

Early Childhood Stimulation in Tanzania

FINDINGS FROM A PILOT STUDY IN KATAVI REGION



WORLD BANK GROUP

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About this document:

The scope of this proposed work was designed to support the World Bank's Investing in Early Years Initiative in Tanzania. There are three interrelated outputs: (a) piloting a set of instruments adapted in Kiswahili to measure child development and home environment of children 0-3 years, (b) training of local researchers on early stimulation and administration of tools in a digitized format, and (c) a report of research methodology and indicative findings from the pilot study.

This report only presents a discussion of the methodology and findings from the study. For the other outputs of this project, see the annexures that include:

1. The digitized version of the consolidated tool to gather data on (a) the background of the child, (b) development of the child as reported by caregivers, and (c) the home environment and parenting practices at the household level.
2. The guiding questionnaire for focus group discussions carried out with groups of mothers and fathers, separately, to supplement the survey activity
3. A set of PPTs used to guide the training content and practice sessions

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<i>Name</i>	<i>Designation at National Bureau of Statistics, Dar es Salaam, Tanzania</i>
Albina Chuwa	Director General
Irenius Ruyobya	Director for Statistical Operations
Emilian Karugendo	Principal Statistician and Manager for Statistical Methods/ Lead Coordinator
Mariam Kitembe	Statistician/ Assistant Coordinator
Janeth Richard Busanya	Field Coordinator/Team leader
Lathma Iddy	Field Coordinator/Team leader
Issa Vullu	Assessor
Upendo Swilla	Assessor
William Matindi Nemes	Assessor
Rahim Mwele	Assessor
Rukia Chuma	Assessor
Asha Abdallah Dingwaya	Assessor

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Overall guidance throughout the course of this study was provided by Sajitha Bashir (Practice Manager), Gayle Martin (Program Leader), Toby Linden (Lead Education Specialist), Huma Ali Waheed (Senior Education Specialist), Cornelia Jessi (Senior Education Specialist), Nkahiga Mathus Kaboko (Senior Education Specialist), and Elizabeth Ann Talbert (Senior Economist/Statistician). The team is grateful to colleagues from the Investing in Early Years Project team of Tanzania, especially Yi-Kyoung Lee (Senior Health Specialist), Chiho Suzuki (Senior Health Specialist), and Ella Victoria Humphry (Consultant), for valuable insights and support.

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List of acronyms

CREDI	Caregiver Reported Early Development Index
ECD	Early Childhood Development
FGDs	Focus Group Discussions
HOME	Home Observation Measurement of the Environment
IEY	Investment in Early Years
NBS	National Bureau of Statistics
THIS	Tanzania HIV Impact Study
TTL	Task Team Leader

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2. A video to demonstrate how to administer the digitized tool
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OVERVIEW

This study qualitatively explores early stimulation practices in Katavi region, Tanzania. It also quantitatively investigates the links between these early stimulation practices and development of children 0-3 years of age in the Katavi region. A comparative qualitative case study was carried out in Zanzibar region and findings have been presented throughout discussion section of this report, in parallel to the case of Katavi. Through this work the research team has developed a robust package of early childhood development research tools that have been carefully adapted and tested for use in Tanzania. The study uses and validates the combined use of tools to measure children's development (the CREDI tool) and the home environment (the HOME tool) for the first time in Tanzania. This package includes a complete survey including culturally-adapted, Kiswahili versions of the CREDI and HOME tools plus a caregiver information form that have all been digitized for data collection using electronic tablets. There is an accompanying video that guides users through the digitized version of the tool. The package also includes a four-day training guide with power points that may be used to prepare enumerators to collect the survey data. The adapted versions of these tools are free to users and easily accessible for others who wish to explore early stimulation and child development in Tanzania.

Data was gathered through pilot surveys and observations of 170 caregiver-child dyads in Katavi as well as 11 focus group discussions with caregivers in Katavi and 12 focus group discussions with caregivers in Zanzibar. The focus group discussions in Zanzibar were added into the study to provide a contrast to the case of Katavi since the two regions are culturally different and represent vastly different levels of early childhood care and development services. Qualitative findings of the study provide a snapshot of early stimulation practices in both areas of Tanzania with regards to perspectives on parenting, feeding, play, education, communication and health and nutrition among parents of the youngest children in the region. Quantitative findings indicate that children's development in Katavi is most strongly associated with the presence of toys, hearing stories from a caregiver, being responded to verbally by a caregiver, and seeing a father or father-figure frequently.

The study finds that parents in Katavi and Zanzibar have various strengths when it comes to providing early stimulation to their young children. For instance, in Katavi, a majority of young children (71.1 percent) reportedly saw their father on a daily basis and in a majority of surveys (74.8 percent) caregivers were observed responding to their children's speech verbally. Both of these features are strong predictors of children's development scores. Additionally, in both Katavi and Zanzibar nearly all parents report talking to or singing traditional songs to their children and feel that their children understand them when they do so. Similarly, all parents in both regions report making toys for their children using locally available material such as corn husks, old socks and clay.

Findings highlight some gaps and resource constraints facing the development of children in Katavi region. For instance, while hearing stories is a positive predictor of children's development, only 9.4 percent of children in the Katavi sample had caregivers who told them stories. Similarly, although having toys was also significantly and positively associated with children's development, only 11.8 percent of the Katavi sample reported children having push and pull toys and 30.6 percent of the sample reported having role-playing toys at home. This gap existed in the case of books as well: only

2.9 percent of the children in the Katavi sample had 1-2 books at home while the vast majority of children had none.

These findings have important implications for programs promoting early childhood development and early learning in the region. The strengths observed within communities can be leveraged to bring about positive change in children's development. For instance, books can be produced for young children that contain the familiar stories and songs parents share with children. The children's familiarity with the content of these books will motivate and ease their access to the print material. As parents already have some skill in creating toys with local material, they can be further guided to create books, print material and other learning toys using locally available resources. This will relieve the burden of payment for parents as it will limit reliance on print material or toys acquired from shops while ensuring that the material being created is developmentally appropriate and fosters the child's cognitive development and early learning.

Findings indicate that there are strong opportunities for parent education to strengthen child development in the study regions. Given the high percentage of children who see their father on a regular basis, fathers and mothers can *both* be engaged in parenting programs and equipped with caregiving and nurturing strategies. There are differences in the perception of mothers' and fathers' roles in Katavi region where there is an overarching and persistent perception that early caregiving is primarily the mother's responsibility. This is not the case in Zanzibar, where early caregiving is seen as more of a shared activity among both parents. Some people in the Katavi focus group discussions express the sentiment that fathers are not as involved with children in this particular age group. This is a clear opportunity to raise awareness among parents about the importance of fathers' engagement with children 0-3 years of age in Katavi, especially since a quarter of children in the sample do not see their father or father figures regularly. There were no reported differences in early caregiving practices for boys and girls in either region. According to parent report, 18 percent of children in this age group in Katavi were spanked in the week before the survey and 5 percent were observed slapping or spanking the child during the survey. Parent education in Katavi must include positive parenting and positive discipline strategies with children age 0-3 years.

The study finds that there are no formal ECD services in areas like Katavi and Zanzibar – none of the parents in either region knew of an ECD service provider in their neighborhood. Findings show that the presence of preschools is uneven across regions. A majority of parents in Katavi did not know of a preschool in their neighborhood but most of the parents in Zanzibar discussed the presence of madrasa preschools in their neighborhoods. These madrasa preschools can serve as a model for the establishment of community centers or preschools in other areas of the country. In the meantime, given uneven preschool services, parent education programs for children between the ages of 4 and 6 years must focus on supporting children's emergent literacy and numeracy skills and help to prepare them for school.

This study highlights parent perceptions regarding child care, particularly in terms of health and nutrition. It outlines some local strategies and traditions used by parents in both regions when children are unwell. Health programs and those focusing on holistic development of young children can use this data to understand the local context and leverage the strength of already existing practices. Importantly, the study finds that home visits by health care workers is an effective strategy to deliver key health messages to parents in Zanzibar. However, coverage by health care workers

seems uneven since most parents in Katavi had not received visits by health care workers and could not name community sessions that focused on caring for young children whereas parents in Zanzibar reported receiving monthly visits by the health care worker and cited community sessions that focused on issues of early childhood. The strategy used by health care workers in Zanzibar can serve as a key example of health information delivery to other areas of the country such as Katavi.

Finally, this study shows that the definition of caregiver for young children must be expanded beyond the child's mother and father to include grandparents and other adults. This will include broadening the scope of early caregiving programs to other members of the family, particularly grandmothers, as they are cited as the most common form of alternative care in the study sites.

Overall, findings of this study provide an initial snapshot into the early stimulation and caregiving practices that exist in two very different regions of Tanzania. These findings can inform the development of early childhood care and development programs and policies in the regions and provide a basis for further study. Next steps of this study will require in-depth analyses of early caregiving practices with a nationally representative sample of caregivers and children in order to generalize findings more widely.

BACKGROUND

This report presents findings from a study carried out in two regions of Tanzania: Katavi region and Zanzibar. The mixed methods component of the study in Katavi adapted and piloted data collection instruments to generate information on early stimulation and parenting practices at home, and their potential association with the development of children aged 0-3 years. The qualitative-only component of the study in Zanzibar provides a contrast to the situation in Katavi since the two regions are culturally different and experience vastly different levels of early childhood care and development services.

The scope of this project was designed to support the World Bank Group's upcoming Investing in Early Years (IEY) Project¹ in Tanzania. Specifically, the proposed activities aimed to address knowledge gaps under the educational component of the planned early childhood development (ECD) interventions with the aim to generate knowledge as well as provide guidance for future work and advocacy on early stimulation. While it is imperative to acknowledge that findings of this study are indicative and not generalizable, the outputs generated through this project, including the set of tools adapted and tested in Kiswahili, are incredibly relevant to future potential studies and operations led by the World Bank and/or its partners in the region.

EVIDENCE ON EARLY STIMULATION AND ITS IMPACT

Stimulation plays a critical role in the process of brain formation. Early childhood stimulation is defined as providing young children with constant opportunities to interact with caring people and to learn about their environment from the earliest age². Children need stimulation and attention at an early age to enhance the impact of good health and nutrition.

Early stimulation interventions can enhance the impact of health and nutrition interventions in Tanzania. In a study³ of cost-effectiveness of responsive stimulation and nutrition intervention in Pakistan, findings verify that early childhood interventions that include responsive stimulation are more cost effective than a nutrition intervention alone in promoting children's early development.

Programs and information on early stimulation in Tanzania are lacking compared to any other body of ECD interventions. The 2012 World Bank SABER systems diagnostic report on ECD in Tanzania pointed out the lack of policy and programmatic focus on early stimulation⁴. It emphasized the absence of information on any examples of government and non-government initiatives for parenting education. The report shows that given the critical role parents and caregivers play in promoting healthy development of children, the government should consider purposeful incorporation of parenting and caregiver education for early stimulation into existing outreach mechanisms. As a follow-up to this recommendation, an important starting point would hence be to take a stock of existing early stimulation practices, policies and programs in Tanzania.

¹ The program development objective of the proposed operation is to improve coverage and quality of the early childhood development services with a focus on nutrition and early stimulation for the first 1,000 days in selected regions. The project is currently in pipeline and is expected to span 5 years starting 2019.

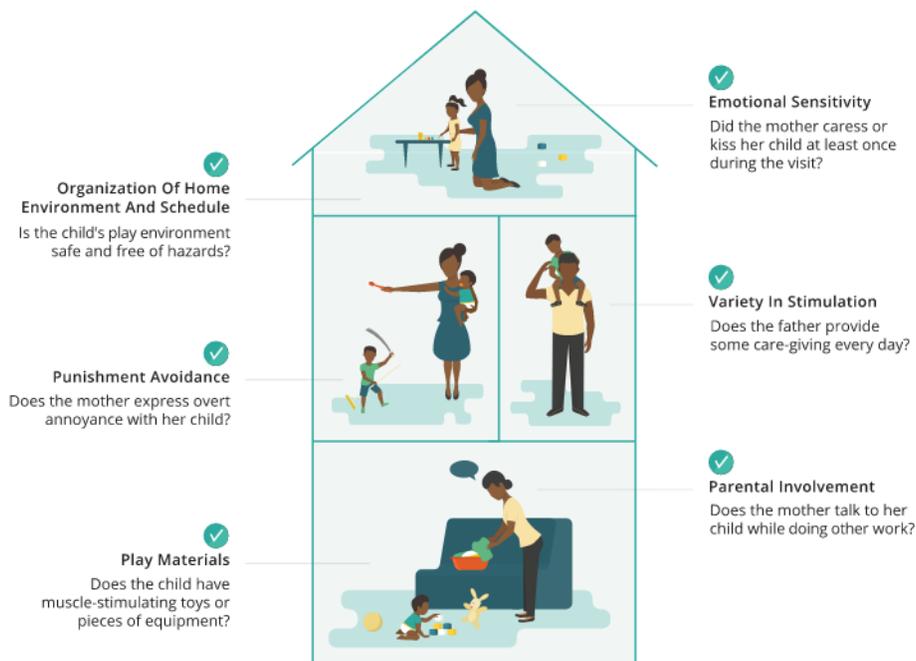
² Naudeau, S. 2011. Investing in young children. Washington DC: World Bank.

³ Gowani, S. et al (2014). Cost effectiveness of responsive stimulation and nutrition interventions on early child development outcomes in Pakistan. <http://onlinelibrary.wiley.com/doi/10.1111/nyas.12367/pdf>

⁴ World Bank. 2012. SABER-ECD: Tanzania. <https://openknowledge.worldbank.org/handle/10986/17641>

Reaching parents and caregivers through parenting support and home-visiting has proven to change the way parents interact with children and shape their home environments. Interventions and studies have employed adapted versions of observation tools such as Home Observation for Measurement of the Environment (HOME) coupled with educational home visits to improve early stimulation practices and enhance cognitive, schooling physical, as well as job market effects. Results from a 20-year longitudinal study⁵ of an early childhood stimulation program in Jamaica suggest that stunted children who received psychosocial stimulation benefited from greater parental investment, improvements in cognitive and psychosocial skills, and greater educational attainment. Most notably, children who received stimulation achieved on average 0.6 more years of schooling than participating children who did not receive stimulation, and were nearly three times as likely to have had some college-level education.

