EVALUATION OF THE NUTRITIONAL EMBEDDING EVALUATION PROGRAMME

AN INFORMATIONAL INTERVENTION IN WESTERN KENYA

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Preface

Evidence Action scales proven solutions that improve the lives of millions. We implement cost-effective interventions whose efficacy is backed by substantial rigorous evidence. Since Evidence Action's inception in 2013, the organization has operated two programmes at scale: Dispensers for Safe Water and The Deworm the World Initiative. In 2014, Evidence Action set out to build new, evidence based programmes with cost-effective impact at scale. We launched Evidence Action Beta - an in house incubator of potential programmes - and assembled a dedicated team focused on our "global innovation" agenda. Since then, we have been identifying and testing evidence based ideas to gauge their potential for implementation as cost-effective programmes with impact at scale.

The Nutrition Embedded Evaluation Programme (NEEP) was a particularly interesting intervention. It provided an opportunity to test an innovative idea that aimed at addressing the challenge of stunting and below normal height-for-age, which is a manifestation of chronic undernutrition. It also gave us an opportunity to explore an idea that could, conceivably, be implemented using the existing infrastructure of one of our at-scale-programmes, Dispensers for Safe Water (DSW), and thus potentially maximise cost.

Evidence Action tested NEEP in Kenya where stunting remains a significant problem, with a reported 26 percent of children under the age of five stunted). Low levels of nutrition knowledge and poor feeding practices among parents have long been cited as key causes for undernutrition. Any intervention that can improve nutritional knowledge and induce behavioural change among parents has the potential to greatly improve health outcomes among children under five.

NEEP was modelled on an intervention with proven impact. The MaiMwana intervention, conducted in Malawi, provided information on nutritional practices to pregnant women and mothers, and was observed to reduce infant mortality and improve growth outcomes. Indeed, multiple trials have shown that informational education programmes can induce positive change in nutritional practices[1].

However, informational programmes tend to be difficult to scale. They are costly, requiring heavy investment towards building a network of workers to disseminate the information. NEEP was especially attractive since it was able to use the existing platform of Evidence Action's Dispenser for Safe Water programme. Dispensers for Safe Water enlists a network of (volunteer) promoters to deliver safe water messages to over 4.8 million people across Kenya, Uganda and Malawi. In NEEP, we saw an opportunity to leverage this network of promoters to deliver additional nutritional information to households at a very marginal cost.

Evaluating NEEP has been instructive for our team. Ultimately, the evaluation, is helping us make strategic decisions on the intervention's potential for scale-up. We believe the results will also be of interest to a larger community of researchers, donors and policymakers seeking to learn more about what works to improve nutritional outcomes.

Paul N. Byatta
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[1]All references given in the main text of the report

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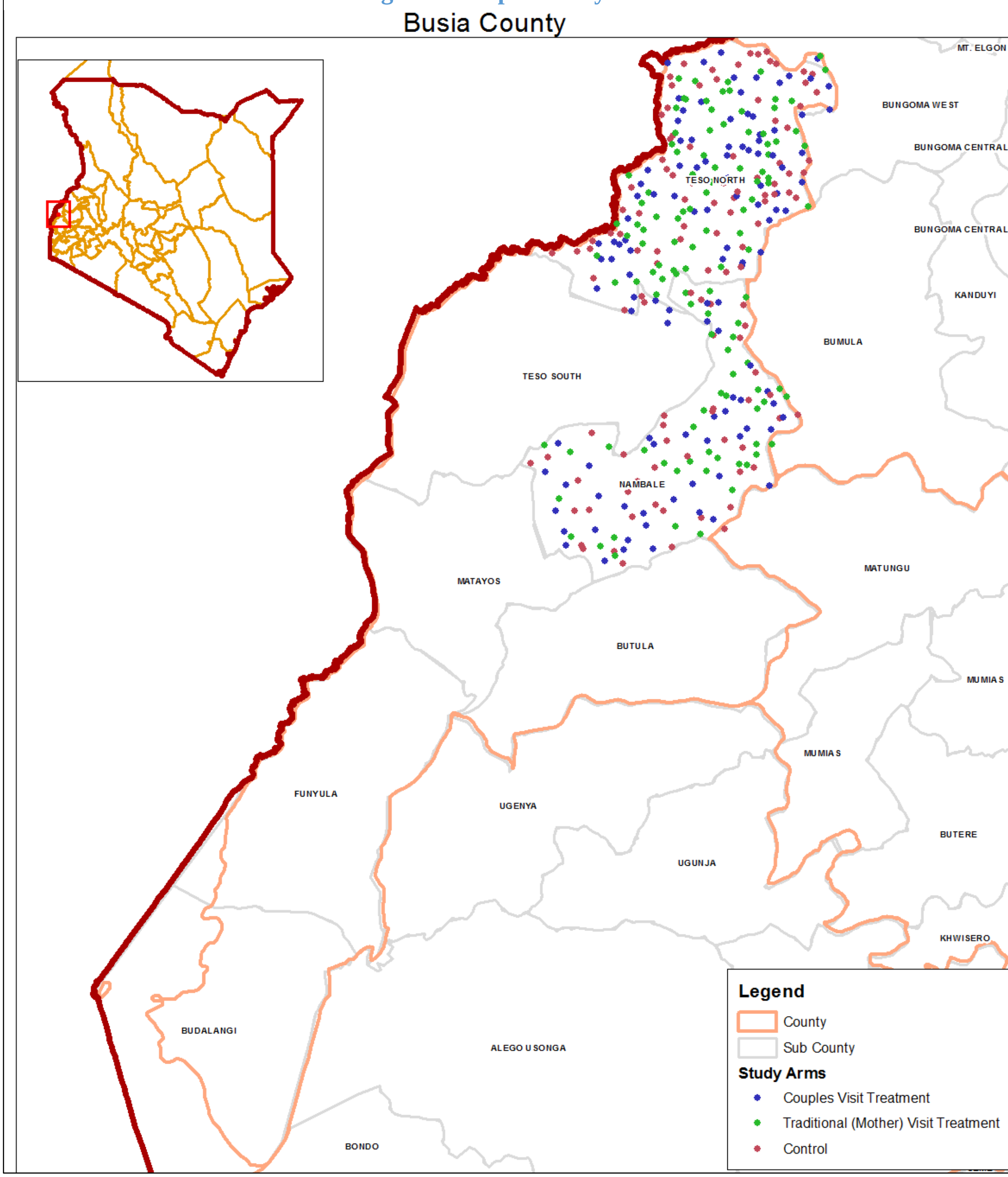
Map of Study Area

Figure 1: Map of Study Area



Acronyms

DSW	Dispensers for Safe Water
EDEPO	Centre for the Evaluation of Development Policies
IFS	Institute for Fiscal Studies
IYCN	Infant & Young Child Nutrition (USAID project)
KDHS	Kenya Demographic and Health Survey
NEEP	Nutritional Embedding Evaluation programme
RCT	Randomized Control Trial
WHO	World Health Organization
MLIS	Monitoring Learning & Information Systems

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Executive summary[2]

Undernutrition among children remains a significant challenge in Kenya with 26% of children under the age of five registering low height-for-age ratios or, in other words, experiencing stunted growth. The problem is often attributed to parents' scant knowledge of optimal feeding practices. Augmenting this knowledge by providing caregivers with information on nutrition has proven to be effective - inducing positive changes in caregivers' behavior and, in turn, improving health outcomes among children. Designed to supply this critically needed information, NEEP was tested as a potentially impactful, cost-effective and scalable innovation to reduce undernutrition and improve growth outcomes among children.

The programme leveraged the infrastructure of Evidence Action's Dispensers for Safe Water programme. NEEP trained select DSW promoters on proper nutrition, and methods for delivering messages to target groups through home visits. NEEP was evaluated through a randomized controlled trial involving two treatment groups and a control group. In the first treatment group nutritional information was shared with the child's mother only, while in the second treatment group the information was shared with both the mother and the father of the child.

The information shared spanned several topics including what types of food are high in protein, best practices for preparing and cooking food, hygiene practices etc. The information was delivered to households with children 6-24 months old. The advice was provided through the dispenser promoters of the DSW programme. Households in the control group, received normal visits from promoters - aimed at sharing information related to safe water treatment only.

NEEP was implemented in select villages in Teso North and Nambale sub-counties of Busia County, Western Province, Kenya, for a period of 18 months. A baseline survey of 1,671 households, across the different sample water points, was conducted before initiating the programme. At baseline, information was collected on nutritional and breastfeeding knowledge, food and non-food consumption at household level, water practices (including a chlorine test of a drinking water sample) and anthropometric measurements of the child. The same households were tracked again for the endline survey, with additional information being captured on intervention delivery and other secondary outcomes.

The key question investigated through the evaluation was whether the delivery of nutritional information to targeted households would lead to changes in nutritional knowledge, feeding practices and consumption, or child growth outcomes.

In answering this question, the study faced a significant challenge, namely information spillover. During the endline survey, a number of control households reported discussing nutritional information with dispenser promoters during household visits. It is possible that high social interactions between dispenser promoters related to different treatment arms led to the transmission of nutrition information to the dispenser promoters serving the control group. These promoters may, in turn, have felt that the need to include the new information in their household visits. The relative proximity of clusters in the study, and apparent regularity of inter-village interaction, meant that messages were spread throughout study area simply through word of mouth.

Efforts were made to account for this contamination in the analysis, by considering treatment not only in a discrete way, i.e. did the household belong to a treatment group or control group, but also in a continuous way i.e. what level of treatment might the household have received as a result of messages spreading throughout the study area. Using this analysis, the study investigated the primary outcome of interest, height-for-age and secondary outcomes of parental nutrition knowledge, child nutritional intake, and

[2] All references are in the main text of the report

intervention delivery, which could help trace the causal chain through which the intervention's impacts on height.

The results reveal that NEEP had a mild positive impact on the primary outcome, once the indirect effects resulting from the propagation of the nutritional messages across the study area are accounted for. The findings on secondary outcomes, however, do not provide a clear picture of the mechanisms through which the effects on anthropometrics were achieved. The study finds limited evidence on improvement in child nutritional practices as a result of NEEP. However, given that we do not have a clear comparison group to compare to the treatment group, it is difficult to say whether this is due to NEEP being ineffective or to the difficulties in precisely controlling for contamination.

The evaluation, also shed light on the feasibility of using existing supply infrastructures available in the DSW programme to deliver nutritional information. In particular, we have no evidence indicating that NEEP undermined the safe water practices encouraged within the DSW programme. Promoters delivered the water treatment messages along with the new nutritional messages and we found no differences in household practices related to water treatment.

Based on these findings, a key recommendation that emerges at this point is to not scale NEEP in its current form. The evidence is not conclusive and further testing is required.

Even with the challenges related to the evaluation, the programme was able to able to providing interesting lessons for future endeavors on nutritional programmes. The first key lesson learned from NEEP is that there is a need for a better understanding of how social interactions take place and to account for these in the evaluation design. The dynamics of geographical and social networks are important components that need to be considered during the planning and design of evaluations. The second lesson relates to the need for similar interventions to include specific protocols for targeting and engaging the male members of households effectively. Male members of the household are typically unavailable during working hours, hence additional measures need to be taken to reach them. The third lesson is that there is potential to layer additional programmes on top of existing ones without adversely affecting the initial programmes. NEEP was delivered without any detrimental impact on DSW outcomes. However, further investigation is needed to explore the potential of this avenue of service delivery.

Evidence Action and the Institute of Fiscal Studies (IFS) will be disseminating the results, lessons and recommendations from the study to key stakeholders within and outside the organization. The findings will also be shared with the larger community of policy makers through blogs, articles and presentations, to share lessons and findings on the model and process followed for testing and delivery of the intervention. Evidence Action will continue to investigate the potential of using the DSW platform for scaling other service delivery programmes in a cost-effective manner.

Structure and contents

The report is divided into five main sections. Section one covers the motivation, design and logic behind the evaluation; section two provides an overview of the programme and evaluation design; section three provides, in greater detail, the methodology of the evaluation; section four presents the findings from the evaluation; and section five provides a discussion of the findings. Section six and seven outline the key lessons and recommendations inferred from the results of the evaluation.

1. Introduction

1.1 Purpose, objectives, and questions

It is now widely recognized that the early years of childhood are critical for children's physical and cognitive development. Nutritional deficits experienced during these years can influence later life outcomes and spur medical conditions that, left untreated, become progressively less reversible. Poor maternal and child nutritional, feeding, and hygiene practices are all major contributing factors to the high levels of mortality, morbidity and undernutrition seen at early ages in low-and middle-income countries (LMICs), particularly those across Sub-Saharan Africa (Black et al., 2008) (Hutton, Haller, & Bartram, 2007). Education has been identified as a tool that can mitigate the impacts of these factors: if parents are better informed about how they should feed and care for their child, they will adapt their behaviour accordingly thereby improving child development outcomes. Educational interventions are advantageous since they are relatively low cost, and could generate sustainable change by empowering households to make better decisions, even after an intervention ends. This report evaluates the effectiveness of an intervention, the Nutritional Embedding Evaluation Programme (NEEP), implemented in Western Kenya, which delivered messages pertaining to infant feeding practices in inducing changes in knowledge, behaviour and child health outcomes.

