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EVALUATION

AN EVALUATION OF THE KURANEZA PROJECT: GOOD GROWTH FOR CHILDREN IN RWANDA

January 2015

This publication was produced at the request of the United States Agency for International Development. It was prepared independently by Dr. Bridget Lavin, Sonita Singh, and Dr. Amy Coombe.

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AN EVALUATION OF THE KURANEZA PROJECT: GOOD GROWTH FOR CHILDREN IN RWANDA

COMMUNITY-BASED INTEGRATION OF CHILD SURVIVAL INTERVENTIONS WITHIN EARLY CHILDHOOD DEVELOPMENT

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The goal of the Kuraneza project was to contribute to reductions in maternal and child mortality in rural Rwanda while improving equity.

DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

January 2015

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ACRONYMS

ANC	Antenatal Care
ARI	Acute Respiratory Infection
ASQ	Ages and Stages Questionnaire
BCC	Behavior Change Communication
CHW	Community Health Worker
C-IMCI	Community-based Integrated Management of Childhood Illness
CS	Child Survival
CS-ECD	Child Survival and Early Childhood Development
DHS	Demographic & Health Survey
EBF	Exclusive Breastfeeding
ECD	Early Child Development
EDPRS	Economic Development and Poverty Reduction Strategy
HB-ECD	Home-based Early Child Development
IFA	Iron Folic Acid
IMCI	Integrated Management of Childhood Illness
IMR	Infant Mortality Rate
ITN	Insecticide Treated Bed Nets
JADF	Joint Action Development Forum
KPC	Knowledge, practice and coverage survey (standardized instrument)
LLITN	Long-life Insecticide Treated Bed Nets
MCH	Maternal and Child Health
ML	Mother Leader
MNC	Maternal and Newborn Care
MOE	Ministry of Education
MOH	Ministry of Health
NGO	Non-Governmental Organization
OR	Operations Research
ORS	Oral Rehydration Solution
PNC	Postnatal Care
UNDP	United Nations Development Program
UNICEF	United Nations Children's Emergency Fund
USAID	United States Agency for International Development
WFP	World Food Programme
WHO	World Health Organization



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An Evaluation of the Kuraneza Program: A Good Growth Project in Rwanda - Executive Summary

This project was funded by the U.S. Agency for International Development through the Child Survival and Health Grants Program.

January 2015

*CHW training HB-ECD
mothers. CARE*

Key Findings:

- Improvements on a number of CS and MCH outcomes in both the comparison and intervention communities
- No distinguishable, consistent differences in ECD outcomes
- Collaboration with MLs reduced the burden on CHWs
- Poverty challenged many aspects of the project, despite equitable access to the HB-ECD

FINAL EVALUATION EXECUTIVE SUMMARY

January 2015

Evaluation, Purpose, and Evaluation Questions

The Kuraneza Child Survival and Early Childhood Development (CS-ECD) project evaluation assesses the project's four-year implementation cycle from 2011 to 2014 in order to determine the impact of decentralized mechanisms to improve child and maternal health sustainably and within a community-based context in Rwanda. This comprehensive evaluation of the project goals, objectives and strategies: (1) assesses the effectiveness of the overall CS-ECD strategy, (2) analyzes CS-ECD integration pathways and mechanisms for their feasibility and (3) explores the individual effectiveness, replicability, scalability, and impact of the project's constituent parts. The specific evaluation questions explored herein include:

- Did the Kuraneza project maintain overall project fidelity to the Detailed Implementation Plan with regard to expected rigor and timeliness?
- What were the integration pathways and mechanisms used? Were the strategies adequate to fulfil the objectives?
- What other big picture factors, outside the realm of the project, may explain the achievements or under achievements of the project?
- Were there any learning/evidence generated that is relevant to the Ministry of Health or other related ministries/programs which will influence national programming?

This report is intended for a wide range of stakeholders including Rwanda's Ministry of Health (MOH), Ministry of Education (MOE), local and international non-governmental organizations, and policymakers, interested in child survival programming, Early Childhood Development (ECD), and their potential integration. The evaluation report will provide a strong evidence-base and policy recommendations for thoughtful use of the Kuraneza project approach.

Project Background

Despite impressive advances towards achievement of the Millennium Development Goals, Rwanda's rates of maternal, infant and under five mortality and chronic malnutrition still exhibit sizeable room for improvement, according to estimates from the 2010 Demographic and Health Survey. [2] Community-based approaches to health promotion serve as the foundation to Rwanda's overall health strategy, with a cadre of 30,000 trained community health workers (CHWs) serving as the frontline for health service delivery. However, an external evaluation of the implementation of Rwanda's Health Sector Strategic Plan II found that CHW

staffing at the village level fell grossly below the levels necessary to implement community health activities effectively, and CHWs reported being limited by heavy workloads. [14]

To address these health sector challenges, while supporting the operationalization and integration of the Government of Rwanda's Community Health Policy, National Food and Nutrition Policy, and Early Childhood Development Policy, CARE Rwanda has implemented the Kuraneza Project. The goal of the Kuraneza (Kinyarwanda for "good growth") project is to contribute to reductions in maternal and child mortality, while improving equity in health and development outcomes, in four targeted areas within Rwanda's Kamonyi district. The project's intended outcomes include (1) improved maternal and newborn care, (2) improved community management of childhood illnesses, (3) improved infant and young child feeding and child nutritional outcomes, and (4) improved cognitive, emotional, and psychosocial development in targeted children.

In the comparison arm, Kayenzi sector, the project supported the CHWs to replicate the standard Government of Rwanda outreach strategy where CHWs work directly with mothers and households to promote healthy behaviors. CARE supported supplemental training to CHWs on behavior change communication and technical knowledge in the areas of maternal and neonatal care and nutrition and integrated management of childhood illness. In the intervention arm, implemented over the life of the project in Nyaryubaka sector and for two years in Karama and Musambira sectors, CHWs also received the same trainings delivered in Kayenzi. However, the difference in the intervention site was that ECD activities served as the platform for CHWs to implement health promotion and behavior change with mothers and families of children under five.

Kuraneza used three pathways to promote early childhood development: (1) home visits among pregnant and lactating women who have children less than one year of age, (2) home-based early childhood development (HB-ECD) groups organized typically among 8-10 self-selected mothers with children 1 to 3 years (but sometimes up to 5 years of age), who rotate turns as the "caregiver" at a fixed site where children are cared for every weekday morning, and (3) volunteer-staffed, community-based or community managed ECD centers for children age 3 to 6 years, depending on the space at the center. The use of ECD activities as a platform for community health work was intended to allow CHWs to meet groups of women, men and children for monitoring, education and behavior change activities and thus to produce efficiencies and community multiplier effects. Mother Leaders (MLs) were used to aid CHWs through outreach and training to the HB-ECD members and home visits to pregnant and lactating women who have children under one year of age to promote health seeking behaviors and proper infant care. The Mother Leaders also facilitated the formation and operation of HB-ECD groups.

Design, Methods, and Limitations

The evaluation uses mixed-methods, pre-post quasi-experimental design among the long-term intervention site in Nyarubaka sector, the long-term comparison site in Kayenzi sector, and shorter term intervention sites in Karama

and Musambira sectors, where the project was phased in at the midterm. Data sources for the final evaluation include:

A. Primary data collected and analyzed by the evaluation team

- (1) Quantitative KPC survey data measuring program household and respondent characteristics, maternal and child health behaviors and practices, early childhood development activities, and program exposure. The KPC represents data from two cross sections of women with a child under two years of age. Baseline data were captured in March 2011 among 401 women in Nyarubaka and 457 women in Kayenzi. Endline data were captured in March 2014 among 403 women in Nyarubaka and 442 women in Kayenzi.
- (2) Qualitative data (1) impressions and understandings of the Kuraneza model, (2) changes observed in the past year, (3) benefits observed from participating in the program, (4) challenges encountered or observed, (5) experiences with the new relationships of community health workers (CHWs) and mother leaders (MLs), (6) what kind of future or ongoing support they would like to have from CARE, local authorities, CHWs, and MLs. Data were collected via in-depth interviews with CARE program staff, teacher/volunteers at ECD centers, and key program stakeholders at sector, district, and national levels and collected via focus group discussions with community health workers, mothers, and mother leaders, as part of the Operations Research.
- (3) Observations of one nursery school, one center-based ECD sites, and three HB-ECD sites to capture information about the staffing and enrollment, physical environment and supplies, supervision and interaction with children, and record keeping.

B. Secondary sources from which data and information are extracted

- (1) Illustrative project monitoring data collected by CARE International in Rwanda, which were reviewed to determine the project's reach
- (2) A project-led, longitudinal assessment of outcomes among 243 children assessed using the Ages and Stages Questionnaire (ASQ) at 6 months, 12 months, 18 months, and 24 months to measure five dimensions of development: fine motor skills, problem solving, communication, gross motor skills, and personal social development.
- (3) Project documents and relevant national policy and strategic planning documents, to assess the operating environment and fidelity of the Kuraneza implementation process against its intended design.
- (4) Web-based sources describing the operating environment.

A number of methodological issues limit the interpretation of the evaluation findings. Because the intervention in question is compared to another intervention, as opposed to a true control, the project's results are difficult to untangle. Another limitation is due to the different age criteria of children for KPC participation and HB-ECD participation. The KPC sample was mothers of children 0 to 23 months, whereas HB-ECD participation was designed for children 12 months and older. The CS and MCH outcomes presented herein are generalizable to the larger targeted populations, but not broadly to groups whose children were attending HB-ECD, inhibiting clarification of the true value and impact of HB-ECD participation on CS outcomes.

Findings and Conclusions

Most planned activities were completed without delay and at the intensity intended, with several notable deviations. There were delays in the trainings of MLs and the establishment and implementation of the integrated

model of CS interventions within HB-ECD. In Karama and Musambira, the short term intervention sites, there was a less intensive pre-project sensitization phase for building community trust and large scale buy-in. This was associated with higher community skepticism, lack of widespread engagement and some public disparagement. Moreover, several tasks were not completed, including translating behavior change communication materials and curriculum for the HB-ECD into Kinyarwanda and some CS sensitization activities related to water and sanitation in Karama and Musambira sectors.

The project's core integration pathways, whereby child survival and early childhood development programming were linked, included (1) the HB-ECD as a source for promotion of health and ECD messaging via CHWs and MLs, (2) routine child health monitoring among children attended HB-ECD, and (3) health promotion activities for children attending the HB-ECD, including hand washing and the provision of a nutritious meal daily.

