. months in last rainy season main route was inaccessible	1.3	0.7	1.9	1.2	0.4	2.0	2.2	0.9	1.5

N = Number of study communities in district

Table 14: Community Characteristics - Access to schooling

	Total N = 387	Bahi N = 38	Chamwino N = 50	Chemba N = 65	Dodoma City N = 50	Kondoa DC N = 48	Kondoa TC N = 12	Kongwa N = 62	Mpwapwa N = 62
% comms with access to at least one PPE school (any)	96.4	100.0	96.0	98.5	88.0	100.0	91.7	96.8	96.8
% comms with at least one PPE school located IN community	89.4	100.0	94.0	93.8	58.0	91.7	75.0	96.8	93.5
Average travel time to nearest PPE school - minutes	12.1	10.3	10.6	13.5	12.7	14.2	12.1	10.8	12.4
% comms with access to at least one primary school (any)	98.7	100.0	98.0	98.5	98.0	100.0	100.0	98.4	98.4
% comms with at least one primary school located IN community	90.4	100.0	98.0	92.3	62.0	91.7	83.3	96.8	93.5

Table 14: Community Characteristics - Access to schooling (contd)

	Total N = 387	Bahi N = 38	Chamwino N = 50	Chemba N = 65	Dodoma City N = 50	Kondoa DC N = 48	Kondoa TC N = 12	Kongwa N = 62	Mpwapwa N = 62
Average travel time to nearest primary school - minutes	12.8	10.3	11.8	13.7	13.3	14.8	11.9	12.2	12.7
% comms with access to at least one secondary school (any)	49.1	52.6	34.0	43.1	74.0	41.7	58.3	56.5	41.9
% comms with at least one secondary school located IN community	24.0	34.2	22.0	16.9	20.0	27.1	41.7	32.3	16.1
Average travel time to nearest secondary school centre (minutes)	39.5	54.2	32.1	52.0	35.2	36.8	27.1	35.9	36.3
% comms with access to at least one nursery or childcare centre (any)	1.3	2.6	2.0	0.0	0.0	0.0	0.0	1.6	3.2
% comms with at least one nursery or childcare centre located IN community	1.3	2.6	2.0	0.0	0.0	0.0	0.0	1.6	3.2

N = Number of study communities in district

Table 15: Community Characteristics - Access to health services

	Total N = 387	Bahi N = 38	Chamwino N = 50	Chemba N = 65	Dodoma City N = 50	Kondoa DC N = 48	Kondoa TC N = 12	Kongwa N = 62	Mpwapwa N = 62
Average travel time (mins) to nearest HD using most common transport	24.3	12.0	20.2	43.0	14.0	27.4	40.0	17.8	28.2
Average travel time (mins) to nearest HC using most common transport	31.1	.	37.4	40.2	18.9	42.8	5.0	17.1	36.2
Average travel time (mins) to nearest hospital using most common transport	19.7	22.5	37.5	15.0	12.5	17.5	10.0	25.0	32.5
% comms receiving CHW training in health and nutrition in last 12 months	0.5	0.0	0.0	1.5	0.0	0.0	0.0	0.0	1.6
% comms receiving CHW training in ECD in last 12 months	0.3	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0

N = Number of study communities in district

Household characteristics

The household characteristics are revealed through a separate questionnaire asked of the household head. A household in our study is defined as a person or group of people related or not by biological bonds that live together in a part of or in a whole dwelling and usually buy food with a common budget and prepare it on the same stove/oven using the same tools. A household member is any person who usually lives in the household, regardless of whether this person is temporarily absent.³ The household head is defined as any adult who is recognised by others in the household (adult and child) as the head of the household. This person is usually responsible for contributing to the household income and decision-making.

Note that in this section we present baseline results in a different format than the ones in the previous sections. We no longer present results by district but instead by study arm, as we want to take advantage of the large total sample size of households to conduct and present study group balance checks (discussed in Section 7.5). Results by district can be obtained upon request.

Each table in this section is generated by performing a regression of a particular outcome variable of interest (e.g. income) on four treatment levels - where we group together the UCT Fixed and UCT Varied group under UCT. Each regression includes randomisation strata (i.e. district fixed effects and the number of communities served by the HD) and is clustered at the level of the community. The first column in each table, 'Control mean', represents the average outcome of the control group in the sample. The values in the other columns (Parenting + UCT, Parenting and UCT) show the difference in mean of each of these groups with the control group. The column headed 'N' shows the total number of observations used in the regression analysis. The last column headed 'F-test' shows the p-value of the balance F-test, testing whether there are any statistically significant differences in the outcome between any of the study groups in the sample. Moreover, any statistical difference in a pairwise comparison between the control group and a study group is indicated with one, two or three asterisks (*): * if p-value < 0.05, ** if p-value < 0.01 and *** if p-value < 0.001. See Section 7.5 for more information about this balance test.

Household demographic composition

Table 16 starts by giving an overview of household size and composition in our sample. Given the focus of the sampling strategy – that is, targeting pregnant women in their families – the households in our sample are relatively young, with children. Most households are headed by a male. On average, the households consist of four people, typically two adults – most often the mother and the father of the target child in-utero – one child under five and one child aged 6-17 years old. In total about 76% of the households in the sample,

³ For example, someone who is on vacation or has left the household temporarily (for less than one year) for labour reasons is considered a household member. A person who has lived in the household for one year or more or who has lived in the household for less than one year but is planning to stay in the household for a year or more is considered a household member. The guests who fulfil the criteria mentioned above and who sleep in the household's dwelling, share the meals prepared in the household's dwelling and use the kitchen freely, are also considered household members. In addition, domestic servants or any other household workers who fulfil the criteria mentioned above, are considered a household member. Persons in places like boarding schools and hospitals who qualify to be usual members of a household, according to the definition, are listed as members of the household, with the exception of those who have been away for six consecutive months or more.

the (pregnant) mother and the father of the target child are the only adults. Approximately one in five pregnant women had no child at the time of the baseline survey visit.

Table 16: Household Composition

	Mean	Median	Standard Deviation	N
Total household size	4.430	4	2.097	3585
Number of Adults (18 or above)	2.260	2	0.787	3585
Number of Children (5 or below)	0.811	1	0.763	3585
Number of Children (6-9)	0.611	0	0.710	3585
Number of Children (10-17)	0.747	0	1.014	3585
Households with no children (%)	17.685	0	38.159	3585
Female Household Heads (%)	10.879	0	31.141	3585

Amenities, assets and land ownership

In this section we sketch a picture of the sample's baseline living conditions. We start by considering the results in Table 17, describing the main material that the floor, roof and walls of their dwellings are made of. A typical household in the study sample lives in a dwelling with a mud/earth floor, with a roof made of iron sheets and with mud/mud brick walls. Only about a third of our households has a floor made of concrete/cement and/or walls made of either burnt bricks or concrete/cement.

Table 18 shows for a selected set of asset types the percentage of households owing at least one item of that kind. Households in the study area are relatively well equipped when it comes to cooking utensils (e.g. cooking pots, cups) or furniture (e.g. chairs, sofas, tables). However, they remain fairly asset deprived in terms of electrical appliances (e.g. fridge, iron, fan/air conditioning, water heater) and modes of transportation (e.g. cars, motorbikes, bicycles).

Most of the households in our sample are farmers, hence 84% of them owe some agricultural equipment (e.g. hoe, plough, wheel barrow) and one in three owns livestock.

Whereas four in ten households own some sort of media such as television or radio, less than two in ten owns any books. The latter observation is particularly important for the study given the importance of picture books and reading for child development.

Table 19 shows land ownership rates for the whole sample as well as differences across the study groups. We can see that the majority (82%) of the sample owns the piece of land on which their dwelling is located, labelled 'Property owner' in the table. About two thirds of them own some agricultural land, and about 11% own non-agricultural land besides the land where their dwelling is located. For those who own agricultural land, the average land size is four acres, whereas the average size of non-agricultural land for the 11% who own it is 18 acres.

Importantly, we observe no significant difference between any of the study groups in terms of baseline amenities, asset ownership nor land ownership. This is a very strong signal that our sample is balanced when it comes to baseline wealth and living conditions.

Table 17: Household Amenities (Construction Materials and Sewage) (%)

	Control Mean	Difference from Control			N	F-Test
		Parenting + UCT	Parenting	UCT		P-value
Floor Material						
Mud/earth	71.11 (45.3)5	-0.75 (4.06)	-1.81 (3.71)	-3.79 (3.47)	3585	0.64
Wood/plank	0.47 (6.83)	-0.49* (0.23)	-0.48* (0.23)	-0.42 (0.24)	3585	0.19
Tiles	1.05 (10.21)	-0.76 (0.45)	-0.53 (0.53)	0.26 (0.51)	3585	0.03
Timber	0.00 (0.00)	-0.05 (0.05)	-0.04 (0.04)	0.04 (0.04)	3585	0.80
Concrete/ cement	27.37 44.61	2.04 (4.03)	2.86 (3.76)	3.90 (3.42)	3585	0.69
Roof Material						
Other	0.00 (0.00)	0.59 (0.60)	-0.18 (0.19)	-0.20 (0.20)	3585	0.80
No Roof	0.12 (3.42)	-0.14 (0.14)	-0.13 (0.13)	-0.14 (0.14)	3585	0.79
Thatch, grass, leaves, bamboo	6.43 (24.55)	2.13 (2.53)	-0.37 (2.13)	2.03 (2.34)	3585	0.33
Mud and grass	9.12 (28.81)	-3.43 (2.63)	-3.79 (2.16)	-2.63 (2.02)	3585	0.36
Wood	0.00 (0.00)	-0.01 (0.10)	0.25 (0.23)	0.08 (0.09)	3585	0.39
Iron sheets	83.39 (37.24)	1.32 (3.73)	3.80 (3.17)	1.21 (3.14)	3585	0.56
Concrete, cement	0.94 (9.63)	-0.53 (0.50)	0.25 (0.59)	-0.49 (0.46)	3585	0.16
Asbestos sheets	0.00 (0.00)	-0.03 (0.03)	0.10 (0.10)	-0.04 (0.04)	3585	0.79
Tiles	0.00 (0.00)	0.09 (0.10)	0.08 (0.08)	0.17 (0.16)	3585	0.78

Table 17: Household Amenities (Construction Materials and Sewage) (%) (contd.)