Although there is considerable evidence supporting the idea that nutritional interventions which provide *only information* can induce positive changes in behaviour and affect health outcomes, this evidence typically comes from small-scale efficacy trials, and there is still a relative dearth of evidence about how to effectively administer these kinds of programmes at scale. NEEP's strategy - leveraging an existing supply of dispenser promoters to delivering nutrition messages to target groups through home visits - offers a possible solution to the problem of how to deliver these types of programme at scale for a relatively low cost. Home visits have already been proven to be an effective way of inducing positive changes in parental behaviour along a number of dimensions, including the maintenance of exclusive breastfeeding (Morrow, et al., 1999) (Haider, Ashworth, Iqbal, & Huttly, 2000) (Lewycka, et al., 2013) (Bhandari, et al., 2003) and improving childrens' psychosocial stimulation (Grantham-McGregor, Powell, Walker, & Himes, 1991) (Yousafzai, Rasheed, Rizvi, Armstrong, & Bhutta, 2014).

Another question surrounding informational interventions is: who should this information be given to in order to maximise impact? To date, relatively few studies in the LMIC context have explicitly sought to assess the role fathers play in the success of nutritional interventions. NEEP set out to determine the relative impact of engaging both parents when delivering nutritional messages, versus engaging the mother/primary female caregiver alone. By splitting treatment into two arms - one in which only the mother was the target of the messages, the other in which attempts were made to include both parents in the intervention delivery process – we sought to isolate the additional impact that involving fathers can have on the effectiveness of such interventions.

To prompt households in treatment groups to follow the messages delivered during home visits, a poster summarizing the main pieces of advice was given to recipients to hang within the household - in close proximity to areas of food preparation. This poster served as an added salience element to the messaging. However, treatment households received different types of posters. Approximately half of the households received a small, monochromatic poster while the other half received a larger, colourful poster. We sought to evaluate the responsiveness of outcomes to these changes in salience.

The findings of the study will be used by Evidence Action to make strategic decisions regarding the potential scale-up of the nutritional programme across Kenya and elsewhere. More generally, the results are useful for institutions and donors attempting to cost-effectively improve nutritional outcomes using community resources.

1.2 Background

In recent years, Kenya has registered tremendous improvements in child health outcomes. Between the last two Kenyan Demographic and Health Surveys (2008/09-2014), the infant mortality rate fell from 52 to 39 per 1,000 live births. These declines have been driven by increases in antenatal and postnatal care, more skilled attendance at childbirth, better use of mosquito nets, a decrease in unmet family planning needs, and improvements in other factors such as education and access to water (Kenya Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCAH) Investment Framework, 2016).

However, despite these positive trends undernutrition and malnutrition remain significant public health problems. Stunting, or low height-for-age, is still prevalent, with 26 percent of children under the age of 5 stunted (2014 KHDS). Stunting rates are highest among children aged 18-23 months (36 percent) and among children in rural areas (29 percent). Poor feeding practices and knowledge deficits partially account for Kenya's persistently high rates of undernutrition. As part of our baseline data collection we administered a 25 question, true or false, quiz to female primary caregivers. The quiz contained questions related to best practices - including feeding practices - for ensuring optimal child nutrition. The sample of caregivers answered, on average, 15 questions correctly; fewer than 5% of respondents answered 20 or more questions correctly. There were several widespread misconceptions: 90% of the sample believed that most of nutrients in soup are in the broth rather than in the solids contained in the soup, 82% believed that a large range of foods should be promptly introduced to children during the first stages of the weaning process, and 56% believed that parents should force children to eat their food even if they do not want it.

A shorter nutritional quiz, containing an 11 question subset of the questions asked to the primary female caregivers, was also administered to husbands/fathers who answered, on average, 5 questions correctly. The belief that most of the nutrients in soups are in the broth was a common misperception for them too, along with the perception that some chicken parts that are suitable for consumption by adults are not suitable for consumption by children.

Other commonly cited drivers of undernutrition include poor maternal nutritional status, lack of access to safe water and hygiene, malaria and HIV/AIDS. In addition, most Kenyans rely on diets that are insufficiently diverse in micronutrients (Kenya Situation Analysis for Transform Nutrition, 2011).

To administer NEEP in a design with the potential for scale, we made use of an existing safe water supply platform (Dispensers for Safe Water) that provides access to safe water and delivers water treatment information to approximately 4.8 million people. Through this programme, Evidence Action has established a robust and far-reaching supply chain that focuses on delivering chlorine to volunteer promoters who refill dispensers and relay information to their community about the dangers of contaminated water and how to treat water with chlorine. These promoters are members of their local community and are elected by their peers. Our programme leveraged the existence of this service delivery platform to provide promoters with additional training on proper nutrition (based on key indicators for Infant and Young Child Nutrition) and methods for delivering these messages to target groups through home visits.

The home visits were modelled on the "MaiMwana" infant feeding intervention (Lewycka, et al., 2013), a home visiting programme in Mchinji District, Malawi, which provided information to pregnant women and mothers of infants aged less than 6 months on how best to feed their infants. This intervention significantly reduced infant mortality (by between 18% - 30%) and improved height-for-age by 0.27 standard deviations (Fitzsimons, Malde, Mesnard, & Vera-Hernandez, 2016), (Lewycka et al., Effect of women's groups and volunteer peer counselling on rate of mortality, morbidity, and health behaviours in mothers and child in rural Malawi (MaiMwana): a factorial, cluster-randomised controlled trial, 2013). We worked with the MaiMwana staff team in the design stage to adapt their intervention to the Kenyan context, and to target a slightly older group of children (i.e. 6-24 months). This process was aided by qualitative research (including focus group discussions and individual interviews with parents, village elders and community health workers) which provided insight into existing feeding practices and constraints faced by households.

1.3 Logic and assumptions

Trials of this kind are typically administered by health workers, and most require beneficiaries to visit a health facility. In developing countries, and particularly in rural areas, health services are geographically dispersed, and are under extreme pressure due to a lack of qualified personnel and resources. Hence, health worker home visits have rarely achieved significant coverage or effectiveness when taken to scale (Haines et al., 2007). Programmes that require the beneficiary to visit a health facility can suffer from low uptake (particularly in rural settings, where families may have to travel long distances to reach a facility), and are likely to find that uptake is biased towards the less needy because children from poor families are less likely to access health facilities than those from wealthier families (Schellenberg et al., 2003). The utilisation of local volunteers helps to circumvent issues relating to the use of health workers for programme delivery at scale.

The DSW promoters are seen as respected members of the local community; they are in close and regular contact with the households that they are delivering the information to. These regular contact points with community members should provide the necessary opportunities for repeated one-to-one interactions to deliver nutritional messages, as well as creating `nudges' for households to abide by these messages through the channels of peer influence and habit formation.

Further to this, a key logic behind the strategy of using the DSW promoters is that it provides a platform that can easily and cost-effectively scale the nutritional information programme. The DSW programme currently has close to 56,146 promoters spread across the regions of Uganda, Kenya and Malawi. The nutritional educational programme has the potential to be taken to scale across these regions using the promoter network, in a cost-effective manner.

Mothers are typically the main care-givers of children, particularly in the context of sub-Saharan Africa. As such, programmes that seek to improve child health outcomes usually aim to induce a change in their beliefs, knowledge and practices. However, in many developing countries, mothers often lack access to or control over household resources. Indeed, in the context we work in, fathers are more likely to work to generate income than mothers (85% vs. 55%), and they also earn more. Mothers may thus be limited in their ability to act on new information that is delivered to them through educational interventions such as NEEP. Involving fathers might be crucial to ensuring the success of such interventions. Existing research has found that fathers may adjust their labour supply in response to information on nutrition (Fitzsimons, Malde, Mesnard, & Vera-Hernandez, 2016).

The use of posters, containing some of NEEP's key messages as an intervention material - and the decision to split poster treatment between a large, colourful poster and a smaller, monochromatic poster – is driven by recent findings in economics literature that salience may induce behavioural effects in consumer choice (Bordalo, Gennaioli, & Shleifer, 2013), the pricing of assets (Bordalo, Gennaioli, & Shleifer, 2013) and taxation (Chetty, 2009). Merely providing the poster, and encouraging the recipient to hang it in the area where food is prepared, acts as a "prompt" to remind them to abide by the nutritional practices that are being encouraged. Testing for heterogeneous effects across poster types allows us to assess the importance of salience in the context of nutritional education.

This study focuses on two specific dimensions of the child health productive process – nutrition and breastfeeding – for children between the ages of 6 and 24 months. This age range is widely recognised as a "critical window" for the promotion of optimal growth, health and behavioural development: longitudinal studies have consistently shown that this is the peak age for growth faltering, deficiencies of certain micronutrients, and common childhood illnesses such as diarrhea (PAHO, 2003). Furthermore, after two years of age, stunting becomes much harder to reverse, and some of the functional deficits brought on by malnutrition are likely to be permanent (Dewey & Adu-Afarwuah, 2008). Short-term consequences of poor nutrition during these formative years include increased morbidity and mortality risk; or delayed mental, motor or social development. In the long-term, early nutritional deficits have been linked to impaired intellectual performance, work capacity, reproductive outcomes and overall health during adolescence and adulthood.

2. Evaluation

2.1 Evaluation purpose

Evidence Action scales proven development solutions to benefit millions of people around the world, implementing effective interventions whose efficacy is backed by a substantial evidence base. In addition to operating two at scale programmes (Dispensers for Safe Water and the Deworm the World Initiative), Evidence Action prototypes and tests evidenced based interventions with the potential for cost-effective impact at scale. As such, as well as making a general contribution to the evidence base in terms of delivering nutritional information at scale in lower and middle income countries, the evaluation is an important tool in allowing Evidence Action to test a nutrition information campaign that was found to have significant positive impacts on child morbidity and growth in a new setting. These evaluation results will be used to demonstrate the objective impact and cost-effectiveness of a programme that has been deliberately modified from a different context (Malawi) to take into account local needs and on-the-ground practicalities of scalable programmes. They will also provide guidance as to whether it is possible to "layer" two programmes, which both make use of volunteers and local community resources, while still maintaining the efficacy of both programmes. Evidence Action will use these evaluation results to determine whether the impact and cost-effectiveness of the programme are sufficient to justify the scaling up of the programme across the entire DSW network, which already serves 4.8 million people across 3 different countries; and is currently being piloted in further locations.

2.2 Evaluation team

The NEEP evaluation team consists of researchers from the Institute for Fiscal Studies and members of Evidence Action's Monitoring Learning and Information System (MLIS) department. The study was led by Dr. Marcos Vera-Hernandez, Reader in Economics at University College London, who provided intellectual leadership for the evaluation. He designed the trial, and was involved in designing the data collection instruments, analysis and interpretation of the data and findings. He was assisted by Dr. Bansi Malde, Lecturer in Economics at the University of Kent, and Research Associate at IFS, who helped design instruments, analyse and interpret the data and findings; and by Sam Crossman, Research Assistant who managed and analysed the data. For the latter, two teams were involved in the NEEP study, data collection team and data management and analysis team. The Data collection team was led by Faridah Mung'oni who is the manager in charge of data collection and assisted by Jasper Otieno who is the associate in charge of data collection. The main role of this team was recruiting, training, organizing and overseeing staff in charge of all data for collection. The data management and analysis team was led by Evidence Action's manager for Design, Data processing and analysis assisted by Olive Mutai, the senior associate for data analysis. This team lead data management of all NEEP and analysis of monitoring data as well as providing guidelines on monitoring aspects of the intervention. The associate director of MLIS, Paul Byatta provided budget management and project management oversight of evaluation activities.

2.3 Programme design and target population

The intervention was implemented as a cluster-randomized control trial in selected villages in Teso North and Nambale sub-counties of Busia County, Western Province, Kenya. This is a primarily rural province, with poor access to basic healthcare services. The main economic activity is agriculture, with agricultural employment rates greater than the national average. Levels of diseases such as HIV, diarrhea, malaria and

TB remain high. This region was chosen as it was the immediate region where Dispensers for Safe Water was expanding to during the planning stage.

Only households that belonged to the catchment area of study water points, and contained children aged 0 – 18 months at the time of baseline data collection, were chosen to participate in the programme. The selected households were to receive visits from the trained promoters, only once the child was of 6 months and were to continue till the child was 24 months of age. The intervention ran for a total of 18 months. Children who were 0 months at baseline were 18 months at endline and benefitted from the intervention while they were 6 to 18 months of age. Children who were 18 months at baseline were 36 months at endline. These children will have directly benefitted from visits by the promoter while they were 18 to 24 months of age. In addition, one would expect that the improvements in nutritional knowledge and practices during the intervention period will remain in the household, and the benefits will accrue even when the promoter is no longer visiting the household. In this sense, the evaluation is also capturing up to what extent the life of the benefits extend beyond that of the household visits. The home visits by the promoter were only to begin when the youngest child in the household reached 6 months of age, so as to avoid inadvertently discouraging breastfeeding at very early ages. This is in line with WHO guidance that infants should be exclusively breastfed throughout their first 6 months to achieve optimal growth, development and health (WHO, 2011).