Figure 1: Intervened aspects of home environment under Jamaica early stimulation program (1986-2008)



Source: J-PAL, 2017⁶ (Adapted from Infant-Toddler HOME Inventory)

International evidence is unequivocal regarding the impact of children's communication environment on early language development, more than social background. Early language acquisition is a key area of child development that predicts academic performance and socio-emotional development later in life. Children whose spoken language is most developed by the age of two are better able to read at school (controlling for social class)⁷. Global evidence, including that from Tanzania by Children in Crossfire, 2015, shows that parent education programs to influence their communication with children in the first two years can have a significantly positive impact on children's early language acquisition.

⁵ JPAL. 2016. Early childhood engagement for lifelong learning.

<https://www.povertyactionlab.org/sites/default/files/publications/early-childhood-engagement-for-lifelong-learning.pdf>

⁶ JAPL. 2017. Early childhood stimulation. <https://www.povertyactionlab.org/policy-lessons/education-health-labor-markets-crime-violence-conflict/early-childhood-stimulation>

⁷ Roulstone, et al. 2010. Investigating the role of language in children's early educational outcomes. UK: DOE.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/181549/DFE-RR134.pdf

“Talk to your Baby Campaign” by Children in Crossfire in Tanzania (2015)⁸

An extensive research of parent-child interactions carried out in urban and rural areas of Tanzania from 2008 until 2014 indicated that mothers, in general, do not tend to talk to their babies until they begin to speak. In the light of research and programmatic evidence, this situation was recognized by the researchers and the government as a significant loss of property.

In 2015, Children in Crossfire, carried out an operational study of over a thousand families in Tanzania to estimate the impact of a short parenting program. The major findings were that the language environment was very poor among both groups; the number of words spoken to babies increased over time in both groups, but those who attended the training program increased significantly more than the controls; the language comprehension of the babies whose parents had been trained was significantly better than that of the control group babies. These findings show the current poverty of the language environment of infants and that intervention can change behavior. This research strengthened the case for a national ‘Talk to Your Baby’ campaign to include sustainable ways to disseminate key messages.

Effective early intervention can minimize potential developmental delays. International evidence⁹ has shown that quality intervention services to families with young children who are at risk of developmental delays or have mild disabilities have positively impacted outcomes across developmental domains including health, language and communication, cognitive development, and social and emotional developmental domains. Families benefit from early intervention by being able to better meet their children’s special needs from an early age and throughout their lives. Benefits to society include reducing economic burden through a decreased need for special education. However, in the context of sub-Saharan Africa, there is limited research and policy discourse¹⁰ on early intervention to address disability, given the lack of sufficient data on childhood disability and coverage rates of ECD services for children with disabilities.

Parenting education programs emphasize the role of parents in supporting children’s development, and strengthening or modifying parenting attitudes, beliefs, and practices. The term parent here refers to caregivers who provide primary care to children. When executed well, parenting programs¹¹ have been shown to (a) increase parent’s sensitivity and nurturing behaviors, (b) increase immunization rates, height and weight of children, (c) lead to greater safety at home and fewer clinic visits, (d) replace violent discipline techniques with effective nonviolent ones, (e) reduce rates of domestic violence. Consequently, these outcomes have been shown to improve emotional and linguistic abilities of young children, improve school readiness and academic performance, and increase children’s happiness and secure attachment to caregivers. To design parent education programs, the first step is to understand the relevant local cultural norms and parenting styles. At present in Tanzania, there is extremely limited research on contemporary parent styles and child outcomes for different groups of families.

Early stimulation and learning before preprimary intervention in developing countries remains one of the most under-researched areas within the field of ECD. This is particularly problematic as children in

⁸ Children in Crossfire. 2015. ZUMM: What is language environment of young babies in Tanzania, and can it, if necessary, be enriched? Draft Research Report. (December 2015).

⁹ NECTAC. 2011. The importance of early intervention for infants and toddlers with disabilities and their families. University of North Carolina. http://www.inclusivechildcare.org/resourcesWeb2/uploads/eifactsheet_2pg.pdf

¹⁰ McKenzie, J. et al. 2013. Intellectual disability in Africa: Implications for research and service development. *Disability and rehabilitation*, 35(20), 1750-1755. DOI:10.3109/09638288.2012.751461.

¹¹ Tomlinson, H. B. & Andina, S. 2015. Parenting education in Indonesia. Washington DC: World Bank.

developing countries may have the most to gain from interventions that promote early childhood stimulation. Poverty and lack of knowledge can negatively influence the time and resources spent by parents to play and communicate with, adequately feed, and educate their children, resulting in a less stimulating home environment. Children in poor households may thus start life at a disadvantage and can fall further behind their more advantaged peers throughout life.

This study is an effort to strengthen advocacy aiming towards policy and programs on early childhood development. It aims to contribute to the evidence base by generating country specific knowledge on early stimulation and parenting practices, as well as by adapting a set of relevant tools for measurement. This is particularly relevant in the case of sub-Saharan Africa where data on early stimulation is limited.

STUDY CONTEXT: KATAVI REGION, TANZANIA

Tanzania is home to over eight million children under the age of seven, with poor health and education indicators. About thirty nine percent of children under the age of five years are stunted, almost two-third of children between the age of five and six years do not attend preschool, and many of the country's children are not developing to their full potential. According to the World Population Prospects 2017, Tanzania's population growth rate remains at about three percent due to a persistently high fertility rate (5.2 births per women). At the current growth rate, the population is projected to double from about 55.5 million in 2016 to over 100 million by 2037.¹² To improve this scenario, the Government of Tanzania has committed to ECD policy as a matter of priority with actions including capacity building, monitoring and evaluation of services, and reaching communities and families. However, significant constraints in resource and quality control affect further development of policy and its implementation, leading to insufficient and poor-quality health and education services for the population. Lack of regularly updated minimal survey data on basic health, nutrition, and education indicators, as well as limited standards for provision of ECD services make enforcement in and compliance to quality assurance particularly challenging.

Table 1: Key indicators from Tanzania Mainland, Katavi, and Zanzibar region

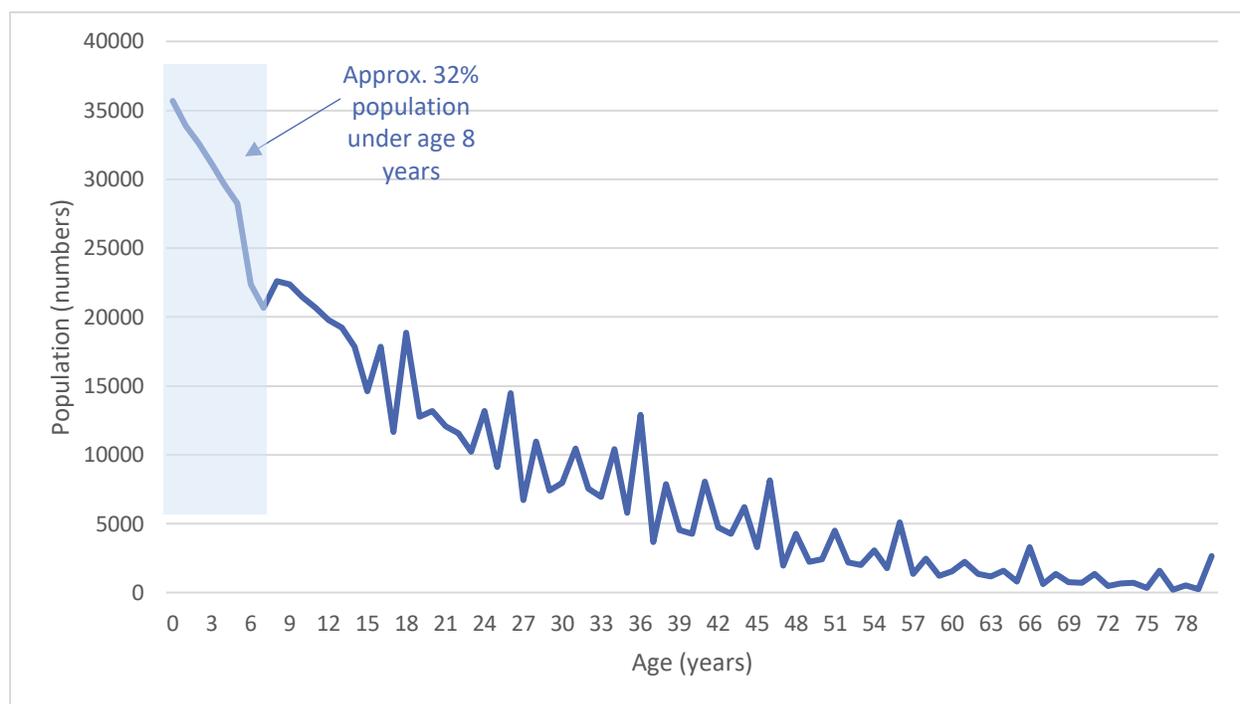
<i>Indicator</i>	<i>Tanzania Mainland</i>	<i>Katavi Region</i>	<i>Zanzibar Region</i>
Total population	50,144,175	642,567	1,467,477
Poverty (Population % living below basic needs poverty line, about \$1/day)	28.2% (2012)	38 (2012)	30.4 (2014)
Area (000 sq. km.)	883.3	45.8	2.5
Annual population growth rate	2.7%	3.2%	2.8
Adult literacy (2012)	71.5%	65.7%	80.0%
HIV prevalence (% tested positive)	5.1%	5.9%	1.0%
Under-5 mortality (deaths/1000 live births)	49	-	56
Stunting (under 5)	35%	39%	24%
Net pre-primary enrollment rate (3-5 years)	30.5% (2014)	-	27.5%
Birth registration of children (under 5 years)	24.6	3.9	91.7

Source: NBS (2016), DHS-Tanzania (2015-16), UNICEF (2016), GPE (2017)

¹² UN Population Division. World Population Prospects 2017. <https://esa.un.org/unpd/wpp/>

A third of the population in Katavi is under 8 years of age. In March 2018, the total estimated population of Katavi was 738,237 with over 50 percent population female. About 14 percent of this population is in 0-36 months age group, and 12 percent in 37-71 months age group. Overall, about 32 percent of the population in Katavi region falls under age 8 years (see figure 2).

Figure 2: Total population (number) of Katavi by age (year) in March 2018



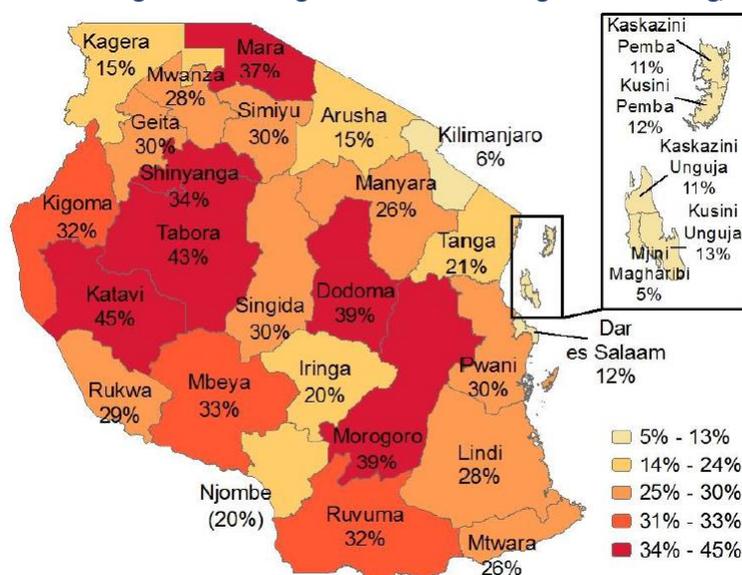
Data provided by NBS in March 2018

Katavi has low density, yet ethnically diverse, population compared to other regions of Tanzania Mainland. In 2012, three out of four district councils had an average household size of more than five persons. Only Mpanda TC had a slightly lower household size of 4.8 persons per household. The main indigenous ethnic group is the Bende. Others who form significant minorities are the Fipa, Konongo, Rungwa, Pimbwe, Sukuma, Hutu, Nyakerema, Maasai, Nyamwezi, Chaga, Nyaturu and the Ha.

Approximately 38 percent of households in Katavi live below the basic needs poverty line (estimated by NBS in 2012). The results of the 2012 Population and Housing Census at the regional level show that in Katavi, unprotected well was the main source of drinking water (30.6 percent), torch/rechargeable lamps were the most common source of lighting energy (36.7 percent) and firewood was the main source of cooking (67.4 percent).

The region experiences shortages of health practitioners, equipment and medicines. The major killer diseases in Katavi Region are malaria, anemia, pneumonia, clinical AIDS and other communicable diseases. The report from the District Medical Offices (DMOs) qualifies Katavi as among the few Regions with ever increasing rates of HIV/AIDS prevalence in the region. Teenage pregnancy rate is particularly high in Katavi, at 45 percent, highest in Tanzania (see figure 3). Similarly, stunting is severe

Figure 3: Percentage of women age 15-19 who have begun childbearing, Tanzania



Source: Tanzania DHS 2015-2016

According to the 2012 Population and Housing Census (Literacy and Education Monograph), Katavi Region had a literacy rate of 65.7 percent for a population of age five years and above and it was ranked 29th in the country. Data from the 2012 Population and Housing Census (Literacy and Education Monograph) show that 89.8 percent of the population in Katavi Region had primary education, 0.7 percent had training after primary education, 8.3 percent had secondary education, 0.6 percent had training after secondary education while 0.7 percent had university or other related education.

Katavi's economy continues to be dominated by the agriculture sector. According to the results of the 2007/08 Rukwa Region Agriculture Sample Census Report, the crop farming engaged 96 percent of economically active population followed by livestock keeping (0.7 percent) and fishing (0.5 percent). The remaining percentage (2.8 percent) was involved in other off farm economic activities such as trade and repairs. Agriculture contributes most of the region's cash income mainly from scale of maize, paddy, beans, sunflower and groundnuts. The main food crops grown in the region include paddy, maize, sorghum, sweet potatoes and cassava as the main subsistence crops. Tobacco is the main cash crop but because of surplus production some food crops like groundnut, sesame and beans are also marketed. Livestock provides the population with high quality protein products such as meat, milk and eggs. It also provides draught power, hides, skins and manure. In Katavi Region all these products are adequately supplied.