		Difference from Control		F-Test		
	Control Mean	Parenting + UCT	Parenting	UCT	N	P-value
Exterior Wall Material						
Other	0.00	0.08	0.22	-0.16	3585	0.39
	(0.00)	(0.19)	(0.31)	(0.11)		
No walls	0.00	0.35	0.06	0.06	3585	0.55
	0.00	(0.26)	(0.10)	(0.10)		
Mud/mud brick	64.33	0.85	-2.96	-5.76	3585	0.18
	47.93	(4.54)	(4.05)	(3.73)		
Stone	0.00	-0.04	0.10	-0.04	3585	0.79
	(0.00)	(0.04)	(0.10)	(0.04)		
Burnt bricks	20.00	-7.04*	-2.01	0.29	3585	0.04
	(40.02)	(3.11)	(3.24)	(2.60)		
Concrete/cement	14.85	5.90	4.78	5.70	3585	0.23
	(35.58)	(3.48)	(3.09)	(3.00)		
Wood/bamboo	0.23	-0.27	0.12	0.15	3585	0.78
	(4.83)	(0.40)	(0.54)	(0.33)		
Iron sheets	0.58	0.03	-0.35	-0.35	3585	0.50
	(7.63)	(0.39)	(0.29)	(0.32)		
Cardboard	0.00	0.15	0.03	0.10	3585	0.56
	(0.00)	(0.11)	(0.07)	(0.14)		
Sewage System Ownership						
Don't know	0.12	0.03	-0.11	-0.02	3585	0.41
	(3.42)	(0.17)	(0.16)	(0.19)		
Refused	0.00	0.25	0.38	0.57	0.29	0.29
	(0.00)	(0.21)	(0.22)	(0.38)	3585	
Yes	1.99	0.86	-0.39	1.77	0.07	0.07
	(13.97)	(1.52)	(1.02)	(1.15)	3585	
No	97.89	-1.14	0.13	-2.32	0.04	0.04
	(14.36)	(1.54)	(1.04)	(1.23)	3585	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Standard Errors in parentheses, p-values are adjusted for clustering on village level, and Fixed effects for district and multiple villages served by HD included in test.

Table 18: Asset and Livestock Ownership (%)

	Difference from Control				N	F-Test
	Control Mean	Parenting + UCT	Parenting	UCT		P-value
Sewing machine	3.51 (18.41)	2.20 (1.43)	2.16 (1.28)	0.49 (1.05)	3584	0.18
Watches	9.01 (28.64)	0.76 (1.82)	-0.58 (1.84)	1.45 (1.59)	3585	0.48
Computers	1.52 (12.24)	-1.01 (0.75)	-1.24 (0.79)	0.01 (0.71)	3584	0.21
Cooking utensils	89.36 (30.86)	2.37 (1.78)	2.08 (2.07)	2.25 (1.71)	3585	0.53
Books	11.70 (32.16)	0.93 (2.45)	2.78 (2.57)	2.62 (2.31)	3585	0.61
Car	0.70 (8.35)	0.42 (0.59)	-0.19 (0.54)	0.28 (0.47)	3585	0.49
Motorbike	12.75 (33.37)	0.36 (2.19)	0.65 (2.04)	0.77 (1.79)	3585	0.98
Bicycles	26.78 (44.31)	-0.36 (3.29)	2.28 (3.08)	-2.14 (2.82)	3584	0.41
Livestock	43.98 (49.66)	2.93 (4.00)	7.05 (3.84)	5.16 (3.65)	3585	0.25
Water pump	0.12 (3.42)	0.33 (0.30)	0.17 (0.22)	0.17 (0.28)	3585	0.71
Outboard engine	0.47 (6.83)	-0.62 (0.32)	-0.07 (0.43)	-0.26 (0.30)	3585	0.08
Media assets	29.94 (45.83)	-0.12 (3.63)	4.26 (3.76)	3.71 (3.40)	3585	0.35
Furniture assets	96.49 (18.41)	-1.82 (1.57)	-0.18 (1.46)	-1.01 (1.78)	3585	0.49
Electrical assets	11.23 (31.59)	-1.89 (2.69)	-2.65 (2.48)	-0.09 (2.13)	3585	0.53
Agricultural equipment	83.86 (36.81)	1.95 (2.72)	3.24 (2.73)	1.16 (2.46)	3585	0.66

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standard Errors in parentheses, P-values are adjusted for clustering on village level, and Fixed effects for district and multiple villages served by HD included in test. This table presents average proportion of households that own various asset or asset types. Media Assets consist of radios, televisions, video DVDs, recorders, music systems, and Antens Furniture Assets consist of chairs, sofas, tables, beds, cupboards, lanterns, and mosquito nets Electrical Assets consist of landlines, fridges, irons, water heaters, and fans/air-conditioners Agricultural equipment consist of cart, animal carts, wheel barrows, hoes, spray machines, reapers, tractors, trailers, ploughs, harrows, milking machines, Harvesting and threshing machines, Hand milling machine, Coffee pulping machine, Fertiliser distributor, and Power tiller

Households who stated that they didn't know if they had a particular asset, of which there were only seven occurrences total for the following assets: radio, sewing machine, lanterns, computer, bicycle, fan, and tractor

Table 19: Land Ownership (%)

	Control Mean	Difference from Control			N	F-test
		Parenting +UCT	Parenting	UCT		P-value
Property owner	82.46 (38.06)	-0.28 (2.87)	0.37 (2.50)	-1.73 (2.36)	3585	0.75
Not a property owner	17.43 (37.96)	0.38 (2.87)	-0.26 (2.51)	1.84 (2.37)	3585	0.74
Don't know (Property owner)	0.12 (3.42)	-0.09 (0.09)	-0.11 (0.11)	-0.11 (0.11)	3585	0.77
Owns agricultural land	66.55 (47.21)	4.45 (3.74)	1.31 (3.60)	1.68 (3.33)	3585	0.63
Doesn't own agricultural land	33.45 (47.21)	-4.62 (3.75)	-1.31 (3.61)	-1.59 (3.33)	3585	0.60
Don't know (agric)	0.00 (0.00)	0.07 (0.11)	0.04 (0.11)	-0.06 (0.05)	3585	0.56
Refused (agric)	0.00 (0.00)	0.10 (0.10)	-0.04 (0.04)	-0.03 (0.03)	3585	0.79
Owns non-agricultural land	11.46 (31.87)	-2.86 (2.41)	-1.79 (2.28)	2.13 (2.20)	3585	0.17
Doesn't own non-agricultural land	88.42 (32.02)	2.62 (2.45)	1.84 (2.30)	-2.07 (2.22)	3585	0.21
Don't know (non-agric)	0.12 (3.42)	0.15 (0.20)	-0.00 (0.18)	-0.03 (0.20)	3585	0.78
Refused (non-agric)	0.00 (0.00)	0.10 (0.10)	-0.04 (0.04)	-0.03 (0.03)	3585	0.79
Agricultural land size (acres)	4.32 (11.47)	2.59 (1.81)	0.93 (0.91)	1.14 (0.89)	2428	0.48
Non-agricultural land size (acres)	17.95 (154.42)	-19.33 (19.09)	-20.08 (19.25)	-19.31 (18.63)	487	0.73

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Standard Errors in parentheses, P-values are adjusted for clustering on village level, and Fixed effects for district and multiple villages served by HD included in test.

This table presents average proportion of households that own the land upon which their dwelling is placed, agricultural, or non-agricultural land. The average size of owned agricultural and non-agricultural land in acres is also included.

Food consumption



We collected detailed data on food consumption at baseline. We also collected data on non-food expenditures but due to a coding error, the recall period was set too short, i.e. one week only, which for non-food consumption is too short an interval to pick up a meaningful share of its consumption. To address this issue, we subsequently called back by phone (before the start of treatment) one third of the sample to ask about non-food consumption using the correct recall periods depending on the type of good (seven days, two weeks, 30 days, 12 months). In this baseline report we focus on food consumption that was collected during the main in field baseline survey and collected for all households in the sample.

As shown in Table 20, average annual food consumption in the study region equals TZS 2,167,926 (US\$862) in total per household, TZS 549,687 (US\$218) per capita, or TZS 668,377 (US\$265) per adult equivalent.⁴

Table 20: Total and per capita annual food consumption inside the household

	Mean	25%	Median	75%	Standard Deviation	N
Total food consumption (TZS)	2,167,925.70	902,942.94	1,510,414.25	1,510,414.25 2,428,400.00	2,876,019.83	3,585
Total food consumption (TZS) per capita	549,686.49	225,968.89	377,000.00	644,800.00	762,350.39	3,585
Total food consumption per adult equivalent (TSHs)	668,376.87	279,361.69	466,575.34	773,049.38	899,107.07	3,585

To calculate annual food consumption within the household, we converted consumption quantities into kilogram equivalent units for various food items, such as cereals, starches, meat and meat products, beverages, sugars, pulses, nuts and seeds, vegetables, fruits, milk/milk products, oils, and spices. The price for each of these items

⁴ An adult equivalent is computed for each household member based on the household member's age and gender. To assign an adult equivalent score to each member we use the same adult equivalent scale used by Tanzania's Household Budget Surveys and National Panel Surveys.

was determined by dividing the total amount spent on purchasing the item by the total quantity consumed. In cases where a household did not purchase the item but received it as a gift or produced it at home, we used the average price paid by others in the village for that item. The aggregate consumption value was then calculated by multiplying the price by the consumption quantity for each item. Since the questions pertained to household consumption during the last seven days, we extrapolated annual consumption by summing the total quantity consumed for all items for the last seven days and multiplying the total weekly consumption by 52 to obtain the annual consumption values for the entire household.