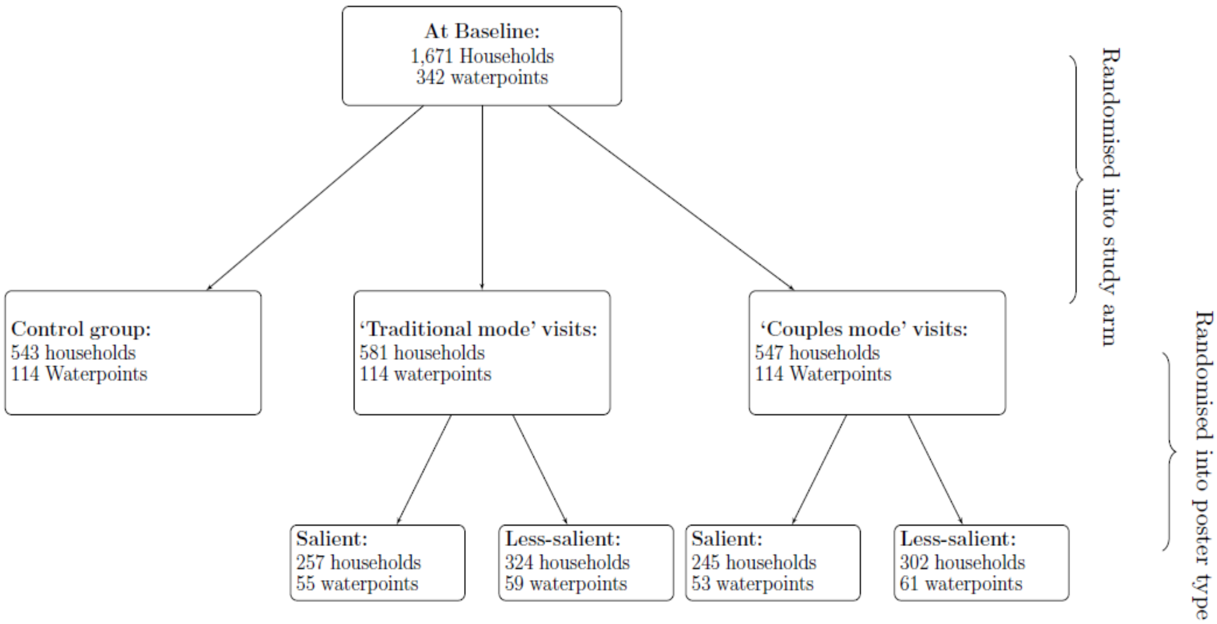
The intervention included information on the maintenance of breastfeeding, safe/hygienic preparation and storage of complementary foods, the amount of complementary food needed, food consistency, meal frequency and energy density, nutrient content of complementary foods, and feeding after illness. The advice was formulated by a local nutritionist, and followed the Guiding Principles for Complementary Feeding of the Breastfed Child (PAHO/WHO 2003). While consistent with WHO recommended best practices, this advice was also simple enough for promoters to deliver directly to targeted households without substantial training. Advice included examples of affordable foods with high protein content; promotion of locally available nutritionally rich foods; tips to cook food to help children's intake and digestion; and hygienic measures in food preparation and consumption. Hence, the intervention followed a food-based comprehensive approach, which is thought to be more cost-effective and sustainable than interventions targeting individual nutrient deficiencies (Dewey & Adu-Afarwuah, 2008). The home visits were modelled on the MaiMwana Infant Feeding intervention that has been taking place in Mchinji (Malawi) since 2005.

The unit of cluster was the catchment area of (i.e. the households that collected their water from) a water point/water-source with a DSW chlorine dispenser attached. At baseline, our study included a total of 1,671 households with children aged between 0-18 months, spread across 342 water points.

2.4 Evaluation design

The randomised design of the intervention is crucial in ensuring that any impacts we estimate are indeed causal. Non-randomised study designs can detect associations between an intervention and an outcome, but typically in these settings it is very hard to rule out the possibility that the association was caused by a third factor linked to both intervention and outcome. Random allocation of treatment ensures no systematic differences between study arms in characteristics, observable or unobservable, which may affect the outcome. This allows us to attribute any estimated effect to the treatment alone.

Figure 2: Randomization Design



In the evaluation, each cluster was randomly allocated to one of three study arms:

1. **Traditional, mother-only treatment:** In this study arm, these home visits were targeted specifically at the mother, with no attempts made to engage the father.

2. **Couples treatment:** The messages delivered in the home visits were identical to the `Mother Only Treatment', the only difference being that in this group promoters attempted to engage both parents of the index child while delivering the messages. The `couples visit mode' is particularly innovative; recognizing that both husband and wife play an important role in household decisions related to nutrition, including spending, labour supply and earnings. Because the fathers weren't necessarily present and willing to participate, this particular study arm will be analysed on an intent-to-treat (ITT) basis.

3. **Control:** Promoters were trained to carry out home visits in which they delivered the same key messages on safe water and hygiene practices that the treatment groups received (but with no nutrition or infant feeding messages).

In addition, promoters in the two treatment arms were provided with posters displaying key messages from the nutritional component of the home visits. These were disseminated to all households that were in a treatment arm. Households were encouraged to hang the poster near the area where food is typically prepared. Two types of poster were randomly allocated across the two treatment arms: a large, colourful, and therefore salient poster; and a smaller, black and white, much less salient poster. Both posters carried identical messages, the only difference being the manner in which these messages were presented.

Within the couples visit treatment arm, the possibility that the father would not be at home or would refuse to participate in some nutritional education sessions with the promoter was considered. We sought to maximise the proportion of time that the father participated by utilizing best practices from the field (such as lessons learnt from UNICEF's Male Champions programmes) for engaging males in household consumption and child health decisions. In any case, the couples' visits are analyzed on an intention-to-treat (ITT) basis. That is, households allocated to the couples visit treatment arm are analyzed as members of this treatment group regardless of whether the father was in fact present for all of the nutrition information delivery visits. However, data were collected at endline (across all treatment arms) in order to assess the extent of fathers' participation in these visits.

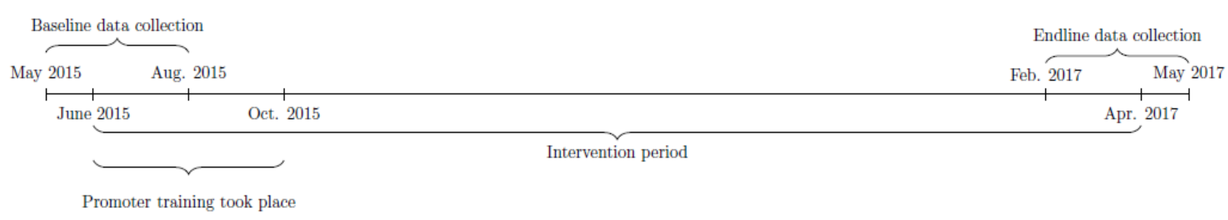
It is feasible that simply receiving home visits from the promoter may be enough to induce changes in household behaviour: if this is the case, then comparing treatments which consist of home visits, in which households receive nutrition and breastfeeding guidance, to control groups in which no home visits were made would thus result in the confounding of this visitation effect with the actual impact of the nutritional component. Having both treatment and control arms receiving home visits in which safe water and hygiene messages were relayed ensures that we can isolate the effect of the nutritional and breastfeeding messages themselves.

The randomisation was implemented at the water point level, rather than at household level, in order to minimise the potential for contamination. In our sample, the number of households per water point varied from between 1 and 23, with mean 4.89. We expected that the majority of social network effects would occur within the group of households that collect water from the same water point; this expectation was based on Evidence Action's field experience, and existing social network research conducted in Western Kenya. By ensuring all households within one of these clusters receive the same treatment, we thus expected to be able to minimise the potential for contamination bias. Beyond the water point, we expected some interaction between households within the same village. Because some villages contain multiple water points, efforts were made to ensure that only one water point per village was included in the study, but it was the case that in some larger villages more than one water point was included in the study. There were in total 7 cases in which water points in the same village were placed in different arms of the study, 3 of which were such that one water point was assigned to the control arm and the other was assigned to one of the treatment arms. At baseline, we expected that inter-household interaction beyond village level would be minimal, due to limited and expensive transportation in the study area.

Cluster-randomised designs introduce dependence between individual units sampled, in the sense that two individuals (or in our case, households) within a cluster are more likely to be similar (in terms of outcomes) than two individuals/households sampled from different clusters. Indeed, this means that (relative to if randomisation was at individual/household level), for a given sample size, the risk that the trials arms are unbalanced according to some important characteristic is higher. To minimize the risk of yielding biased estimates because of this, we used a large number of clusters (114) per study arm. To ensure that our inference also takes into account this within-cluster correlation, standard errors will be clustered by water point.

2.5 Timeline of programme

Figure 3: Timeline of Programme



The timeline of the intervention is described in figure 3 above.

To begin the intervention, the DSW programme team first conducted initial activities of water point verification, chlorine dispenser installation and community sensitization meetings led by field officers. It is in these community sensitization meetings that the community elects one of their members as a promoter. Once the promoter was selected, they underwent training on the key messages of safe water and use of chlorine dispensers. Promoters from treatment areas received additional training on the nutritional information. Promoter training began in June 2015, with promoters in trial clusters receiving 1 day of classroom instruction on the nutritional messages that they should be sharing, as well as the methods by which they should be disseminating these messages. Evidence Action, in collaboration with other key stakeholders, delivered the training. The intervention began in each water point as soon as the promoter for that water point had been trained, and in all cases ran for a fixed term of 18 months. Throughout the trial period, promoters in treatment areas were expected to relay advice on nutrition and food hygiene to target households, along with messaging on safe water treatment. Promoters in control areas were also expected to visits households on a monthly basis, but only to relay advice on safe water practices.

The collection of both the baseline and the endline waves of data accommodated this structure of rollout: those households for which their promoters' had an early training date were interviewed first at baseline to ensure that had not yet received any form of treatment, and those households for which their promoters' had a later training date were interviewed last at endline to ensure that they had received the full term of treatment. Further description of the timeline for data collection can be found in the "Methodology" section.

2.6 Objectives and questions

The two key research questions that this evaluation aims to answer are:

- Can existing chlorine dispenser platforms across rural East Africa (currently reaching 4.8 million people) be used as a platform to distribute nutritional information campaigns?
- Will the delivery of nutritional information to targeted households lead to changes in nutritional knowledge, actual food consumption, nutrition behaviours, or child growth outcomes?
- Is providing information on complementary feeding more effective when it is delivered to the couple (father and mother) instead of only the mother?

A question of secondary interest is:

- Do mechanisms that raise the salience of the nutrition information (i.e. salient posters showing nutritional information) increase the impact of providing nutritional information?

2.7 Key Outcomes

The primary outcome of interest in the evaluation is the height-for-age z-score of the index child in the study, at endline. The anthropometric measure of the child directly answers the question of improved nutritional outcomes as a result of the study. Secondary outcomes of interest trace out the causal chain through which the intervention impacts on height would be realized. These include parental nutrition knowledge, child nutritional intake, the age at which the index child stops breastfeeding, and various other anthropometric measures. Any improvement in these indicators, when compared with the control group, would reveal a clear narrative of how the intervention impacted growth outcomes of the child. Other outcomes that will be analysed include parental labour supply, aggregate household food consumption and hygiene practices of household members. These indicators will track additional benefits that could be gained from the intervention due to improved nutrition and knowledge. A full description of outcome measures and how they were created is included in the Appendix.

2.8 Changes

The originally planned start date of the intervention was in April 2015, but delays in the commencement of dispenser installations for Dispensers for Safe Water in the intervention area led to a 3 month delay that affected the timeline of the programme.

We had also originally targeted 2,415 households from 345 water points, but were only able to get 1,671 households that had children of targeted age (0 to 18 months), across 342 water points. This was a result of there being fewer children of the targeted age than we had expected in the study area. A request for approval of this amendment was sent to the in-country ethic review and approval committee and the amendment approved.

2.9 Ethical considerations

The only ethical issues relevant to the evaluation study were the choices of which informative health messages the study participants were to receive. At comparison group water points, randomly selected households with children aged 0 – 18 months at the time of baseline received targeted messaging about the importance of water, sanitation and hygiene, including specific language about the value of using the chlorine dispenser. In the treatment group, equivalent households also received targeted messages about the importance of nutrition and tips on how to improve nutrition for infant children. Both sets of messages are anticipated to provide health benefits (especially for young children) so neither groups is seen as "missing out" on a valuable intervention.

When the baseline survey was administered, all potential participants were asked to provide consent for their participation in the study before any data were collected about them. Two informed consent forms were signed, with the respondent keeping one of the copies for their reference. These consent forms included a rough outline of what their consent entailed; the expected length of the intervention; names of the ethical review boards that had approved the study; contact details for a project manager at Evidence Action; as well as a reiteration of the fact that they were free to withdraw from the trial at any point in time, or refuse to answer any question while being surveyed, without giving any reason.

Interviews were only conducted after informed consent is obtained. Access to individually identifiable private information is strictly limited to designated individuals in the organization or among the team collecting the data. These persons, along with anyone else involved in the data collection, are bound by an explicit confidentiality agreement. No such data are ever released for general research unless fully anonymised. Anonymising entails removing any explicit household identifiers and the key to the link between these identifiers is kept securely by the designated individuals mentioned above. In addition to the anonymisation, data are never sent or transported unless encrypted safely and protected by a complex password, which is communicated only in person. Any written and published information from the study will be in aggregated form with no possibility of identifying the study participants.

Institutional review board approval was obtained from both the University College London Research Ethics Committee (1827/006) and the Kenya Medical Research Institute (KEMRI/RES/7/3/1). The trail was also registered with ClinicalTrials.gov (Identifier: NCT02427945).