Contrast between the two study contexts: While Katavi was selected at the recommendation of IEY project team and the Ministry of Health, Zanzibar was purposively selected to provide a contrast to Katavi. The aim of selecting second study context (rather than remaining with one) was to present the situation of early childhood care and development in two vastly different regions of Tanzania. Zanzibar, as a region that is quite culturally different, and one with potentially greater access to ECD services¹³ than Katavi provides an appropriate case of a region where very different parent responses and conversations around early stimulation could be expected.

¹³ Under the impact of ongoing UNICEF/Save the Children intervention focusing on early health

OBJECTIVES

The purpose of the present study was to support the Investing in Early Years (IEY) mission in their priority project region in four ways:

- To adapt data collection instruments to measure early childhood development and the home environment of children aged 0-3 years
- To pilot tools to assess early caregiving practices (early stimulation) and children’s development between the ages of 0-3 in the study region
- To develop an effective training package for future studies exploring early stimulation in the region
- To provide a snapshot of early stimulation and parenting practices at home in the study region and the nature of their association with children’s development

The study aimed to explore the following research questions:

1. What early stimulation and caregiving practices are commonly used at home for children aged 0-3 years in Katavi region, (and Zanzibar) Tanzania?
2. What associations exist between early stimulation practices and children’s development in Katavi region?

SUMMARY OF METHODOLOGY¹⁴

The study employed a **mixed-methods approach** and included surveys and focus group discussions (FGDs) with caregivers as well as observations of interactions between caregivers and their infant children (see table below). The study sample was drawn from the most recent household survey done in Katavi by NBS in 2017. While Katavi was the focus region of this study, a set of FGDs were conducted in Zanzibar for qualitative comparison. For details of the study instruments, training, and sampling, please see the Annex.

Table 2: Stages of the pilot study

Study stage	Tool	Location	Sample size
Pre-pilot (Round 1)	Paper version of adapted survey tool	Dar es Salaam	10 caregivers
Pre-pilot (Round 2)	Digitized version of adapted survey tool	Peri-urban Dar es Salaam	20 caregivers
Quantitative study	Final digitized survey tool	Katavi region (Mpanda and Mlele)	194 caregivers
Qualitative study to accompany quantitative study	FGD	Katavi region (Mpanda and Mlele)	11 groups of caregivers
Qualitative study for comparison with Katavi qualitative study	FGD	Zanzibar region (Pemba and Unguja)	12 groups of caregivers

¹⁴ Please refer to the annex for details of the methodology and the instruments

The survey tool comprised of three sections of which two contained items from established and evidence-based instruments:

- HOME Inventory (Home Observation for the Measurement of Environment)-Short Form¹⁵
- CREDI (Caregiver Reported ECD Index)¹⁶

While there are records of CREDI being tested previously in Tanzania, no records were found of studies based on HOME in the country. Moreover, no record was found of a systematic study testing the relationship between early stimulation environment and the development of children in 0-3 age group.

ALPHA RELIABILITY OF HOME AND CREDI TOOLS

Analysis of the alpha reliability scores for both CREDI and HOME tools in the current study indicates moderate to strong reliability for both. This shows that the tools were appropriate to use in the study context.

Table 3: Alpha reliability scores of HOME and CREDI instruments (N=170)

Assessment Tool	Alpha reliability coefficient
<i>HOME</i>	
Observation variables only	.40
Response variables only	.59
Observation and response combined	.63
<i>CREDI</i>	
0-5 months	.90
6-11 months	.84
12-17 months	.86
18-23 months	.91
24-29 months	.74
30-35 months	.80

SURVEY SAMPLE (KATAVI ONLY)

A total of 194 caregivers in Katavi were surveyed. Initial analysis revealed discrepancies between children's birth dates and the corresponding CREDI age band for which data was entered. Cases with discrepancies¹⁷ were dropped from the sample for a final sample size of 170 caregivers and their children.

Survey households. Of the households in the survey sample in Katavi, 40.6 percent were in urban areas, 2.9 percent were in semi-urban areas, 50.6 percent were in rural areas and 7.7 percent were in remote areas. In a majority of cases (72.4 percent) the respondent lived in a residence alone but in some cases

¹⁵ Bradley, R. H., Corwyn, R. F., McAdoo, H. P., and Coll, C. G. (2001). The Home Environments of Children in the United States, Part I: Variations by Age, Ethnicity, and Poverty Status. *Child Development*, 72 (6), 1844–1867

¹⁶ Harvard School of Public Health. (2018). Caregiver Reported Early Childhood Development Instruments (CREDI). <https://sites.sph.harvard.edu/credi/credi-materials/>

¹⁷ Greater than one-month difference between child birth date and the corresponding age bracket for which CREDI information was gathered

(27.65 percent) the family of the respondent lived in a building occupied by other families as well. Neighboring families helped with childcare in 7.7 percent of the cases.

The average number of adult males and adult females in the households was 1.3. Most households in the sample consisted of mothers (97.1percent), fathers (86.47 percent), siblings (19.4percent), grandmothers (14.1percent) and grandfathers (11.25 percent).

Survey child's primary caregiver. The average age of the child's primary caregiver was 29.0 years. In a vast majority of cases (95.3 percent) the child's primary caregiver was the mother, while in some cases the primary caregiver was the father (1.8 percent), aunt (1.2 percent), or grandmother (1.8 percent).

In terms of education, 21.2 percent of mothers and 14.7 percent of fathers in the sample had received no education. Almost half (46.0 percent) of the mothers had completed standard 7 and 11.8 percent of the mothers had completed form 4 with the remainder having completed less than this level. Almost half of the fathers (47.6 percent) had completed standard 6 and 13.5 percent had completed a form 3 level of education with the remainder having completed less than this level.

Language spoken most often in survey homes. The languages spoken most prevalently in the homes were Kiswahili (70.6 percent) and Kisukuma (22.4 percent).

Survey focal children. Focal children within the total sample of 170 fell within one of six age bands. These age bands are presented in the table below.

Table 4: CREDI Age bands for focal children in survey sample (N=170)

Age Band	Percentage	Number
0-5 months	19.4	33
6-11 months	19.4	33
12-17 months	24.7	42
18-23 months	8.8	15
24-29 months	14.1	24
30-35 months	13.5	23
Total n		170

There were slightly more male focal children (51.8 percent) than female focal children (48.2 percent) in the sample.

Birth certificate and clinic card in survey homes. Only 13.5 percent of the sample of parents had the birth certificate for the focal child at the time of the survey, citing lack of knowledge about where to get it (36.1 percent), high associated costs (12.4 percent), having lost the certificate (1.8 percent) and other unspecified reasons (57.0 percent) as reasons for not having this document available.

In contrast, most parents (88.8 percent) had the focal child's clinic card available at the time of the survey. Those who were missing the clinic card cited having lost the card (4.1 percent), other unspecified reasons (5.3 percent) and not knowing about the card (1.8 percent) as reasons for not having this document.

FINDINGS I: COMMON EARLY STIMULATION AND CAREGIVING PRACTICES

Research Question 1: What early stimulation and caregiving practices are commonly used at home for children aged 0-3 years in Katavi region, Tanzania and Zanzibar, Tanzania?

EARLY STIMULATION AND CAREGIVING PRACTICES (KATAVI SURVEY)

The following table summarizes the responses gathered on HOME-SF interview and observation items in the administered survey.

Table 5: Early stimulation and caregiving practices in the survey sample (on HOME-SF survey items)

In the restricted sample of 170 children:	
<i>Presence of children's books in the home</i>	5 (2.9%) had 1-2 books in their household (while everyone else had 0 books)
<i>Frequency with which caregiver tells child stories</i>	16 (.09%) had parents or caregivers who told them stories.
<i>Frequency of seeing father/male guardian</i>	121 (71.1%) saw their father or male guardian on a daily basis.
<i>Presence of toys</i>	52 (30.6%) had at least one soft, cuddly, or role-playing toy and 20 (11.8%) had one or more toys that allow them to push and pull.
<i>Frequency of spanking</i>	31 (18.2%) were reportedly spanked in the week prior to the survey.
In a restricted sample of 169* children	
<i>Safety of child's environment</i>	163 (96.4%) were considered (by the enumerators) to be in a safe environment, free from hazardous objects during the observation.
In a restricted sample of 164** children	
<i>Caregiver speaking to child spontaneously</i>	121 (73.8%) had mothers who spoke spontaneously to them twice or more (excluding scolding), during the course of the observation
<i>Caregiver caressing child</i>	121 (73.8%) had a mother or guardian who caressed, kissed or hugged them at least once during the observation.
In a restricted sample of 159*** children	
<i>Caregiver responding verbally to child's speech</i>	119 (74.8%) had a mother or guardian who responded to their speech during the course of the observation. In the age band of 12-17 months (41 sampled children), 30 (73.1%) children had a mother/guardian who responded to their speech during the course of the observation. Similarly, in the age band of 30-35 months (23 sampled children), 21 (91.3%) children had a mother/guardian who responded to their speech during the observation.
In a restricted sample of 150**** children	
<i>Caregiver slapping or spanking child</i>	7 (4.7%) had mothers/guardians who slapped or spanked them during the observation.
<i>Caregiver providing toys or interesting activities for child</i>	25 (16.7%) had a mother/guardian who provided toys or interesting activities for child during the observation.
In a restricted sample of 138***** children	
<i>Caregiver restricting child from exploring</i>	22 (15.9%) had a mother/guardian who interfered with child's actions or restricted them from exploring during the observation.

*1 case with missing data; **6 cases with missing data; ***11 cases with missing data;

****20 cases with missing data; ***** 32 cases with missing data

EARLY STIMULATION AND CAREGIVING PRACTICES (KATAVI AND ZANZIBAR FGDS)

Parent descriptions of early stimulation and caregiving practices captured in the FGDs are presented in the following categories: 1) perspectives on parenting, 2) alternative caregiving 3) play, 4) communication, 5) education 6) health, and 7) nutrition. Findings from Katavi are presented first. Any differences found in Zanzibar are highlighted in a box below.

PERSPECTIVES ON PARENTING AND RESPECTIVE ROLES

In 3 of the 11 FGDs conducted in Katavi, respondents felt that the mother had the primary responsibility of caring for young children, in 6 groups respondents felt this responsibility was shared and in 1 group, women felt this was the mother's role whereas men felt that this was a shared responsibility of mothers and fathers.

Parent roles. There were some differences between perceptions of the roles that mothers and fathers play in the lives of the youngest children. The main features of their respective roles are presented in Table 6 below.

Table 6: Perceptions of mother's and father's role in early caregiving

Mother's Role	Father's Role
<ul style="list-style-type: none"> • Ensuring home environment and child are clean • Feeding the child nutritious food • Breastfeeding • Meeting child's needs • Taking care of herself during pregnancy • Ensure that the child is well fed, sleeping in a good place, safe, protected • Teaching the child right from wrong, • Loving and valuing the child • Teaching and instructing the child to go to school • Changing the child • Washing the child's clothes • Protecting the child from danger • Taking the child to the clinic • Ensuring the child's good health 	<ul style="list-style-type: none"> • Protecting the family • Ensuring food, house to live in, clothes for the family, money for school and hospital visits • Supporting the child in learning good manners • Providing for the mother of the child to have healthy children • Head of the house • Playing with child • Soothing child • Taking child to clinic • Scolding child to discipline • Protecting the rights of the child • Identifying problems • Teaching the child • Telling the child stories • Eating with the child • Telling the child "I am your father"

Similarly, there were some differences in respondents' perspectives around what constituted a "bad mother" and what constituted a "bad father". The main features of these respective definitions are presented in Table 7 below.

Table 7: Perspectives on what makes a bad mother and a bad father

Definition of a bad mother	Definition of a bad father
<ul style="list-style-type: none"> • Does not care about family • Does not provide for her children 	<ul style="list-style-type: none"> • Abusive in speech and action • Not available to meet his family's needs for love and care

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- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Does not know where the child is or whether he has eaten or bathed • Uses abusive language • Is selfish • Runs from her child • Does not feed the child • Does not go to church • Screams at the child • Beats the child | <ul style="list-style-type: none"> • Spends all his money on beer • Impregnates young girls and leaves them • Commits infidelity • Allows wife to wash clothes with no soap • Leave early and comes home late • Does not care what family eats • Acts like one of the children • Does not leave money for food • Drinks beer and is a drunkard • Lazy • Beats his wife in the presence of children • Has no love for his children • Does not ask about his children • Believes that the child is the mother's alone • Has no family values • Speaks harshly to children |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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Engagement of fathers. Most respondents indicated that there was no difference in a father's participation in childcare for boys and girls. However, in one group respondents shared that girls needed more care and affection than boys, in a second group fathers were seen as having limited participation in the lives of children under the age of 3 years and in a third group, respondents shared that some fathers may care more about boys than girls because they feel that girls would grow up and be "married off" so were seen to have "no value". In a fourth group, parents shared that the participation of a father in the lives of his children was dependent on the mother:

"It really depends on the mother and how she chooses to present her daughter to the father. If the mother decides that she will handle all things to do with the girl child, then the father will be distant with his daughter."

Parent perspectives on raising children well. Respondents were asked to explain what was important to do for children between the ages of 0 and 3 years in order to ensure that they grow well. They were also asked to elaborate on what type of care would help to raise healthy, smart and kind children.

Responses provide by parents included:

- Breastfeeding the child when young (exclusively for first 6 months, at least 30 minutes at a time)
- Taking the child to hospital immediately if he/she is unwell
- Providing child with nutritious food (including fish soup, potatoes and bananas)
- Teaching them to respect, love, and be kind to everyone
- Teaching them language
- Providing them with education
- Allowing them to eat and play with other children so they learn to share
- Encouraging them to play and providing play materials
- Spanking/yelling at children to discipline them
- Not being harsh to children
- Making sure that children sleep for at least 3 hours per night
- Ensuring that children are clean
- Allowing the child to try new things
- Pointing to things and naming them out loud

- Making sure that children are sleeping in a net that has been soaked in mosquito repellent
- Teaching child to welcome guests and help them to carry things inside
- Modeling good behavior and your language
- Spending time with child and guiding them to grow

In one group, parents shared:

“When a guest comes, teach the child to show them respect and welcome them. Teach the child to give the guest a seat, kneel, and give the guest water. Teach the child simple ABC’s at home. When the child is eating something tell the child to break off a little bit and share with their sibling and friend. Tell the child not to walk and eat at the same time.”