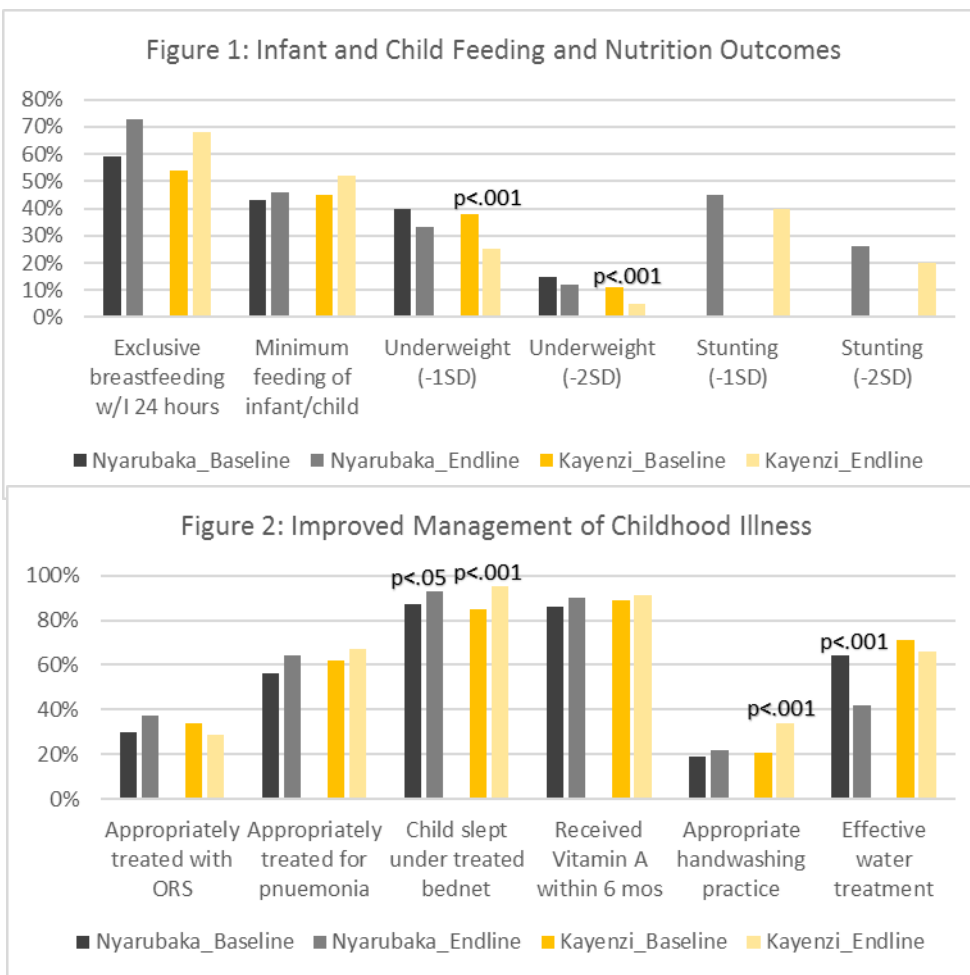
The evaluation found mixed evidence of achievement across various domains, such that for many outcomes, either intervention would be apt. For example, there were improvements on a number of CS and MCH outcomes in both the comparison and intervention communities (Figures 1, 2, and 3).

CHWs in the intervention communities reported that the combined CS-ECD approach yielded efficiencies that reduced their burden. MLs were able to fulfill adequately many of the roles tasked to them and were respected partners to the CHWs. Those familiar with the HB-ECDs indicated that participating children had improved social skills and hygiene, and reduced malnutrition.

There were no distinguishable, consistent differences in mean

ASQ scores between the intervention and comparison group. Large proportions of children in Rwanda fell below US-based cutoffs for developmental lags. In the comparison site and the intervention site, household engagement patterns with young children increased similarly over time. Across all activities and both sectors, the reported engagement levels for fathers increased noticeably.

Poverty challenged many aspects of the project—from the ability of families to contribute to meals provided at the ECDs to disparities in CS outcomes based on household socio-economic status.

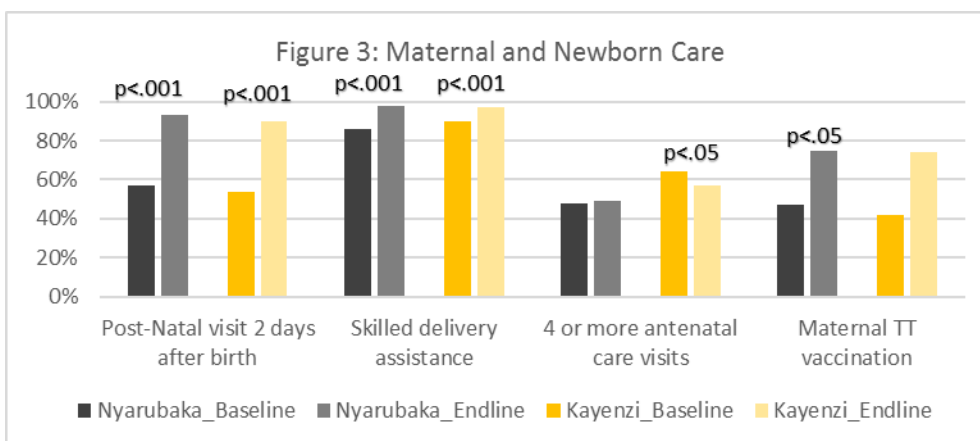


Other findings and their accompanying recommendations include:

- While there is limited data available to assess the effectiveness of the capacity development given to CHWs and MLs, both cadres requested more frequent trainings and trainings on additional topics relevant to the project.

Recommendations: Offer additional/supplemental trainings on topics requested by project staff including MCH, family planning, and income generating activities for CHWs and first aid, promoting family relationships, resolving conflict in families, and behavior change in men for MLs; Institute pre/post knowledge and competency assessments of MLs and CHWs; Revisit the current schedule for CHW training to determine whether shorter, more frequent modules are feasible

- Despite equitable access to the HB-ECD, there remained differences in CS-related KPC outcomes by socio-economic status, as well as frequent qualitative reference to the challenges of poverty on benefiting from the full impact of Kuraneza. **Recommendations:** Include project mechanisms to penetrate the poverty barrier, including adaptive and participatory approaches to benefit the most poor, BCC approaches for sub-populations and deeper incorporation of behaviour change theory, in conjunction with poverty reduction and social service programming
- Some nutrition outcomes were associated with household food insecurity. **Recommendation:** Integrate anti-poverty and food security activities, especially targeting the most vulnerable households.
- Resource deficits may challenge implementation fidelity and project quality, as they relate to upkeep of project sites and supplies, food contributions for families that cannot pay, and income generation for MLs. **Recommendations:** Training on and/or start-up support for income generating activities for MLs and/or HB-ECDs; ML cooperatives; Performance-based financing (PBF) for MLs; GOR budget support from the Education and Health sectors
- Outcome scores among longitudinally tracked children found no significant differences between ECD outcomes among children exposed to the HB-ECD versus those not exposed, perhaps due to ineffective ECD programming, inappropriate use of the ASQ tool for evaluative purposes, or incomplete analysis of the ASQ cohort data. **Recommendations:** Additional analysis of the ASQ cohort data, factoring in program exposure and tracking the movement of individual children in addition to cohort averages, including consultation with ASQ developers about tool's use for program evaluation.
- The children involved in both HB-ECD treatment and control showed ECD cut-offs very different than Western populations, possibly because the assessed children actually lagged or these differences may be explained by lack of ASQ validity and reliability in the Rwandan context. **Recommendation:** Validation studies of the ASQ in the Rwandan context, with support from local clinicians who can diagnose and support developmental delays.



EVALUATION PURPOSE AND EVALUATION QUESTIONS

EVALUATION PURPOSE

The goal for the Kuraneza Child Survival and Early Childhood Development (CS-ECD) project evaluation is to conduct an objective assessment of the overall project at the end of a four-year implementation cycle from 2011 to 2014. This comprehensive evaluation of the project goals, objectives and strategies will: (1) assess the effectiveness of the overall CS-ECD strategy, (2) analyze CS-ECD integration pathways and mechanisms for feasibility and (3) determine the individual effectiveness, replicability, scalability, and impact of the project's constituent parts. These findings will proffer understanding of the impact of decentralized mechanisms to improve child and maternal health sustainably and within a community-based context.

This report is intended for a wide range of stakeholders including Rwanda's Ministry of Health (MOH), Ministry of Education (MOE), local and international non-governmental organizations, and policymakers, interested in child survival programming, Early Childhood Development (ECD), and their potential integration. The evaluation report will provide a strong evidence-base and policy recommendations for thoughtful use of the Kuraneza project approach.

The project evaluators are a qualified and objective third party. Hired with project funds, steps were taken to preserve the independence of the evaluators' views. The Scope of Work for the evaluation was drafted by CARE International in Rwanda and approved by USAID. The initial selection of the evaluators by CARE International in Rwanda received subsequent approval by USAID. Once agreement was reached on the Scope of Work, the draft and final reports were directly submitted to USAID by the evaluator at the time they were provided to the grantee.

EVALUATION QUESTIONS

The evaluation seeks to determine empirically whether the Kuraneza project achieved its objectives and provided services designed to support individual- and community-level benefits. As a mixed methods study, the evaluation is afforded a depth and breadth of understanding to the project's successes and gaps. The evaluation explores the following broad themes:

- Did the Kuraneza project maintain overall project fidelity to the Detailed Implementation Plan with regard to expected rigor and timeliness?¹
- What were the integration pathways and mechanisms used? Were the strategies adequate to fulfil the objectives?
- What other big picture factors, outside the realm of the project, may explain the achievements or under achievements of the project?

¹ This question represents a synthesis of the following questions in the Scope of Work (Annex 8): Was the project implemented as per the plan and schedule? Was the implementation implemented in sufficient rigor and timeliness to effect changes?

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- Were there any learning/evidence generated that is relevant to the Ministry of Health or other related ministries/programs which will influence national programming?