The difference between food consumption per capita and food consumption per adult equivalent is that the latter adjusts household size by household composition, giving relatively less weight to young children and the elderly and more weight to adolescents and young adults – with exact weight also depending on gender. This is based on the assumption that young adolescents and adults require relatively more nutritional intake to be healthy.

Food consumption expenditures vary a lot across households, with the poorest 25% of households consuming less than TZS 279,362 (US\$111) per adult equivalent per year and the richest 25% annually consuming more than TZS 773,049 (US\$306). Median food consumption per adult equivalent is substantially lower than the mean food consumption per adult equivalent, indicating that the food consumption distribution has a thinner and longer right tail than left tail. This can also be seen very clearly in Figure 6 showing the distribution of annual food consumption per adult equivalent across all the households in the sample (dropping 119 outlier observations with food consumption per adult equivalent larger than TZS 2,000,000). Half of the study population consumes less than TZS 466,575 (US\$185) worth of food per adult equivalent on an annual basis. Table 21 shows that baseline consumption expenditures are balanced across study arms.

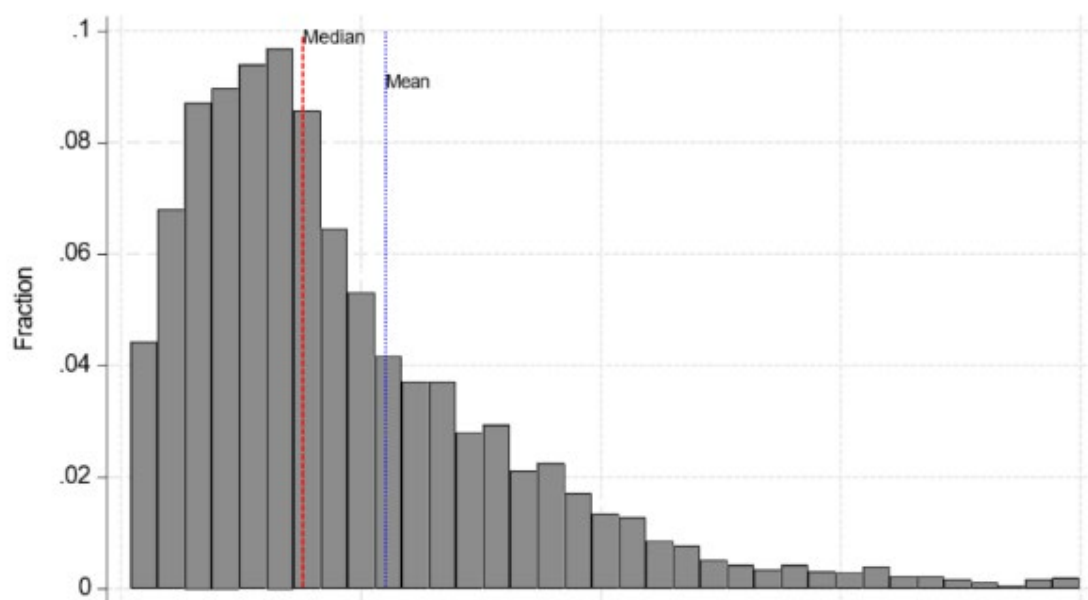


Figure 6: Distribution of food consumption per capita

According to Tanzania’s latest Household Budget Survey (HBS) in 2018, the national food poverty line – that is, the level at which households’ total spending is used to meet their

needs for food – is set at TZS 33,748 per adult equivalent per month, or TZS 404,976 per adult equivalent per year.⁵

HBS 2018 observed that in the Dodoma region the average total food consumption per adult equivalent stood at TZS 612,084 per year, which is very similar to the food consumption per adult equivalent that we find in our baseline data for Dodoma region. Applying the national food poverty line to the *Kizazi Kijacho* baseline data on food consumption in the Dodoma region, we conclude that 42% of households spent less on food consumption than what is required for a minimum food bundle or basket containing 2,200 kilocalories per adult per day.

Table 21: Total and per capita annual food consumption inside the household

	Constant	Difference from Control			N	F-test
		Parenting + UCT	Parenting	UCT		P-value
Total food consumption (TZS)	2,124,979.72 ***	-158,579.69	89,428.45	2,711.39	3,585	0.44
	(230,871.31)	(216,278.79)	(262,634.06)	(199,672.67)		
Total food consumption per capita (TZS)	541,540.42** *	-11,323.03	49,921.99	8,479.47	3,585	0.54
	(50,425.90)	(57,643.95)	(75,182.43)	(50,005.23)		
Total food consumption per adult equivalent (TSHs)	659,266.28** *	-29,709.57	48,535.44	-532.97	3,585	0.49
	(61,208.69)	(67,981.04)	(67,981.04)	(58,781.94)		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standard Errors in parentheses, p-values are adjusted for clustering on village level, and fixed effects for district and multiple villages served by HD included in test. To calculate annual food consumption within the household, we initially converted consumption quantities into kilogram equivalent units for various food items, such as cereals, starches, meat and meat products, beverages, sugars, pulses, nuts and seeds, vegetables, fruits, milk/milk products, oils, and spices. The price for each of these items was determined by dividing the total amount spent on purchasing the item by the total quantity consumed. In cases where a household did not purchase the item but received it as a gift or produced it at home, we used the average price paid by others in the village for that item. The aggregate consumption value was then calculated by multiplying the price by the consumption quantity for each item. Since the questions pertained to household consumption during the last seven days, we extrapolated annual consumption by summing the total quantity consumed for all items for the last seven days and multiplying the total weekly consumption by 52 to obtain the annual consumption values for the entire household

The rich baseline food consumption data also allows us to get more insight into the study population's diet and to test balance in diet between the study groups. This is important as adequate nutrition – in particular during pregnancy – is a pillar in the NCF, essential to early childhood development.

⁵ The food poverty line is the monetary value of a minimum food bundle or basket containing 2,200 kilocalories per adult per day for one month, based on the food consumed by 10 to 50% of the population. The daily cost of the food poverty line is TZS 1,110 per adult equivalent or TZS 33,748 per adult equivalent per month in the 2018 Household Budget Survey.

Table 22 provides an overview of the different food groups consumed by the households in the seven days prior to the baseline survey. For each food group, it shows the fraction of households that consumed it, the average total quantity consumed (kilograms) and the value (TZS) consumed. Almost all households report to have consumed at least some cereals and vegetables in the given week that they reported on and many (approximately nine in ten) consumed oil and spices. Other food groups - including some very important ones for a healthy diverse diet - are significantly less represented in the study population's diet. Only six in ten households frequently consume sugar, pulses and meat and less than half consume starches (e.g. cassava, sweet potatoes, cooking bananas), nuts, fruits, milk and beverages other than water.

Table 22: Food consumption inside the household over the past week

	Difference from Control				N	F-test
	Constant	Parenting + UCT	Parenting	UCT		P-value
Cereals: Consumed? (Yes/No)	1.00***	0.00	-0.00	-0.00	3585	0.02
	(0.00)	(0.00)	(0.00)	(0.00)		
Consumption Quantity (Kg)	13.96***	1.48*	1.26	1.41**	3567	0.95
	(0.68)	(0.87)	(0.79)	(0.70)		
Consumption value (TZS)	13519.94***	1313.61	-364.35	-1238.28	3567	0.12
	(1193.34)	(1549.74)	(1365.41)	(1261.60)		
Starches: Consumed? (Yes/No)	0.40***	0.08*	0.09**	0.04	3585	0.22
	(0.04)	(0.04)	(0.04)	(0.04)		
Consumption Quantity (Kg)	96.83***	-38.91*	-52.94***	-13.87	1592	0.01
	(16.87)	(20.57)	(17.28)	(17.64)		
Consumption value (TZS)	4589.16***	-1653.77*	-1430.46	-619.49	1592	0.11
	(847.77)	(851.95)	(1041.30)	(856.43)		
Sugar: Consumed? (Yes/No)	0.63***	0.09**	0.09**	0.05	3585	0.41
	(0.04)	(0.04)	(0.04)	(0.04)		
Consumption Quantity (Kg)	0.98***	-0.04	-0.03	-0.02	2418	0.87
	(0.05)	(0.06)	(0.06)	(0.05)		
Consumption value (TZS)	2362.26***	9.34	70.03	89.02	2418	0.75
	(115.80)	(123.36)	(115.28)	(112.58)		

Table 22: Food consumption inside the household over the past week (contd.)

	Difference from Control				N	F-test
	Constant	Parenting + UCT	Parenting	UCT		P-value
Pulses: Consumed? (Yes/No)	0.62***	0.07*	0.05	0.04	3585	0.75
	(0.04)	(0.04)	(0.04)	(0.03)		
Consumption Quantity (Kg)	1.23***	0.42	0.18	0.35*	2396	0.61
	(0.20)	(0.48)	(0.27)	(0.21)		
Consumption value (TZS)	3027.44***	53.74	399.06	446.91	2396	0.40
	(243.12)	(349.79)	(295.36)	(285.88)		
Nuts: Consumed? (Yes/No)		0.05	0.06	0.04	3585	0.85
	(0.03)	(0.04)	(0.04)	(0.04)		
Consumption Quantity (Kg)	1.9***	-0.09	-0.14	-0.06	1621	0.94
	(0.19)	(0.27)	(0.22)	(0.23)		
Consumption value (TZS)	3640.9** *	-899.13	-1119.09*	-1566.37***	1621	0.44
	(540.58)	(611.27)	(569.03)	(537.79)		
Vegetables: Consumed? (Yes/No)	0.98***	-0.00	-0.02	-0.00	3585	0.40
	(0.01)	(0.01)	(0.01)	(0.01)		
Consumption Quantity (Kg)	3.33***	0.02	-0.02	0.16	3504	0.82
	(0.31)	(0.38)	(0.39)	(0.29)		
Consumption value (TZS)	3771.46***	-180.95	53.57	128.95	3504	0.19
	(215.17)	(219.94)	(227.42)	(212.76)		
Fruits: Consumed? (Yes/No)	0.41***	0.01	-0.01	-0.01	3585	0.82
	(0.03)	(0.04)	(0.04)	(0.03)		
Consumption Quantity (Kg)	1.62***	-0.19	-0.08	0.10	1459	0.11
	(0.16)	(0.16)	(0.17)	(0.14)		
Consumption value (TZS)	1464.10***	-28.77	-51.58	59.75	1459	0.59
	(138.99)	(149.85)	(124.30)	(127.69)		
Meat: Consumed? (Yes/No)	0.63***	0.07*	0.06*	0.06*	3585	0.94
	(0.04)	(0.04)	(0.04)	(0.04)		
Consumption Quantity (Kg)		-0.02	0.05	0.14	2366	0.21
	(0.11)	(0.11)	(0.11)	(0.11)		
Consumption value (TZS)	7143.9** *	-177.31	-33.17	360.33	2366	0.54
	(556.72)	(654.00)	(709.61)	(617.76)		
Milk: Consumed? (Yes/No)	0.28***	0.04	-0.02	-0.00	3585	0.22
	(0.03)	(0.04)	(0.04)	(0.03)		

Table 22: Food consumption inside the household over the past week (cont.)