3. Methodology

3.1 Data sources and collection

A total of four surveys were designed and administered by the evaluation team to act as the sources of data for the evaluation. These were:

1. **A household survey (administered only to the mother or primary care giver of the index child):** This questionnaire collected data about the socio-demographic characteristics of the household in question, labour supply of various household members, food and non-food consumption at household level, hygiene and water practices (including a chlorine test of a drinking water sample), nutritional and breastfeeding knowledge, family networks, female empowerment, time allocation, and finally maternal and child anthropometrics. At endline additional modules were added to capture information on intra-household decision making on child nutrition, intervention delivery, and marital relationships.

2. **A "fathers" survey:** This survey contained a subset of questions from the main household survey, and was administered exclusively to the father of the index child. At baseline, data collected in this survey captured information on time allocation, and nutritional and breastfeeding knowledge. Additional modules were added to the endline iteration of the survey in order to capture information pertaining to labour supply, decision making on child nutrition, intervention delivery and marital relationship.

3. **A promoter survey:** This survey was designed to be asked to the promoters that were active in each study area water point for any period of the trial. The promoter survey was only administered at endline, because at the time of the baseline survey the final set of promoters that would take part in the trial had not been selected. The idea behind surveying the promoters was that it would provide data which would help to ascertain the characteristics of the promoters, how effectively the programme was implemented by the promoters (and how this interacted with promoter characteristics), and where there may be potential for improving intervention delivery. The questions asked captured information on general household characteristics, promoter responsibilities (including those outside their role as the promoter), promoter activities and information delivery, knowledge on nutrition and breastfeeding issues, hygiene and safe water practices, time allocation, personality, labour supply and assets. A module was also designed for the promoter survey in order to capture whether or not the promoter for that water point had changed over the study period, and if so, the training and handing over of responsibilities that had taken place (if any) at the point of change. A shorter version of this questionnaire was also designed, focusing only on intervention delivery, nutritional knowledge and promoter turnover, to be administered over the phone in cases where the promoter could not be found or had migrated.

4. **A market price survey:** A group of surveyors were dispatched to the 20 main markets that were used by study participants with the task of gathering data on local prices for the goods that made up the household food consumption survey, as well as standardised measurements of non-standard units for these goods (for instance, the weight in kg of a "heap" of onions, or the weight in kg of a "kimbo" of omena). This was to assist in constructing a comparable-across-household metric of household consumption expenditure from consumption quantities reported in the household questionnaire, in cases where household purchasing data were missing or incomplete.

The same households that were interviewed at baseline were interviewed at endline. Although following the same cohort across time isn't strictly necessary for the estimation of treatment effects in a RCT setting, such an approach maximizes the analytical possibilities of the evaluation. At baseline, we collected information on children's anthropometrics, nutritional practices, the mother and father's knowledge of nutrition, and women's empowerment. Using the cohort approach, we will be able to analyze how the impact of the intervention varies according to various baseline variables.

Baseline data collection ran from early May through to the end of July in 2015. In this period 1,671 household surveys were administered to the mother or primary caregiver of the index child in the households that had been randomised into the study. 781 separate surveys were administered to the father of the index child, in those cases where the mother/primary caregiver of the index child was married. Finally, market surveys of the 20 main markets within the study area also took place to provide supplementary data for constructing household consumption metrics (see the data sources section under methodology for a more detailed description of the surveys administered).

Endline data collection began in early February 2017, and ended in May 2017. Attempts were made to follow-up all households that were interviewed at baseline in both the endline household survey (administered to mothers/primary caregivers), as well as for the separate spouse/father survey (in cases where the mother/primary caregiver was married). In total, 1,427 of the main household surveys were successfully administered, as were 1,014 of the separate spousal surveys. Up-to-date market data was also collected for the same 20 markets as at baseline; and a survey of the promoters was also administered in order to ascertain the characteristics of the promoters who worked on NEEP, as well as how well they fulfilled their various responsibilities.

Data collection, management, quality assurance and quality control for the project were all managed by Evidence Action's MLIS team. A week long training course with the casual workers hired for data collection. During the training the data collectors were first given a brief introduction to the study and different field scenarios for NEEP and how to go about them. They were then taken through all the surveys tools used for data collection in paper and electronic versions. On the last day of the training the data collectors were taken through a practical section of how to use the relevant instruments for anthropometric measurements; where a number of mothers and their children were invited and the data collector practiced taking anthropometric measurement on them. A day before the start of data collection, the data collectors went to water points which are not NEEP water points and collected dummy data for half a day and then held a debrief session with the manager and associate in charge of data collection.

In the first days of data collection, the data management and analysis team performed checks on data collected and gave feedback on areas that need to be improved on. In addition, back-checks were conducted on 10% of the data collected where 2% of the households were visited physically by the associate directly managing data collectors and 8% were back-checked by phone interview. The households to be back-checked were randomly selected. In addition to these back-checks, the associate in charge of data collection conducted infield supervision of the data collectors twice every week. The associate accompanied different field officers every week and would sit in and observe as they administered the surveys.

3.2 Sample characteristics

The intervention took place across two sub-counties in Busia County, Western Kenya: Nambale and Teso North. Households that lived in the catchment area of water points which had been randomly selected to take part in the trial were interviewed at baseline, and those for which the youngest child was aged 0-18 months at baseline were selected to receive the intervention. In our sample, the number of eligible households per water point varied between 1 and 23, with mean 4.89. The vast majority of households in our baseline sample (84.0% & 82.8% respectively) had walls or floors made out of only natural materials – sand, dirt, mud or plants. 33% of households in our baseline sample had an improved sanitation facility, considerably higher than the rural-Kenya average from the DHS (21.6%). The mean number of household member in our sample was 5.07, considerably below the corresponding average found for Western Kenya in the DHS, which was 6.01.

The gender of children in our sample was roughly evenly split between boys (49.85%) and girls. The rates of incidence for diarrhoeal disease in our baseline sample were 20.3% for children under 6 months and 23.2% for children 6 months and older. Of those children that, at baseline, had been introduced to semi-solid or solid foods, 17.8% had been introduced at an age younger than the recommended 6 months.

Approximately 13% of children under the age of 12 months in our baseline sample were stunted (height-for-age z-score < 2), while 6% were wasted (weight-for-age z-score < 2), and 6% were underweight (weight-for-height z-score < 2). This compares to the respective figures of 13.9%, 7.9% and 6.3% nationwide in the 2014 Kenya DHS; or 15.4%, 8.4% and 6.2% respectively for rural areas. The corresponding figures for the province of Western Kenya given by the DHS data are 10.1%, 4.5% and 4.5% respectively.

For children in our sample aged between 12 and 24 months at baseline, the rates of stunting, wasting, and being underweight were, respectively, 29.3%, 13.1%, and 5.6%. The comparable figures from the 2014 DHS are 31.2%, 14.2%, and 6.3% at a nationwide level; 33.3%, 15.5%, and 7% for rural areas; and 25.9%, 6.8% and 3.9% for Western Province.

Educational attainment in Kenya, as in much of Sub-Saharan Africa, is low. In our baseline sample 12.3% of mothers had completed secondary school or higher: this rate is slightly below that found for females in the 2014 Kenya DHS in rural areas of Kenya (16.7%) and in Western Kenya specifically (21.9%). Spouses in our survey were also quite poorly educated. 23. 6% had completed secondary education or higher, this compares to the figures of 25.2% in rural areas and 26.3% in Western Kenya found for males in the DHS. More than 50% of the mothers/primary caregivers, and 38.7% of spouses/fathers, in our sample had not even completed their primary education.

In our sample, 59% of females and 86% of spouses were in employment at baseline. This compares to 65% and 97% respectively which are the corresponding figures found in the Kenya DHS for married persons in rural areas. Of those women that work, the majority are employed in agriculture (72%) and mostly on their own or family land (67%). For the spouses, most employment is in either agriculture (38%), or self-employment and work in the family business (34%).

Self-reported weekly household food consumption at baseline has an average of 952 KSHS (about $9). Starch staples, such as rice, green maize, sorghum flour, cassava, and potato, make up the highest proportion of average aggregate expenditure, around 250KSHS (about $2.50). Meats (including red meats, poultry, and fish such as omena) are another significant component, with households spending on average just over 200KSHS (about $2) a week on them. Nuts and legumes, an example of a low-cost food group that is typically high in nutritional value, showed relative low average consumption, the data suggests a value of just under 30KSHS (about $0.30) a week.

3.3 Challenges

Attrition

Our endline data collection sought to survey as many of the index children as possible. To do so, we put in place robust protocols to track and survey mothers (and their children) if they had migrated within or outside the study area. Despite these efforts, we failed to survey almost 15% of all index children at endline. Of these, 14 children had died, the mothers of 11 declined consent to interview at endline, while the rest had moved out of the study area and their whereabouts were not known.

Final attrition rates are presented, by study arm, in table 1 below. As can be seen and is confirmed by statistical tests presented in Appendix C.3, Table 17, attrition rates are lower in the mother only arm. This difference appears to be driven by maternal age, marital status and household size. Importantly, our analysis will be valid as long as attrition is balanced across the different treatment arms. We consider formally whether the attrition introduced any imbalances across the samples, by testing for baseline balance among the sample of households successfully interviewed at endline. Appendix C2, Tables 11- 16 display the findings. Reassuringly, sample balance is maintained across the study arms for all but one observable variable – average amount of free chlorine present in water samples – which is significantly different at the 10% level for households in the mother only arm (since our chlorine analysis focuses on the presence of *any* chlorine, which is still balanced with the endline sample, this has no effect on our analysis).

Table 1: Attrition rates by study arm

	Control Group	Mother Treatment	Couples Treatment	Total
Baseline	543	581	547	1,427
Endline	453	510	464	1,671
Attrition Rate	16.6%	12.2%	15.2%	14.6%

Male Respondents

A second challenge experienced in both the baseline and endline data collection was in interviewing the male spouses of our respondents. At baseline, we successfully interviewed 781 of 1,411 spouses. The low response rate was driven by the fact that male respondents were typically absent when the interviewers visited the households. We implemented a number of strategies at endline to ensure a higher response rate, including conducting phone surveys (with phone credit of 50 KSHS provided as an incentive), and conducting the phone interviews during evenings and weekends when the men were likely to be available. These measures resulted in a significant improvement in the number of male spouses reached in the endline wave of data: 1,014, out of 1,259 married female respondents.

Contamination

The third major challenge faced in the evaluation was the high level of contamination that appeared to have taken so that a significant proportion of households in control arms of the study received nutritional messages. This potential contamination was identified first by monitors, who received reports of households in the control arm receiving nutrition related topics through their monthly monitoring. In response, multiple steps were taken to prevent further contamination:

1. Call were made to the promoters in control arms to desist from sharing nutrition information
2. SMS messages were sent monthly to both treatment and control promoters on sticking to their visit guide messages

3. The NEEP field officers, who were responsible for delivering chlorine to and training NEEP promoters, were instructed to re-emphasize the messages above during field visits

Despite these measures, results from the intervention delivery module administered in the endline household survey are suggestive of significant contamination across study arms. For instance, results from a question in which respondents were asked whether they had discussed any nutritional messages with their promoter show approximately 47% of respondents in the control arm claiming that they had discussed nutrition with their promoters, only slightly less than the corresponding figure of 55% of respondents in treatment arms.

A similar conclusion emerges when analyzing responses to a question (shown in Table 2) in which respondents listed, without prompts, the specific nutritional messages they had discussed with their promoters. The results indicate that control households received a similar number of nutrition messages as treated households.

Answers to a question of whether the respondent ever received a poster carrying key nutritional messages from their promoter, and whether they still had the poster at the time of the endline interview (which would be verified by the interviewer), suggest that just over 50% of households in treatment arms received the poster, and just below 50% still had the poster at the time of the endline interview. For control households, the corresponding figures are 8.6% and 7%. This means that, in regards to the one physical object that was delivered as part of NEEP, contamination was apparently fairly minimal, which potentially suggests that the contamination was not a result of failings in the administration of NEEP.

One possibility is that interactions between promoters across different study arms led to the transmission of the nutritional component of NEEP to control promoters, who in turn felt that they should be including this information in their household visits too. Some descriptive statistics from the promoter survey provide support for this hypothesis: 36% of all promoters interviewed at endline reported interacting with other promoters at different water points in the 3 months prior to the interview (41% of control promoters); of these promoters 81% (76% in control arms) reported discussing issues related to the programme specific nutrition messages, in these interactions. Furthermore, the promoter survey also provided evidence of promoters exhibiting pro-social behaviours. In the month prior to the interview: over 60% reported participating in at least one community meeting; 68% reported being asked for advice by someone other than a relative; and 38% reported working with others in their village to do something for the community (for an average of 3.5 days) , without being paid. The relative lack of geographical dispersion of study clusters (any given study-water point had on average 7 other water points within a 2km radius of itself; any given control-arm water point had on average 5 treatment water points within a 2km radius of itself), combined with the presence of these pro-social behaviours perhaps suggests that more care in the design stage of the evaluation would have helped to ensure that such interactions wouldn't have had such an effect on the validity of the control group.