PROJECT BACKGROUND

In the 20 years since the 1994 genocide against the Tutsi, Rwanda has made great strides in economic and human development. In the lead up to 2015, Rwanda was on track to meet most of the Millennium Development Goals – one of the few sub-Saharan African countries that was poised to do so. [1] These include a reduction in extreme poverty from 36% in 2006 to 24% in 2011, declines in malaria and tuberculosis incidence, and reductions in mother-to-child transmission of HIV from 22% in 2006 to 3% in 2011.[2] Other pertinent achievements include vaccination coverage among 90% of children by 2011 [3], high enrollment in the community-based insurance program [4], and substantial increases in skilled health center delivery for less educated, less wealthy, and rural Rwandan women. [5] Nevertheless, according to 2010 Demographic and Health Survey data, the rates of maternal, infant and under five mortality and chronic malnutrition still exhibit sizeable room for improvement. [6]

A number of policies and strategic plans underlie Rwanda's commitment to improve the health and well-being of the population, including a National Community Health Policy (2008) [7], a National Food and Nutrition Policy (2013) [8], a National Multi-sectoral Strategy to Eliminate Malnutrition in Rwanda (2010) [9], a National Early Child Development Policy (2011) [10], and a National Family Planning Strategic Plan (2012-2016).[11] In addition, Rwanda's second Economic Development and Poverty Reduction Strategy (EDPRS 2) frames its development efforts over the period 2013/14 to 2017/18.[12] The strategy has been rolled out at the district level, with detailed plans guiding local efforts to eradicate poverty. [13]

Additional progress has been made through Government of Rwanda initiatives focused on health system strengthening. This includes major investments in infrastructure, equipment, and human resources for health at Rwanda's 42 District hospitals and 415 Health Centers.[14] A cadre of 60,000 trained Community Health Workers (CHWs) is the foundation for local health service delivery and health promotion.[15] A performance-based financing system among CHWs and health facilities is used to promote better patient follow-up and improved primary care indicators. [16]However, in 2013, heavy workloads were reported as a primary challenge for CHWs. An external evaluation of the implementation of Rwanda's Health Sector Strategic Plan II found that CHW staffing at the village level fell grossly below the levels necessary to implement community health activities effectively. [17]

By 2020, Rwanda aims to be a middle-income country, via an accelerated poverty reduction strategy outlined in EDPRS 2. [18] Rwanda has taken a holistic, life-course approach to poverty reduction, emphasizing intervention for very young people through ECD programming. ECD has the potential to offset the risks socially disadvantaged children face, in particular, by creating nurturing environments that promote early physical growth and learning, which in turn can lead to better school preparedness and productivity. However, efforts to identify evidence-based, contextually relevant interventions have only recently gained substantial traction in Rwanda.

To support the operationalization and integration of Government of Rwanda's Community Health Policy, National Food and Nutrition Policy, and Early Childhood Development Policy, CARE Rwanda has implemented the Kuraneza Project. Kuraneza has served as a pilot to (1) document the assessment of community needs, (2) design an integrated CS-ECD intervention, (3) implement the key features, and (4) monitor and evaluate the process and its outcomes. The goal of the Kuraneza (Kinyarwanda for "good

growth”) project is to contribute to reductions in maternal and child mortality, while improving equity in health and development outcomes, in targeted areas within Rwanda’s Kamonyi district. The project’s intended outcomes include (1) improved maternal and newborn care, (2) improved community management of childhood illnesses, (3) improved infant and young child feeding and child nutritional outcomes, and (4) improved cognitive, emotional, and psychosocial development in targeted children. Kamonyi district was chosen because no other non-governmental organizations were working the areas of maternal and child health at the time of Kuraneza’s planning. Within Kamonyi, four geographic sectors were selected because of their high poverty indices and low primary care indicators, relative to other sectors in the District.[19] To test the integrated model, the project was designed with two arms, each one with a different intervention. In the comparison arm, Kayenzi sector, the project supported the CHWs to replicate the standard Government of Rwanda outreach strategy where CHWs work directly with mothers and households to promote healthy behaviors. CARE provided supplemental training to CHWs on behavior change communication and technical knowledge in the areas of maternal and neonatal care and nutrition and integrated management of childhood illness.

In the intervention arm, implemented over the life of the project in Nyaryubaka sector and for two years in Karama and Musambira sectors, CHWs also received the same trainings delivered in Kayenzi. However, the difference in the intervention site was that ECD activities served as the platform for CHWs to implement health promotion and behavior change with mothers and families of children under five. Kuraneza used three pathways to promote early childhood development: (1) home visits among pregnant and lactating women who have children less than one year of age, (2) home-based early childhood development (HB-ECD) groups organized typically among 8-10 self-selected mothers with children 1 to 3 years (but sometimes up to 5 years of age), who rotate turns as the “caregiver” at a fixed site where children are cared for every weekday morning, and (3) volunteer-staffed, community-based or community managed ECD centers for children age 3 to 6 years, depending on the space at the center. All mothers were to be trained on early child development and stimulation, child safety, protection and rights and maternal and child health. Based on the community-based integrated management of childhood illness (C-IMCI) and maternal health package established by Rwanda’s MOH, behavior change strategies included community sensitization about sick childcare, community member capacity building on prevention of childhood illnesses, skill building to identify the early signs and symptoms of infection in children and to promote early referral to the health center. The use of ECD activities as a platform for community health work was intended to allow CHWs to meet groups of women, men and children for monitoring, education and behavior change activities and thus to produce efficiencies and community multiplier effects.

Mother Leaders (MLs) were used to aid CHWs. Mother Leaders are elected members of the HB-ECD groups who support CHWs with outreach. In monthly trainings with CHWs, MLs learn one nutrition/education topic to share with the ECD mothers group. MLs also make home visits to pregnant and lactating women who have children under one year of age to promote health seeking behaviors and proper infant care. Further, the Mother Leaders facilitate the formation and operation of HB-ECD groups. To this end, all MLs received training from CARE on the fundamentals of early childhood development and stimulation and child rights and protection, as well as the integration between child survival and early childhood development. The vast majority of CHWs did not participate in training on these topics, in compliance with MOH guidelines for CHW scope of work.²

A number of national and local partners have collaborated on the Kuraneza Project. A Kuraneza Advisory Council was formed to assess the impact and effectiveness of the project to improve growth

² For more details on the roles and responsibilities of MLs and CHWs, please see Annex 15: Kuraneza Operations Research Report, pages 7-14.

and child health outcomes. Chaired by Rwanda's MOH, the co-chair is UNICEF. MCHIP serves as secretary. Other members are MOE, Ministry of Gender and Family Promotion, USAID, the University of Rwanda School of Public Health, World Vision International, World Food Program and CONCERN Worldwide. The Advisory Council's role includes: (1) review project strategies and provide formative feedback, (2) inform data collection protocols, tools, and the development of the project's behavior change strategy, and (3) assist with program documentation.

Kuraneza project has also collaborated extensively at the district level. As a Joint Action Development Forum (JADF) member, the project team was able to promote the CS-ECD model in meetings and other forums with local leadership, the private sector, and civil society. The district of Kamonyi was a major project partner, with strong representation on a District Steering Committee specific to the project. District strategic plans and the project plan were developed through collaboration between CARE and Kamonyi District. Further, the Kuraneza Project collaborated with local health facilities to train CHWs.

The USAID Mission's Health Team participated in the design of the Detailed Implementation Plan and has provided consistent consultation throughout the life of the project, particularly with regard to the operations research components. In its second year of operations, in an effort to build local partnerships and in reaction to mid-project funding model changes, CARE incorporated a local partner (Strive Foundation) to provide construction and logistical project support given the continuing need for evidence-based programming that responds to apparent system challenges.

Child survival (CS) programming historically has shown mixed effectiveness, and no standard intervention or approach leads to positive outcomes in all contexts. [22] Successful programs, however, rely on increased knowledge of appropriate care behaviors at the community level. A 2007 Lancet series on ECD called for the integration of health and nutrition within ECD to promote child development.[20] A 2010 literature review by CARE indicated that, while programs often integrate ECD into CS interventions, no known programs in developing contexts were integrating CS into established ECD programming.[21]

The hypothesis underlying the project design is that the integration of child survival interventions into ECD groups using community-based health mechanisms will result in greater and more equitable uptake of positive health and nutrition behaviors and improved outcomes compared with more traditional community-based maternal and child health activities alone. As part of the learning agenda and operations research (OR), the Kuraneza project also was designed to determine the feasibility of ECD and CS integration and to identify common barriers and challenges faced in the process of integration. In particular, the OR explores the extent to which the integrated model compares to standard CS programming in terms of maternal and child health outcomes achieved, as well as the processes of the integration and whether the added layer of instruction and support from Mother Leaders helps overcome challenges faced by community health workers with high workload.

EVALUATION METHODS AND LIMITATIONS

The evaluation seeks to determine whether the Kuraneza project achieved its objectives and provided services designed to support individual- and community-level benefits. The evaluation follows a mixed-

methods, pre-post quasi-experimental design. Four geographic sectors in Rwanda's Kamonyi District were designated as study sites: the long-term intervention site in Nyarubaka sector, the long-term comparison site in Kayenzi sector, and shorter term intervention sites in Karama and Musambira sectors, where the project was phased in at the midterm. Data sources for the final evaluation include:

C. Primary data collected and analyzed by the evaluation team³

- (4) Quantitative KPC survey data measuring program household and respondent characteristics, maternal and child health behaviors and practices, early childhood development activities, and program exposure. The KPC represents data from two cross sections of women with a child under two years of age. At baseline and endline, CARE Rwanda worked with local authorities and CHWs in Kayenzi and Nyarubaka sectors to compile census lists of all children under age 5 years and all women of reproductive age. Data collected at the child level included the parents' names, the child's birth date or age, and the village of residence. With assistance from the Ministry of Local Government, Community Development, and Social Affairs, CARE categorized women of reproductive age into two wealth groups—low wealth and high wealth—based on crude indicators of wealth. The sample size was determined for a p-value of .05 and a statistical power of 80, considering changes in children's weight for age as the impact outcome guiding this sample size determination. Independent probability samples were drawn from the census lists at baseline and endline, allowing for half of the respondents in each site to be from the lower socio-economic group and half to be from the higher socio-economic group. Baseline data were captured in March 2011 among 401 women in Nyarubaka and 457 women in Kayenzi. Endline data were captured in March 2014 among 403 women in Nyarubaka and 442 women in Kayenzi.
- (5) Qualitative data collected via in-depth interviews with CARE program staff, teacher/volunteers at ECD centers, and key program stakeholders at sector, district, and national levels and collected via focus group discussions with community health workers, mothers, and mother leaders, as part of the Operations Research. Qualitative respondents were asked about (1) impressions and understandings of the Kuraneza model, (2) changes observed in the past year, (3) benefits observed from participating in the program, (4) challenges encountered or observed, (5) experiences with the new relationships of community health workers (CHWs) and mother leaders (MLs), (6) what kind of future or ongoing support they would like to have from CARE, local authorities, CHWs, and MLs. For the baseline assessment, CARE only collected qualitative data from the sector of Nyarubaka, as it was the only sector where the intervention was being implemented at the time (2012). For the endline, additional intervention sectors of Karama and Musambira were included, as the intervention was phased into these sectors at the project midterm. Likewise, Kayenzi sector was included for data collection among certain key informants, representing the comparison communities.
- (6) Observations of one nursery school, one center-based ECD sites, and three HB-ECD sites to better understand operations and to assess quality, as part of the Operations Research. The observation captured information about the staffing and enrollment, physical environment and supplies, supervision and interaction with children, and record keeping.