	Difference from Control				N	F-test
	Constant	Parenting + UCT	Parenting	UCT		P-value
Consumption Quantity (Kg)	2.54***	0.24	0.47*	0.21	1001	0.48
	(0.26)	(0.25)	(0.27)	(0.24)		
Consumption value (TZS)	1900.78***	519.56*	389.40	286.36	1001	0.63
	(340.03)	(302.49)	(396.53)	(283.29)		
Oil: Consumed? (Yes/No)	0.9***	-0.00	-0.01	0.01	3585	0.58
	(0.02)	(0.03)	(0.03)	(0.02)		
Consumption Quantity (Kg)	2.90***	-0.99	-2.29**	-0.99	3197	0.25
	(1.34)	(1.47)	(1.03)	(1.11)		
Consumption value (TZS)	5260.64***	-1491.93	1450.17	1352.04	3197	0.12
	(2435.82)	(2076.14)	(2936.42)	(2170.38)		
Spices: Consumed? (Yes/No)	0.86***	-0.10**	-0.08*	-0.07*	3585	0.76
	(0.03)	(0.05)	(0.04)	(0.04)		
Consumption Quantity (Kg)	0.27***	0.00	0.01	-0.02	2926	0.38
	(0.02)	(0.02)	(0.02)	(0.02)		
Consumption value (TZS)	977.97***	-225.97	-308.25	-208.91	2926	0.84
	(337.56)	(247.36)	(251.18)	(252.65)		
Beverages: Consumed? (Yes/No)	0.50***	-0.02	-0.05	-0.02	3585	0.75
	(0.03)	(0.04)	(0.04)	(0.03)		
Consumption Quantity (Kg)	1.57***	-0.11	-0.12	0.06	1797	0.37
	(0.18)	(0.18)	(0.17)	(0.17)		
Consumption value (TZS)	2181.6***	-323.58	-161.32	-178.58	1797	0.82
	(354.11)	(341.97)	(346.90)	(333.27)		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standard Errors in parentheses, p-values are adjusted for clustering at the village level, and Fixed effects for district and multiple villages served by HD included in the test. This table provides information on the average proportion, consumption quantities, and values for goods consumed by households during this period. The average consumption values were determined by calculating the average price of each item within each community. To establish this average price, all quantities were first converted into kilogram units. For items purchased by households, the unit price was computed by dividing the total amount spent by the quantity purchased in kilograms. For items produced by households themselves, the quantity produced in kilograms was multiplied by the average price paid by

respondents who bought the same item within the community; Observations with responses: "Don't know/Refused" were reported/replaced as missing for the food consumption inside the household.

To investigate the sample's diet in more detail, Table 23 shows the more detailed decomposition of food consumption of items also within the item groups. We show the fraction of households consuming each item (organised by food group), the quantity consumed, and whether this quantity was purchased, consumed out of self-production, or received as gifts. From these data we can see that the diet in the Dodoma region is very rich in maize flour, with 81% of the households reporting to have consumed it in the last seven days. Further, husked rice is consumed by about 38% of the sample; and buns, cakes and biscuits are consumed by about 24% of the sample. We can see that for cereals, most is bought on the market. However, for some items, less than 50% of the consumption are bought. This is true for maize, where about 40% of the grained maize and about 31% of the maize flour, is purchased.

Table 23: Food consumption inside the household over the past week by category

	Consumed?	Qty consumed (kgs)	Share purchased	Share produced	Share as gifts
Cereals					
Rice (paddy): Consumed (Y/N)?	0.02	2.80	0.95	0.02	0.03
	(0.13)	(1.90)	(0.22)	(0.13)	(0.18)
Rice (husked): Consumed (Y/N)?	0.38	2.33	0.96	0.03	0.00
	(0.49)	(1.94)	(0.19)	(0.18)	(0.06)
Maize (grain): Consumed (Y/N)?	0.09	9.02	0.40	0.54	0.05
	(0.29)	(10.18)	(0.49)	(0.50)	(0.22)
Maize (flour): Consumed (Y/N)?	0.81	10.72	0.31	0.68	0.01
	(0.39)	(7.53)	(0.46)	(0.46)	(0.09)
Millet and sorghum (grain): Consumed (Y/N)?	0.03	9.27	0.27	0.70	0.03
	(0.18)	(7.42)	(0.44)	(0.46)	(0.16)
Millet and sorghum (flour): Consumed (Y/N)?	0.29	9.39	0.22	0.76	0.01
	(0.45)	(8.15)	(0.41)	(0.43)	(0.12)
Wheat (flour): Consumed (Y/N)?	0.14	1.34	0.99	0.01	0.01
	(0.34)	(1.83)	(0.12)	(0.08)	(0.08)
Bread: Consumed (Y/N)?	0.10	0.76	0.97	0.02	0.01
	(0.30)	(2.27)	(0.18)	(0.13)	(0.11)
Buns/cakes and biscuits: Consumed (Y/N)?	0.24	3.76	0.96	0.03	0.00
	(0.43)	(4.34)	(0.19)	(0.17)	(0.05)
Macaroni/spaghetti: Consumed (Y/N)?	0.07	0.37	1.00	0.00	0.00

Table 23: Food consumption inside the household over the past week by category (contd)

	Consumed?	Qty consumed (kgs)	Share purchased	Share produced	Share as gifts
	(0.25)	(0.19)	(0.00)	(0.00)	(0.00)
Other cereal products: Consumed (Y/N)?	0.01	5.65	0.42	0.57	0.00
	(0.11)	(4.53)	(0.49)	(0.49)	(0.00)
Starches					
Cassava fresh	0.15	5.70	0.52	0.39	0.08
	(0.35)	(51.87)	(0.50)	(0.49)	(0.28)
Cassava dry/flour	0.02	90.58	0.48	0.45	0.06
	(0.13)	(247.68)	(0.50)	(0.50)	(0.25)
Sweet potatoes	0.13	7.01	0.81	0.14	0.05
	(0.34)	(30.35)	(0.39)	(0.34)	(0.23)
Yams/cocoyams	0.01	4.53	0.21	0.79	0.00
	(0.10)	(8.52)	(0.42)	(0.42)	(0.00)
Irish potatoes	0.30	118.90	0.94	0.03	0.03
	(0.46)	(240.09)	(0.23)	(0.17)	(0.16)
Cooking bananas/plantains	0.06	5.67	0.72	0.21	0.06
	(0.24)	(7.46)	(0.45)	(0.41)	(0.23)
Other starches	0.00	1.09	0.44	0.44	0.11
	(0.05)	(0.88)	(0.53)	(0.53)	(0.33)
Meat and meat products					
Goat meat	0.18	0.98	0.93	0.04	0.02
	(0.39)	(0.74)	(0.25)	(0.20)	(0.15)
Beef including minced sausage	0.28	0.91	0.96	0.02	0.01
	(0.45)	(0.66)	(0.19)	(0.15)	(0.12)
Pork including sausages and bacon	0.07	0.75	0.95	0.02	0.03
	(0.25)	(0.62)	(0.21)	(0.14)	(0.16)
Chicken and other poultry	0.10	1.22	0.31	0.64	0.04
	(0.29)	(0.74)	(0.46)	(0.48)	(0.20)
Wild birds and insects	0.01	1.42	0.36	0.50	0.11
	(0.10)	(1.73)	(0.49)	(0.50)	(0.32)
Eggs	0.14	0.52	0.38	0.57	0.04
	(0.35)	(0.32)	(0.49)	(0.49)	(0.19)
Fresh fish and seafood (including dagaa)	0.10	0.35	0.94	0.05	0.01
	(0.30)	(0.38)	(0.24)	(0.22)	(0.09)
Dried/salted fish and seafood (incl. dagaa)	0.32	0.78	0.97	0.02	0.01
	(0.47)	(0.88)	(0.17)	(0.12)	(0.11)

Table 23: Food consumption inside the household over the past week by category (cont.)