IN CONTRAST: Perspectives on parents and respective roles in Zanzibar

In Zanzibar, there seemed to be a greater expectation that fathers would help with the household chores and be present to provide spiritual guidance to their children. In one group parents mentioned that the father’s role was:

“The same as the mother’s role except for breastfeeding.”

ALTERNATIVE CAREGIVING

Respondents in all of the groups in Katavi region indicated that there were no ECD services available close to their homes. All respondents felt that in case they had to go outside of the home and were not able to take the child along, they would leave the child with the other parent, another family member or other trusted adult such as a neighbor or house helper because this would ensure that all of the child’s basic needs would be met. The family members mentioned most often as alternative caregivers were the child’s grandmother and aunt. In one group a grandmother’s home was cited as the most preferable caregiving option because:

“...you are sure of the quality of care you can expect and [grandmothers] have experience. It is safe, there is love for the child, there is food, a place to sleep, it is close to a health facility and it is safe for the child to roam around.”

In another group, parents indicated that leaving the child with a grandmother as opposed to the grandfather was better because *“the grandfather cannot wash the baby’s bottom.”*

In two of the FGD discussions, parents mentioned that leaving a very young child alone with another adult for a few hours would be okay but that if the parent was going to be out all day, it was better to take the child along. In one group, parents mentioned that it was best for the child to stay in their own familiar home environment and ask the caregiver to come to the home and watch the child.

When prompted to speak about their expectations of an ideal caregiving situation, parents generally indicated that it would be a place where their child would be kept safe, fed and loved. In one group parents indicated that they would not expect their child to learn in an alternative caregiving setting because alternative caregivers are old. In some cases, parents also mentioned that they expected their child to be disciplined and learn how to share with other children. In four groups, parents indicated that they expected their child to be taught games and in two groups parents indicated that they expected their child to learn how to pronounce words and basic vocabulary in a caregiving situation.

IN CONTRAST: Alternative caregiving in Zanzibar

Parents in Zanzibar reported that there was no ECD facility close to them and that the most preferable place to leave their children would be with a grandmother, followed by the child's sibling, a neighbor, or other relative. However, although most groups mentioned a grandmother as the idea alternative caregiver, all groups reported leaving children with siblings or other children in the neighborhood when they were obliged to leave the child behind.

One additional expectation of alternative caregiving that parents in Zanzibar expressed was the expectation that a caregiver would provide their child with guidance on spirituality, teach them how to pray, teach them religious poems (*kasida*) and remind them to pray.

PLAY

All of the parents indicated that their children played with various objects such as balls, dolls, cans, bottles, bottle tops, flutes, bells, cars, car and bicycle tires, marbles, toy guns and baby walkers. One parent mentioned her child placing a small corn cob on her back and pretending it was a baby. In some cases, parents indicated the types of toys children played with at various stages. These are presented in Table 8 below.

Table 8: Parent report of toys and games children play at different ages

Age	Toys/Games
6 months	Toys with bells, boxes, dolls, cars, flowers, sand, anything he/she finds
1 years	Doll, car (if boy), car made of clay, parent's phone, ball, cans, tin can, cup, box
2 years	Build a house, ball, pretend to cook, push car, role-play (pretend to cook like mother using tin cans, if girl), run outside, sticks or a small car that can be dragged on a stick, car made of clay
3 years	Scribble in notebooks, pretend to cook (if girl), ball or car (if boy), ring from a tire, with other children, push car, role-play (pretend to cook like mother using tin cans, if girl), run outside, swing, drag a car on a stick

Some parents indicated having made toys for their children themselves using locally available material. These are presented in table 9 below.

Table 9: Local material parents use to make toys for their children

Toy	Material Parent Used
Ball	Paper, plastic bags, old socks, cloth
Car	Boxes, corn husks, stalks, clay, bottle caps, stones (carved to make wheels)
Animals	Clay
Doll	Corn cob, clay
Airplane	Clay
Toy gun	Clay/mud
Bicycle	Wire
Kite	Sticks/grass

Most of the parents indicated that their children enjoyed playing with these toys. One parent indicated that her child was happy with the clay airplane and doll until she saw the toys other children had and wanted those instead.

Some parents indicated that they bought toys such as dolls, balls, cars and planes for their children from local hawkers or shops. In purchasing toys, they considered the safety and cleanliness of the toy, the age of their child, what other children in the neighborhood played with and what their child seemed to want. When asked which play activities children enjoyed, parents in 5 out of the 11 FGDs indicated a gender preference and reported that boys enjoyed playing with balls, cars and guns and that girls enjoying playing with dolls, pots and pans, and pretending to cook and broom.

IN CONTRAST: Play in Zanzibar

Parents in Zanzibar also mentioned using locally available material to make toys for their children. In addition to the types of toys mentioned by parents in Katavi (e.g. balls, dolls etc.) parents in Zanzibar mentioned making huts, boats, and watches for their children to play with. As well, parents in Zanzibar mentioned the use of shells, coconut husks and coconut leaves to make toys (specifically huts, watches and baskets). Some parents in Zanzibar also shared that their children participated in role-playing around fishing and fish vending.

COMMUNICATION

Parents in all of the FGDs indicated that they spoke to their child. Most parents felt that parents should begin speaking to their child at birth and some parents in one group believed that the child could hear in the mothers' womb. One woman shared the belief that a child in the womb may reject the name given to him or her and that this may contribute to challenges with the pregnancy that could only be relieved by changing the name. Parents in one group felt that because parents have the urge to soothe the child at birth, "they are simply unable to stop themselves from talking to their child." In contrast, in one group parents said they only spoke to the child after the child was 7 months old.

Most parents indicated talking to their child during breastfeeding to encourage them to feed well, including telling the child "nyonya mama" (eat mama). Other words that parents reported saying to their child included mimicking the child's babble, saying the child's name, using two syllable words like "mama" or "baba" or giving the child simple commands such as "go get water", "hush baby", "look at this object", "greet the elders", "stop it or you will get dirty", "stop", "be careful" and "come here".

Parents who reported speaking to their child said that they did so because it helped the child to learn the language, built a relationship between the parent and child and was a way to show them that they were loved and not alone. Parents who spoke to their child felt that the child could understand them. For instance, one mother said that when she spoke to her infant child during breastfeed, the child stopped to look at her. Another parent shared that a child who was following her to the focus group discussion session was asked not to follow so the child stopped and went back inside the house.

Most parents indicated singing songs to their children although in the mixed group, only the women (and not the men) reported doing so. Parents who sang to their children reported doing so because they felt it encouraged their child to eat or sleep, helped to develop a close relationship with the child, made the child happy and energized, was a way to show closeness and affection, and helped their child to learn the songs. The songs sung to children included songs parents had learned from their elders and neighbors, in church, at school or madrassa, or on the radio. These included:

- Stand up sit down
- Ladede ladede (a song about animals in the forest)
- Maua mazuri (beautiful flowers)
- Baba huyo (here comes daddy)

- Mapera mapera (guava guava)
- Simama dede (stand straight on your own feet)
- Baby don't cry
- Grow and be a peaceful person
- National Anthem of Tanzania

IN CONTRAST: Communication in Zanzibar

Parents in all of the groups in Zanzibar reported speaking to their children and parents in all but one group reported singing to their children. While parents in most of the groups reported sayings things such as “come here”, “I love you” and “well done” to their child, in 3 of the 8 groups, parents reported more substantial interaction including telling their children stories about the past, responding to their questions, or talking “a lot of things about life”. Parent in all of the groups said that they spoke to their children to teach them either about life (culture, religion and family), language (grammar, communication) or manners (by praising good deeds). Parents in all of the groups felt that children should be spoken to from birth. Those in one group indicated that speaking to a child since birth was natural: *“automatically you start saying things like look at those cute eyes of yours, daddy will be happy to see you, mommy loves you.”*

Most of those who sang to their children sang in Kiswahili while parents in one group reported singing in Arabic. All parents felt that their children understood them when they spoke or sang and indicated their comprehension by either smiling or dancing. Parents reported that they sang to their children to soothe and entertain them, teach them about their language or to teach them the Quran so that they grew spiritually. Parents reported having learned songs from their own parents, schools, madrassas or the radio. Some of the songs parents reported singing to their children included:

- Mau mazu yapendeza (beautiful flowers are attractive)
- Jua limetua lala lala (The sun has gone down to sleep)
- Lala salamaKasida (Sleep well)
- Mabata wadogo wadogo (The little ducks)
- Oho ho mtoto nakubebeleza ulale (Soothing you little baby go to sleep)

PRESCHOOL EDUCATION

None of the parents in the groups in Katavi knew of any preschools for children in their villages. However, the findings from Zanzibar FGDs were different:

IN CONTRAST: Preschool education in Zanzibar

All of the parents in Zanzibar reported the presence of a preschool or madrassa in their village. In the madrassas, children were taught Quran (including in some cases the Arabic language, dictation and calligraphy) and moral values so that *“they could be better adults”*. One group explained that in madrassa preschools, *“children pray, play, sing and learn together.”* Another group described preschools in their villages in the following way:

“Madrassas are located in the village at a walkable distance. The children attend to learn religious values as well as play and interaction with other children from the same neighborhood. This class accepts children from the time they are 3-years-old. Private preschools on the other hand take children starting from age 4 who attend play-based teaching and learning sessions. Some have a feeding program and some don't, depending on the willingness and ability of parents to contribute.”

HEALTH

None of the parents in Katavi had received a home visit from a healthcare worker to share health information with them. In one group, parents mentioned that healthcare workers came to a central location in town to deliver health messages but that these messages were not specific to young children.

Illness. All parents reported specific strategies to use if their child seemed to be sick. These included:

- Soothing the child
- Being close to the child
- Giving child his/her favorite meal
- Bathing the child with cold water
- Giving the child water
- Giving the child porridge
- Search the child's body for the source of pain

Parents also mentioned how they managed specific illnesses. Specific strategies used when the child had a fever, diarrhea or the flu included. These are summarized in Table 10 below.

Table 10: Parent report of strategies used to manage children's fever, diarrhea and flu in Katavi

Illness	Treatment
Fever	<ul style="list-style-type: none"> • Give child panadol • Reduce items of clothing the child is wearing • Give child a bath • Sponge child with cold water/wet cloth • Give child a lot of water to drink • Pray • Boil miyonso leaves or kaselenge leaves and administer into the child's anal canal • Give child their favorite meal
Diarrhea	<ul style="list-style-type: none"> • Boil wheat flour, sugar and water and feed to child • Mix salt and sugar in water and feed to child • Give child flagyl pill • Give child a lot of water to drink • Give child traditional medicine • Give child guava tree leaves boiled in salt • Give child medicine administered into the child's anal canal
Flu	<ul style="list-style-type: none"> • Massage child's face and nose with warm water/cloth • Give child a lot of water • Massage baby's face with warm hands heated over a fire • Give child pilton or vix medication • Give child panadol • Suck the mucus out of the child's nose • Put oil on or in the nose of the child • Boil water with sodium carbonate salt for the child to drink • Give child a cold bath

Traditional Healing Practices

When a child was unwell, parents reported consulting with the child's grandmother, neighbor, traditional healer, or other adult who had children on how to take care of the child. In one case, a mother reported that her child was unwell and would not stop crying because he had rejected his name. Once a ritual prayer was conducted and the child's name changed, the child's improved. In another case, a mother

reported that her mother contacted a traditional healer for advice, whenever her child did not react well to medication that has been prescribed at a clinic. Parents shared a number of traditional practices (including ritual incisions and wearing amulets for protection against witchcraft) that were learned from elders that may be used to treat various ailments their child was experiencing. These are summarized in Table 11 below.

Table 11: Children's ailments and traditional practices used to treat them in Katavi

Ailment	Traditional Treatment
General (no specific ailment mentioned)	<ul style="list-style-type: none"> • Give child raw honey • Cove the child in elephant dung
Flu	<ul style="list-style-type: none"> • Give the child water often • Suck the mucus out of the child's nose
Problem with child's stomach	<ul style="list-style-type: none"> • The mother should chew ndagulago leaves and then give them to the child or crush ndagulago leaves and mix them with water for the child. • Feed the child mnyonso leaves or flush the child's anal canal with a mixture of these leaves and water • Boil mitishamba leaves in hot water and give child to drink or flush this mixture into child's anal canal using a straw like plant or tool • Boil roots of a papaya plant and give child to eat • Give the child aloe vera to drink
Child has epilepsy and keeps fainting or gets startled often	<ul style="list-style-type: none"> • The mother should remove her undergarments and fan the baby's face with it or hit the child with it • Amulets worn on the baby's wrist prevent convulsions • Place child under the bed and urinate on them • Mix lengonengo roots with water and give this mixture to the child
Diarrhea	<ul style="list-style-type: none"> • Boil kaselenge leaves with water and when cool flush the baby's anal canal with this mixture and the baby should be fine within one hour • Mix soap and salt with water and flush the baby's anal canal with this mixture. • Mixture of mnyoso leaves with water • Amulets worn around the child's waist prevent diarrhea • Place honey or tomato juice in the child's anal canal • Feed child mixture of ground cashew nut leaves and water and administer this mixture into the child's anal canal
Fever	<ul style="list-style-type: none"> • Soak the child in cool water • Crush garlic and put it on the child's head and joints • Give the child fish oil from local shop • Make a juice by straining Lukalanga leaves and bathe the baby in it as well as have the baby drink this mixture. The baby will feel better and fall asleep. • Give the child a spoon of aloe vera • Give child mavunja homa (breaking fever) leaves in cold water without boiling • Chant holy words over the child and spit on the child • Chant prayers in Arabic • Bathe child in holy water from church or give child holy water to drink
Child urinating blood	<ul style="list-style-type: none"> • Boil the roots of a hedge plant (michongoma) and give it to the child
Eye problems	<ul style="list-style-type: none"> • Mixture of mnyoso leaves in water
HIV	<ul style="list-style-type: none"> • Mixture of mnyoso leaves in water
Typhoid	<ul style="list-style-type: none"> • Mixture of mnyoso leaves in water

Vomiting	<ul style="list-style-type: none"> • Amulets worn around the child's neck prevent vomiting
Child chews tongue	<ul style="list-style-type: none"> • Boil mbeko leaves and feed to child
Child has green veins at birth	<ul style="list-style-type: none"> • Wrap child in leaves of a banana tree or boil the roots of a banana tree and feed this to the child
Child's belly button is still healing	<ul style="list-style-type: none"> • Cover it with cloth material so that when the umbilical cord falls off it does not affect the child's sex organs
To ensure that a male child's seeds in their genitals come down to the appropriate place	<ul style="list-style-type: none"> • Boil the roots of a michongoma (hedge tree) and feed that to the child
Child has hiccups	<ul style="list-style-type: none"> • Take a small piece of thread from the garment that the child is wearing and place it on the child's forehead • Give child breastmilk or water

Many parents gave examples of times when the traditional methods recommended by elders had helped their child to feel better. For instance, one mother reported that her child who had psychological issues was better after 3 days of prayer. A second woman reported that her child's legs did not work well and someone advised her to boil the leaves of a *mitishamba* plant, dip a piece of cloth in the mixture and massage her child's legs with them. After a while of doing this, her child was able to walk properly again. A third mother related that her child could not lift his tongue to breastfeed properly. She used the plant of a certain leaf to make an incision under the child's tongue in order to help him lift it and he was able to breastfeed properly after this. Another shared that her child whose stomach would get full too quickly (after only a few bites) was taken to church for special prayers. After this treatment, recommended to her by friends, her child was healed of his ailment.