D. Secondary sources from which data and information are extracted

- (1) Illustrative project monitoring data collected by CARE International in Rwanda, which were reviewed to determine the project's reach

³ For more details, please refer to Annex 9: Evaluation Methods and Limitations

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- (2) Nthanzi Operations Research report (see Annex 19), which details longitudinal ECD outcomes among 243 children who first participated in baseline measurements when they were five to seven months in age. Among these, 127 children were from the comparison group, while 116 were from the intervention group. The Ages and Stages Questionnaire was used to measure them at 6 months, 12 months, 18 months, and 24 months on five dimensions of development: fine motor skills, problem solving, communication, gross motor skills, and personal social development. Due to attrition, 49 children were lost to follow-up at various stages of the longitudinal tracking. Thus, 194 children participated in the endline at 24-months of age.
 - (3) Project documents, including annual reports and their accompanying annexes for project years 1-3; the baseline KPC report; the baseline qualitative assessment; the Detailed Implementation Plan; the Operations Research concept paper; and relevant national policy and strategic planning documents, including the National Early Childhood Development Policy (2011); National Community Health Policy (2008); National Community Health Strategic Plan (2008); Food and Nutrition Policy (2013); and National Community Health Strategic Plan (2013-2018). These documents were reviewed to provide contextual information about the operating environment, as well as to assess the fidelity of the Kuraneza implementation process against its intended design.
 - (4) Web-based sources describing the operating environment, such as the 2006 and 2010 Rwanda Demographic and Health Surveys and websites for the Rwandan Ministry of Health, Ministry of Education, and Ministry of Agriculture

Evaluation of Project Implementation: To determine the level of adherence to model fidelity by which the program was implemented over the course of four years, the evaluation compares intended activities detailed in design documents and annual work plans against implemented activities, as documented in annual reports. The objective was to determine whether the expected outcomes could be achieved given the specific inputs and activities performed and in the timeline specified.

Evaluating Integration Mechanisms and Pathways: The evaluation explores three integration mechanisms and pathways: 1) the integration of Child Survival programming within Early Childhood Development programming, 2) the implementation of a knowledge transfer model from CHWs to Mother Leaders to mothers in the community, and 3) the execution of a home-based and center-based intervention model as a platform for integrated child survival and ECD activities. In addition to reliance on project documents, this section also relies on primary data collected for monitoring and evaluation purposes throughout the life of the project.

Evaluation of Achievement of Project Goals: Measurement of Kuraneza project effectiveness is based on the extent to which stated project goals were realized, as explored via the Performance Evaluation using the KPC and ASQ assessments and the Operations Research. When expected performance outcomes were above or below hypothesized measures, operations research data were used to reveal modifiers and obstacles driving results.

Evaluation of Factors Outside the Realm of the Project: Exploration of other potential contributors to measured outcomes was informed by themes emerging from the qualitative interviews in the Operations Research, household characteristics of significance on the KPC, and document and website review.

Limitations. While Annex 9 renders an extensive discussion of the methods, data quality and limitations, several are noted here. The formative arm of the operations research was fully executed as planned. With components intended to inform the content of the intervention, the formative research included efforts to ascertain the benefits and challenges of the home-based ECD pilot, identify the barriers to relevant health service access in order to shape the project's behavior change communications strategy, and adapt the home-based ECD platform to incorporate child survival interventions. The project's annual reports, as well as discussions with Kuraneza staff, detail how information gleaned during the formative phase was fed into the project design.

The evaluative study is the component where the Operations Research design did not fully meet its objectives, as there were a number of deviations to the planned evaluation methodology. No Mid-Term Evaluation was conducted due to project funding issues. The Community Health Worker survey, fielded at baseline, was not carried out longitudinally as planned. In its place, the team used qualitative data collection at endline among MLs, CHWs, and other government stakeholders to evaluate program experience and operational challenges. However, the timing of this latter piece, coinciding with the analysis of the KPC and the final evaluation analysis, was unfortunate. It prevented the ability to influence changes that might have otherwise been detected in a final evaluation.

A major limitation of the evaluative study is that intervention in question is compared to yet another intervention, as opposed to a true control. The comparison group employed a model of intervention with its own constituent strategies and effects. These effects need to be analyzed separately, and presented as an alternate to the featured intervention. Thereby, the results presented below are neither straightforward, nor will they give a discernable level of impact of no program versus either program.

Another limitation is with regard to the extent to which the available quantitative data can elucidate the interaction effects of CS programming for children participating in ECDs. This limitation is largely driven by the different age criteria of children for KPC participation and HB-ECD participation. The KPC sample was mothers of children 0 to 23 months, whereas HB-ECD participation was designed for children 12 months and older. Consequently, the CS and MCH outcomes presented herein are generalizable to the larger targeted populations, but not broadly to groups whose children were attending HB-ECD. Therefore, it is difficult to know the true value and impact of HB-ECD participation on CS outcomes. The expectation that the CS-ECD intervention would have a population level effect is most likely premature.

Because the KPC surveys use a pooled cross-sectional experimental design, the assumptions that can be drawn on a comparison of similar-but-different individuals decrease confidence in a plausible attribution of outcomes to intervention. These will be generalized results, noting the effect size of the intervention would need to be significantly greater than the distortion generated by non-panel respondents.

Findings, Conclusions, and Recommendations

FINDINGS

Did the Kuraneza project maintain overall project fidelity to the Detailed Implementation Plan with regard to expected rigor and timeliness?

The Kuraneza project implementation phases under evaluation include: (1) establishment of institutional support among MOH, MOE, CARE and other partners, (2) broad community sensitization, (3) intensive training for CHWs and MLs, and (4) deployment of a tiered knowledge transfer approach, from CHWs to MLs to community mothers and fathers, working to integrate and decentralize key health and development knowledge and behaviors, via an ECD platform.

Regarding the institutional support-building phase, institutional support emerged as a point of leadership under which the other phases organized. High-level buy-in and engagement demonstrated by MOH and MOE guided national and local activities. [22] This organization extended to district-level through steering committees with local government officials and hospital and health center staff, and at national-level through an advisory council formed from MOH, MOE, UNICEF, Concern Worldwide, and World Vision, with CARE facilitating the linkages to these external partners. [23]

In a review of the Kuraneza 4-year Work Plan, there was evidence of an intensive sensitization phase for building community trust and opening the door for large-scale buy-in at the population level in Nyarubaka, the long-term intervention site. Conversely, in the two short-term intervention sites where the sensitization period was shorter, the project was met with skepticism, lack of widespread engagement and some public disparagement at greater levels compared to the high sensitization area. [24] In Karama and Musambira, the less intensive sensitization seemed to be associated with reduced buy-in and more-limited implementation. According to data provided by project staff and 2012 census figures, in December 2014 there were 130 HB-ECD groups in Nyarubaka sector (total population = 24,991), 113 in Musambira sector (total population = 33,954), and 67 in Karama sector (total population = 18,860). [25]

In my neighborhood there is a sect of rebellious believers called 'Abanyabutayu' who believe this program is useless and it only benefits the MLs. – Mother Leader, Karama Sector

I have not done any assessment yet but there is a difference between where we started and where we are working in new sectors. It is seen that they (Karama and Musambira) expect the program to provide donations while in Nyarubaka they understand that the community's contributions are the pillar for the functioning of the program. – CARE Rwanda staff

Source: Annex 15, Final Operations Research Report, pg 17

The training phase had high coverage for CHWs and MLs on trainings planned in the Detailed Implementation Plan with very few modules missed. [26] However, a lack of monitoring data to establish learning uptake for both CHWs and MLs (e.g., pre and post training assessments of knowledge) prevents a determination of the training effectiveness. The one exception is with regard to ECD training effectiveness among MLs, where pre-test knowledge scores averaged 34.6% and post-test scores averaged 59.9%. [27] The qualitative research with CHWs and MLs revealed satisfaction with the capacity building tools presented through the CS-ECD curriculum. Still, CHWs and MLs were reported to have requested more frequent learning opportunities and offered new topics that they want to be trained on emphasizing that 'learning is a process', evidence that improvements and adaptations are required in order to meet their inputs. [28]

Review of the Project Workplan (Annex 4) reveals that most planned activities were completed without delay and at the intensity intended. There are several notable deviations. The intervention group did not begin implementation of all trainings of MLs until the last quarter of the first year, followed even later by the actual performance of ML duties at full intensity. Similarly, the establishment and implementation of the integrated model of CS interventions within HB-ECD did not begin until the second quarter of the second year. Moreover, there were delays in translating behavior change communication (BCC) materials and curriculum for the HB-ECD into Kinyarwanda. The Workplan indicates that translation and validation of these materials remains outstanding.[29] Some CS sensitization activities – such as

those covering hygiene, diarrhea management, latrine use – were not achieved as planned in Karama and Musambira sectors.

Longitudinal monitoring data were not availed for the evaluation, although the Kuraneza project team shared some cross-sectional monitoring data that revealed an impressive volume of indicators sensitive to the project’s activities and objectives that the Mother Leaders gather (e.g. tracking proportional participation, pregnancies, ANC, child health and nutrition, sick and at-risk children and health facility data).

The establishment of the HB-ECD site standards provided an opportunity to measure the quality of the project’s primary operating environment. As documented in the Site Observations of Home-based ECD taken near the endline (August, 2014) in the Nyarubaka village of Gatagara, the site was substandard, with a history of flooded structures and no latrine on-site). [30] In some cases, the observations also revealed limited space for child sleeping and to play and sit, and the absence or reduced quality of feeding, learning, and play supplies.

What were the integration pathways and mechanisms used?

The integration of Child Survival programming within Early Childhood Development programming

Messaging. The project’s primary integration pathway was the channeling of child survival messaging through an existing early childhood development project.[31] Self-organized small groups of women—many of which whom have children participating in the HB-ECD—could be targeted for sensitization activities and child monitoring in an efficient manner. This occurred through via CHWs and MLs.