	Consumed?	Qty consumed (kgs)	Share purchased	Share produced	Share as gifts
Beverages					
Tea dry	0.13 (0.33)	0.40 (0.00)	0.10 (0.27)	0.06 (0.21)	0.00 (0.01)
Other raw materials for drinks	0.01 (0.07)	1.40 (0.54)	0.39 (0.50)	0.36 (0.50)	0.00 (0.00)
Bottled/canned soft drinks	0.17 (0.37)	1.10 (1.63)	0.82 (0.38)	0.04 (0.19)	0.00 (0.06)
Prepared tea/coffee	0.24 (0.43)	0.96 (0.13)	0.02 (0.14)	0.70 (0.45)	0.00 (0.03)
Bottled beer	0.01 (0.11)	2.40 (1.48)	1.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Local brews	0.11 (0.32)	2.67 (1.77)	0.84 (0.36)	0.07 (0.26)	0.03 (0.16)
Wine and spirits	0.00 (0.05)	1.10 (0.52)	0.90 (0.32)	0.00 (0.00)	0.10 (0.32)
Sugars	0.67 (0.47)	0.98 (0.72)	0.97 (0.16)	0.02 (0.14)	0.00 (0.07)
Pulses	0.67 (0.47)	1.63 (3.19)	0.69 (0.46)	0.28 (0.45)	0.02 (0.15)
Nuts and seeds	0.45 (0.50)	1.96 (2.82)	0.40 (0.49)	0.56 (0.49)	0.04 (0.19)
Vegetables	0.98 (0.15)	3.45 (4.66)	0.86 (0.30)	0.13 (0.29)	0.01 (0.08)
Fruits	0.41 (0.49)	1.78 (1.56)	0.89 (0.30)	0.06 (0.23)	0.04 (0.19)
Milk/milk products	0.28 (0.45)	2.62 (2.31)	0.54 (0.50)	0.38 (0.49)	0.08 (0.26)
Oils	0.89 (0.31)	2.48 (14.52)	0.77 (0.42)	0.22 (0.41)	0.00 (0.06)
Spices	0.82 (0.39)	0.28 (0.21)	0.91 (0.28)	0.08 (0.26)	0.01 (0.09)

Standard Deviations in parentheses.

This table presents household consumption of different cereals, starches, meat and meat products, beverages, sugars, pulses, nuts and seeds, vegetables, fruits, milk/milk products, oils and spices, inside the household over the last month. Column 1 shows the average proportion of household who consumed the good, Column 2 shows the average quantity consumed in kgs, Column 3, 4 and 5 show the share of quantity purchased, produced and received as gifts of the total consumption quantity. The quantity estimates are in kgs.

TASAF eligibility and social transfers

As discussed in Section 3.2, the RCT was launched in a context in which a social protection scheme, TASAF, distributes conditional cash transfers to eligible families nationwide, including in the Dodoma region RCT study area. Across Tanzania, TASAF's coverage is reported to be around 15%. Given that in our study we recruited a representative sample of pregnant women of the Dodoma region, irrespective of their socio-economic status, we expect a proportion of those women to be eligible for TASAF. We will use the baseline data to find out what proportion exactly. This is important, so that later on at follow-up we can find out whether there are any differential effects of the RCT interventions (Parenting and/or UCT) by baseline TASAF membership status.

Table 24 confirms how well-known Tanzania's flagship TASAF programme is. Nine out of ten household heads in the sample report to have heard about TASAF. Out of those who report to have heard about TASAF, 10% report to have ever been eligible to benefit from the programme. However, only half of those people (5% of the sample who have heard about TASAF) report to still be a TASAF beneficiary today. Of those present beneficiaries, only half reported to have received a transfer during the 12 months prior to the baseline survey and the last transfer received was approximately TZS 79,000 (US\$31). Reassuringly, this reported average amount is very close to TZS 77,000 (US\$31), which is the average value of the officially fixed minimum (TZS 22,000) and the maximum (TZS 110,000) bi-monthly TASAF to be transferred to a family with a profile similar to those in our study sample (pregnant women with children) (see Section 3.2). Hence, it is very similar to the value of the bi-monthly UCT transfer that will be disbursed to families in the UCT study communities, which was calibrated to be similar to the official bi-monthly TASAF transfer amount. Equally reassuring is the observation in Table 24 that there are no imbalances between study groups in terms of former and current TASAF eligibility, nor in terms of any TASAF cash transfer receipts.

Table 25 reports the baseline survey responses to the question asking the household heads whether anyone in the household received any financial support other than TASAF in the past 12 months. In particular, we asked whether they received any UCT, free food//maize, scholarships or bursaries for primary school, scholarships for secondary school or other type of social transfer. Virtually zero respondents reported to have received any type of social support other than TASAF.

The findings in this section make clear that young families in the Dodoma region are currently not receiving much financial support for the upbringing of their children. For parents who are struggling to make their ends meet, lack of financial support could be detrimental for the development of their children. In such a context, an intervention like *Kizazi Kijacho's* UCTs could significantly improve the chances of these children to reach their developmental potential

Table 24: Tanzanian Social Action Fund (TASAF) membership and transfers

	Control Mean	Difference from Control			N	F-test
		Parenting + UCT	Parenting	UCT		P-value
Heard about TASAF						
Don't know	0.00	-0.01	-0.14	0.08	3585	0.28
	(0.00)	(0.12)	(0.07)	(0.08)		
Refused	0.12	-0.01	-0.02	-0.12	3585	0.42
	(3.42)	(0.14)	(0.12)	(0.08)		
Yes	86.90	0.72	2.31	3.54	3585	0.36
	(33.76)	(3.25)	(2.76)	(2.48)		
No	12.98	-0.70	-2.14	-3.50	3585	0.36
	(33.63)	(3.25)	(2.75)	(2.47)		
Past eligibility						
Don't know	0.00	0.35	0.25	-0.01	3187	0.42
	(0.00)	(0.24)	(0.29)	(0.15)		
Yes	9.56	-2.10	-3.80	-1.07	3187	0.20
	(29.42)	(2.17)	(2.19)	(1.91)		
No	90.44	1.74	3.55	1.08	3187	0.27
	(29.42)	(2.17)	(2.18)	(1.91)		
Past receipt of cash						
Yes in the last year	26.76	-11.57	-0.60	-3.64	278	0.52
	(44.59)	(10.25)	(10.23)	(9.39)		
Yes but not in the last year	29.58	-2.08	-1.82	8.46	278	0.57
	(45.96)	(11.50)	(11.40)	(10.73)		
Never benefited	43.66	13.65	1.22	-4.82	278	
	(49.95)	(13.78)	(13.59)	(11.69)		
Current eligibility						
Yes	5.34	-2.32	-2.10	0.07	3055	0.06
	(22.49)	(1.36)	(1.46)	(1.28)		
No	94.66	2.32	2.10	-0.07	3055	0.06
	(22.49)	(1.36)	(1.46)	(1.28)		

Table 24: Tanzanian Social Action Fund (TASAF) membership and transfers (cont.)

	Difference from Control				F-test	
	Control Mean	Parenting + UCT	Parenting	UCT		Control Mean
Current receipt of cash						
Yes in the last year	28.95	19.46	21.94	3.86	149	0.32
	(45.96)	(18.51)	(14.44)	(12.44)		
Yes but not in the last year	65.79	-15.90	-19.36	-4.57	149	0.52
	(48.08)	(18.60)	(15.26)	(13.41)		
Never benefited	5.26	-3.56	-2.58	0.71	149	0.48
	(22.63)	(6.00)	(5.25)	(5.87)		
Money Received from TASAF	79,000	-13,959.90	-3,043.42	-17,881.67	47.00	0.91
	(101,101.4)	(37,263.28)	(48,983.8)	(30,174.68)		

* p < 0.05, ** p < 0.01, *** p < 0.001.

Standard Errors in parentheses, p-values are adjusted for clustering on village level, and Fixed effects for district and multiple villages served by HD included in test.

Table 25: Social transfers (%)

	Difference from Control				N	F-test
	Control Mean	Parenting + UCT	Parenting	UCT		P-value
Unconditional cash transfers	0.00	-0.09	-0.10	0.10	3585	0.54
	(0.00)	(0.06)	(0.07)	(0.07)		
Free food/maize distribution	0.12	-0.06	-0.06	-0.09	3585	0.62
	(3.42)	(0.06)	(0.06)	(0.09)		
Scholarships or bursaries for primary school	0.12	-0.15	-0.01	-0.14	3585	0.55
	(3.42)	(0.11)	(0.15)	(0.11)		
Scholarships or bursaries for secondary school	0.12	-0.10	-0.11	-0.11	3585	0.78
	(3.42)	(0.10)	(0.11)	(0.11)		
Other	0.12	-0.06	-0.06	-0.09	3585	0.62
	(3.42)	(0.06)	(0.06)	(0.09)		
None	99.42	0.46	0.23	0.34	3585	0.15
	(7.63)	(0.29)	(0.36)	(0.31)		

* p < 0.05, ** p < 0.01, *** p < 0.001.

Standard Errors in parentheses, p-values are adjusted for clustering on village level, and Fixed effects for district and multiple villages served by HD included in test. This table shows the percentage of households that received different forms of social transfers

Mother and father characteristics



Socio-demographics

In this subsection, we test balance in baseline characteristics of mothers and fathers across study groups in the sample, focusing on a set of basic socio-demographic characteristics. Table 26 shows the average socio-demographic characteristics for mothers in the control group and the possible deviations from that mean for each treatment group. Table 27 does the same for the fathers in the sample.

Mothers are on average about 27 years old and the majority (78%) are Christian, whereas the rest are Muslim. Most mothers – 75% – have attended school, 70% report that they are comfortable with numbers and 67% report that they are comfortable reading. Fathers are on average older than mothers, they are about 35 years old on average. As for mothers, most fathers are Christian (about 76%) and the rest are almost exclusively Muslim. A somewhat higher fraction of fathers attended school (about 82%) and – just as mothers – most men are comfortable with numbers (74%) and with reading (71%).

Table 28 shows the marital status of the mothers. Most of them, 75%, are monogamously married. About 8% are polygamously married, whereas 7% are separated or divorced. The remaining 9% were never married or are cohabiting (8%) or are widowed (1%). Overall, there seems to be very good balance between study groups in terms of baseline socio-demographic characteristics of mothers and fathers. Moreover, fathers and mothers do not differ much in terms of these basic features.