Another possibility is that the relative proximity of clusters in the study, and the apparently regularity with which inter-village interaction took place (over half of our sample reported either visiting or being visited by neighbouring villagers on a weekly basis), meant that these messages were spread throughout the study area simply through word of mouth; by propagating in this way, these messages could potentially have raised the salience of proper nutritional practices throughout the entire study area. It may also be the case that both of these potential mechanisms worked simultaneously to drive spillovers between study clusters.

Table 2: Number of NEEP nutritional messages that respondent recalls discussing

	Study Arm			
No. of nutrition topics resp. recalls discussing %	Couples (n = 452)	Mothers (n = 497)	Control (n = 441)	Total (n = 1390)
0	42.90	46.70	53.50	47.60
1-5	47.7	47.5	38	44.6
> 5	9.40	5.80	8.50	7.80
Total	**100.00**	**100.00**	**100.00**	**100.00**

3.4 Analytic methods

Statistical Methodology

The primary methodology used for determining whether NEEP had a significant impact on the outcomes of interest is analysis of covariance (ANCOVA). In simple terms, ANCOVA evaluates whether the population mean of a dependent variable of interest (for instance height-for-age z-score) is equal across levels of a categorical independent variable (in our case, study arm), while controlling for other covariates that are not of primary interest. This involves estimating regressions of the following form:

$$Y_{ik} = \alpha + \beta_1 monly_k + \beta_2 monlycol_k + \beta_3 mandf_k + \beta_4 mandfcol_k + \gamma Y_{ik}^0 + \delta X_{ik} + \varepsilon_{ik}$$

Here Y_{ik} denotes the outcome of interest for individual i in cluster k. $monly_k$, $monlycol_k$, $mandf_k$, and $mandfcol_k$ are indicator variables that take a value of 1 if the individual's cluster was assigned to mother-only, black and white poster; mother-only colour poster; couples-visit black and white poster; or couples-visit colour poster treatment respectively. Y_{ik}^0 denotes the baseline value of the outcome variable; although it is not necessary to control for this given the randomised nature of assignment to treatment (and the relatively good balance of our baseline sample), we still do so where the data are available as this should increase the precision of our estimates. X_{ik} is a vector of covariates, the inclusion of which reduces the amount of unexplained within-group variance, and also controls for cases where covariates may not have been totally balanced across study arms, which again should improve precision and statistical power of our estimates. ANCOVA has been shown to perform as well as, or out-perform difference-in-differences analysis (McKenzie, 2012).

Accounting for Contamination

As we describe in the preceding subsection, the primary challenge to our analysis is the level of contamination, as evidenced by the reports from control households that they discussed nutritional topics with their promoters. This forced us to consider treatment not only in a discrete way (i.e. did the household belong to a treatment arm or a control arm), but also continuous (in the sense of: what level of treatment might the household have received as a result of messages spreading throughout the study area).

To investigate this, we initially looked simply at how the number of treatment water points within a 1 or 2km radius of a household's own water point affected outcomes. This provided some suggestive evidence that those households which were surrounded by many treatment-arm water point (and thus were potentially more likely to experience potential informational spillovers) did indeed show improved anthropometric results at endline (results in Appendix E).

Following this, as a more nuanced measure of these potential spillover/network effects, we used the GPS coordinates of study water points to devise a measure of "indirect treatment", to act as a measure of the level of inadvertent treatment that households may have received due to the propagation of messages due to inter-water point promoter and/or participant interaction. This measure is based on the network theory concept of Bonacich centrality (Bonacich, 1987), whereby the "centrality" (which measures the importance of a vertex within a graph, a practical example of which could be the most influential person in a social network) of a member of a network is a function of how many other members it is connected with (the member's "neighbours"), and in turn the centrality of these neighbours (which in turn depends on the centrality of *their* neighbours, which depends on the centrality of their neighbours, and so on and so forth); as well as a parameter which weights the importance of a member's more distant connections (i.e. the centrality of one's neighbours' neighbours, and their neighbours, and so on and so forth).

Using the GPS coordinates of study water points, we were able to back out a measure of "total effective treatment", which for any given water point was a function of their actual treatment (i.e. whether they were officially assigned to a treatment arm as part of NEEP); as well as their "indirect treatment", the calculation of which was based on the Bonacich centrality measure described above (but with extra weight given to connections with treatment-arm clusters, to reflect that these clusters would have been the primary propagators in the flow of information). This measure of indirect treatment was then included in the core regressions to act as a control for any potential unintended treatment effects that may have spilled-over to a given cluster.

In calculating this measure of "total effective treatment" we had to make a decision as to when to consider two water points as being directly linked (in our case, if two water points are directly linked then information can move between these water points without having to go through one or more intermediate water points on the way). Our decision was informed by a question in the promoter survey which asked promoters for the names and villages of other promoters that they had chatted to in the previous 3 months. Using the GPS data, we found that promoters typically interact with other promoters whose water points lie between 0 and 2km from their own. Thus, to show how sensitive our results are to the choice of this threshold, our specifications in the results sections are presented with two separate direct-connections cut-offs: one at 1km, and one at 2km.

In recognition of the potentially significant impacts that these indirect effects could have had on our outcome variables, we will report "total treatment effects" (TTEs) for each of our main results in the analysis. Three different TTEs will be reported: an average total treatment effect, a total treatment effect at the 75^{th} percentile of indirect treatment, and a total treatment effect at the 25^{th} percentile of indirect treatment. These TTEs will be calculated as the sum of the direct effect of treatment and the estimated total indirect treatment effect, estimated at the relevant level (i.e. the mean, the 75^{th} percentile or the 25^{th} percentile). These *levels* of indirect treatment will be calculated under the assumption of total coverage of the programme (i.e. levels of indirect treatment that each household would have received had every household been treated), which is simply the unscaled Bonacich centrality measure for each household, minus 1 (the one representing direct treatment). Thus, what we report is a comparison of the expected outcome for an individual with a given level of centrality, if the programme was implemented with full coverage, and the counterfactual of no implementation whatsoever.

3.5 Limitations

The key limitation of our programme design lay in the lack of a distinct buffer zone between study clusters; in the context of our trial there was no clear information on the level of inter-water point/-village interaction, or on the kind of distances between which these interactions may take place. Hence there was no obvious way to define what the buffer zone should be. Anecdotal evidence suggested that most social network effects took place within the boundaries of the water point catchment area, and our prior was that inter-village interaction would be minimal due to the high cost of transport within the study area, thus the focus was on ensuring that water points within the same village received the same treatment (as described under logic & assumptions in the previous section, there were 3 major violations of this). The difficulties in terms of collecting data over a more dispersed geographical area meant that our ex ante belief was that the cost of increasing the buffer zone beyond this were unlikely to outweigh the benefits. Ex post, it seems as though the buffer zone was insufficient to ensure a clear distinction between treated and control households, as described in the challenges subsection.

4. Findings

4.1 Intervention Delivery and Layering

A key question that we sought to answer is: how effective is it to use community-based, volunteer promoters to administer a programme that seeks to enact positive changes in nutritional practices through education?

As part of the endline wave of data collection, we collected data on intervention delivery from both households and from promoters. In conducting endline promoter surveys, we reached 320 out of the 342 promoters that formed the original set of set of study promoters. Of these 320, 318 had been the promoter since the beginning of the intervention. 70% of our promoter sample were female, and over 90% were married. The median age of promoters was 40, and fewer than 30% of promoters had completed their secondary education. Of the promoters interviewed, the median number of years reported to have lived in the study village was 20.

At endline, respondents in households were asked whether they knew the promoter (after their name had been verified by the interviewer if they were not initially sure), and whether the promoter had visited their household at any point since the chlorine dispenser had been in installed in their community (which would have been prior to baseline). Around 80% of respondents reported *knowing* their promoter and just over 60% of the full sample reported having been *visited* by their promoter since the programme began. The level of coverage varied by water point. In 33%, of clusters all households report having been visited at least once by their promoter. In around 10% of clusters, all sample households reported not receiving a single visit from the promoter.

Table 3 below indicates what percentage of scheduled visits study participating households actually received. Households were initially scheduled to receive monthly visits, with visits commencing once a child turned six months old and ceasing once the child turned 24 months old. The total number of visits received by a household varied depending on the age of the child at baseline. Table 3 below indicates that around 60% of respondents received less than 75% of the visits that they should have. The median reported typical visit length was 30 minutes. It should be noted that over 12% of those who reported receiving >75% of the visits they should have actually reported receiving *more* visits than they should have.

Table 3: Percentage of visits that respondent should have received that they report receiving

	Study Arm			
% of Visits Received	Couples (n = 464)	Mothers (n = 510)	Control (n = 453)	Total (n = 1427)
0 - 25%	39.90	47.50	41.90	43.20
25 - 50%	10.80	8.20	10.20	9.70
50 - 75%	6.90	6.70	7.10	6.90
>75%	42.50	37.60	40.80	40.20
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**

97% of respondents who reported being visited at some point in the lifecycle of the intervention said that they found the visits at least “somewhat” relevant. In both treatment and control households, receiving advice on how to make drinking water safe was the most commonly listed basis for the “relevance”, followed by the provision of information about nutritious foods for children (which was the second most cited reason across both treatment and control households).

Though the household survey reports only 62% of households having ever been visited by their promoters, the self-report from the promoter survey suggests that 96% of the promoters carried out promotion activities over the trail period. Promoters report spending on average 3 hours a month on promotion activities (median value), around half of which is reported as being spent on actually visiting households. The proportion of promoters who report visiting households to discuss nutrition, presented in Table 4 below, is relatively low and isn't particularly variable across different study arms; suggesting imperfect programme delivery, a similar result to that found in the intervention delivery module from the household survey (see Subsection 3.3).

Table 4: Promoter-reported discussions of nutrition during visits

	Study Arm			
Report visiting households to discuss nutrition %	Couples (n = 98)	Mothers (n = 94)	Control (n = 103)	Total (n = 295)
No	55	45	63	55
Yes	45	55	37	45
Total	**100%**	**100%**	**100%**	**100%**

Finding fathers was a challenge in the couples-visit arm: 22% of promoters in this arm report the father being consistently absent during visits, and only 8% report the father being present "often" or "always". Fathers' absence is the most oft cited difficulty when it came to finding the relevant person to deliver messages to in the couples-visit arm (71% reported this as a difficulty). Strangely, this was also the case in the other arms (in which fathers were not meant to be targeted) where 71% of promoters reported finding fathers as a difficulty when delivering messages to the relevant person. Notably, in the couples-visit arm, 41% of promoters did not make enough effort to ensure that the father would be there when they visited (e.g. making an appointment or asking what times the father worked).

The challenges promoters reportedly faced in delivering nutritional messages included the large volume of content that they were tasked with disseminating and the limited times households could spare for discussion. Both challenges, along with a third i.e. promoters being limited in the time they had for visits, were commonly reported in relation to the delivery of the water treatment message as well,

In order to assess the impact of NEEP on DSW and the water treatment components of the programme, surveyors took a reading of the chlorine content in a drinking water sample provided by the main respondent at baseline and endline. The results from regressions with an indicator variable for presence of total/free chlorine in the water sample as the outcome are presented in Tables 48 & 49 in Appendix D7. The direct treatment effect is presented separately for each different potential arm of treatment in the first column, and then presented amalgamated together in a single treatment variable in the second column. Treatment effects are typically statistically indistinguishable from zero, implying that the layering of NEEP had no detrimental effect on the actual practices of households with regards to water treatment. The coefficients in the 1km specification imply that respondents in the mother-only, colour poster study arm were on average marginally less likely to have free chlorine present in their drinking water. This result is sensitive to the specification chosen, and disappears when considering a 2km direct connection cut-off.

4.2 Participant Outcomes, Main Results:

Primary Outcomes: Anthropometrics

Columns 1 and 2 in Tables 18 & 19 in Appendix D1 present the results for the regression containing height-for-age z-score, the first table with the indirect treatment evaluated with a 1km direct-connection cut-off, and for comparison the second table with a 2km cut-off. Throughout all specifications the coefficients on direct treatment effects, whether split by treatment arm or combined into a single variable, imply no statistically significant impact of NEEP on height-for-age. Looking at implied total (direct + indirect) treatment effects, the specification with a 1km cut-off implies a positive total average treatment effect on height-for-age z-score of just under 0.2 standard deviations. The total treatment effect at the 75^{th} percentile of indirect treatment effects (i.e. for households that are located around a very central water point) increases in size to approximately 0.23 standard deviations. When looking at the results from the specification with the 2km cut-off, implied total treatment effects increase in size across all levels of indirect treatment, but the precision of these estimates drops off dramatically, meaning they are still indistinguishable from 0 with any reasonable level of confidence.

Columns 3 and 4 in Tables 18 & 19 present the results of the regression containing a summary index (Anderson, 2008) of the other z-scores that were created: weight-for-age, weight-for-height, bmi-for-age, arm circumference-for-age and head circumference-for-age. Once again, we see no significant direct treatment effects in any direction, in either specification. Total treatment effects in the summary index regression are typically positive and significant across specifications, although this is driven entirely by indirect effects.

Presence of bipedal oedema in our sample was so low - 13 children, or 0.78% of our sample at baseline; and 29 children, 2.08% of our sample (of those children who were check for bipedal oedema) at endline – that it was decided that it would not be possible to come to any meaningful conclusion on the effect of NEEP on bipedal oedema, thus the impact of NEEP will not be evaluated on this dimension of child health. Further analyses of the anthropometric results are contained within Appendix E.