IN CONTRAST: Health in Zanzibar

All of the parents in Zanzibar reported having a healthcare worker visit them at home on a monthly basis to give them information about healthcare including regularly clinic attendance, family planning and infant feeding. Some groups explained that the healthcare workers also conducted regular monthly group sessions in the communities where different topics related to health were discussed. Parents explained:

"On a monthly basis we get visits from the healthcare workers who promote the importance of breastfeeding, visiting clinic during pregnancy and throughout the child's life through regularly monthly visits and whenever the child feels unwell. They provide information on safe delivery, preparation for the coming baby. They also follow-up on environmental sanitation, nutrition and hygiene in the households".

All of the parents appreciated the support of the health care workers. Parents in one group shared, *"It feels great to know that we have people with skills and knowledge to support raising our children well"*. In another group parents added: *"We feel supported appreciate the knowledge and reminders to do the right things that we occasionally forget as sometimes we are busy and cannot keep track of everything and do these things right."*

The health care workers and local clinics were the parents' source of information for vaccinations and all of the parents in the groups reported that their children had received vaccinations since birth. In all of the groups parents shared that the vaccinations were important to prevent illnesses, in 3 groups named specific diseases that they believe vaccinations helped to prevent. These included tuberculosis, polio, diarrhea, pneumonia, and *sulua*. In 3 groups parents were aware that children needed a total of 9 vaccinations.

As well, parents in all groups reported taking their children to the local health clinic once per month. Although none of the parents knew their child's current height, parents in a majority of the groups knew their child's current weight because it had been measured at the health clinic.

As in Katavi, parents in Zanzibar also offered specific strategies used when children had the fever, flu or diarrhea. These are listed in Table 12 below.

Table 12: Parent report of strategies used to manage children's fever, diarrhea and flu in Zanzibar

Illness	Treatment
Flu	<ul style="list-style-type: none"> • Massage coconut oil on forehead and nose • Black tea with ginger, spices and lime
Fever	<ul style="list-style-type: none"> • Panadol • Black tea, spices and lime • Resting in the shade with fresh air • Massage head with warm cloth • Do not use perfume
Diarrhea	<ul style="list-style-type: none"> • Give child mixture of salt, sugar, water and coconut water • Give child mixture of uwanga (wild root), sugar, water and salt • ORS • Wheat porridge • Septrine drug

All parents reported going to the clinic if their child was ill but consulting with elders until medical treatment could be sought. The advice of elders included giving the child Panadol, herbs and spices (such as lemon tea), praying for the child, and blessing the child's drinking and bathing water with *dua* (prayer). All parents noted that the traditional strategies provided temporary relief and complemented but did not take the place of medical treatment.

NUTRITION AND FEEDING PRACTICES

Breastfeeding. Parents who were breastfeeding reported that they knew the child had fed sufficiently when she stopped sucking, became playful, fell asleep, began to burp or spit up, turned her head away and let go of the breast, bit the mother's nipple with her gum, or when her stomach appeared to have gotten big.

Solid food. Parents indicated that children were exclusively breastfed in the first six months of life and that following this, a nutritious porridge made with soy, ground nuts, rice, and sugar was introduced with a spoon or a cup. Parents indicated the following items when describing their young children's diet: Fruits, Vegetables, Ugali (made of maize flour), Fish, Beans, Bean soup, Rice, Peanuts, Eggs, Milk, and Soy.

Feeding practices. All parents indicated that their child would either not eat or eat an insufficient amount if they were not monitored during meals. Most parents indicated that very young children ate separately from the rest of the family because feeding them required special attention and because their food could not be mixed with the food of adults (for instance mixing raw meat with the child's milk). In some cases, several young children were reported to eat together, separately from adults.

Some parents indicated that child would only sit still and eat in case they were hungry but otherwise wandered around and had to be followed and enticed to eat (with a game, for instance). Other parents reported that their child was not allowed to wander during meal time and had to sit still to eat. Parents in one group shared,

“It depends on the child. Some children sit still and eat. Some do not sit still so you must sit them down and threatened to spank them in order for them to eat. Others need to see you eating before they will eat.”

In cases where a child may refused to eat, parents indicated using different strategies to encourage them to eat such as: forcing the child to eat, giving the child something different to eat, feeding the child at different intervals, promising the child a treat if he/she eats, feeding the child later, telling the child *“tamu tamu”* (tasty, tasty), pretending to eat the food and showing the child how delicious it is, singing to the child, telling them that other children are eating or using encouraging words such as, “good boy, you will grow strong when you eat a little more.”

In three groups, parents mentioned that children (particularly those who usually eat well) may not eat or finish their food due to illness and that parents should check to make sure that their child was not sick before forcing them to eat. Parents in one group spoke about a strategy of inserting a straw-like tool with natural herbal medication on it into the child’s anal canal to cure them of any disease that may be negatively impacting their appetite.

IN CONTRAST: Nutrition and feeding practices in Zanzibar

Parents in half of the groups in Zanzibar shared that children were not exclusively breastfed. One group offered that this may be due to mother’s poor diet and another mentioned that the number of women breastfeeding was on the rise since community volunteers began working in the neighborhoods and stressing the importance of breastfeeding. Parents shared that breastfeeding mothers stopped breastfeeding when the child turned 2 years of age or if the mother became pregnant again. One group mentioned that this was based on religious requirements. Breastmilk was supplemented with a porridge (made of cassava flour, coconut milk, nuts, millet and milk), fish soup, meat soup, mashed plantains, ugali, vegetables and fruit.

Parents reported that children would begin eating before the rest of the family and later join the family (as it took a long time to feed children). Although most parents reported children were not allowed to wander around while they ate, many shared that this is usually what happened as it was difficult for children to sit still.

FINDINGS II: ASSOCIATIONS BETWEEN CHILD DEVELOPMENT AND EARLY STIMULATION PRACTICES (KATAVI ONLY)

Research Question 2. What associations exist between early stimulation practices and children’s development in the region?

Figures 4 and 5 below graphically portray the significant associations found between early stimulation and caregiving practices and children’s development scores.

Figure 4: Association between early stimulation and caregiving practices (as measured by HOME response items) to children’s development scores (as measured by CREDI)

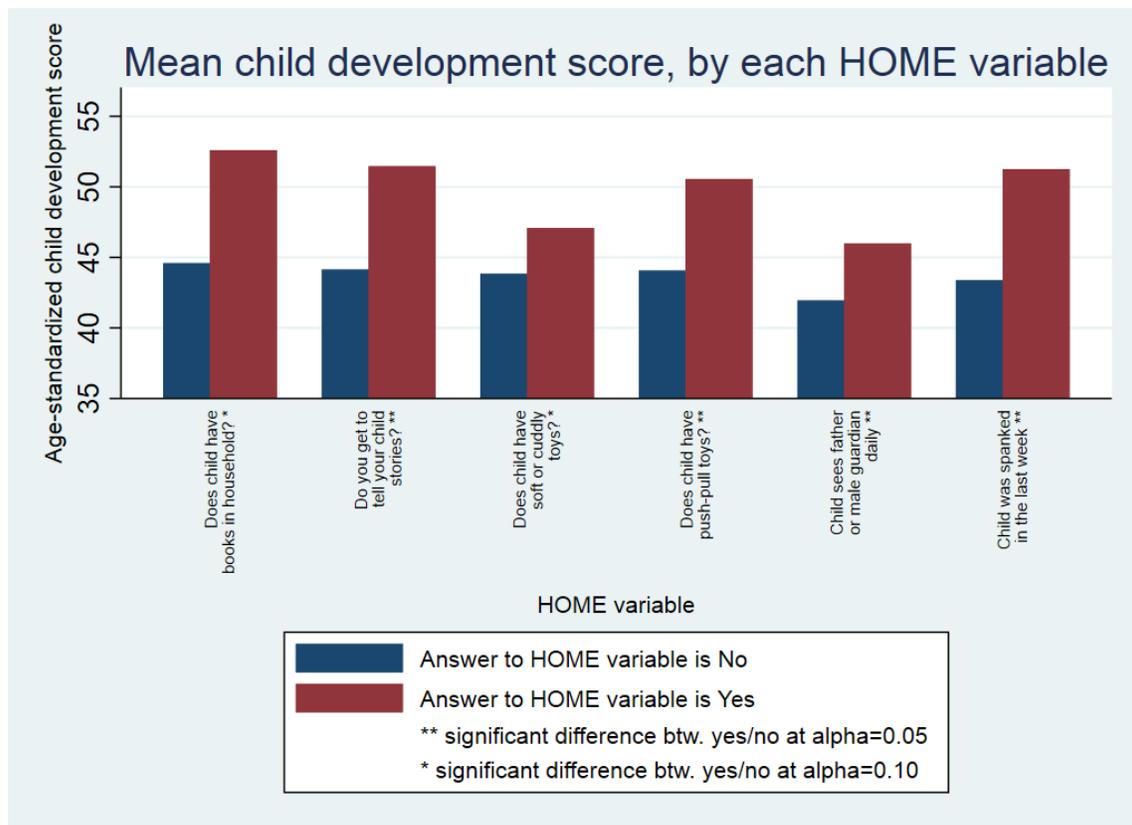
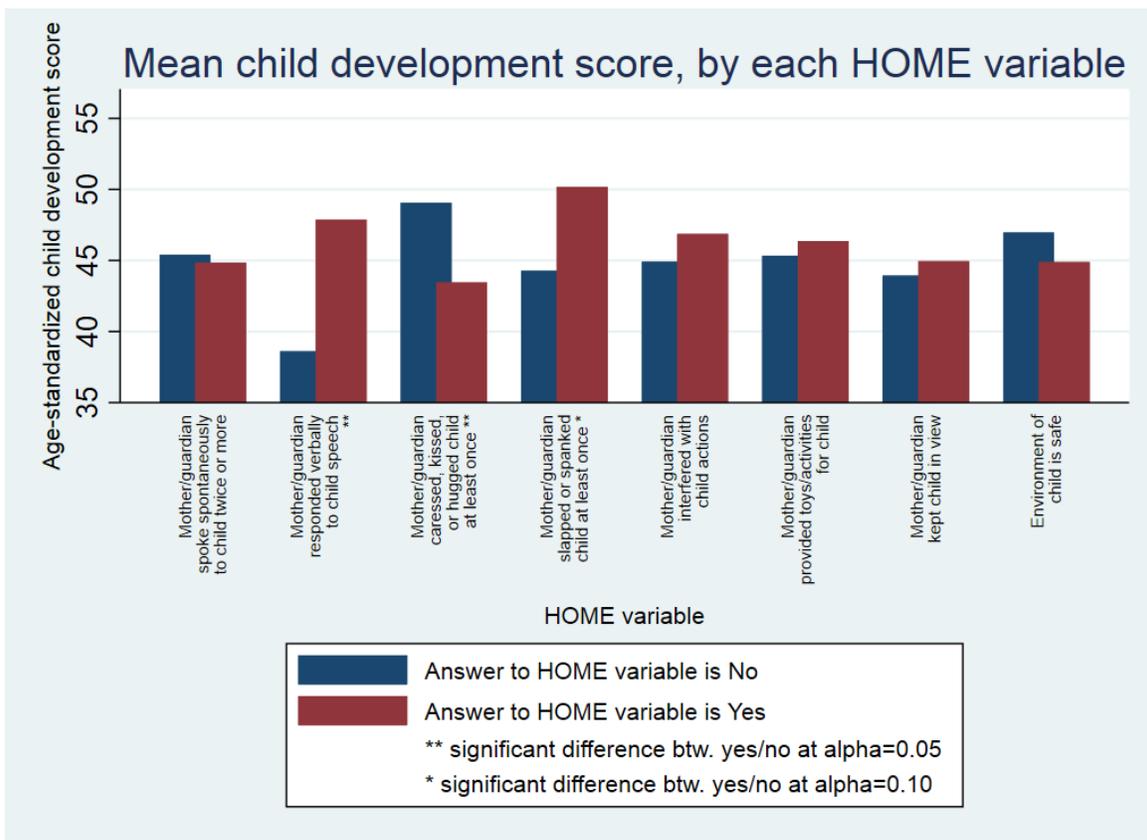


Figure 5: Association between early stimulation and caregiving practices (as measured by HOME observation items) to children’s development scores (as measured by CREDI)



PRESENCE OF BOOKS AND CHILDREN’S DEVELOPMENT

Children who had books present in the home had a higher age-standardized CREDI score than the rest, by about 8 points although this association was not statistically significant at the $p=0.05$ level. There was a positive (but not statistically significant at the $p=0.05$) association between presence of books in the home and CREDI scores for children 18-23 and 30-35 months of age.

HEARING STORIES FROM CAREGIVER AND CHILDREN’S DEVELOPMENT

Children whose parents or caregivers told them stories had a significantly higher age-standardized CREDI score than the rest, by about 7 points ($p=0.05$). Within each of the age bands, there was a positive (but not statistically significant at $p=0.05$) association between the frequency with which caregivers told children stories and children’s CREDI scores.