In addition to providing information directly to community women and men, CHWs had the additional role of collaborating with and supporting Mother Leaders to fulfill their responsibilities to the project. The project provided ECD-related training to MLs.[32] However, CHWs provided monthly training to MLs on various health topics, which MLs relayed to women at that HB-ECD.[33] CHWs reiterated throughout the qualitative assessments the value of the ML in helping to unburden them by giving them ‘eyes and ears’ among the target areas and providing a centralized place (HB-ECD) to spread messaging to community mothers.[34]

When we have trained Mother Leaders, they help us train the rest, and so the work becomes easier. – CHW, Musambira Sector

They really ease our work by giving us the information and helping us to educate the parents. – CHW, Musambira Sector

Source: Operations Research Report, pg 22

The KPC data revealed that 40% of the endline sample in Nyarubaka was an HB-ECD group member, with 77% of these attending more than half of the group meetings devoted to imparting knowledge on child health and development in the three months prior to the survey. When asked about the type of information they received from MLs in the prior year, the majority of HB-ECD group members had heard about antenatal care (77%), child development stimulating activities (71%), exclusive breastfeeding (75%), family planning (77%), food preparation for children (76%), growth monitoring (80%), hand washing (73%), malaria prevention (70%), maternal, infant, and young child feeding (79%), newborn care (73%), and diarrhea care and treatment (64%). [35]

Monitoring. Child participation in the HB-ECD provided a method for monitoring the health and development of children aged 1 to 3 years. In addition to records kept from their home visits to

pregnant and lactating women and attendance records at HB-ECD group meetings for women and men, MLs kept extensive records on child wellbeing at the HB-ECD.[36] This included details on attendance patterns, what and when the child ate, and the child's hygiene level. In cases where there was concern about the child's health, the ML relayed this information to CHWs for follow-up. In Nyarubaka alone, as of December 2014, MLs were tracking 1,351 children who attended HB-ECD.[37]

Activities with Children. There were several activities undertaken at the HB-ECD that potentially influenced child health and good growth (Table 1). The HB-ECD schedule emphasized hygiene among children, with multiple sessions devoted to washing before eating and after playing. Each HB-ECD maintained a kitchen garden to support child feeding. A nutritious porridge meal was prepared daily and was provided to all children, regardless of family ability to contribute.[38] Indeed, key informants who participated in the Operations Research praised the project for its assistance in reducing child malnutrition through intervention pathways including the daily feedings at the ECDs, behavior change communication and trainings about hygiene and proper nutrition, the kitchen gardens, child growth monitoring, and expedient follow-up and case management for lagging children.[39]

Table 1. Sample HB-ECD Activity Schedule

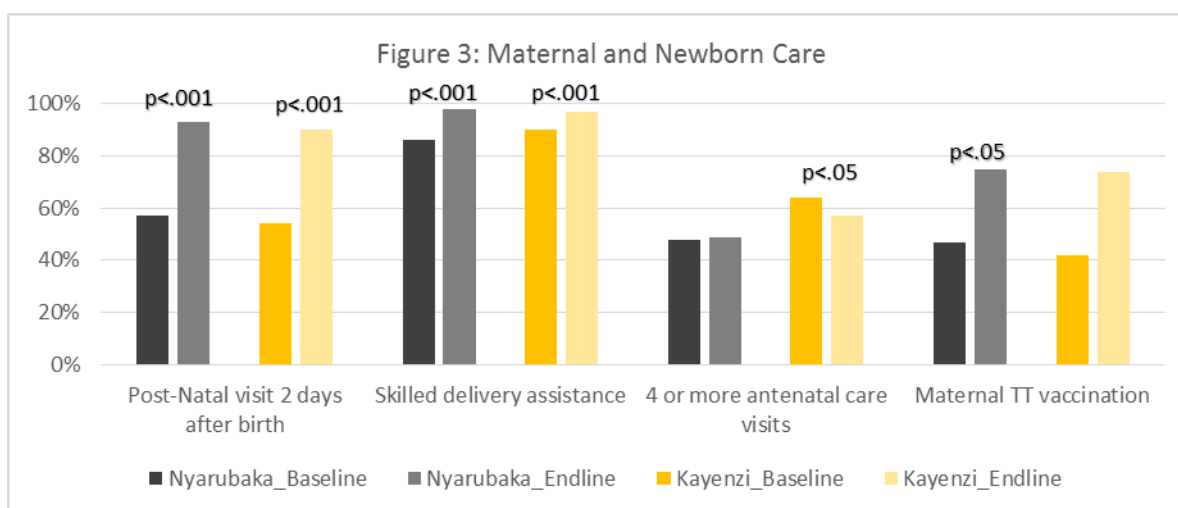
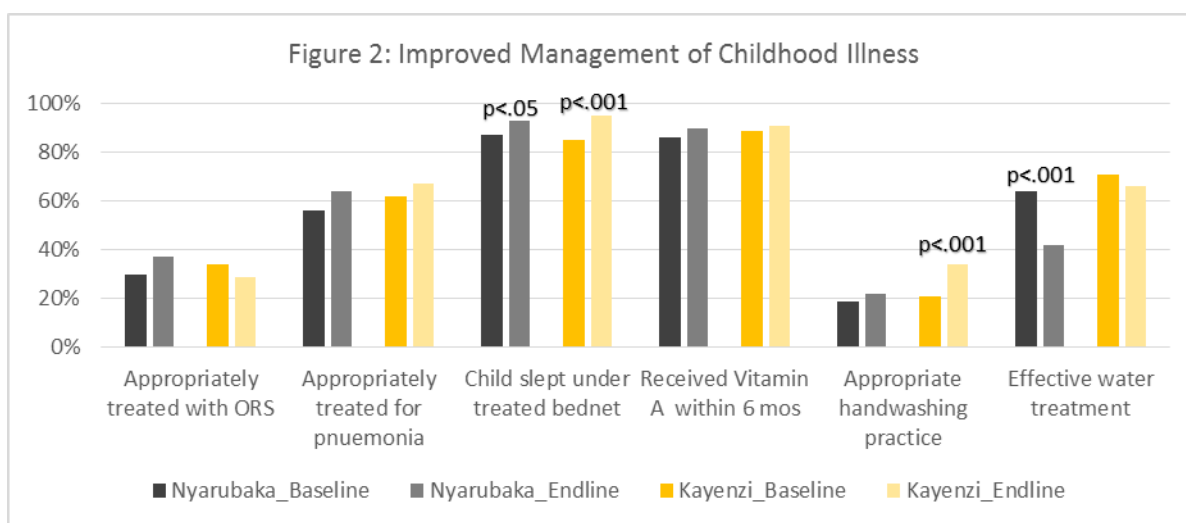
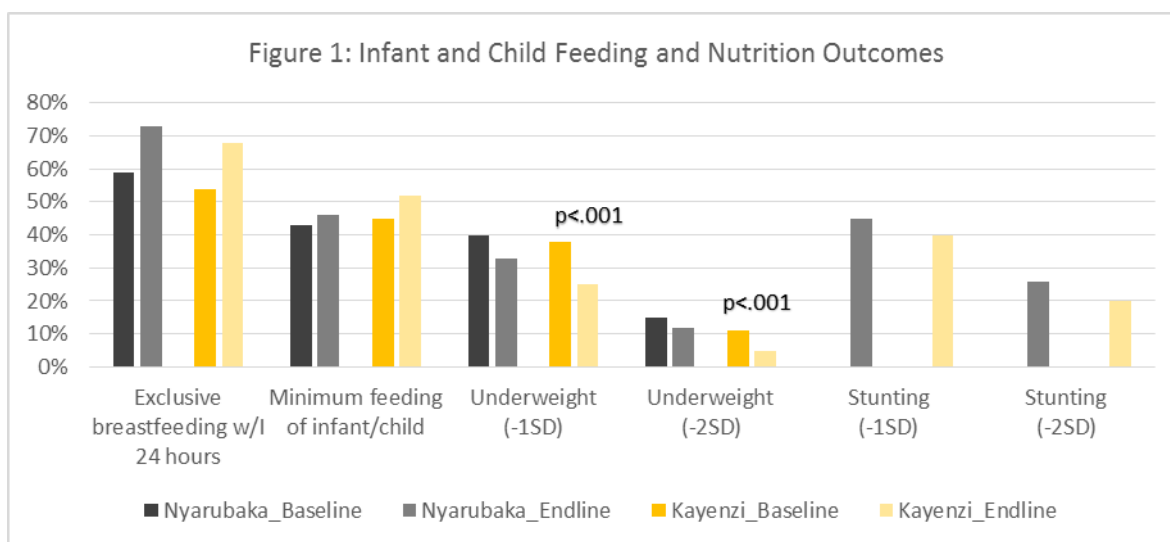
Hours	MONDAY	TUESDAY
7:00am-8:00am	Mothers/Caregivers check health and hygiene of children; Learn prayers & songs	Mothers/Caregivers check health and hygiene of children; Learn prayers & songs
8:00am-9:00am	Play with ball, build with stones, pretend to cook	Play with sand
9:00am-9:30am	Wash hands	Wash hands
9:30am-10:00am	Mothers cook and children eat porridge	Mothers cook and children eat porridge
10:00am-11:00am	Learn names of body parts	Learn how to put on clothes, button and tie shoes
11:00am-11:30am	Wash and return home	Wash and return home

Source: Annex 19. Nthanzi (ASQ) Draft Report

Were the strategies adequate to fulfil the project objectives?

The quantitative analyses of project outcomes were meant to determine the strengths and weaknesses of the approaches carried out in the comparison site and the intervention sites—the enhanced training approach for CHWs in the comparison site and the integrated CS-ECD approach facilitated by MLs in the intervention site. The CS-ECD outcomes of interest tested in the KPC are knowledge and behaviors directly linked to maternal and child health, community management of childhood illnesses, breastfeeding and nutrition, and early childhood development.

The KPC survey produced a number of clear patterns of outcomes over the four years of implementation (Figures 1, 2, and 3). Three distinct outcome categories emerged from the analysis of the KPC indicators: (1) Outcomes characterized by having definitive and/or statistically significant differences in either the intervention or comparison population, but not both; (2) Outcomes characterized by similarly high achievements demonstrated in both the intervention and comparison populations; and (3) Outcomes characterized by similarly low achievements demonstrated in both intervention and comparison populations.