Secondary Outcomes: Nutritional Knowledge & Food Intake

Tables 20 and 21 in Appendix D2 show the results obtained from the regressions looking at the results of the nutrition and feeding quiz that was administered to the main female caregivers. In the first two columns of each table the outcome variable is the proportion of questions that the respondent answered correctly, and in the second two columns the outcome variable is the latent knowledge parameter that is outputted from the IRT process mentioned previously.

The regression results imply no significant total treatment effects in either metric; there are significant direct treatment effects in the couples visit, colour poster study arm – implying an increase in proportion correct of around 2.5 percentage points, or an increase of 0.18-0.19 standard deviations in latent nutritional knowledge – but these effects are entirely limited to this single arm. The median number of questions correctly answered in our sample (15), did not change between baseline and endline.

In Tables 22 & 23 are the results from equivalent regressions run using the promoter data (although without baseline controls, as no promoter data were collected at baseline); they show no effect whatsoever of treatment on promoter knowledge. It should be noted that the median number of questions correctly answered by promoters (16) is very similar to the equivalent figure for female primary caregivers.

Tables 24-29 in Appendix D3 present the results pertaining to the index child from the 7-day food frequency section of the survey; the dependent variables represent the sum of days on which the index child was reported as having consumed a food from that category in the 7 day period prior to the interview (e.g. if they had consumed poultry on 3 days and omena on 2 days then the variable "meat" would take the value 5). The coefficients on the indicator variable for direct treatment indicate small, positive (but typically statistically insignificant) increases in nutritional intake for the index child in three key, protein-rich groups of food which were targeted by the intervention: meat, nuts and eggs. The coefficients for those study arms where the more salient poster was dispensed are typically the most positive, which suggests that the regular prompt provided by the poster may be driving this. Indirect effects and total treatment effects are typically insignificant, although for groundnuts both are positive and highly significant in the specification with network measures evaluated with a 2km cut-off; the sensitivity of this result to the choice of threshold for direct connections casts doubt on its validity however.

There appear to also be some small (but again insignificant) direct effects of the programme on the consumption of vitamin-A rich foods, and fruit. The results suggest a *negative* impact of the programme on intake of green leafy vegetables (particularly in the mother only visit arm), but there do not appear to be any clear patterns in other foods groups suggesting further modifications in behaviour.

Also in Appendix D3, Tables 30 & 31 show the results from regressions on whether the index child received the minimum recommended number of meals in the 24 hour period preceding the interview. The coefficients on the direct treatment effects are consistently positive, typically indicating a 2-3 percentage point impact of direct treatment on the average likelihood of an index child meeting their 24-hour minimum food frequency requirements; however they are statistically insignificant in all but one case. Implied indirect effects are negative and insignificant in the 1km cut-off specification, and positive, small and insignificant in the 2km specification.

Appendix D4i contains the results from the household food consumption questionnaire, with foods categorised into relevant groups and total consumption expenditure on foods in these groups, in the 7 day period prior to the interview, acting as the dependent variable.

The results of the expenditure regressions tell no consistent story as to whether NEEP had any impact by this metric. Hence, as an alternative mode of analysis which should help to eliminate a certain amount of measurement error coming from the potential for inaccurately reported or imputed prices, Appendix D4ii presents results from regressions on *quantities* of some specific foods. When looking only at quantities, we see small, consistently positive direct treatment effects of NEEP on household consumption of meat (in kg), with these effects significant at the 10% level in the couples visit, colour poster study arm, and also in column 2 when we consider all 4 separate treatment arms amalgamated into a single treatment variable.

The regressions for groundnuts imply no significant direct treatment effect of NEEP on household consumption of groundnuts, but the indirect treatment effect is positive in both the 1km cut-off and 2km cut-off specifications – and is quite large and significant in the 2km specification – which drives the positive and significant total treatment effects which are visible in the specification with the 2km direct-connection cut-off. The omena regression implies no significant impacts of NEEP on household consumption of this food. For eggs (measured in pieces), we see negative, significant implied direct treatment effects in the black and white poster arms, but these don't translate into negative total treatment effects. Household consumption of green leafy vegetables also appears to be unaffected by the programme. There is a small, positive and significant direct treatment effect for the mother only, colour poster arms in the tomato regression, but in the 2km specification this coefficient becomes insignificant and indirect effects are sufficiently negative that they imply negative and significant total treatment effects. This does however corroborate with the negative and significant total treatment effects that can be seen in the expenditure regressions for fruit.

Tables 40 and 43 present the results for household consumption (in quantities) of maize flour, plain milk and bananas, and the 1km and 2km cut-off respectively. Baseline controls are not included for these foods because data were missing at baseline for them. Consistent with the results for starches when looking at household expenditures, we see negative direct impacts of NEEP on consumption of maize flour, with these impacts significant throughout the mother only treatment arms. House consumption of plain milk and bananas appear to exhibit no significant adjustment according to the treatment received.

Non-food consumption & breastfeeding

Appendix D5 presents the results from the regressions containing household aggregate weekly non-food consumption expenditure as the dependent variable. The coefficients on the direct treatment indicators imply a quite large, negative direct treatment effect in the black and white poster arms; this effect is significant at the 5% level in the couples visit arm. Indirect treatment effects are negative, quite large, but insignificant in the specification with the 1km cut-off; and positive and insignificant in the specification with the 2km cut-off.

At endline, a total of 1,080 of children in our sample were reported as having stopped breastfeeding. Thus, tables 46 & 47 present the results of the regression where the outcome variable is the month at which these children were reported as having stopped breastfeeding, where the data were available. These results show no treatment effects – direct, indirect or total - of NEEP on this measure in the specification with a 1km cut-off. There are some negative, significant total treatment effects in the 2km specification, but the sensitivity of this result to the definition of the adjacency matrix reduces the strength of any conclusions that may be drawn from this.
In all three of the main study arms – couples visit, mother visit, and control – the median age at which breastfeeding stopped was 20 months, well above the WHO recommended minimum of 6 months. And for those children who had stopped breastfeeding at baseline (n = 82) the median age in months at which they were reported as having stopped was 12 months.

Other Outcomes of Interest

Tables 54 & 55 report the results from regressions of time spent cooking, and those for hours spent feeding children, in the previous working day, for the 1km cut-off and 2km cut-off respectively. The 1km specification implies no significant effects of NEEP on either of these measures. In the 2km specification implied total treatment effects are negative and significant at 10% level, but this is driven entirely by the indirect effect and the sensitivity of this result to the cut-off used means that the validity of this result may be questionable.

The results from the regressions on indicator variables for the extensive margin labour supply (working or not working) of primary female caregivers and spouses are contained within Appendix D8. The first two columns in each specification look at the likelihood of the individual in question working, and the second two columns look at the likelihood of the individual having a second job.

The results for the primary female caregivers typically imply no or even negative impact of NEEP on female labour supply, particularly in the mother only, colour poster study arm for which the coefficient in both specifications implies a significant, negative impact on the probability of working, and on the probability of having a second job. The results for spousal labour supply are broadly similar, and suggest no impact of NEEP on labour supply at the extensive margin (except, perhaps, in the mother only, colour poster treatment arm, where like in the female case direct treatment effects are negative and significant, although this time only in the 1km specification).

Probability of having a chat with a friend or acquaintance about food or nutrition

Tables 56 - 59 present that results for the regressions looking at self-reported chats about nutrition in the 3 days prior to the interviews; the outcome variable in columns 1 and 2 is an indicator for the respondent reporting having a chat with family, and columns 3 and 4 for a chat with friends, about nutrition.

Table 56, which contains results for the specification with the 1km cut-off, implies no treatment effects of NEEP on the probability of having a chat with a family member. In terms of chats with friends: in the regression with separated treatment arms, implied direct treatment effects are consistently positive but statistically indistinguishable from 0. When the treatment arms are amalgamated into a single treatment arm, we do see a small but statistically significant direct impact of treatment on the probability of having a chat with a friend about nutrition in the past 3 days: an increase in likelihood of about 5 percentage points, significant at the 10% level. Accounting for both direct and indirect treatment effects, we see a significant total treatment effect at the 25th percentile of indirect treatment; despite larger estimated effects at higher levels of indirect treatment these effects are too imprecisely estimated to be statistically distinguishable from 0.

In the 2km specification, indirect treatment effects increase considerably, which leads to positive and significant treatment effects in the chats-with-family regression. These implied treatment effects are strikingly large, and the sensitivity of this result to the direct connection cut-off used casts doubt on the accuracy of these magnitudes. In terms of respondents' chat with spouses, the regressions in tables 58 and 59 imply no significant impact of NEEP along this metric.

Probability of child suffering from diarrhea

To test for the impact of NEEP on the probability of the index child in the study suffering diarrhoea, tables 60 & 61 contain the regression results with outcome variable an indicator for whether the index child is reported as having suffered from diarrhoea in the 7-day period prior to the interview.

For the specification with the 1km direct connection cut-off, direct treatment effects when treatment is separated by arm are statistically insignificant. When looking at treatment as a single arm, the implied direct treatment effect is positive (which suggests that NEEP lead to an increase in the probability that the index child suffered from diarrhoea), but is very small and statistically insignificant. Indirect treatment effects are negative and somewhat larger, but still indistinguishable from 0 at any reasonable level of confidence. Reported total implied treatment effects are also negative, but again the null hypothesis of no total treatment effect cannot be rejected using this specification. In table 61, with the 2km cut-off, direct treatment effects are again entirely indistinguishable from 0 under both specifications. Indirect treatment effects grow in magnitude compared to the specifications with a 1km cut-off, and become significant at the 5% level. Implied total treatment effects are very large (the average total treatment effect implies an average reduction in the likelihood of contracting diarrhoea of over 30 percentage points) and statistically significant.

Appendix D12 contains the results from regressions looking for programme impact in terms of hygiene practices of study households; there are however no implied impacts of NEEP along this dimension.

5. Conclusions

5.1 Achievements

Our evaluation of NEEP shed light on the feasibility of using existing supply infrastructures such as those available in the DSW programme to deliver nutritional information at low marginal cost. In particular, we find no evidence indicating that NEEP undermined the practices encouraged within the DSW programme. Promoters delivered the water treatment messages, along with the new nutritional messages and we found no differences in household practices related to water treatment. However, further research is needed to investigate how different types of programmes can be layered atop one another and what the best way to operationalize this would be, given the varying needs that different interventions would have.

Our evaluation also investigated the difference in impact of providing information to a female caregivers versus both parents. Unfortunately, the significant level of contamination experienced made it challenging to answer these questions. However, preliminary findings applying a novel methodology developed to account for this kind of contamination has revealed some interesting patterns. In particular, they point to important indirect effects generated by the programme, which warrant further investigation in future work.

5.2 Results

The results on intervention delivery present a mixed picture on the success of NEEP in reaching the targeted groups. In some respects, NEEP appears to perform well. Achieving a 60% home visitation rate is significant for a programme making use of un-paid volunteers. Similarly, the fact that over 40% of household reporting receiving at least 75% of their scheduled visits, with the median reported typical visit time being 30 minutes, indicates that the promoters tried to follow the visit schedule and that the duration was in line with programme design. The absence of any significant detrimental effect on DSW (e.g. the tasks that promoters most often reported performing all pertained to water treatment, and the fact that chlorine uptake appeared generally unaffected) can also be considered a success too.

In terms of the key outcome of interest, child height-for-age, the results imply that NEEP had a mild positive impact, once the indirect effects resulting from the propagation of the nutritional messages across the study area are accounted for. The total treatment effects are positive and quite large throughout all specifications (see tables provided in Appendix D). A before-after analysis using DHS data provides further evidence supporting this conclusion. We also find large, positive and statistically significant total treatment effects in an index of other anthropometric outcomes (weight-for-age, BMI-for-age, weight-for-height, arm circumference-for-age and head circumference-for-age), which provides further evidence suggestive of the success of NEEP in improving child health outcomes.

There were no significant direct treatment effects in anthropometrics, even after controlling for the *estimated* indirect treatment effect resulting from contamination. However, given that we do not have a clear comparison group to compare to the treatment arms, it is hard to say whether this is due to NEEP being ineffective or the difficulties in precisely controlling for contamination. The descriptive evidence of interaction between promoters and trial participants across water points, combined with the finding that NEEP increased the likelihood of participants discussing nutrition among their friends suggests that NEEP may have raised the salience of nutrition issues in the study area.

Our analysis includes overall network centrality, which should soak up any spurious correlation emerging for the spatial position of the water point in the study area. Thus, the centrality measure will capture effects on our outcomes that are driven by, for example, the water point being positioned next to a road or market. Thus, we can be relatively confident that NEEP is a key driver of the estimated indirect treatment effects.

Our findings on other outcomes, however, do not provide a clear picture on the mechanisms through which the effects on anthropometrics were achieved. Although we found a consistently positive and significant direct impact of NEEP on both the proportion of correct answers in the nutritional quiz, and on latent nutritional knowledge measured using Item Response Theory, this impact was limited to a single treatment arm in the study. And this translated to no significant total treatment effects overall. This could be a result of the nutritional quiz not performing as well as expected in discerning respondents' knowledge along dimensions NEEP sought to influence. For instance, on review the authors identified some questions with potentially ambiguous answers and others which were worded poorly (e.g. "Children should be given chopped foods when they are 12 months old", which was supposed to ask whether children can be given adult foods when they are 12 months old), and others which didn't appear to correspond to any of the content in the intervention materials (e.g. "Some parts of a chicken should not be given to children"). A second possibility is that the length of time taken to administer the female survey (the median survey took over two hours to complete) led to inattention and lackadaisical answering on the part of the respondent. Indeed, one possible explanation for our failure to find positive correlations between answers to the same question at baseline and endline suggests that respondents might have been guessing the correct answer.