FREQUENCY OF SEEING FATHER/MALE GUARDIAN AND CHILDREN’S DEVELOPMENT

Children who saw their father daily had a significantly higher age-standardized CREDI score than the rest, by about 4 points ($p=0.05$). In the age band of 6-11 months (33 sampled children), 21 children saw a father

or male guardian on a daily basis. These children have a significantly higher raw CREDI score than the rest of their age band, by about 3 points (0.8 SD) ($p=0.05$).

PRESENCE OF TOYS

Children who had at least one soft, cuddly, role-playing toy at home had a higher age-standardized CREDI score than the rest, by about 3 points. This association was not statistically significant at the $p=0.05$ level. Positive, non-significant associations existed between presence of soft, cuddly or role-playing toys and CREDI scores at each individual age band.

Children who had at least one push and pull toy at home had a significantly higher age-standardized CREDI score than the rest, by about 6.5 points ($p=0.05$). The association between having a push and pull toy and CREDI scores remained positive, yet was not significant, at each individual age band.

FREQUENCY OF SPANKING

Children who were reported to have been spanked in the previous week had a significantly higher age-standardized CREDI score than the rest, by about 8 points ($p=0.05$).

CAREGIVER SPEAKING TO CHILD SPONTANEOUSLY

Children whose mothers spoke spontaneously to them twice or more (excluding scolding), during observation had a higher age-standardized CREDI score than the rest, by about 0.5 points. This association was not statistically significant at the $p=0.05$ level.

CAREGIVER RESPONDING VERBALLY TO CHILD'S SPEECH

Children whose mother/guardian responded to their speech verbally during the course of the observation had a significantly higher age-standardized CREDI score than the rest, by about 9 points ($p=0.05$). In the age band of 12-17 months (41 sampled children), 30 children had a mother/guardian who responded to their speech, during observation. These children have a significantly higher raw CREDI score than the rest of their age band, by about 3.5 points (0.8 SD, $p=0.05$). Similarly, in the age band of 30-35 months (23 sampled children), 21 children had a mother/guardian who responded to their speech, during observation. These children have a significantly higher raw CREDI score than the rest of their age band, by about 5 points (0.2 SD, $p=0.05$).

CAREGIVER CARESSING CHILD

Children whose mother/guardian caressed, kissed or hugged them at least once during the observation had a significantly lower age-standardized CREDI score than the rest, by about 5.5 points ($p=0.05$).

CAREGIVER SLAPPING OR SPANKING CHILD

Children whose mothers were observed slapping or spanking them at least once during the observation had a higher age-standardized CREDI score than the rest, by about 6 points. This association was not statistically significant at the $p=0.05$ level.

CAREGIVER RESTRICTING CHILD FROM EXPLORING

Children whose mother/guardian interfered with the child's actions or restricted them from exploring during the observation had a higher age-standardized CREDI score than the rest, by about 2 points. This association was not statistically significant at the $p=0.05$ level.

CAREGIVER PROVIDING TOYS OR INTERESTING ACTIVITIES FOR CHILD

Children whose mother/guardian provided toys or interesting activities for child during the observation had a higher age-standardized CREDI score than the rest, by about 1 point. This association was not statistically significant at the $p= 0.05$ level.

SAFETY OF CHILD'S ENVIRONMENT

Children who were deemed to be living in a safe environment had a lower age-standardized CREDI score than the rest, by about 2 points. This association was not statistically significant.

Table 13: Multivariate regression model predicting children's CREDI scores

	b/se
How often do you get a chance to tell your child stories? (0= never; 1= at several times a year)	2.499*** (0.73)
About how many toys does your child have that allows them to do a pushing or pulling motion?	1.436* (0.70)
Mother spoke to child spontaneously twice or more (excluding scolding).	-1.271* (0.58)
Mother/guardian responded verbally to child's speech.	1.710** (0.62)
Child's environment is safe.	-3.741** (1.14)
Age in years (continuous variable)	22.571*** (1.02)
Squared age in years (continuous variable)	-4.185*** (0.34)
Parent's education (higher of mother or father)	0.117 (0.08)
Frequency of breastfeeding (0= none/don't know; 1= 3-4 times/day; 2= 5/6 times /day; 3= more than 6/day)	0.183 (0.26)
_cons	26.576*** (1.88)
N	157
adj. R-squared	0.925

Note: * = significant at 0.05 level, ** = significant at 0.01 level, *** = significant at 0.001 level

Multivariate regression analyses were carried out in order to identify which early stimulation and caregiving features were the most highly associated with children's development. Parent education (the higher of the two parents) was used as a proxy for family socio-economic status. As Table 13 shows, the

frequency with which a caregiver told child stories ($\beta = 2.5, p < .001$), the amount of push and pull toys in the home ($\beta = 1.4, p < .05$), caregiver speaking spontaneously to the child ($\beta = -1.3, p < .05$), caregiver responding to the child's speech verbally ($\beta = 1.7, p < .01$) and the environment of the child ($\beta = -3.7, p < .001$) being safe were significantly associated with a child's developmental score on the CREDI assessment tool when placed in a regression model ($R^2 = .93$). Parent education was not a significant predictor of children's developmental score in this model.

DISCUSSION OF FINDINGS AND IMPLICATIONS

Findings of this study provide a snapshot of the early caregiving practices in Katavi region and Zanzibar and highlight links between early caregiving practices and child development in Katavi region. Findings have implications for policy and practice around supporting optimal development of the youngest children in the two regions. Each of the main findings of this study are discussed below.

ECD and preschool services are limited in Katavi and this may present a challenge to the development of children's school readiness unless parents intervene. This study finds that in Katavi and Zanzibar, parents were not aware of formal ECD services in their neighborhoods. In this case, parents reported relying on neighbors and other adults in the family for alternative child care. Similarly, parents in Katavi reported no preschools in their neighborhoods. The lack of these early care and learning services may have negative implications for children's development, learning and performance as they begin formal schooling. In the absence of these services, there is a greater need to equip adults and caregivers with effective strategies to support children's earliest literacy and learning.

This study finds that **toys are an important tool in the development of children between the ages of 0 and 3 years, but are present in very few families.** Children in the study sample who had a role-playing toy such as a doll or a push and pull toy such as a car had higher developmental outcomes than children who did not have access to these types of toys. Manipulating toys such as these may help children in developing their gross and fine motor skills and imaginative play may aid children in honing their earliest cognitive and socioemotional skills. While toys are important, the study finds that only a small percentage of children have such toys in their homes. Parents were likely referring to store bought items in answering this question since nearly all parents report making toys for their children themselves using locally available resources such as old clothes, shells and coconut husks. This indicates the presence of materials that can be used to fashion toys as well as a willingness on the part of parents to create toys for their children to play with. Given the importance of toys in the early development of young children, further exploration into the specific types of toys parents make, which materials they use and how they make the toys may help to leverage this activity in order to positively impact a larger number of children and their parents.

This study also finds that only a **very small percentage of children in the sample had access to books, presenting an opportunity for programming around early learning.** Given the benefits that early exposure to print material has on children's learning, this finding indicates a potential gap in children's home environment that may have implications for learning as children grow. Even in cases where parents are illiterate, it may be useful to have books in the home. Parents may be supported to use strategies such as holding a book and turning pages, looking at and pointing to pictures and telling children stories and asking them questions about what they see. These strategies may build children's familiarity with books and concept of print, skills that may have implications for children's performance once they start school.

In cases where children's books are not readily available or too expensive, parents may be guided¹⁸ on using the locally available material they already use in making toys to make print material or play literacy games with children. This would be another way to leverage the strengths already present in communities to enhance children's development.

Telling children stories and talking to them from birth onwards is important and most parents in the study sample already do so. It is important for parents to tell children stories, ask them questions and respond to their preverbal expressions in order to support optimal development as this also has implications for the child's language and literacy skills. This study finds that children who are told stories from an early age have a higher developmental score than children who are not told stories. This is also true for children whose mothers were observed responding verbally to them during the survey. These findings provide evidence that engaging in dialogue beyond simple directives such as "come here" or "stop that" may help children to develop their cognitive skills.

The definition of a child's caregiver should be expanded beyond the parents. A majority of parents surveyed indicated that the best form of alternative childcare for a child, in case the parent was not around, would be the grandmother. In a majority of cases, parents reported leaving their youngest children with other children or adults in the neighborhood when away. Given that caregiving activities are shared among various adults, programs providing useful information or strategies should not be limited to the child's parents. Programs should be cognizant of the many forms caregiving takes within communities and design and deliver content to the many adults (and even older children) who share the responsibility of early care.

Home visits by health workers is an effective strategy to impart knowledge around early care but coverage is uneven. Parents in Katavi reported not receiving regular visits by health care workers whereas those in Zanzibar reported monthly visits. As a result, parents in Zanzibar seemed to have had more opportunity to ask questions and discuss health issues and preventative care than those in Katavi and appreciated the support they received from health care workers in caring for their young child. Home visits and neighborhood group sessions set up by health care workers around topics that are key to children's health, hygiene and nutrition are an effective way to impart messages to parents as well as check in on infants and toddlers thereby ensuring children's optimal development in the early years.

The engagement of fathers in early caregiving and stimulation is key to children's development in the early years and most children in the sample see their fathers regularly. This study finds that children who spent time with their fathers regularly had higher developmental scores than those who did not. This is important information in a context where many perceive early caregiving to be the role of mothers alone. There was some indication of differences between the expectations of fathers in Katavi and Zanzibar where Katavi fathers were expected to simply provide for their families financially and Zanzibar fathers were expected to participate in household chores and caregiving in the same way as mothers. Assessing children's early development in Zanzibar, where presumably fathers would have greater engagement in childcare, was beyond the scope of this study. However, such a study may help to provide evidence supporting benefits of the involvement of fathers in early caregiving practices.

¹⁸ Examples to follow would be Save the Children's Literacy Boost program for children aged 7-9 years and First Steps program for children 0-3 years, where early exposure to print and engaging parents in making print material inexpensively with local resources has been proven to effectively positively impact children's development and learning.

Variations in traditional practices around health and nutrition provide insight into the local context that can be leveraged to bring about positive change in children’s lives. This study provides an initial glimpse into some of the traditional perspectives and practices with regards to early childcare in Katavi and Zanzibar, particularly in the case of children’s illness. The study has yielded rich data in terms of caregiver beliefs and practices that may have been in place for centuries in some cases. This data provides an insight into existing early nutrition and caregiving practices already in use in the region and those that may be leveraged in the delivery of programs supporting children’s healthcare in the early years.

RECOMMENDATIONS FOR POLICY AND PRACTICE

Based on the findings of this study, the research team presents the following recommendations for effective policy and practice around early stimulation and caregiving in Tanzania:

Indicators that emerged as significantly associated with child development in this study should be included in national household surveys like DHS¹⁹ and MICS²⁰. Inclusion of these early stimulation indicators will help to provide a more holistic picture of early caregiving practices in Tanzania, particularly features of the home environment that have proven to be significant in children’s development. They will also help to highlight the essential role of caregivers at this earliest stage of life.

Findings should be used for communication around best practice in early stimulation and caregiving (such as through the media) and in programming (such as in toolkits and manuals guiding parenting sessions). Caregivers and other stakeholders should be made aware of the findings of this study in order to increase understanding and behavior around positive caregiving strategies. These findings should also be used in order to develop curricula or manuals designed to support caregivers.

Findings should be used to inform early stimulation and caregiving policies in the country and region more broadly. Government structures dedicated to the design of policies around early caregiving should use the findings of this study in design or revision of policies around early childhood care and development.

Findings should be used to advocate for ECD service provision in Katavi, Zanzibar, and similar regions. This study indicates that there are no formal ECD structures in Katavi or Zanzibar. This has dangerous implications for the health and safety of young children as caregivers may be forced leave children in the care of other children (such as siblings) or unskilled adults. Findings of this study should be used to advocate for the provision of appropriate ECD services for the youngest children.

Madrassa preschools should be used as a model for the management and delivery of preschools in Katavi and similar contexts. This study found that parents in Katavi region were unaware of any preschool facilities for their young children. However, those in Zanzibar discussed the benefits of madrassa preschools and all of the activities that their children participated in there. The madrassa preschool model should be explored and used to inform the design and management of preschool facilities for young children in Katavi and other regions where preschools do not exist or are not readily accessible to children.

¹⁹ USAID – Demographic and Health Surveys

²⁰ UNICEF – Multiple Indicator Cluster Surveys

Parents should be empowered to create tools that support children’s early learning and development.

Parents in Katavi and Zanzibar already create toys for their young children. These parents should be encouraged to continue creating these toys and explore making other toys that can support the physical, cognitive and socio-emotional development of their children.

Parent should be encouraged to continue speaking to their young children, responding to their verbalizations, telling them stories and singing them songs.

Parents in Katavi and Zanzibar communicate with their children in various ways. Given the benefits of communicating with children as early as birth, parents should be encouraged to continue speaking to their children, responding to their verbalizations, telling them stories and singing them songs. These behaviors serve to develop pre-literacy skills for young children and set the stage for further literacy learning.

High quality, age appropriate and culturally relevant books should be developed and provided to children.

This study found that a majority of children in both regions do not have books. Whereas exposure to books in the home helps set the stage for learning later on, this lack of early exposure to books may have negative implications for children’s school readiness and learning both inside and outside of school. ECD programs and policies should include a component of book provision to young children and their caregivers. As well, caregivers should be supported to use and maintain these books with their children appropriately.

Fathers should be considered and actively included in early caregiving sessions and workshops.

While some parents indicated that fathers did not play a major role in the lives of the youngest children, this study found that father’s engagement with children between the ages of 0-3 was associated with higher developmental score for the children. Therefore, policies and programs for the youngest children should acknowledge the important role of fathers and actively include fathers in the design and implementation of parenting sessions or workshops. Additionally, the role of other caregivers such as grandmothers, aunts, and siblings, who often serve as alternative caregivers should also be acknowledged and they should be included in early caregiving sessions and workshops.

Health care workers should be utilized as an effective mechanism of health education and service delivery in regions similar to Katavi.

Health care workers were a main source of health information and services in Zanzibar. They did home visits and led community sessions to guide new parents on caring for their children. Parents in Katavi, however, did not experience similar benefits of health care workers. Therefore, challenges to effective health information and service delivery through health care workers should be analyzed and addressed in Katavi and similar regions. Given the apparent success of this mechanism in Zanzibar, this context can be used as a model case for how health care workers can be used more effectively.