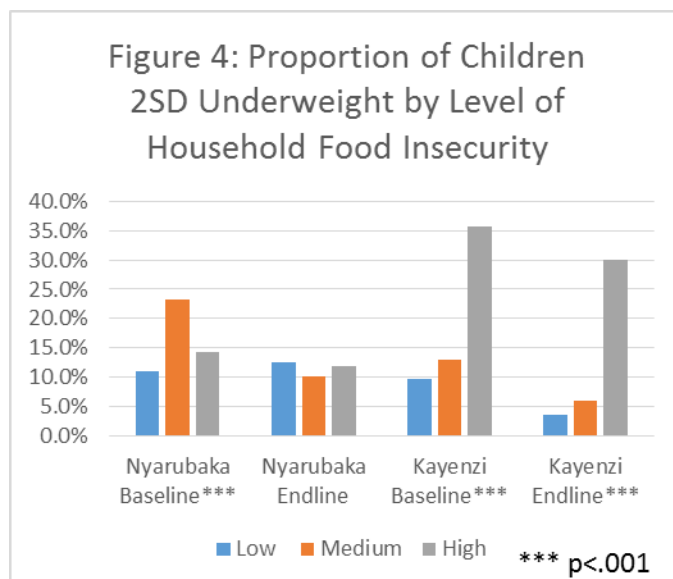
There were very few outcomes where the intervention group demonstrated dramatic or significant differences from the comparison group over time. Because the comparison population was generally better off at the baseline, even when the intervention group performance was statistically significant, it would often still be at a lesser level of knowledge, practice, or coverage relative to the comparison group. For example, in the intervention group, the increase of percentage of mothers of young children age 0-23 months who are using a modern contraceptive method improved from 51.4% to 63.5% from baseline to endline. However the comparison group's baseline rate was already at 62.4% and increased to 67.0% at endline.[40]

In some cases, there was an outright margin of improvement in the comparison group not matched by the intervention group. Cases where the comparison group wholly outperformed the intervention group in improvements include: Percent of children fed according to minimum standards, Percent of children who were one and two standard deviations underweight from the mean weight-for-age, and Percentage of children who show stunting at one and two standard deviations under mean height-for-age at endline.

Household food insecurity, as measured in the KPC, accounts for some differences in underweight children. For example, as shown in Figure 4, there were higher proportions of children underweight 2 Standard Deviations below the median weigh-for-age in houses with medium and high food insecurity in Nyarubaka at baseline and Kayenzi at both baseline and endline, relative to houses with low food insecurity.

The more complex element of this analysis is related to outcomes that improved in both populations. There may have been several sources of confounding between the two groups. However, improvements in indicators of either group are desirable. Noteworthy improvements shared by both groups (with similar margins of improvement) occurred with: exclusive breastfeeding, decreased intake of any other liquid besides breast milk, increases in consumption of commercially produced infant formula⁴, post-natal visit to 2 days after birth, skilled delivery assistance at birth, Tetanus Toxoid vaccination of pregnant mothers, child sleeps under Insecticide-treated new, and received Vitamin A dose within 6 months. The implication is that either approach taken in the intervention or comparison group nets a strong behavioral change in many MCH-specific practices.

Finally, several outcomes were not satisfactorily changed for either group, including: percentage of children with diarrhea who received ORT, percentage of households with appropriate hand washing/access to soap, and percentage of households that treat water properly (only for intervention). This particular group of outcomes is puzzling in that the surveyed percentage of households that have access to improved drinking water sources declined in the intervention group from 68.5% to 46.2%, while remaining constant at 72% for the comparison group over time. The comparison group's percentage of proper water treatment also was steady at 72%. Barring the pooled-cross section



⁴ This formula was distributed free of charge throughout the comparison and intervention areas. Improvements should be viewed with caution, as rates of use will likely decline with free access.

sampling issue, which could lead to the chance selection of a worse off intervention group at endline, other cause for this trend could be a breakdown of infrastructure (i.e. dried wells, piped or trucked water issues, etc.).

As seen in the Table 2, a Difference in Differences (DiD) Regression analysis was performed on the KPC data. DiD technique allows the evaluator to distinguish significant differences relevant only to time (baseline to endline) and differences relevant only to groups (intervention vs comparison) simultaneously. The interaction variable distinguishes across groups and time, to determine variables that were statistically significantly different taking both into account.

The DiD analysis reveals that the intervention strategy compared to the comparison strategy produces specific gains in some antenatal care, family planning and proper water use indicators. The lack of statistical significance across group variables could be attributable to lack of distinct differences in intervention and comparison outcomes, the implication being that they both improved concurrently. The comparison of baseline to endline outcomes were significantly different for multiple variables. The positive impact evidenced over time in each group is a substantial finding. The initial inference is that for those specific behaviors, either intervention would be appropriate though more data would be necessary to identify the specific mechanisms used to create gains in outcomes in the comparison sites. Finally, regarding the DiD interaction term (*taking into account time and group variables*) these indicators represent those where the intervention group performed particularly worse than the comparison group over time.

Table 2. Pooled Cross Sectional Regression Model Results

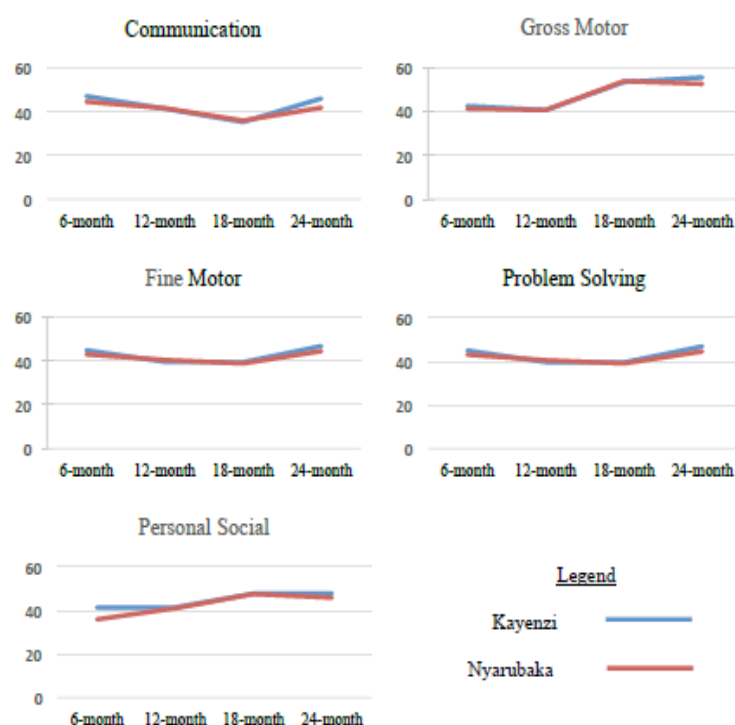
Key outcome variable	Factor		
	Group (Sector)	Time	Group*Time
Exclusive breastfeeding	1.24	1.82	0.99
Appropriate feeding practices	0.91	1.30	0.88
Pneumonia treatment	0.77	1.23	1.16
Skilled attendant at delivery	0.72	3.19***	1.93
Antenatal care	0.53***	0.76*	1.39
Family planning	0.59***	0.75*	1.47
Hand washing	0.90	1.95***	0.62*
Improved water use	0.72*	0.79	0.51***
Underweight (-1 st. dev.)	1.09	0.55***	1.37
Underweight (-2 st. dev.)	1.38	0.38***	2.07*
Post natal care	1.14	7.46***	1.27
ORT use for diarrhea	0.83	0.79	1.76
Tetanus vaccine	0.88	1.16	1.22
Vitamin A	0.78	0.64	1.19
ITN use	1.19	3.19***	0.64

Source: Final KPC report (2014)

*p<.05; **p<.01; ***p<.001

The ECD Assessment used the Ages and Stages Questionnaire (ASQ), which began with a baseline measurement of five dimensions of development among 243 children at approximately 6 months of age. The comparison group was intended to represent a true control, as no ECD messaging or programming was known to have been explicitly introduced to the mothers or young children. ECD outcomes were not noteworthy. There were no clear patterns evolving from data for all ECD outcomes besides Gross Motor Skills (these include: Communication, Fine Motor, Problem Solving and Personal Social) (Figure 5, from Annex 19: Nthanzi Report).

Figure 5: ECD Outcomes from Children Tracked Longitudinally on the ASQ



In DiD analysis across time and groups, without regression calculations, there was no distinguishable, consistent difference in mean ASQ scores between the intervention and comparison group. Compared to ASQ cut-off scores established among US populations as indicators of potential developmental lags on each developmental dimension, the mean scores for the cohorts tracked in Kayenzi and Nyarubaka were above these thresholds for each measurement interval. However, large proportions of children in Rwanda fell below these cut-offs.

The potential limits of the ASQ assessment and/or ECD intervention should not be viewed without the community context, whereby interviews with CHWs, MLs, mothers, and other key informants expressed a great acceptance and willingness to continue with the ECD agenda.[41,42] The KPC data provided additional context with regard to the promotion of early childhood development within the home, through a series of questions assessing family member engagement with the youngest member of the household in the three days prior to the survey. Interestingly, in both the comparison site and the intervention site, engagement patterns changed similarly over time. At endline, similar proportions of households reported playing with the child (90% in Kayenzi, 87% in Nyarubaka), singing songs and taking the child outside the home (approximately 60% in both sites), and telling stories and spending time naming, counting, and/or drawing things with the child (approximately 25% in both sectors). Across all activities and both sectors, the reported engagement levels for fathers increased noticeably.

What other big picture factors, outside the realm of the project may explain the achievements or under achievements of the project?

Two big picture factors provide context to the results presented above: (1) poverty among the communities and households and (2) the general operating environment.