Table 26: Mother Characteristics

	Difference from Control				N	F-test
	Control Mean	Parenting + UCT	Parenting	UCT		P-value
Age (years)	26.912 (6.846)	-0.720 (0.414)	-0.631 (0.403)	-0.178 (0.370)	3576	0.182
Religion (%)						
Christian	77.591 (41.725)	3.365 (3.236)	4.873 (2.896)	4.297 (2.575)	3299	0.257
Muslim	22.021 (41.465)	-3.269 (3.216)	-4.796 (2.876)	-4.474 (2.547)	3299	0.235
Unaffiliated	0.389 (6.226)	-0.097 (0.444)	-0.077 (0.424)	0.177 (0.457)	3299	0.811
Attended School (%)						
Yes (Attended School)	74.707 (43.494)	-2.996 (3.194)	-2.512 (3.305)	-1.388 (3.139)	3580	0.753
No (Attended School)	25.293 (43.494)	3.084 (3.194)	2.610 (3.306)	1.289 (3.140)	3580	0.714
Comfortable with Numbers (%)						
Yes (Numbers)	70.023 (45.842)	-4.038 (3.794)	-3.061 (3.776)	2.254 (3.411)	3580	0.074
More or less (Numbers)	9.602 (29.479)	1.744 (2.333)	-0.811 (2.065)	-3.460 (1.906)	3580	0.008
No (Numbers)	20.258 (40.215)	2.323 (3.099)	3.918 (3.287)	1.384 (3.048)	3580	0.613
Comfortable Reading (%)						
Yes (Reading)	67.447 (46.885)	-4.268 (3.866)	-1.303 (3.821)	1.730 (3.501)	3580	0.197
More or less (Reading)	5.386 (22.588)	2.166 (1.709)	-0.298 (1.446)	-1.727 (1.219)	3580	0.063
No (Reading)	27.166 (44.508)	2.026 (3.465)	1.539 (3.472)	0.069 (3.326)	3580	0.834

$p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Standard Errors in parentheses, p-values are adjusted for clustering on village level, and Fixed effects for district and multiple villages served by HD included in test. The sample sizes reported in this table differ from the expected 3585 because of missing data for these outcome variables

Table 27: Father Characteristics

	Control Mean	Difference from Control			N	F-test
		Parenting + UCT	Parenting	UCT		P-value
Age (years)	34.744 (10.094)	-0.539 (0.651)	-0.701 (0.643)	-0.576 (0.601)	2867	0.694
Religion (%)						
Christian	75.535 (43.021)	3.244 (3.087)	4.119 (2.968)	5.667 (3.074)	2858	0.235
Muslim	23.394 (42.366)	-2.791 (3.148)	-3.488 (2.941)	-5.766 (3.027)	2858	0.237
Folk Religion	0.153 (3.910)	-0.178 (0.143)	-0.011 (0.187)	-0.174 (0.138)	2858	0.559
Unaffiliated	0.765 (8.717)	-0.102 (0.766)	-0.443 (0.658)	0.435 (0.850)	2858	0.161
Attended School (%)						
Yes	81.957 (38.484)	-0.843 (3.154)	-2.084 (2.872)	0.907 (2.845)	2858	0.666
No	18.043 (38.484)	0.843 (3.154)	2.084 (2.872)	-0.907 (2.845)	2858	0.666
Comfortable with Numbers (%)						
Yes	74.006 (43.894)	-0.968 (3.563)	-1.922 (3.379)	4.109 (3.446)	2858	0.157
More or less	10.245 (30.347)	0.279 (2.232)	-0.460 (2.131)	-3.156 (2.146)	2858	0.288
No	15.749 (36.454)	0.688 (3.000)	2.382 (2.728)	-0.953 (2.854)	2858	0.609
Comfortable Reading (%)						
Yes	70.795 (45.505)	-0.818 (3.648)	0.010 (3.570)	5.082 (3.360)	2858	0.139
More or less	7.645 (26.592)	2.513 (2.030)	0.254 (1.903)	-1.997 (1.767)	2858	0.132
No	21.560 (41.155)	-1.645 (3.292)	-0.372 (3.042)	-3.061 (2.984)	2858	0.673

p < 0.05, ** p < 0.01, *** p < 0.001.

Standard Errors in parentheses, p-values are adjusted for clustering on village level, and Fixed effects for district and multiple villages served by HD included in test. The sample sizes reported in this table differ from the expected 2869 because of missing data for these outcome variables.

Table 28: Mother Marital Status (%)

	Control Mean	Difference from Control			N	F-test
		Parenting + UCT	Parenting	UCT		P-value
Monogamous married	74.737	3.387	3.956	6.263**	3585	0.040
	(43.478)	(2.413)	(2.391)	(2.275)		
Polygamous married	8.070	-2.891	-2.399	-3.117*	3585	0.187
	(27.254)	(1.500)	(1.518)	(1.514)		
Separated/divorced	6.901	-1.314	-1.454	-2.858*	3585	0.083
	(25.361)	(1.450)	(1.463)	(1.284)		
Never married but living together	1.170	-0.952	-0.142	-0.614	3585	0.072
	(10.758)	(0.530)	(0.647)	(0.565)		
Never married	8.070	2.441	0.386	0.667	3585	0.453
	(27.254)	(1.910)	(1.852)	(1.731)		
Widower	1.053	-0.672	-0.347	-0.342	3585	0.529
	(10.212)	(0.545)	(0.594)	(0.544)		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Standard Errors in parentheses, p-values are adjusted for clustering on village level, and Fixed effects for district and multiple villages served by HD included in test.

Education



Zooming in more closely on education, in Table 29 we observe that the most common highest grade completed for both mothers and fathers is Primary education. However, there is a significantly higher fraction of fathers with incomplete primary and a higher fraction of

mothers completing primary education. For both parents, by far the main reason for quitting school is because they failed the promotion exam (about 40%). The second main reason reported is lack of money. When it comes to differences in mothers' and fathers' reasons for quitting school, fathers are more likely to have quit for financial reasons (support home expenses and lack of money) whereas mothers are more likely to have quit because of pregnancy, for marriage or to care for others. As suggested in the previous section – but now confirmed statistically – fathers are more likely to be comfortable reading and with numbers than mothers although the differences are rather small.

Table 29: Mother and Father Education

	Mother		Father		F-test
	Mean	N	Mean	N	P-value
Attended School	0.772	3583	0.837	2860	< 0.001
Average age to start school	7.223	2729	7.974	2393	< 0.001
Currently in school	0.040	2765	0.048	2393	0.147
Highest grade completed					
Nursery	0.003	2765	0.003	2393	0.956
Primary (incomplete)	0.155	2765	0.211	2393	< 0.001
Primary (complete)	0.705	2765	0.666	2393	0.002
Secondary-0	0.119	2765	0.084	2393	< 0.001
Secondary-A	0.002	2765	0.002	2393	0.685
Diploma	0.005	2765	0.017	2393	< 0.001
Postgrad	0.001	2765	< 0.001	2393	0.650
Bachelors	0.004	2765	0.012	2393	0.001
Masters	0.001	2765	.	.	.
PhD	< 0.001	2765	.	.	.
None	0.004	2765	0.005	2393	0.723
Reasons for quitting school					
Support Home expenses	0.086	3472	0.127	2860	< 0.001
Lack of Funds	0.193	3472	0.228	2860	0.001
Distance from school	0.056	3472	0.060	2860	0.506
Lack of Studying ability	0.052	3472	0.030	2860	< 0.001
Failed promotional exams	0.432	3472	0.404	2860	0.022
Illness	0.029	3472	0.018	2860	0.007
Left to care for others	0.017	3472	0.008	2860	0.004
Poor quality schools	0.003	3472	0.010	2860	< 0.001
Parental Banning	0.184	3472	0.144	2860	< 0.001
Marriage	0.010	3472	0.005	2860	0.025
Pregnancy	0.018	3472	< 0.001	2860	< 0.001

Table 29: Mother and Father Education (contd)

	Mother	Father	F-test		
	Mean	N	Mean	N	P-value
Expulsion	0.001	3472	0.002	2860	0.532
School Closed	< 0.001	3472	< 0.001	2860	0.271
Change of residence	0.012	3472	0.004	2860	0.001
Not interested	0.082	3472	0.138	2860	< 0.001
Other	0.007	3472	0.010	2860	0.322
Refused	0.001	3472	0.004	2860	0.002
Comfortable Reading and Writing					
Yes	0.695	3583	0.731	2860	0.002
More or less	0.056	3583	0.084	2860	< 0.001
No	0.248	3583	0.184	2860	< 0.001
Comfortable with numbers					
Yes	0.719	3583	0.762	2860	< 0.001
More or less	0.084	3583	0.095	2860	0.143
No	0.196	3583	0.144	2860	< 0.001

Blank spaces indicate that no observation in that specific group selected that education response. For the mean age of starting school, ages that were coded as refused or didn't know were treated as missing values (36 observations). P-value from T-test for the difference between the means of the fathers and mothers is included.

Health



Turning to health, in Table 30 we find that the self-reported physical health for both (young) mothers and fathers is reported to be fairly good; only about 3% of mothers and 2% of fathers report that their health is poor. However, fathers report significantly better health than mothers. Whereas fathers are 87% likely to report health as very good or good, only 71% of mothers report the same. Fathers also systematically (and significantly more than mothers) report that their health is good compared to their peers.

Table 30: Mother and Father Health

	Mother		Father		F-test
	Mean	N	Mean	N	P-value
How is your Physical Health?					
Very good	0.086	3583	0.142	2860	<0.001
Good	0.623	3583	0.724	2860	<0.001
Fair	0.259	3583	0.119	2860	<0.001
Poor	0.031	3583	0.015	2860	<0.001
Don't Know	0.001	3583	0.001	2860	0.586
How is your Health in comparison to peers?					
Much better than others	0.029	3583	0.049	2860	<0.001
Better than others	0.207	3583	0.269	2860	<0.001
Same than others	0.700	3583	0.633	2860	<0.001
Worse than others	0.040	3583	0.025	2860	0.001
Much worse than others	0.001	3583	0.002	2860	0.150
Don't Know	0.023	3583	0.023	2860	0.966

P-value from T-test for the difference between the means of the fathers and mothers is included. Refused responses were excluded as no father respondent refused and mother respondents were less than 0.01.