Some evidence for the first of these hypotheses is provided by the "item characteristics curves" (ICCs) which are outputted from the IRT procedure. Item characteristic curves plot the relationship between estimated latent knowledge and the probability of answering an item correctly, hence they are expected to slope upwards if a question is a good metric for knowledge – there should be a higher probability that more knowledgeable people answer a question correctly. Figures 4 & 5 in Appendix F present the item characteristic curves for one of the questions identified as being ambiguous in its answer ("Children should be given chopped foods when they are 12 months old"). We see that in the treated sample, at both baseline and endline, the estimated ICC in fact has a slight *downward* slope, indicating that people who typically performed better overall in the quiz in fact did a worse job at answering this question. There were several other questions which exhibit either very flat or downward sloping ICCs, which suggests that the quiz we used was a poor metric by which to judge nutritional knowledge.

We also find limited evidence of an improvement in child nutritional practices as a result of NEEP. In particular, there appear to have been small improvements in consumption of nuts, eggs, dairy and vitamin-A rich foods by the index child, but some of these results are statistically insignificant or sensitive to the specification chosen. Further (although again limited) evidence supporting child nutritional intake as a channel through which change may have taken place comes from the small apparent improvement in child feed frequency shown by the results in Tables 30/31. We also find small increases in the quantities of nuts and meats at the household level.

One possible explanation for why we detected significant effects in anthropometric results and not in those pertaining to nutritional and food intake is that anthropometric measurements are likely to contain considerably less measurement error – surveyors were provided were provided with the recommend equipment and training, took multiple measurements, and were measuring something physical and not prone to misreporting – than reported quantities such as consumption expenditures, or feeding frequency. Given the difficulties in attaining our desired sample size, the statistical power that we have may be insufficient to accurately determine changes in reported quantities such as these, but still detect changes in anthropometric outcomes, which were more accurately measured and thus less prone to attenuation bias. Another possible explanation is that practices did adjust in response to treatment, but that these adjustments did not persist on the completion of the home visit schedule (around 50% of our sample were at least 30 months old at endline, and thus would not have received a visit for at least 6 months prior to the interview); the time period over which behaviours did change may have been sufficient to drive the changes we see in anthropometrics though.

Our evidence that NEEP increased chats about nutrition among family and friends, particularly in water points which were more highly connected to treated water points. This lends credence to the idea that salience of nutritional issues increased as a result of NEEP and this is a potentially important avenue through which NEEP may have influenced and changed behaviours.

Other mechanisms that were originally posited as potential dimensions along which behaviour might change were labour supply (which may increase for some family members to facilitate increased quality or quantity of food purchases), time spent cooking (in order to implement the food preparation and storage advice that formed a part of the information that NEEP disseminated), and household non-food consumption (which may have decreased if households substituted non-food consumption for improved food consumption as a result of their learning the potential benefits to doing so). None of these expected changes were apparent in the results for these measures. The age at which the index child stopped breastfeeding also appears to be unchanged by the trial, but the fact that most primary caregivers appear to have already been following best practices here perhaps make this results not so surprising.

5.3 Strengths and Weaknesses

The first strength of the intervention is that it successfully contributed evidence towards the feasibility of utilising the existing infrastructure of the DSW programme to administer new programmes simultaneously. Whether this “layering” of programmes is successful is a question of the ability of both promoters and recipients to absorb and act upon multiple streams of information. In order to answer this question we collected data from both parties on how the various components of the intervention were delivered, and the outcomes in terms of nutritional knowledge and chlorine uptake.

Another strength of NEEP comes from the extensive data that we collected in both survey waves. By interviewing mothers, father, and promoters we were able to gain an extensive insight into the characteristics and behaviours of all parties involved in the trial. A rich set of markers pertaining to anthropometric outcomes, knowledge of nutritional issues, child nutritional intake, household consumption, and water and hygiene practices allow for a detailed analysis of nutritional and health behaviours in our sample. The data on promoter characteristics and intervention delivery will also prove valuable to Evidence Action by giving them a more detailed picture of their promoters, the activities they perform, the social interactions among them and their receptiveness to performing tasks outside of DSW.

The primary weakness of the intervention was the absence of a sufficiently large buffer zone to ensure that there was a clear distinction between the treatment that treatment-arm and control-arm households received. This was a result of a lack of information in the planning stage in both the extent of inter-village interactions, and also in the lack of sufficiently detailed maps to allow for the inclusion of sufficiently large buffer zones between study clusters. As a result, there was a significant level of contamination that took place across study arms, as evidenced in reports in the monthly monitoring of discussions pertaining to nutritional message taking place between promoters and participants in control arms, and in the distinct lack of difference in the reported topics that respondents discussed with their promoters across treatment and control arms at endline. These spillovers are likely to have come from two sources: interactions between promoters from different study water points, and interactions within trial participants’ own social networks. As a result of the contamination, it was very hard to distinguish between treatment-arm and control-arm households in term of the actual level of treatment they received, and hence to it was challenging to draw conclusions as to the effects NEEP had. In response to this challenge, we devised a measure of “effective treatment” based on the centrality of clusters in the study-water point network in an attempt to create a distinction between study households along this dimension. But even with these strategies we are unable to report conclusively on the effect of NEEP.

Other weaknesses primarily related to data collection: in particular, the difficulty of reaching a sufficient number of male respondents, and the relatively high levels of attrition at endline. The comparatively low numbers of spouses reached (781 at baseline, 1014 at endline) was a result of males typically spending most of their day outside of the household compound, and the difficulties that came with finding a reliable phone number on which they could be reached for phone interview. The smaller, potentially selection-biased sample of male respondent that resulted means that conclusions drawn from these data need to be interpreted with caution. The level of attrition between the two waves of data collection (around 15%) was significantly higher than the figure we had anticipated (around 7%), thus trying to ensure that our endline sample was sufficiently large and balanced to facilitate a robust analysis was also a significant challenge. This attrition further impacted statistical power to detect effects.

6. Lessons

The first key lesson learned from NEEP is that there is a need to better understand how interactions take place in a setting prior to designing an evaluation. In this case, an understanding of the interactions between promoters, as well as those between regular householders, should have been factored into evaluation design. Developing such an understanding may, however, require further research into the structure of social networks (e.g. in what way are families typically spread across a location), and also more extensive data defining how village/locality boundaries are de facto defined (for instance through more extensive mapping of areas of interest). Ensuring that this data is collected in the planning stage of future randomized controlled trials aimed at testing informational interventions can reduce the likelihood of contamination across study arms.

A second lesson relates to the difficulties associated with involving male family members, in the intervention and evaluation. In evaluating NEEP, we found that the father of the child was mostly unavailable during promoter visits, which were during the day. Most promoters reported that finding fathers to receive messages was among the most difficult aspects of their role. This was also the case during both evaluation survey rounds, where fathers were mostly absent during enumerator visits to the households, leading to relatively high levels of attrition. Interventions that target the male members of the household, should thus include specific protocols (like scheduling visits after working hours, scheduling appointments etc.) which can effectively engage the male members. Similar processes should also be integrated in the survey design for example phone surveys with incentive structures, which can help reduce multiple re-visits to households and attrition in the sample.

A third lesson is that there is potential to layer additional programmes on top of DSW. The apparent absence of detrimental impact on DSW as a result of the layering of the two programmes provides some support for this as a method of delivering additional programmes at scale using existing infrastructure. However, the lack of conclusive results, makes it difficult to definitively comment or provide explicit recommendations on the process of layering. Further research is needed to identify the most sustainable and effective way to operationalize a layered model on the DSW platform and to understand the best practices of engaging the dispenser promoters in these additional activities.

7. Recommendations

Although there are some tentatively positive anthropometric results, the lack of a consistent message presented by the results for outcomes that could be potential mechanisms for anthropometric changes casts some doubt on the strength of any conclusions that can be drawn. However, the fact that contamination was so pervasive means that NEEP could potentially still have been successful in enacting positive change, and we simply lack a precise way of measuring this change. Thus, a primary recommendation is that further investigation be pursued prior to making a decision about scaling NEEP, at least in its current form.

A second recommendation is that further care be taken in the planning stages of future informational interventions, in order to ensure that there is sufficient understanding of geographic and social networks which may impact on the reliability of the analysis. This may require investments in up to date mapping of study areas to ensure that a complete and accurate picture of de facto boundaries is available when assigning treatment, or pre-baseline surveys within study areas to facilitate an analysis of the structure of family/friendship networks of potential study participants, to help ensure that spillovers of information are negligible.

The data and results gained from the promoter survey may also prove a valuable tool in understanding who the DSW promoters are and how they behave. Hence, sharing the evaluation findings with the DSW programme team is recommended. This information may provide them with more nuanced insight into promoters and the DSW operations in Busia county of Kenya.

Finally, given the tentatively positive results regarding the efficacy of layering different types of complementary programmes on the DSW platform it is recommended that further research be undertaken to investigate this avenue of service delivery, especially since different interventions will have different needs. If feasible, layering holds tremendous prospects for improving the cost-effectiveness, and impact, of DSW.

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Appendix

Appendix A. Full Set of Outcome Variables

Primary

- **Height-for-age z-score of index child:** This is a measure of the height of a child relative to the height of a reference population (in this case, children that are in the same gender and month-age group), divided by the standard deviation for the reference population. All z-scores were calculated using the WHO Child Growth Standards Stata igrowup macro.

Secondary

- **Knowledge of child nutrition issues:** Both parents were administered a short quiz, designed by the nutritionist attached to the project, at both baseline and endline in order to test their knowledge of key nutritional and feeding practices. As well as investigating whether there were any impacts on the raw score of respondents, Item Response Theory was also used in order to construct a potentially more nuanced measure of nutritional knowledge.
- **Child nutritional intake:** In the survey administered to mothers, one module contained a 7-day food frequency questionnaire which asked the respondent to recall how many times in the previous 7-days they had fed the index child a certain type of food (e.g. groundnuts, omena, mango, green leafy vegetables).). Child nutritional intake will also be evaluated through reported 24 hour feed frequency.
- **Child's age when breastfeeding stops:** Mothers were asked to recall at what age the index child stopped breastfeeding. This allows for the ascertainment of whether mothers maintained breastfeeding until the recommended age, and also for the construction of an indicator for adequate meal frequency for the index child (as this varies according to whether the child is still breastfed).
- **A composite index of other anthropometric indicators:** Besides height, the index child's weight, mid-upper arm circumference and head circumference were also measured. These measurements are then converted to z-scores in accordance with WHO Child Growth Standards and a summary index is created using the methodology of Anderson, 2008.
- **Probability that a child suffers from bipedal oedema:** Oedema arising from micronutrient deficiencies (also known as Kwashiorkor. Prevalence of oedema was very low in our sample, and hence this was dropped as an outcome.

Other

- **Household food consumption:** A detailed survey of total household food purchases and consumption over the 7-day period prior to the interview was taken for each of the interviewed households at both baseline and endline.
- **Household consumption:** As well as total food consumption in the household, data on the consumption of other non-food goods including utilities, clothing, and healthcare were also collected.
- **Total chlorine residual score:** Surveyors were asked to measure chlorine levels in a typical glass of drinking water provided by the main female respondent at both baseline and endline.
- **Labour supply:** The main household survey collected data on typical weekly working hours for mothers/main caregivers, spouses (if the main caregiver was married), and head of household (if neither the main caregiver nor their spouse were household head). This recognised the previous empirical findings (Fitzsimons, Malde, Mesnard, & Vera-Hernandez, 2016) that labour supply may

be an important dimension upon which households may need to adjust in order to facilitate their uptake of a more nutritious diet. The male survey also collected information on the man's own labour supply.

- **Time cooking on the day prior to the survey:** We asked both the main female respondent and her spouse to report how much time they had spent on various activities, including cooking over the 24 hours prior to the survey.
- **Women's empowerment:** Both waves of the survey collected data on various dimensions of domestic activities and decision making, to allow for the construction of an index based on the Women's Empowerment in Agriculture Index (WEAI). This will facilitate an analysis of whether empowering caregivers to make better nutritional choices has an impact on their empowerment more generally, and also whether this hypothesized impact varies depending on whether it is only the main caregiver who receives the messages or both her and her spouse.
- **Probability of having a chat with a friend or acquaintance about food or nutrition:** All female respondents were asked separate questions as to whether they had spoken to their spouse, another family member, or a friend or acquaintances about food or nutrition.
- **Probability of child suffering from diarrhoea:** Data were collected on stool frequency and consistency to gauge incidence of diarrhoea in children in the household over the 7 days prior to the survey.
- **Hygiene practices:** Data were collected on hand-washing, dish-washing, bathing of the index child, and food-washing and storage.

Construction of Knowledge Score

In the evaluation of the performance of respondents in the nutritional quiz, as well as looking at the simple raw scores, we also created a more nuanced measure of "latent nutritional knowledge" using Item Response Theory (IRT). This is in recognition of the fact that questions in our test typically did not have identical characteristics: in particular, some were markedly harder than others, and some were more closely tied to content contained within the intervention materials than others.