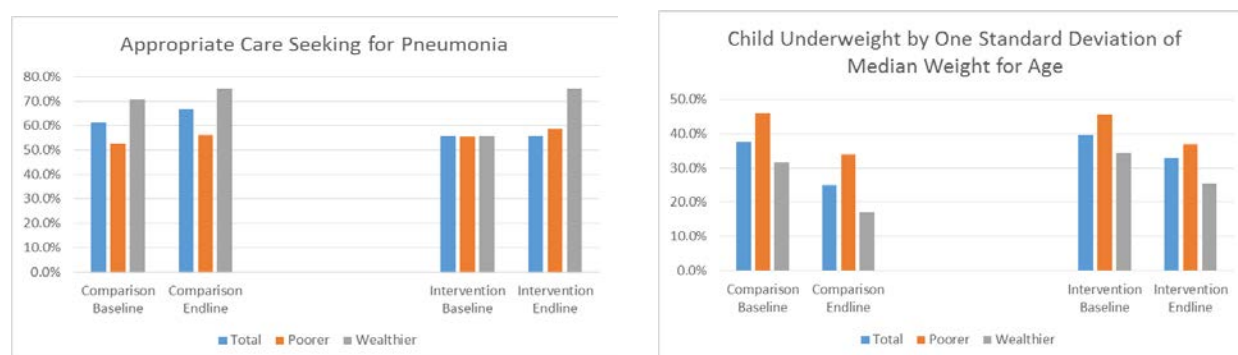
The effect of poverty on the project is thoroughly examined in the Qualitative Operations Research, wherein several hindrances to program participation and broad establishment of Kuraneza-supported

knowledge and practices are described. These include the effect of poverty on the perceived ability to participate in HB-ECDs and Center ECDs due to the cost of expected contributions for porridge or fees. Poverty was blamed for absences of mothers and children due to poorer health, linked also to their inability to afford insurance to follow-up on health behaviors. Nutrition was a consistent issue regarding general and seasonal food insecurity, malnutrition and access to wholesome food during the recovery of an illness. Based on qualitative data, the lower SES groups had a harder time understanding instructions, maintaining food security and purchasing supplies for high nutrient feeding and ECD activities.[43]

Household SES was associated with a variety of knowledge and practice trends in the KPC data, as well.[44] Whereas the general baseline to endline comparisons lacked in statistical significance across many outcomes, a number of outcomes were significantly sensitive to SES. Although the dichotomy of the wealth categories was a crude measurement, it became clear throughout the analysis that the poorer were more vulnerable in a range of indicators, most particularly child underweight and stunted, accessing treatment for childhood illnesses and contraceptive use.

The margin of improvement demonstrated wide variation from the poorer to wealthier groups, with a higher proportion of improvements occurring most often within the wealthier group. An example of this phenomenon is apparent in the trends for Appropriate Care Seeking for Pneumonia (Figure 6). In both the comparison group and intervention group, care-seeking for pneumonia was notably higher for those in the wealthier group at endline, and in the case of the comparison group, at baseline, too. A similar case is observed among the Percentage of Child underweight by one standard deviation of median Weight-for-Age. At baseline and endline in the comparison and intervention groups, the wealthier group is noticeably better off than the poorer group.

Figure 6: MCH Outcomes by Socio-Economic Status



These findings indicate that the goal of equitable impact was not reached at endline by the treatment in either the intervention or comparison group for several variables where there was disparity between wealth groups. It should be noted that this was not the experience for those outcomes defined above as 'improved for both groups'. For those groups, broad base improvement occurred, and there was little disparity between wealth groups.

The project's operating environment also may have affected project achievements. Though efforts were made to establish the study in regions naïve at least to ECD interventions, it is possible that ubiquitous national health policies and programs, as well as targeted regional efforts, could have impacted the sites. For example, the implementation of Integrated Community Case Management among CHWs was initiated in Kamonyi District in late 2010.[45] Additionally, community performance-based financing with both supply side (CHW) and demand side (community member) incentives was rolled out in 2009 and

2010, respectively.[46] In early 2010, Rwanda's Ministry of Health launched the first phase of a conditional, in-kind incentive scheme aimed at improving maternal and child health. Originally launched in 30 of Rwanda's poorest geographic sectors, including Kamonyi's Nyarubaka Sector, the program offered incentives such as soap and water purification products to women who receive prenatal care in the first four months of pregnancy, give birth at a health facility, and receive post-natal care for themselves and their infants within seven days after birth. Performance-based financing has proven effective in improving maternal and child health indicators in Rwanda. Yet, the full impact of these initiatives may not have occurred immediately and may have contributed to changes in indicator levels between Kuraneza's baseline and endline data captures, and perhaps differentially between Kayenzi and Nyarubaka.

Similarly, while Rwanda's GIRINKA (one cow per family) program has been implemented since 2009, the impact likely has been phased. Primarily an economic development program, GIRINKA also has contributed to improved food security through milk and meat production for poor families. National in scope, the program has evolved to include activities such as providing cow's milk to children at ECD centers and mobilizing citizens who own cows to provide daily milk to malnourished children living near them. GIRINKA may have complemented the Kuraneza project to enhance outcomes related to young child feeding, particularly among the poor.

There were several other international NGO efforts occurring in Kamonyi District during this time, including the USAID/Higa Ubeho Program (education, nutrition and HIV) implemented by CHF International, the DFID-funded Early Childhood Caregiver Professional Development and Certification program, and early childhood education and development projects implemented by Food for the Hungry. The question remains whether any of the data assessed were capturing the spillover or combined effect of these various and coinciding programs.

Were there any learning/evidence generated that is relevant to the MOH or other related ministries/programs which will influence national programming?

In addition to the learnings already presented, other Kuraneza Project findings have general relevance to Rwandan Ministries, specifically the MOH, MOE and MIGIPROF, as they plan for and implement national programming.

MOH: One important learning emerging from the qualitative data was with regard to the sustained training needs of CHWs and MLs specific to health. Both CHWs and ML separately requested continued and repetitive training on CS and MCH subjects, citing that the trainings were 'adequate' but more were necessary to have mastery of subjects.[47] CHWs requested additional training on family planning and maternal and child health.[48] MLs requested training on basic first aid so that they could help children at the HB-ECD as needed – a finding that likely has relevance for all individuals working with children in the education sector.[49]

MOE: A consideration for MOE, in conjunction with MOH, is the need for a simple, reliable and low-burden mechanism for child attendance and wellbeing monitoring. One of the fundamental responsibilities of MLs was to capture monitoring data about the wellbeing of young children and pregnant and lactating mothers. Records from home visits and attendance patterns at HB-ECD and group meetings were recorded in registers provided by the Kuraneza project and shared regularly with CHWs for follow-up. Observations of the HB-ECD monitoring records revealed inconsistent data quality. In one site, the logbook was up to date and well-kept with legible entries. In another site, the

official log was not up to date, with daily records spread across small pieces of loose paper. At another HB-ECD the log book was not available for viewing.[50]

MIGIPROF: Some learning from the evaluation speaks to issues of women’s empowerment and family promotion, which may be of interest to the Ministry of Gender and Family Promotion. Engagement in the HB-ECD had the secondary effect of family strengthening and influencing relationship dynamics between husband/wife. The qualitative data suggest that, with their “free” time, women were able to join men in the field which promoted ‘good relations among families’ or could devote their time to other activities that supported the household.[51] On the other hand, there was evidence that the project design might reinforce gender norms about childcare. The current Kuraneza design has mothers leading all caretaking activities. MLs suggested that men also could be incorporated in the running of the HB-ECDs, particularly in the context of assisting with income-generating activities to make them sustainable.[52] MLs also suggested the need for training in areas that MIGIPROF may have particular expertise to support: promoting family relationships, resolving conflict in families, and behavior change in men.[53]

For all Ministries, the experience in Karama and Musambira, the shorter-term intervention sites, speaks to the importance of adequate sensitization prior to the initiation of project models that challenge cultural norms. Moreover, initial buy-in is mandatory for local ownership, which stakeholders identified as a sustainability driver.[54] In sites not adequately sensitized, community members viewed CARE as owning the project and were resistant to implementing it as designed via a shared approach to caregiving and ECD, preferring others to take responsibility for caregiving and funding operations.[55]

Another condition for buy-in and sustainability that emerged from the Operations Research was the support of national and local leadership.[56] According to CARE program staff, the varied perspectives of partners comprising the project’s National Advisory Council and District Steering Committee helped ensure that programming and the implementation plan were feasible, efficient, and made use of the most current best practices.[57] While all parties were still involved with Kuraneza in mid-2014 at the time of the evaluation, CARE reported that the role for each group had diminished over time. Other key informants noted that turnover in leaders that had originally championed the project was a potential threat to sustained achievements.[58]

Table 3: Summary of Inputs, Activities, and Outputs Contributing to Key Outcomes			
Project Inputs	Activities	Outputs	Outcomes
Project Objective #1: Improved maternal and newborn care			
Building materials	MOH/CARE support to CHW/ML	12 CHW supervisors trained on supportive supervision	Increase in percentage of children aged 0–23 months whose birth was attended by a skilled Delivery Assistant . [Intervention: 86.4% to 97.5% (p<.001), Comparison: 89.9% to 96.6% (p<.001)]
Curriculum Bags/ T- shirts	Building CHWs/ML Capacity	315+ CHW/ASM trained once on: <ul style="list-style-type: none"> maternal and newborn care module BCC and adult learning strategy implementation RapidSMS and m'Ubuzima maternal and child death audit 	Increase in percentage of children aged 0–23 months who received a post-natal visit from a trained health worker within 2 days after birth of the youngest child. [Intervention: 56.8% to 92.6% (p<.001), Comparison: 53.6% to 89.6% (p<.001)]
Visuals/cards	Community Sensitizations		
Counselling cards			
Birth planning cards	ML Surveillance & referral of Maternal and Newborn health complications to CHW	2 sensitization meetings in each sector/cell conducted on: <ul style="list-style-type: none"> effective food intake for pregnant women (4 sessions out of 8 planned) importance of PNC visit for mother and newborn (4 of 8) birth preparedness and complications (4 of 8) 	Increase in percentage of mothers with children age 0-23 month with at least two Tetanus Toxoid Vaccinations [Intervention: 46.7% to 75.4% (p<.05), Comparison: 42.4% to 74.2%]
Home visit check list			
ML Facilitator guide			Increase in percentage of mothers of children age 0-23 using a modern contraceptive method [Intervention: 51.4% to 63.5%, Comparison: 62.4% to 67.0% (p<.05)]
Register for tracking data			

Project Objective #2: Improved community management of childhood illnesses			
Building materials	MOH/CARE support to CHW/ML	208 CHW/Binome Trained twice on C-IMCI training Module	Increase in percentage of children age 0-23 months with ARI symptoms taken to an appropriate health provider [Intervention: 55.7% to 64.3%, Comparison: 62.1% to 66.9%]
Curriculum Bags/ T- shirts	Building CHWs/ML Capacity	317 CHWs Trained on good hygienic practices <ul style="list-style-type: none"> • hand washing, • clean water techniques, • food conservation 	Increase in the percentage of children age 0-23 who slept under a treated bednet in the previous night [Intervention: 86.7% to 93.1% (p<.01), Comparison: 84.5% to 94.6% (p<.001)]
Visuals/cards	Community Sensitizations	4-8 sensitization meetings in each sector/cell conducted on: <ul style="list-style-type: none"> • community case management of ARI, (4 sessions out of 8 planned) • management of diarrhea (4 of 8) • the use of ITN (4 of 8) • good hygienic practices (4 of 8) • home based diarrhea management (4 of 8) 	Increase in the percentage of mothers of children age 0-23 months who have access to hand washing soap [Intervention: 19.2% to 22.3%, Comparison: 20.9% to 33.9% (p<.001)]
Counselling cards	Surveillance and CHW referral of Maternal and Newborn health complications	ML organized as Imboni z'isuku (role model) in their respective HB-ECD for 6 of 8 planned sessions	
Birth planning cards		ML targeted MG members on proper methods of hand washing on a quarterly basis	
Home visit check list		MGs sensitized on the importance of the of soap	
ML Facilitator guide		2 meetings/per sector community mobilization meetings facilitated on the use of recommended latrines	
Register for tracking data			