Table 31 considers mothers' Antenatal Care (ANC) experience during their last completed pregnancy, focusing on the sub-sample of women who have had at least one pregnancy prior to the current one. Almost all of these women report to have received ANC during their previous pregnancy, with on average four ANC clinic visits in total. The first time they received ANC was, on average, at the beginning of the second trimester, when they were four months pregnant. Whereas only four percent of these women report to have received a home visit from a CHW during the last pregnancy, almost half of them do know the name of the CHW currently serving their community. This latter finding suggests that at baseline a significant fraction of CHWs were actively serving young mothers and their families, though not yet through home visits during the ANC period.

Table 31: Antenatal care (ANC) & Community Health Worker (CHW) resources (%)

	Control Mean	Difference from Control			N	F-test
		Parenting + UCT	Parenting	UCT		P-value
Sought Antenatal Care						
Don't Know/don't remember	0.00	-0.06	-0.06	0.06	2846	0.79
	(0.00)	(0.06)	(0.06)	(0.06)		
Yes	99.41	-0.01	-0.26	-0.19	2846	0.97
	(7.65)	(0.58)	(0.69)	(0.49)		
No	0.59	0.07	0.33	0.13	2846	0.97
	(7.65)	(0.58)	(0.69)	(0.48)		
Number of months Pregnant before receiving ANC	4.25	0.11	0.04	-0.08	2752	0.15
	(1.47)	(0.10)	(0.11)	(0.09)		
Number of Times you received ANC	4.22	-0.05	0.02	0.06	2752	0.70
	(1.49)	(0.12)	(0.13)	(0.11)		
CHW visit for ANC counselling						
Don't Know	0.00	-0.03	0.16	0.20	2846	0.37
	(0.00)	(0.12)	(0.17)	(0.20)		
Refused	0.00	-0.06	-0.05	0.05	2846	0.80
	(0.00)	(0.06)	(0.05)	(0.05)		
Yes	3.52	-0.64	0.05	2.48	2846	0.35
	(18.45)	(2.14)	(1.79)	(1.53)		
No	96.48	0.73	-0.16	-2.73	2846	0.26
	(18.45)	(2.14)	(1.78)	(1.53)		
Knowledge of Current CHW						
Don't Know	0.23	-0.20	0.29	0.03	3580	0.09
	(4.84)	(0.22)	(0.32)	(0.25)		
Refused	0.00	-0.08	0.04	0.02	3580	0.58
	(0.00)	(0.06)	(0.10)	(0.06)		
Yes	46.14	5.55	4.99	6.84	3580	0.40
	(49.88)	(4.90)	(4.39)	(4.07)		
No	53.63	-5.27	-5.32	-6.89	3580	0.39
	(49.90)	(4.90)	(4.39)	(4.09)		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Standard Errors in parentheses, p-values are adjusted for clustering on village level, and Fixed effects for district and multiple villages served by HD included in test.

Work activities

As shown in Table 32, in the 12 months preceding the baseline survey visit, the mothers spent little time working outside of the home. About half of them considered their main employment status in that period to be 'unemployed'. Those employed were self-employed mainly in the agricultural sector, either doing unpaid family work or farming (34%) or other self-employment activities with no employees. Only very few women (less than 30%) reported doing any work as an employee for a wage, salary, commission or any payment in-kind (including paid domestic work or paid farm work) in the last month, not even for one hour. However, despite being pregnant, 40% of women reported to have been doing some paid or unpaid work in the last month.

Compared to the fathers, there are significantly fewer mothers who are self-employed with or without any employees than fathers (16% compared to 23%), whilst there are significantly more mothers than fathers who are doing unpaid family work (34% compared to 16%). There are significantly fewer fathers that are unemployed, although the unemployment rate for fathers is also high (about 30%). Of those employed, there are more fathers than mothers who report that they are working in the agricultural sector (about 91%). Fathers are also significantly more likely than mothers to have done work in the month prior to the survey, either as an employee (22%), a business owner (20%) and/or on household agricultural activities (55%). Overall, whereas all fathers in the sample reported doing at least some work in the last month, only 40% of the mothers reported the same. Out of the mothers working, only 40% were paid in cash for the work that they did. The rest were either paid in kind (15%) or not paid at all (45%). A slightly higher percentage of fathers were compensated in cash for the work they did in the previous month, that is, 49%. However, for those who reported to have done some work for cash in the month prior to the survey (only 15% of mothers versus 49% of fathers), the total earnings reported for that work is not significantly different for the mother and father sample; it is on average TZS 53,000 (US\$21).

Table 32: Mother and Father Work Activities

	Mother		Father		F-test
	Mean	N	Mean	N	P-value
Employment Status in past 12 Months					
Government	0.004	3583	0.013	2860	< 0.001
Parastatal	0.001	3583	0.001	2860	0.586
Private Sector	0.008	3583	0.017	2860	< 0.001
NGO/religious	< 0.001	3583	0.001	2860	0.218
Self Employed (No Employees)	0.155	3583	0.228	2860	< 0.001
Self Employed (Employees)	0.005	3583	0.053	2860	< 0.001
Self Employed (Unpaid Family)	0.335	3583	0.164	2860	< 0.001
Self Employed (Paid Family)	.	.	0.064	2860	.
Job seeker	0.007	3583	0.038	2860	< 0.001
Student	0.001	3583	0.001	2860	0.695
Unemployed	0.483	3583	0.299	2860	< 0.001
Other	.	.	0.121	2860	.

Table 32: Mother and Father Work Activities (contd)

	Mother		Father		F-test
	Mean	N	Mean	N	P-value
Agriculture	0.794	1804	0.913	1139	< 0.001
Fishing/hunting	0.001	1804	0.011	1139	< 0.001
Mining	0.002	1804	0.006	1139	0.042
Tourism	0.001	1804	.	.	.
Other	0.195	1804	0.070	1139	< 0.001
Work Activities in Past 1 Month					
Employee	0.028	3583	0.217	2860	< 0.001
Business owner	0.128	3583	0.202	2860	< 0.001
Household/Agriculture	0.268	3583	0.550	2860	< 0.001
Apprentice	0.009	3583	0.103	2860	< 0.001
Hours Worked in Past 1 Month Hours	60.106	1354	50.691	2860	< 0.001
Earnings in Past 1 Month					
Total Earnings	52498.19	519	53452.02	1397	0.855
Received earnings in cash	0.270	1342	0.356	2860	< 0.001
Received earnings in kind	0.153	1342	0.044	2860	< 0.001
Received earnings in cash & in kind	0.130	1342	0.134	2860	0.682

Blank spaces indicate that no observation in that specific group held such employment status or engaged in such industry. P-value from T-test for the difference between the means of the fathers and mothers is included. Respondents who didn't know or refused to provide how many hours they worked (2 observations) or how much they earned (18 observations) were treated as missing observations

Savings



Table 33 shows the mothers' reported savings behaviour and compares it to that of fathers. Most mothers (98%) do not have a personal bank account and neither do fathers (95%). Whereas one third of the mothers reported having any form of personal savings other than in a formal bank account or in a self-help group (e.g. hidden in a safe place, with a friend/family, in a village bank), half of all fathers do. The most frequently given reason given by both men and women for not owning any account in a commercial bank or other formal financial institution is because they find it too expensive (88% of women and 77% of men). Women are more likely than men to also report some reasons other than it being too expensive, including being financially illiterate (e.g. not knowing how to use the financial products and services, not knowing how to make financial decisions or feeling generally uninformed about the existence of such financial matters).

Table 33: Mother and Father Savings

	Mother		Father		F-test
	Mean	N	Mean	N	P-value
Ownership of financial account					
Yes	0.016	3583	0.050	2860	< 0.001
No	0.983	3583	0.950	2860	< 0.001
Joint ownership (with spouse)	0.119	59	0.069	144	0.253
Joint ownership (with non-household member)	0.017	59	.	.	.
No Joint Ownership	0.864	59	0.931	144	0.134
Alternative savings					
Yes	0.336	3583	0.485	2851	< 0.001
No	0.663	3583	0.515	2851	< 0.001
Reasons for not using financial institution					
Don't know how to use financial products and services	0.090	3521	0.066	2716	0.001
Don't know how to make financial decisions	0.067	3521	0.029	2716	< 0.001
Don't have a valid identification document (ID)	0.022	3521	0.008	2716	< 0.001
Don't know financial institutions	0.041	3521	0.019	2716	< 0.001
Don't trust financial institutions	0.024	3521	0.019	2716	0.195
Unreliable platforms	0.014	3521	0.014	2716	0.847
Uninformed	0.089	3521	0.068	2716	0.003
Expensive	0.875	3521	0.773	2716	< 0.001
Other	0.001	3521	0.002	2716	0.446
Refused	0.005	3521	0.003	2716	0.279

Blank spaces indicate that no observation in that specific group used such financial service. P-value from T-test for the difference between the means of the fathers and mothers is included.

Communication and information

Table 34 shows some statistics on the mother and father use of communication and information equipment and structures. Neither mothers nor fathers use computers and internet much, although the frequency is slightly higher for the fathers than for the mothers: about 3% of mothers and 6% of fathers have ever used a computer, and 7% of mothers versus 18% of fathers have ever used internet. Use of mobile phones is much more common in the study area. Nearly all (95%) of women report to have access to a mobile phone that they can use and 43% of women own their own personnel phone. 54% of women report to have used a mobile phone every day during the three months preceding the baseline survey and only 17% report not to have used a phone at all in the same period. We did not collect information on mobile phone use by fathers and therefore cannot report on it.

Table 34: Mother and Father Information and Communication

	Mother		Father		F-test
	Mean	N	Mean	N	P-value
Have used a computer	0.031	3583	0.060	2860	< 0.001
Have used the internet	0.077	3583	0.182	1345	< 0.001
Use of internet in last three months					
Less than once a week	0.138	276	0.137	293	0.968
Once a week	0.239	276	0.253	293	0.711
Everyday	0.420	276	0.321	293	0.014
Use of mobile in last three months					
Less than once a week	0.131	3583	.	.	.
Once a week	0.149	3583	.	.	.
Everyday	0.539	3583	.	.	.