RECOMMENDATIONS FOR FURTHER STUDY

Further replication of this study with a larger sample is necessary. While this study provides an initial account of associations between children’s home environment and early caregiving practices, the small sample size limits its ability to generalize findings. As well, some associations do not appear to be significant given the small sample size but may be significant with a larger sample. Hence, replicating the present study with a larger, randomly selected sample of parents and children in Tanzania may help to shed light on some of the key factors in children’s earliest development in the region.

Future study should investigate associations between early stimulation and children’s development at different age bands. While the CREDI tool allowed the research team to collect data for the different age bands within 0-3 years, the small sample size limited significance of findings within each age band. Future study with a larger sample size will be able to isolate the specific ages at which a particular association is most significant.

Associations between important subgroups should be analyzed. Future study should isolate particular subgroups of interest for a more in-depth analysis. For example, variations in home environment, early stimulation and child development between boys and girls is an important factor that the present study was unable to isolate due to small sample size. Similarly, children of parents from different quartiles of wealth or education may have different experiences, outcomes, and/or associations between the two. As well, parents or children identified as having a disability may vary in terms of the observations or associations under study. Examination of early stimulation and developmental outcomes for these various groups would be an important addition to the current work.

LIMITATIONS

There are several limitations of this study that must be acknowledged. Firstly, the **small sample size limits generalizability to the larger context of Katavi region**. As well, the small sample size limits the likelihood of identifying statistical significance in association. The smaller sample size also meant that analysis within age bands (i.e. an even smaller sample size) became challenging. Therefore, findings presented in this report point to the whole sample of children rather than looking within or across age bands. Replicating this study with a larger sample size would allow deeper analysis of young children’s development at specific stages within the 0-3 age group.

Secondly, there were **certain limitations to using the CREDI and HOME tools** in order to answer the research questions. For example, as part of the HOME instrument, observations of the interaction between caregiver and child were meant to be conducted during the parent survey. Having to focus on the survey answers between parent and child complicated the enumerator’s task. In addition, it is difficult to judge whether something that occurred within the 40 minutes to one hour of the observation was a ‘typical’ occurrence or something that took place because there was an outsider present in the home. An HOME observation checklist was created in order to circumvent this challenge and assist enumerators to keep track of interactions during the survey and complete the observation section of the survey once they had left the participants home. As well, some of the items on the HOME survey were quite subjective and reliability proved challenging despite thorough training. For instance, observation items that judged whether a child spanked by the caregiver or whether the environment of the child regarding a subjective judgement on the part of the enumerator.

A third limitation was **the lack of audio recordings** of the FGDs. Due to technical difficulties during the first few FGDs in Katavi, the research assistants made a decision not to audio record the remaining sessions and instead took notes on participant responses. As a result, direct quotes from respondents were not available during analysis and hence could not be cited during the report.

Fourthly, a couple of findings of the regression analysis carried out in this study seem **counter intuitive**, namely that children whose caregivers were observed spanking them during the survey or those whose

environment was deemed unsafe by the enumerator had higher developmental scores than those who were not spanked or who were considered to be in a safe environment. While further exploration is required to unpack the veracity of these counter intuitive findings, it is important to note that for both of those items, the sample of children was extremely small (i.e. 7 children were observed being spanked and 6 children were considered to be in an unsafe environment). As well, both of these were observation items and hence based on the subjectivity of the enumerator. For instance, one enumerator may have considered a slight tap to the child's bottom as spanking while another may not have. Given these factors, it would be important to replicate the study with a larger sample of parents and children so that significant associations may be uncovered.

Acknowledging the different expectations of and outcomes for boys and girls in developing contexts, this study explored whether there were any differences in perceptions or early caregiving practices in the earliest years across the two study contexts. However, **no significant differences in caregiving practices were found by child's gender**. This could have been due to the small sample size of the present study. Further analysis with a larger sample size is required to explore whether gender differences in caregiver perception or practices emerge at this or a later stage in the child's development. In Katavi region, there were differences in the perception of parent role based on parents' gender whereas no such differences existed in Zanzibar.

Finally, the comparison drawn between Katavi region and Zanzibar, based on the caregiver responses gathered through FGDs, should be interpreted keeping in mind the various limitations of the sample size and location. Several participants in Zanzibar were participating in early caregiving interventions being implemented by Save the Children and UNICEF in the region. It is difficult to say what extent of participant responses were due to intervention and to what extent was it cultural. Therefore, the data from the Zanzibar sample was presented separately from Katavi data and only those responses that indicated cultural differences between the two regions was highlighted in this report

Conclusion: Although the sample size was small, this study provides an important, initial snapshot into some of the early stimulation and caregiving practices in Katavi region, Tanzania. Results reinforce the importance of positive early caregiving practices (such as telling children stories, providing interesting toys for them to play, engagement with fathers/male guardians and responding verbally to their speech) to children's early development. They also reveal some counterintuitive findings regarding spanking and caressing young children. Further exploration is needed to unpack the reasons behind these counterintuitive findings.

ANNEX 1: STUDY METHODOLOGY

QUANTITATIVE SURVEY TOOL

TOOL DESIGN, DIGITIZATION, AND PRE-PILOT

HOME Inventory-SF. The Home Observation Measurement of the Environment²¹-Short Form (HOME-SF) is the primary measure of the quality of a child's home environment. It has been extensively used as both an input in helping to explain other child characteristics or behaviors and as an outcome in its own right for researchers whose objective is to explain associations between the quality of a child's home environment and earlier familial and maternal traits and behaviors.

The HOME-SF is a modification of the HOME inventory²², a unique observational measure of the quality of the cognitive stimulation and emotional support provided by a child's family. The HOME-SF is about half as long as the original HOME Inventory, an adaptation necessitated by survey time and cost constraints. It contains 8 multiple choice and free response questions for the primary caregiver and 10 observation items.

CREDI. The Caregiver Reported Early Development Index (CREDI) was designed to serve as a population-level measure of early childhood development (ECD) for children from birth to age three. As the name suggests, the CREDI exclusively relies on caregiver reports, and thus primarily focuses on milestones and behaviors that are easy for caregivers to understand, observe, and describe. The main objective of the CREDI is to assess the overall developmental status of populations of interest.

The primary aim of the *Caregiver-Reported Early Development Index (CREDI)*²³ is to provide a population-level measure of ECD for children from birth to age three. The CREDI is designed to capture five inter-related domains of ECD that have not only been shown to develop most rapidly within the 0 to 3 age range, but also to be integral in predicting later life success. First, the CREDI focuses on children's **motor** development, or their ability to use fine and gross movements to explore and engage with their environments. Second, the CREDI captures children's **language** development, or their ability to communicate their needs and desires, and understand what others are saying to them. Third, the CREDI measures children's **cognitive** development, including their ability to pay attention, remember information, perceive and discriminate between objects and people in their environment, solve problems, and acquire basic knowledge. Fourth, the CREDI considers children's **socio-emotional** development, including their ability to control their behaviors and emotions, understand their feelings, and get along well with others. Finally, the CREDI captures early symptoms of children's mental health, including the absence of behaviors related to aggression, anxiety, and distress.

²¹ Bradley, R. H., Corwyn, R. F., McAdoo, H. P., and Coll, C. G. (2001). The Home Environments of Children in the United States, Part I: Variations by Age, Ethnicity, and Poverty Status. *Child Development*, 72 (6), 1844–1867

²² Caldwell and Bradley 1984, 1992

²³ Harvard School of Public Health. (2018). Caregiver Reported Early Childhood Development Instruments (CREDI). <https://sites.sph.harvard.edu/credi/credi-materials/>

All items on the CREDI are administered directly to the primary caregiver of the target child using a “yes”/”no”/ “don’t know” response scale.

The CREDI Short Form includes different sets of items that are administered to children in 6 different age bands: 0-5 months, 6-11 months, 12-17 months, 18-23 months, 24-29 months, and 30-35 months. Each age band includes a total of 20 items that cover different developmental domains. Although some items appear on more than one set of items, many of the items in each age band are unique. Items were selected for each age band based on developmental appropriateness. For example, because almost all children are able to sit up without support before their first birthday, this item is not included for older children. Only one set of items should be administered to each child receiving the CREDI Short Form. For example, if a child is 4 months old, he/she should receive the set of items for 0-5 months.

CREDI had previously been used in the context of Tanzania.

The research team (including the Task Team Leader, the training facilitator and a Kiswahili speaking research assistant) devised a caregiver questionnaire including questions on parent age and education, household size, and feeding practices. They also reviewed the HOME inventory and CREDI tools for items that seemed relevant to include in the final early stimulation tool. The final tool consisted of three sections: 1) caregiver questionnaire, 2) child development (CREDI items) and 3) caregiving practices (HOME items).

Tool translation. The final tool was translated into Kiswahili by the research assistant and back translated by another Kiswahili speaker to ensure that the meaning of each item was captured well in translation.

Tool digitization. The tool was digitized using Tangerine data collection software²⁴ so that data could be collected electronically using tablets.

Tool pre-pilot. The digitized version of the tool was pilot tested in 10 households by the research assistant. Findings from the pilot informed a few minor adjustments to the translation and wording of the tool. At a later stage, the tool was piloted again with 20 households in peri-urban Dar es Salaam, with the team of enumerators during the practice sessions of their training.

The final tool took approximately 30-40 minutes to administer.

ASSESSOR TRAINING AND PREPARATION

For quantitative data collection the World Bank team partnered with the National Bureau of Statistics (NBS), Tanzania. NBS hired eight Tanzanian researchers (4 male, 4 female) to carry out data collection. The assessment team participated in an intensive five-day training on the data collection tool and methodology led by World Bank staff. The first four days of training took place in the NBS headquarters and the final day took place in the World Bank office in Dar-es-Salam, Tanzania in early February 2018.

Training sessions²⁵ consisted of: 1) an overview of the project, 2) ethics of research with human subjects, 3) background on early childhood development, 4) survey skills, 5) inter-rater reliability, and 6) the early stimulation study tool (including caregiver information, CREDI items, and HOME items).

²⁴ RTI. 2018. Tangerine. <http://www.tangerinecentral.org/>

²⁵ Training materials provided as annexures. For details please contact TTL, Huma Kidwai, hkidwai@worldbank.org

The training facilitator guided the assessors through each item on the tool and discussions led to further refinement of the tool. Assessors practiced conducting the survey with caregivers through discussions and role play.

On the third day of training, 3 volunteer families who had children between the ages of 0-3 were invited to attend training and assist the assessors to practice surveying and recording responses. The children of the volunteer families were given a small educational toy as a form of gratitude for their time.

On the fourth day of training, assessors practiced conducting surveys using tablets with caregivers in their homes in a nearby location. On this field practice day, each assessor conducted at least 3 surveys. Following practice, any remaining questions or challenges faced while conducting the survey were thoroughly discussed and a few small adjustments were made to the wording of a couple of items. Assessors were also trained on uploading the data collected at this time.

ASSESSMENT TEAMS

Assessors were divided into two teams of three assessors each, with one NBS staff member serving as team leader. Each assessor was expected to conduct at least 5 surveys per day. The team leaders were responsible for introducing the study and team to local leaders, identifying replacement families when families on the NBS list were not available for survey, guiding team members, and liaising with the research team daily.

PARTICIPANT SELECTION

The sampling frame used for the study comprised of households in Katavi region that participated in the Tanzania Human Immunodeficiency Virus Impact Survey, commonly referred to as THIS study conducted between October 2016 and August 2017 to measure the status of Tanzania's national HIV response²⁶. The survey was conducted in Katavi during February 2017 and involved a total of 1,139 households distributed in 37 Enumeration Areas in the region stratified by urban and rural. The sampling for THIS study was random.

The sample drawn for the early childhood stimulation study maintained the urban and rural location stratifications used in THIS, but only included households with known presence of at least one child that was 0 to 2 years of age as of February 2017 (the time of THIS in Katavi).

The study had a predetermined preferred sample size of 200 households from each of which a parent or primary caretaker of one of the children under the age of 3 years living in the household would be interviewed. In order to achieve this sample size, first all households with children who would be less than 3 years as of February 2018 (less than 2 years as of February 2017) was drawn from the entire Katavi region THIS sample. Secondly, districts were clustered according to how close they are geographically in order to draw as few wards as possible to be used for the study, while also ensuring that both urban and rural households participate.

²⁶ For more information on this: http://www.nbs.go.tz/nbs/takwimu/this2016-17/Tanzania_SummarySheet_English.pdf

Using this approach, a total of 201 households with at least one child that would be under 3 years of age as of February 2018 were drawn from 10 wards in Mlele District Council (6), Mpanda Mji (3) and Mpanda Rural District Council (1). This sample was distributed in 14 Enumeration areas and 14 villages. Any replacements of the sampled households (e.g. if the child no longer lived in the household, and there was no other child in the household within the required age group; or if the selected household no longer lived in the selected enumeration area etc.), was done using the remaining portion of the THIS sample in the selected enumeration areas.

Sample selected for the study by wards

	District	Ward	Urban/Rural	No. of Households
1	Mpanda Mji	Misukumilo	Urban	22
2	Mpanda Mji	Makanyagio	Urban	19
3	Mpanda Mji	Kawajense	Urban	36
4	Mpanda District Council	Kabungu	Rural	22
5	Mlele	Mamba	Rural	27
6	Mlele	Kibaoni	Rural	18
7	Mlele	Itenka	Rural	17
8	Mlele	Ikuba	Rural	17
9	Mlele	Mwamapuli	Rural	17
10	Mlele	Majimoto	Rural	6
Total				201

Selection of child to be included in the study

The field data collectors visited households that were selected from THIS only for the study. In households where there was only one child under the age of 3 interviewers spoke with the parent or primary caretaker of that same child. In households where there happened to be more than one child, interviewers were trained to select one child randomly to be included in the study.

Rationale for selecting participant from THIS-2017 study

Two major adjustments were made to the initial sampling approach. First, in an ideal scenario, the selection of households with children under 3 years as of February 2018 would have been done using a civil register of births for the study Region, or listing of households prior to selection of the required sample. Due to time limitations and resource constraints, both of these approaches were deemed unfeasible. Instead, it was agreed to use the most recent available household-based survey database that could provide the needed information for sampling of households with 0-3-year-old children in Katavi region. Since THIS was the most recent available nationally representative survey at the time (less than 1 year old) it was agreed that it be used.