Project Objective #3: Improved infant and young child feeding and child nutritional outcomes			
Building materials Curriculum Bags/ T-shirts Visuals/cards Counselling cards Birth planning cards Home visit check list ML Facilitator guide Register for tracking data	MOH/CARE support to CHW/ML Building CHWs/ML Capacity Community Sensitizations Surveillance and CHW referral of Maternal and Newborn health complications	CHW peer learning sessions facilitated on effective exclusive breastfeeding (6 of 12) 1 Sensitizations per sector performed <ul style="list-style-type: none"> • CHW train ML on exclusive breast feeding (2 of 4) • ML train HB-ECD groups exclusive breastfeeding (4 of 4) 104 CHW facilitated to train mothers leaders on appropriate IYCF practices for 0-23 months children (5 training per sector) 315+ CHW trained twice on: <ul style="list-style-type: none"> • new Community-based nutrition programme • kitchen gardening, small animals promotion • active feeding sessions and peer learning • Infant and young child feeding (IYCF) In-home fortified micronutrients distributed to children under age 2 years in 12 sectors of Kamonyi district 30 Weighing scales provided for growth monitoring	Increase in the percentage of children who have received Vitamin A within the last 6 months [Intervention: 86.1% to 90.0%, Comparison: 88.6% to 90.6%] Increase in the percentage of infants age 0-5 months who were exclusively breastfed in the last 24 hours [Intervention: 59.3% to 72.5%, Comparison: 54.1% to 68.2%] Increase in the percentage of infants and young children age 6-23 months fed according to minimum appropriate feeding practices [Intervention: 42.8% to 45.9%, Comparison: 44.7% to 51.7%] Decrease in the percentage of children age 0-23 months who are 1sd under the median Weight-for-Age mean [Intervention: 39.6% to 33.0%, Comparison: 37.7% to 24.9% (p<.001)] Decrease in the percentage of children age 0-23 months who are 2sd under the median Weight-for-Age mean [Intervention: 14.8% to 11.9%, Comparison: 11.2% to 4.5% (p<.001)]

Project Objective #4: Improved cognitive, emotional, and psychosocial development of targeted children

<p>See Objectives 1-3 [59]</p> <p>Child friendly ECD centres</p> <p>Toys and playground materials</p> <p>Equipped ECD centre (4-5yr old)</p> <p>Qualified teachers and benefit from</p> <p>Child stimulation materials</p>	<p>See Objectives 1-3 of DIP [60]</p> <p>Construction of 6 ECD centres</p> <p>Identify and build the capacity of ECD teachers</p> <p>Establish PTA for the ECD centres</p>	<p>6 ECD centres built and/or rehabilitated then equipped</p> <p>Health and nutrition activities integrated within ECD activities</p> <p>24 PTA formation and capacity building for ECD centers completed</p> <p>6 Teacher training and refresher training for ECD centers completed</p> <p>153 Mother leaders trained on</p> <ul style="list-style-type: none"> • early childhood development/stimulation • child protection and rights <p>Developed curriculum for HB ECD</p> <p>Developed BCC materials for HB ECD</p> <p>Implemented the Integrated model of HB-ECD to include CS</p>	<p>Among HB-ECD members⁵, over half attended at least 75% of HB-ECD meetings</p> <p>Among HB-ECD members, a high percentage were provided CS-ECD information by the ML in HB-ECD, for example [Intervention: 50.9%(PNC) to 80.2%(growth monitoring)]</p> <p>Similar levels of Child Engagement Practices across intervention and comparison groups, with variation by type of activity</p> <p>Non-significant longitudinal improvements in all ASQ subdomains, except Gross Motor Skills which was significantly improved from baseline (p<.05)</p>
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⁵ KPC Endline Report (2014) notes 40% of intervention community households reported being in HB-ECD group and some spill over (n=14) in comparison group

CONCLUSIONS & RECOMMENDATIONS

While the Kuraneza project offers an innovative mechanism to improve child and maternal health and early child development, the analysis of Kuraneza project findings does not present comfortably straightforward answers or provide unarguable evidence of an outright success. The analysis required an intricate weaving of diverse layers of evidence, which consistently suggest the approaches and strategies chosen have the potential to be deeply effective in a supportive environment. This is expected when attempting a multi-modal initiative within the complex environments of communities and hierarchical groups including CHWs, MLs, and mothers in the community. This is true for both the intervention group and the comparison group, each representing their own unique complex system.

However, the evaluation reveals that an integrated CS-ECD model is feasible, and key successes have emerged. There were improvements on a number of CS and MCH outcomes in both the comparison and intervention communities, while CHWs in the intervention communities reported that the combined CS-ECD approach yielded efficiencies that reduced their burden. MLs were able to fulfill adequately many of the roles tasked to them and were respected partners to the CHWs. Those familiar with the HB-ECDs indicated that participating children had improved social skills and hygiene, and reduced malnutrition. The cultural momentum around ECD is present and vibrant, as demonstrated by increased household member engagement with young children in both Kayenzi and Nyarubaka.

Conversely, there were a number of imperfect activities, such as the implementation of an unvalidated version of the Ages and Stages Questionnaire to screen children for developmental delays and lack of timely upkeep and utilization of project monitoring data, both of which may have affected project decision-making and obscured clearer evidence of program efforts, outcomes and benefits. Likewise, poverty challenged many aspects of the project—from the ability of families to contribute to meals provided at the ECDs to disparities in CS outcomes based on household socio-economic status. Even MLs spoke to the ways that poverty affected their ability to model behaviors and fulfil their responsibilities to the Kuraneza project.

Future efforts must consider and account for these and other areas of improvement as well as issues of sustainability. To this end, Table 4 highlights the key learning and evidence generated from this study and provides recommended actions to strengthen and scale-up programming in Rwanda and elsewhere.

Additionally, further study of the Kuraneza project could be improved upon in several ways. First, it would be useful to include a pure comparison group, untouched by project activities, to help determine the extent to which CS and MCH outcomes are driven purely by improved training of CHWs. Second, future research designs should better coordinate measurement within subpopulations of project beneficiaries. For example, it would be useful to link child ECD data and mother's behavior and practice data and project exposure data for individual children across the entire spectrum of children, newborn to five years, rather than selectively capturing outcomes among different age cohorts of children as the current methodology does. Third, it would be useful to continue to measure KPC indicators after the birth of a second child in a subsample of households that have been surveyed for the current study to determine whether the benefits of project exposure are sustained over time within a household.

Table 4: Recommendations

Finding	Conclusion	Recommendation	Action	Who Is Responsible
While there is limited data available to assess the effectiveness of the capacity development given to CHWs and MLs, both cadres requested more frequent trainings and trainings on additional topics relevant to the project.	Addressing capacity gaps is important for instilling confidence in project personnel and promoting implementation quality.	Offer additional/supplemental trainings on topics requested by project staff: MCH, family planning, and income generating activities for CHWs and first aid, promoting family relationships, resolving conflict in families, and behavior change in men for MLs Institute pre/post knowledge and competency assessments of MLs and CHWs Revisit the current schedule for CHW training to determine whether shorter, more frequent modules are feasible	Identify institution to provide training Assess existing training materials & develop new materials as necessary Determine budget for training	MOH, MOE, MIGIPROF
Despite equitable access to the HB-ECD, there remained differences in CS-related KPC outcomes by SES and frequent qualitative reference to the challenges of poverty on benefiting from the full impact of Kuraneza.	The intervention had limited ability to fully address poverty-related inequities on child survival outcomes.	Include project mechanisms to penetrate the poverty barrier, including adaptive and participatory approaches to benefit the most poor, BCC approaches for sub-populations and deeper incorporation of behaviour change theory, in conjunction with poverty reduction and social service programming	Refinement of project materials and methods to improve message appropriateness, targeting and effectiveness for the poorest families. Strengthened efforts to link families struggling with poverty to existing social service and poverty reduction programming.	CARE, MOH, MOE, MINALOC

Some nutrition outcomes were associated with household food insecurity.	The high rates of short and long term markers of under-nutrition suggest that the project results must be interpreted in terms of the broad social ecology of nutrition in Rwanda.	Integrate anti-poverty and food security activities, especially targeting the most vulnerable households.	Explore potential linkages and integration points with projects promoting food security, such as GIRINKA and Feed the Future	
Evidence of additional resource needs for operations, including upkeep of project sites and supplies, food contributions for families that cannot pay, and income generation for MLs	These issues pose an immediate challenge to implementation fidelity and project quality and are theorized to be a threat to long-term commitment of MLs and achievement of child ECD outcomes	<p>Training on and/or start-up support for income generating activities for MLs and/or HB-ECDs</p> <p>ML cooperatives</p> <p>Performance-based financing (PBF) for MLs</p> <p>GOR budget support from the Education and Health sectors</p>	<p>Review health sector learning about the implementation of CHW incentives</p> <p>Develop/augment materials for IGA training</p> <p>Develop PBF indicators</p> <p>Cost out annual expenses for supply/site upkeep, PBF, and IGA support</p>	MOH, MOE
Outcome scores among longitudinally tracked children did not indicate that the Kuraneza project achieved significant and sustained gains in ECD compared to children not exposed.	It is possible that ineffective ECD programming and/or inappropriate use of the ASQ tool for evaluative purposes or even incomplete analysis of the ASQ cohort data may have produced these results	Additional analysis of the ASQ cohort data, factoring in program exposure and tracking the movement of individual children in addition to cohort averages, including consultation with ASQ developers about tool's use for program evaluation	Further Analysis with longitudinal and clinical considerations	CARE

ECD outcome scores were substantially lower than western averages for children of the same age	The children involved in both treatment and control showed ECD cut-offs very different than Western populations, possibly because the assessed children actually lagged or these differences may be explained by ASQ validity and reliability in the Rwandan context.	Validation studies of the ASQ in the Rwandan context, with support from local clinicians who can diagnose and support developmental delays	Reformulate ECD markers, assessments, clinical and community-level protocols for referral and intervention, all within the Rwandan context	CARE, MOH, MOE
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