Fathers were not asked the same question of how often they used a mobile phone in the past three months, which is the reason for the blank spaces. P-value from T-test for the difference between the means of the fathers and mothers is included.

Allocation preferences

Finally, we conclude with a discussion on whether and how mothers and fathers differ in their preferences regarding the allocation of resources in the household. One of the main arguments used in support of policies that target women as recipients of UCTs is that targeted transfers promote investments in children and increase child welfare. A premise is that mothers would like to invest more in children than fathers. We have designed a novel instrument to look at mother and father resource allocation preferences.

Participants were asked to divide a certain hypothetical amount of additional cash – TZS 150,000 (US\$60) – among consumption categories. Amongst the allocation options, there were seven private goods and three public household goods. The private goods were clothing/footwear, food, education (tuition fees, uniform and transport), learning materials (books, notebooks and other stationary), health (medical products, admission to health

facilities, treatments), transportation, and personal expenditure (internet, cell phone vouchers, hair products, etc). The public household goods were furnishings/household equipment (e.g. cooking utensils, bed sheets, etc.), housing (rent, water, electricity, gas and other fuels), and investments in the family business. Unlike private goods, public goods are considered to be shared by all members in a household. The respondents were asked (in private, without their partner being present) to divide the total amount of cash (TZS 150,000) among the goods, and for the amounts allocated to private goods, they were asked to specify what amount of cash would be allocated to private goods for the mother, the father, and a child. To facilitate the allocation process, the respondents were given 75 beads, each bead representing TZS 2,000, and cardboard displaying the different allocation options listed above.

Table 35 shows the results of this hypothetical allocation experiment, as well as the statistical test results for whether mother and father allocation to the child is different for each category. Note that, as expected, for both fathers and mothers, all allocated amounts together sum to 75 which was the total number of beads given to them to allocate. Interestingly, the allocations that the mothers and fathers propose (at separate times from each other and in private) are strikingly similar. Both mothers and fathers allocate most of the money to clothing (16% of the money), food (18%), health (15%) and investment for the household (10-13%). Both father and mother report that they would spend 10% of the total TZS 150,000 cash amount on a combination of education (tuition fees, uniforms and school transportation) and learning materials, mostly for their children. After these first priorities, they each report that they would spend some share of the money on transportation (7%), personal expenditures (7%), furnishings (5-6%), and housing (4-6%).

Turning to the allocation of resources for private goods to individual people, for both mothers and fathers we see a clear tendency to allocate slightly more of the cash to mother clothing, food and health, than to father clothing, food and health. This tendency may be there for personal expenditures as well, at least for mothers, whereas it seems like fathers allocate about the same amount of personal expenditures to mothers and fathers. Although differences are small, mothers do spend statistically significantly more on child clothing, food, learning materials, health, transportation and personal expenditures. The only spending category for children where we see no difference is that of education. Overall though, the results of this hypothetical experiment suggest that mothers would not allocate substantially more cash to children than their spouses. The net difference is not more than TZS 2,780 (US\$1) out of a total of TZS 150,000 (US\$60).

In sum, although we find some significant differences between mother and father preferences, there does not seem to be strong support for the maternal argument in our data. On the contrary, it seems like mothers and fathers have about the same preferences for spending on children, although the mothers do spend significantly more on most categories, but the differences to the fathers are small.

Table 35: Mother and Father Allocation

	Allocation by Mother					Allocation by Father					P-value
	Mother	Father	Child	Household	N	Mother	Father	Child	Household	N	
Clothing	4.679	3.105	4.428		3592	4.430	3.856	4.043		2874	< 0.001
Food	4.785	3.741	4.676		3592	4.672	4.461	4.466		2874	0.018
Education	0.454	0.352	3.780		3592	0.402	0.389	3.683		2874	0.212
Learning mat	0.368	0.305	3.374		3592	0.295	0.320	3.162		2874	< 0.001
Health	4.664	2.825	3.967		3592	4.296	3.375	3.767		2874	< 0.001
Transportation	2.067	1.910	1.276		3592	1.836	2.378	1.130		2874	< 0.001
Personal expend	2.440	1.550	1.364		3592	2.068	1.955	1.224		2874	0.001
Furnishings				4.909	3592				4.656	2874	
Housing				4.041	3592				4.089	2874	
Investment				9.948	3592				10.047	2874	

This table shows the mean allocation by both the target mother and father when asked on how they would allocate additional income (TZS 150,000) across the family members inclusive of the mother, father, and the child based on various expenditures. Expenditures which were considered to be shared by the household, which are furnishings, housing, and investments is allocated to the entire household rather than individual family members. P-value from T-test for the difference between the means of the fathers and mothers, specifically for the respective allocation for a five-year-old child, is included

Conclusion



The *Kizazi Kijacho* RCT was launched in October 2022, a period of significant reflection in Tanzania on the importance of ECD. After an extensive period of ECD stakeholder consultation and engagement, in December 2021 Tanzania launched NM-ECDP, which has created a lot of excitement and interest among researchers, policy makers, NGOs and other ECD stakeholders, in identifying scalable and sustainable inter-sectoral solutions to holistically improve ECD, from conception until age eight. The ambition is to identify a system of continuous ECD service provision, spanning the early life cycle, to improve children's nurturing care in all its dimensions: Health, nutrition, early learning, responsive caregiving and child safety and security. The *Kizazi Kijacho* RCT of a parenting and UCT intervention aims to contribute significant knowledge and understanding about cost-effective ECD modelling for the critical 'first 1000 days' in this cycle, that is, the period from conception until age two.

In addition to describing the *Kizazi Kijacho* objectives, study design and work plan, this report reveals some interesting characteristics of the context where the next generation of children in the Dodoma region in Tanzania are being born into today. Most communities have access to a HD open five to seven days per week, providing basic antenatal care and child delivery services. However, only very few are sufficiently equipped to deal with complications and most pregnant women receive their first ANC counselling only in the second trimester. Many pregnant women know the name of the CHW working in their community, but almost none of them receive any visits by a CHW at their home, despite most CHWs reporting to work both in clinic and in community. This could be linked to the observation that a substantial fraction of CHWs – one in five – finds their CHW workload challenging. Overall, CHWs – most of them unpaid – wish they could work on average ten hours per week fewer than what they are currently administering. Lack of training could also be an issue, as virtually no community reported to have received any CHW training in the year prior to the survey visit, not in health and nutrition, nor in ECD.

In such a context, a programme such as the *Kizazi Kijacho* parenting intervention has potential to make a significant difference. The provision of CHW and HCW training, continuous digital app support and incentives to the CHWs, are likely to make CHW work more manageable, and therefore encourage more active and effective CHW in-community activity during pregnancy and early childhood. However, the data also highlight some possible challenges for the implementation of the parenting program, e.g. some CHWs are older and less educated than others, which might affect their digital literacy and hence ability to effectively use the app. Others are doing substantial paid or unpaid work other than CHW work, which could limit the extent to which they have the time to engage in parenting home visits and group sessions. Moreover, many communities in the Dodoma region are remote and poorly accessible. It will be interesting to investigate how such factors will affect CHW performance and, hence, impact of the parenting intervention.

Looking at family socio-economic characteristics, most families in the Dodoma region are economically poor. Their living conditions are very basic, with minimal amenities and asset

ownership. Only very few – two in ten – families own any educative material such as books, which have been shown to be instrumental for child development. Food consumption expenditures for many families are below what is deemed required for a minimum food bundle or basket essential for adequate nutritional intake. Moreover, diets in the Dodoma region are not sufficiently diverse from a health and nutrition perspective. Only very few families report to receive any financial support such as cash transfers, including TASAF.

This characterisation of the study area reveals that – to the extent that lack of investment is due to financial constraints – a programme such as the *Kizazi Kijacho* UCT could make a difference. The results regarding household resource allocation behaviour suggests that in this context, fathers are almost as likely as mothers to report to want to spend resources on children. It will be interesting to see how such intentions translate into actual spending when we analyse and compare outcomes between families where the UCT got targeted to the fathers versus those families where the UCT was instead targeted to mothers. Moreover, the results confirm that many women in the study population do not own any mobile phone, which could affect the extent to which transfers targeted to women actually reach women, which in turn can affect women empowerment and possibly child development.

In this report we further show that at baseline – prior to the start of the Parenting and UCT intervention activities – the different RCT study groups were very well balanced in a large variety of baseline observable characteristics, ranging from household socio-demographics, wealth, employment, social transfers, education, and health to food consumption patterns and diets. This is an important finding, as it confirms the integrity of the research design: From now on, any systematic differences in caregiver and child outcomes that may be observed between the communities that received the parenting intervention or the UCT intervention, or the program combining both parenting and UCT, with those communities where no such intervention was being implemented, can confidently be attributed to the treatment(s).

In the coming months and years, *Kizazi Kijacho* will monitor and analyse changes in outcomes in the study area, tracking measures at different stages in the programme's Theory of Change: Changes in CHW motivation, work satisfaction and performance; changes in factors undermining or empowering parental practices and behaviour, such as parental preferences and beliefs, women empowerment, intimate partner violence, caregiver health and mental wellbeing, social norms and household decision making; changes in parental practices and behaviour, in particular changes in financial investments (e.g. use of health and education services, consumption expenditures, etc.) and non-financial investments (e.g. time use, consumption resource allocation, child stimulation and responsive caregiving, etc.); and, finally, changes in different dimensions of child development outcomes (health, nutrition, cognition, socio-emotional development). A careful analysis of any differences in such outcomes between the study groups, and by sub-group (e.g. by family baseline socio-economic status), combined with a complementary costing/value for money analysis and process evaluation, will help inform the design of targeted cost-effective ECD policies for the critical 'first 1000 days' period in the child's life, from pregnancy until age two.

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