Second, the initial plan was to use socioeconomic status as another criterion for selection of households to be included in the study (i.e. in addition to age of children and urban-rural stratification). However, with a limited sampling frame from THIS, and the likely wider spread of the sample geographically that could have resulted from this approach, the criterion was not applied. Instead, it was decided that as much information as possible from THIS that could be used to establish socioeconomic status of the selected households would be added to the data collected for the Early Childhood Stimulation Study for further analysis.

A list of selected participants (those who had a child between the ages of 0 and 3 years) was shared with each assessment team. In cases where a participant who was on the list was not available, a replacement participant (provided by NBS) was taken instead.

DATA COLLECTION AND ANALYSIS

Data collection took place over the span of 7 days from February 20th, 2018 to February 27th, 2018. Team leaders and the research team communicated regularly through a WhatsApp group. This group was used by the team leaders to provide a daily progress report to the research team as well as to discuss any issues or questions that emerged during data collection. All quantitative data was downloaded from the Tangerine software in .csv format and shared with the data analyst.

Quantitative data analysis was conducted using STATA data analysis software, and qualitative data gathered from focus group discussions was analyzed on ATLAS.ti software.

FOCUS GROUP DISCUSSIONS (FGD) DESIGN, PILOT AND DATA COLLECTION

Focus group discussions were carried out to supplement the information gathered through the survey as well as to get some insights into caregiver perceptions of child development and their explanations for their practices.

FGD PROTOCOL DESIGN AND TRANSLATION

The research team (consisting of the TTL, training facilitator and two research assistants) devised questions for the FGDs under each of the following topics: 1) community access to Early Childhood Development (ECD) services and caregiver perception of optimal caregiving services, 2) caregiver perception of optimal caregiving practices, 3) caregiver-child communication practices, 4) male caregiver participation in childcare, 5) child play material and behavior, 6) caregiver responsive feeding practices, 7) child and caregiver health. All FGDs were carried out by World Bank researchers who are native Kiswahili speakers and have experience with community engagement activities.

PARTICIPANT SELECTION

In Katavi participants were selected with the help of NBS field coordinators in Katavi and the FGDs were carried out around the same time as the survey. Participants were selected from both urban and rural locations in Mpanda and Mlele districts. Effort was made to focus on primary caregivers with at least one child in 0 to 3 years age range. Convenience of sampling and the willingness of participants to come together for about an hour-long discussion determined the groups. While the research team aimed for a group size of at least 5 participants, for several FGDs the group size was as small as 3 participants.

KATAVI FGDS

A total of 11 FGDs were conducted in Katavi region: 5 had all female participants, 5 had all male participants and 1 was a mixed-sex group. Several FGDs took place in the local government administration

office of the town/village as it was determined to be the most convenient location for participants to gather in.

Katavi Focus Group Discussion Sample

A total of 11 FGDs were held in Katavi region. Four of these were conducted in rural wards and 7 in urban wards. Of these 11 FGDs, 5 were conducted with all male participants, 5 with all female participants and one with male and female mixed participants. The number of participants in each focus group ranged from 3 to 7 with an average of 4.8 participants per group.

Participants were 58.5% female and 41.5% male. The average age of the FGD participant in Katavi region was 38.3 years. All of the participants had at least one child between 0 and 3 years. Most of the participants were farmers (71.6%) followed by small business entrepreneurs (15.0%), technicians (5.7%), a driver (.02%), a ticket agent (.02%), a public servant (.02%) and a village executive officer (.02%).

ZANZIBAR FGDS

A total of 12 FGDs (6 with all female participants, 6 with all male participants) were conducted in Zanzibar over the course of 7 days between April 14th and April 20th, 2018. The same protocol used in Katavi region was followed in Zanzibar. However, since time and resources limited the research team's ability to administer the early stimulation tool in Zanzibar as well, some questions based on the early stimulation tool were added in to the original FGD protocol. Participants were gathered with the help of partner organizations, UNICEF and Save the Children, who are currently carrying out their community health intervention. Hence, it must be noted that the caregivers who participated in Zanzibar were inherently different from those in Katavi as the former have been receiving interventions aimed at community health services. As the Zanzibar case was added on as a comparison to Katavi, only findings different than those in Katavi are presented in this report.

Zanzibar Focus Group Discussion Sample

A total of 12 FGDs were conducted in Zanzibar (in Pemba and Unguja), 6 with all female respondents and 6 with all male respondents. All FGD locations were characteristically rural. The number of participants in each focus group ranged from 5 to 7 people with an average of 5.9 participants per group.

Participants were 52.2% female and 47.8% male. The average age of the FGD participant in Zanzibar was 31.3 years. All of the participants had at least one child between 0 and 3 years. Most of the participants were farmers (45.6%), followed by homemakers (17.4%), teachers (8.7%), fishermen (8.6%), technicians (6.5%), entrepreneurs (6.5%), a student (2.1%), an extension officer (2.1%) and a transporter (2.1%).

DATA ANALYSIS

Participant responses to the FGD questions in both contexts were analyzed using ATLAS Qualitative data analysis software. Codes were created thematically and frequencies of each code were assessed for inclusion in the final report.

ANNEX 2: FOCUS GROUP SAMPLES

Katavi Focus Group Discussion Sample

Group	Ward	Type	Gender	Age	Occupation	Education	Number and age of children
1	Itenka	Rural	Male	49	Farmer	Grade 7	4 (28, 16, 14, 2)
				49	Technician	Grade 7	8 (17, 12, 10, 6, 4, 3, 2, 1)
				40	Farmer	Grade 7	5 (18,15, 9, 7, 5)
				41	Farmer	Grade 10	6 (13, 8, 5, 5, 3, 9 months)
2	Itenka	Rural	Female	24	Farmer	Grade 10	1 (1)
				37	Farmer	None	5(16, 14, 11, 9, 7)
				56	Farmer	Grade 4	8 (37, 34, 31, 28, 25, 22, 21, 16)
				40	Farmer	Grade 7	7 (20, 18, 15, 12, 10, 8, 2)
3	Kabungu	Rural	Male	40	Farmer	Grade 3	7 (21, 18, 15, 12, 10, 8, 2)
				42	Farmer	Grade 7	4 (20, 16, 11, 3)
				30	Technician	Grade 7	2 (7, 2)
				24	Farmer	Grade 7	1 (2)
4	Kabungu	Rural	Female	33	Farmer	Grade 10	2 (6, 6 months)
				38	Farmer	Grade 7	2 (17, 8)
				31	Farmer	Grade 7	3 (14, 11, 4)
				44	Farmer	Grade 7	2 (18, 21)
5	Kawagense	Urban	Female	34	Farmer	None	3(17, 5, 2)
				40	Farmer	Grade 4	6 (22, 20, 17, 14, 12, 6)
				33	Farmer	Grade 2	6 (13,12,10,9,3, and 5 months)
				42	Entrepreneur	Grade 7	7 (22, 17, 14,14, 10,7,1)
				25	Ticket Agent	Grade 10	1 (4 months)
				26	Public Servant	University	2 (6, 1)
				32	Village Officer Executive	University	2 (4, 3 months)
6	Kawagense	Urban	Male	29	Farmer	None	5 (18, 14, 12,7, 1)
				32	Homemaker/Farmer	Form 4	1 (3 months)
				44	Farmer	Grade 7	6 (18, 14, 9, 8, 1, 1)
7	Kawagense	Urban	Male	25	Entrepreneurship	Grade 10	1 (3 months)
				47	Farmer	Grade 10	4 (16, 12, 4,1)
7	Kawagense	Urban	Female	25	Farmer	Grade 7	1 (1 year)
			Female	31	Entrepreneur	Grade 7	3 (17, 15,5)

Group	Ward	Type	Gender	Age	Occupation	Education	Number and age of children
			Male	30	Entrepreneur	Grade 7	3 (9, 4, 1)
			Male	30	Entrepreneur	Grade 7	3 (9, 4, 4)
			Female	17	Entrepreneur	Grade 5	1 (1)
			Female	32	Entrepreneur	Grade 7	4 (14, 11, 7, 2 months)
				49	Farmer	Grade 7	4 (10, 7, 4, 2)
8	Makanyagio	Urban	Male	27	Farmer	Grade 10	1 (2)
				28	Farmer	Grade 7	2 (3, 1)
				42	Entrepreneur	Grade 10	2 (20, 16)
				55	Farmer	Grade 7	7 (38, 35, 32, 29, 28, 25, 16)
9	Makanyagio	Urban	Female	30	Farmer	Grade 7	3 (8, 6, 1)
				39	Farmer	Grade 3	3 (23, 13, 4)
				46	Farmer	Grade 7	3 (28, 18, 13)
				35	Farmer	Grade 2	5 (21, 15, 7, 3, 1)
				37	Farmer	Grade 7	4 (13,11,6,1)
				60	Technician	Grade 7	6 (18,16,13,10,7,4)
10	Misunkumilo	Urban	Male	39	Farmer	Grade 7	4 (16, 13, 10, 3)
				51	Farmer	Grade 7	4 (28, 22, 22, 17)
				42	Driver	Grade 7	3 (15, 12, 5)
				48	Farmer	Grade 7	4 (32, 24, 22, 15)
				50	Farmer	Grade 7	3 (39, 36, 31)
11	Misunkumilo	Urban	Female	60	Farmer	Grade 7	6 (34, 31, 20, 20, 26, 17)
				55	Farmer	Grade 4	2(38, 34)
				47	Farmer	Grade 7	4 (27, 23, 19, 12)

Zanzibar Focus Group Discussion Sample

Group	Ward	Type	Gender	Age	Occupation	Education	Number and age of children
				27	Farmer	Form 4	1(3)
				39	Farmer	Form 2	5(19, 16, 14, 10, 3)
				28	Teacher	Form 4	2(3,1)
1	Bumbwini	Rural	Female	43	Home maker	Form 2	5(20,15,8,6,3)
				33	Home maker	Form 2	2(15, 1)
				10	Farmer	Form 2	1(1)
				38	Home maker	Form 2	6(22, 19, 17, 10, 4, 2)
2	Bumbwini	Rural	Male	55	Farmer	Form 4	4(22,19,17,4)
				28	Farmer	Form 4	1(1.5)

Group	Ward	Type	Gender	Age	Occupation	Education	Number and age of children
				22	Transporter	Form 4	2 (3, 1)
				22	Fishing	Form 1	3(6, 4, 2)
				28	Technician	Form 3	5(9, 7,5,4,2)
				37	Entrepreneur	Form 4	4(7,5,3,5,1)
3	Chuwini	Rural	Female	37	Home maker	Form 4	1(2)
				45	Farmer	Grade 7	6(25,20,18,14,12,3)
				44	Teacher	Form 4	4(16,14,10,3)
				47	Farmer	Form 4	5(22,18,11,6,3)
				25	Student	University	1(1)
4	Chuwini	Rural	Male	34	Farmer	Form 2	3 (5,3,1)
				28	Farmer	Form 4	1 (2)
				43	Technician	Form 3	4 (12, 9, 6, 3)
				33	Farmer	Form 2	5 (10, 8, 6, 3, 1)
				26	Farmer	Grade 7	2 (4,2)
5	Jendele	Rural	Female	30	Home maker	Grade 5	4(6, 4, 2, 6 months)
				36	Home maker	Form 3	7(18, 16, 13, 11,9,7, 3)
				28	Technician	Form 2	5(8, 7, 5, 3, 1)
				25	Entrepreneur	Form 2	2 (3, 2)
				28	Entrepreneur	Form 4	3(5, 3, 1)
				25	Farmer	Form 2	2(2,6 months)
6	Jendele	Rural	Male	23	Farmer	Form 4	2 (2yrs, 1yr)
				29	Farmer	Form 2	2 (3yrs, 1 yr)
				24	Farmer	Form 4	1 (1.5 yrs)
				35	Farmer	Form 6	3 (4 yrs, 2 yrs, 1 yr)
				24	Farmer	Form 2	1 (6 months)
				23	Farmer	Grade 7	2 (7 months)
7	Maziwa Ng'ombe	Rural	Male	29	Extension Officer	Diploma	1 (2 and 6 months)
				40	Teacher	Diploma	10 (14,12,10,8,7,5,3,2,1,6 months)
				35	Teacher	University	1 (2 and 6 months)
				29	Fishing	Form 4	2 (2.5 years, 5 months)
				34	Fishing	Form 2	3(7,6,4)
				26	Fishing	Form 4	1(2 yrs)
8	Mzambarao Takao	Rural	Female	30	Farmer	Form 2	5 (7,5,4,2,5 months)
				30	Farmer	Form 2	5 (16,15,10,5,2)
				24	Homemaker	Form 4	2 (4, 2)
				30	Farmer	Form 2	5(11,9,6,4,2)
				29	Homemaker	None	5(11,9,4,3,1)
9	Kiungoni	Rural	Male	25	Farmer	Form 4	2(5,2)
				24	Farmer	Form 4	1(2)
				20	Farmer	Form 4	2 (3, 1)

Group	Ward	Type	Gender	Age	Occupation	Education	Number and age of children
				24	Farmer	Form 4	1(1)
				37	Farmer	Form 4	7(13, 10, 8, 5, 3, 1)
				45	Farmer	Form 4	8(24, 20, 18, 16, 14, 8, 5, 3)
10	Kiwani	Rural	Female	33	Homemaker	Form 2	3 (5, 2, 1)
				39	Home maker	None	6 (9, 7, 5, 3, 2, 6 months)
				29	Farmer	None	1 (1.5)
				30	Homemaker	Form 4	3 (4, 2 1 yr)
				24	Homemaker	Grade 4	1 (6 months)
				25	Farmer	Form 2	4 (9,6,4,2)
11	Mikinduni	Rural	Female	30	Farmer	Form 2	5 (16,14,8,5,3)
				34	Homemaker	Form 4	3 (5, 3, 1)
				30	Farmer	Form 2	5(12,9,6,4,1)
				29	Homemaker	Not educated	4(9,6,3,1)
				26	Homemaker	Not educated	2 (3, 1)
				42	Farmer	Not educated	5 (14,12,10,7,3)
12	Ukutini	Rural	Male	35	Farmer	Form 4	2 (5, 3)
				29	Teacher	Form 4	4 (7,5,3,6 months)
				25	Farmer	Grade 7	1 (3)
				29	Entrepreneur	Form 2	2 (2.5 years, 5 months)
				32	Farmer	Form 2	4 (9,7,6,4,2)