IRT models the probability of a correct response to a given question in the quiz (an "item") by fitting a logistic model to the data for each item, with parameters for its difficulty and discrimination (i.e. how well a question can discriminate between high-and low-ability individuals). Performing this procedure on the entire set of questions, one can obtain an overall estimate for the latent knowledge trait; also identified are the difficulty and discrimination parameters for each item in the quiz, which will help us to determine which parts of the quiz, if any, did a poor job of evaluating the knowledge of respondents.

Description of Constructed Anthropometric, Knowledge and Food/Nutrition Variables

Anthropometrics

- Height-for-age: Denotes height-for-age z-score. The z-score system expresses anthropometric measurements as a number of standard deviations below or above the (age) reference median; z-scores are widely considered to be the best system for analysis and presentation of anthropometric data, and allow us to compare anthropometric results across children of different ages in our sample. We calculate z-scores using the World Health Organization igrowup macro for STATA.
- Summary Index: Denotes a summary index (Anderson, 2008) of the z-scores calculated (again using the WHO igrowup macro) for the other anthropometric measures that we took in for our survey. These other measures are: weight-for-height, bmi-for-age, arm-circumference-for-age, and head-circumference-for-age. Summary index tests can be considered as having three advantages over testing individual outcomes. Firstly, they are robust to overtesting (over rejection of the null

hypothesis because of multiple inference) because each index represents a single test. Secondly, they provide a statistical test for whether a programme has a "general effect" on a set of outcomes; since all of our anthropometric measures are essentially proxying for health status, this may be more informative as to whether there was a positive impact than if one looks at the various measures separately. Finally, they are potentially more powerful than individual-level tests – multiple outcomes that approach marginal significance may aggregate into a single index that attains statistical significance.

Knowledge of child nutrition issues

- Prop_corr: The proportion of questions that the respondent answered correctly in the 25 question nutritional quiz.
- Latent Knowledge: The estimated latent knowledge parameter from the IRT procedure described above.

Child's age when breastfeeding stops

- Age stopped breastfeeding (months): The age, in months, at which the primary female caregiver/main respondent report the index child as having stopped breastfeeding.

Child nutritional intake

- Foods: The variables labelled meat, nuts, eggs etc. in tables 24 – 29 denote a simple sum of the number of days on which the index child is reported to have consumed foods falling under that category in the week prior to interview. The categories are composed as follows
    - Meat:
        - Number of days on which child consumed any kind of meat (e.g. cow/rabbit/sheep/goat/pig).
        - Number of days on which child consumed any kind of poultry meat (e.g. chicken/duck/turkey/birds).
        - Number of days on which child consumed omena.
        - Number of days on which child consumed any other fresh fish.
        - Number of days on which child consumed any kind of dry fish.
        - Number of days on which child consumed termites.
    - Nuts:
        - Number of days on which child consumed peanuts (groundnuts) and other nuts.
        - Number of days on which child consumed beans, cowpeas, green grams and other legumes.
    - Eggs:
        - Number of days on which child consumed eggs.
    - Vit-A (Vitamin-A rich foods):
        - Number of days on which child consumed orange fresh sweet potato.
        - Number of days on which child consumed pumpkins, butternut or yellow squash.
        - Number of days on which child consumed any red leafy vegetables.
    - Green (Green vegetables):
        - Number of days on which child consumed any dark green leafy vegetables.
    - Fruit:
        - Number of days on which child consumed mango.
        - Number of days on which child consumed guava.

        - Number of days on which child consumed pineapple**.**
        - Number of days on which child consumed papaya
        - Number of days on which child consumed banana.
        - Number of days on which child consumed avocado.
    - Dairy:
        - Number of days on which child consumed milk
        - Number of days on which child consumed yoghurt/home-made clotted milk
    - Starch:
        - Number of days on which child consumed any of rice, pasta, bread/cake/donuts, sorghum, millet, maize, potato, cassava, sweet potato, or any other starchy staples
- 24 hour minimum feed frequency: food_min_freq is an indicator variable taking the value of 1 if the child is reported as having received the minimum recommended number of meals (conditional on their age and whether they are still breastfed) over the 24 hour period preceding the interview, in accordance with IYCN guidelines.

Household food consumption

- Consumption expenditures: The variables labelled meats, starch, veg. etc. in tables 32 – 37 denote a sum of the reported consumption expenditure on foods that fall under that group in the week prior to the interview. The categories are composed as follows:
    - Meats:
        - Consumption expenditure of any kind of meat (e.g. cow/rabbit/sheep/goat/pig/poultry)
        - Consumption expenditure on blood
        - Consumption expenditure on termites
        - Consumption expenditure on omena
        - Consumption expenditure on dried fish (obambla)
        - Consumption expenditure on other fish
    - Legs (Legumes):
        - Consumption expenditure on lentils
        - Consumption expenditure on soybeans
        - Consumption expenditure on peas
        - Consumption expenditure on groundnuts
        - Consumption expenditure on cow peas
        - Consumption expenditure on green grams
    - Eggs:
        - Consumption expenditure on eggs
    - Fruit:
        - Consumption expenditure on tomatoes

    - Consumption expenditure on mango
    - Consumption expenditure on bananas
    - Consumption expenditure on papaya
    - Consumption expenditure on guava
    - Consumption expenditure on avocado

- Veg. (Vegetables):
    - Consumption expenditure on pumpkin/sweet potato
    - Consumption expenditure on red leafy vegetables
    - Consumption expenditure on green leafy vegetables
    - Consumption expenditure on dark green leafy vegetables
    - Consumption expenditure on onion

- Starch:
    - Consumption expenditure on green maize
    - Consumption expenditure on rice
    - Consumption expenditure on millet flour
    - Consumption expenditure on maize flour
    - Consumption expenditure on sorghum flour
    - Consumption expenditure on wheat flour
    - Consumption expenditure on cassava
    - Consumption expenditure on arrow root
    - Consumption expenditure on pumpkin/sweet potato
    - Consumption expenditure on potato
    - Consumption expenditure on bread

- Dairy:
    - Consumption expenditure on sour milk
    - Consumption expenditure on plain milk
    - Consumption expenditure on baby-formula milk
    - Consumption expenditure on other milk
    - Consumption expenditure on other dairy

- Other:
    - Consumption expenditure on oil
    - Consumption expenditure on sugar
    - Consumption expenditure on salt

- Agg. (Aggregate):
  - Consumption expenditure on all of the above

- Consumption quantities: When looking at the *quantities* that households consumed, we focused on a few key foods that were either specifically targeted by the intervention (e.g. groundnuts, omena), or were likely to be a good source of the requisite nutrients to support growth (e.g. meat, eggs, milk), along with a starch and a couple of staple fruits (maize flour, tomato and banana) to look for broader effects. The foods chosen were as follows:

  - Meat_qtty: Reported household consumption of any kind of meat (e.g. cow/rabbit/sheep/goat/pig/poultry) in kg.
  - Gn_qtty: Reported household consumption of groundnuts in kg.
  - Omena_qtty: Reported household consumption of omena in kg.
  - Eggs_qtty: Reported household consumption of eggs in pieces.
  - Gl_qtty: Reported household consumption of green leaves in kg.
  - Tom_qtty: Reported household consumption of tomatoes in pieces.
  - Maizef_qtty: Reported household consumption of maize flour in kg.
  - Pmilk_qtty: Reported household consumption of plain milk in litres.
  - Ban_qtty: Reported household consumption bananas in pieces.

Household consumption

- Nf_cons_agg: The non-food aggregate consumption measure is an agglomeration of reported average weekly expenditure on a range of common household purchases; these are:
  - Utilities (e.g. water, electricity)
  - Firewood/charcoal
  - Paraffin
  - Matches/candles
  - Grinding mill fees Transport
  - Clothing
  - Medical expenses
  - House improvements
  - Household non-durables (pans, cups etc.)
  - Education (including fees and related expenses such as uniform, stationary etc.)

Appendix B. Evaluation team

Paul Byatta is an associate director at Evidence Action. He leads the Monitoring, Learning and Information Systems (MLIS) team. In this capacity, Paul is responsible for the overall strategy and management of the MLIS team within the Africa region. Paul works with his team to support Evidence Action'sprogramme outcomes through well-designed monitoring and analysis systems, timely access to useful data and evidence-based decision making. Previously, he was a Senior Research Associate for a large scale WASH and Nutrition research programme in Kenya run by Innovations for Poverty Action (IPA). He also worked as a Policy Analyst at the Ministry of Finance in Kenya. Paul has a B.A in Economics from Harvard University.

Philip Kahuho is the manager for Evidence Action's Monitoring Design, Data Processing and Analysis team. He oversees all measurement, sampling, survey strategy, and design forprogramme monitoring and evaluation in Evidence Action's programmes within the Africa region. Philip has a background in Statistics (BSc) and Economics (MA) and has been working in the monitoring and evaluation field for the last six years.

Farida Mung'oni is Evidence Action's manager for Data Collection and Training. She is in charge of all data collection within Africa and leads team dispersed across Kenya, Uganda, Malawi and Ethiopia. She is a holder of Bachelor of Arts Degree in Project Planning and Management from the University of Nairobi. She is highly skilled in Strategic planning, monitoring and evaluation, data collection, team building and training. She has over 7 years' experience working and managing community projects.

Olive Mutai is the senior associate in charge of the analysis team and leads a team of two other analysts who provide data analysis function for Evidence Action. She is highly skilled in statistical analysis and data management. She is an expert in several analytical and geo-spatial software. Olive holds a Bachelor of Science Degree in Mathematics majoring in Statistics. She has six years of experience in analysis.

Jasper Otieno holds the position of Associate, Data Collection and Training. He is in charge of charge the team that collects data for our programmes still under. He holds a Bachelor degree in Science- Chemistry Major from Egerton University (2012) and has over two years of work experience with Non-Governmental Organisation in data collection. He possesses data collection skills, interviewing, planning, organisation and strong leadership skills.

Marcos Vera-Hernandez is a Senior Lecturer in the Economics Department at University College London; and is also a research fellow at the Centre for the Evaluation of Development Polices (EDePo), part of the Institute for Fiscal Studies (IFS). His primary research interests are in topics relating to development and health economics. He holds a Ph.D. in Economics from Universitat Autònoma de Barcelona.

Bansi Malde is an Assistant Professor of Economics at the University of Kent, and a Research Associate at the Institute for Fiscal Studies. Her research focuses on the role on social networks in developing country contexts, as well as on investigating the determinants of household investments in health. She holds a Ph.D. in Economics from University College London.

Sam Crossman is a research assistant at the Institute for Fiscal Studies. He holds BSc and MSc degrees Economics from University College London, where the focus of his studies was on microeconomic and microeconometric theory, and empirical topics in development and health economics.

Appendix C.1: Tables Showing Balance of Baseline Sample

Table 1: Baseline Characteristics of Index Children

	Control Group Mean	Difference: Mother Visit - Control	p-value	Difference: Couple Visit - Control	p-value	N
Age (months)	9.192 (5.356)	0.048 (0.351)	0.892	0.329 (0.326)	0.313	1671
Female	0.486 (0.500)	0.040 (0.032)	0.209	0.000 (0.028)	0.997	1671
Diarrhoea	0.199 (0.400)	0.039 (0.028)	0.176	0.033 (0.027)	0.217	1671
Height-for-age z-score	-0.687 (1.580)	-0.060 (0.109)	0.580	-0.073 (0.111)	0.513	1635
Summary index of other z-scores	0.034 (0.809)	-0.042 (0.049)	0.392	-0.058 (0.049)	0.238	1666
Age introduced to (semi-)solids	5.749 (1.754)	-0.064 (0.140)	0.650	-0.033 (0.160)	0.839	1196
Age introduced to liquids other than breastmilk	4.753 (2.177)	0.247 (0.209)	0.239	0.206 (0.208)	0.322	1264
Still breastfed	0.944 (0.230)	0.018 (0.013)	0.182	-0.009 (0.016)	0.582	1655

Table 2: Baseline Characteristics of Mothers/Main Caregivers

	Control Group	Mother Visit - Control	p-value	Couple Visit - Control	p-value	N
Age (years)	26.969 (8.123)	-0.488 (0.542)	0.368	-0.297 (0.528)	0.575	1670
Married	0.842 (0.365)	0.002 (0.022)	0.936	0.007 (0.022)	0.763	1671
Days inactive due to illness	1.634 (3.856)	0.134 (0.253)	0.597	0.153 (0.250)	0.542	1671
Completed secondary education	0.131 (0.337)	-0.015 (0.023)	0.520	-0.007 (0.024)	0.761	1665
Working to generate income	0.580 (0.494)	-0.032 (0.035)	0.361	-0.057 (0.038)	0.130	1670
In agriculture	0.438 (0.497)	0.003 (0.038)	0.936	-0.020 (0.038)	0.605	1670
Hours worked per week	15.349 (21.885)	-1.854 (1.407)	0.188	-1.404 (1.410)	0.320	1661
Weekly income from all activities	753.599 (2271.602)	-182.191 (128.594)	0.157	-147.859 (157.156)	0.347	1667
Number of correct answers in nutrition quiz	14.786 (2.523)	-0.177 (0.212)	0.404	-0.234 (0.195)	0.230	1671
Body-mass-index	22.038 (3.430)	-0.190 (0.228)	0.405	-0.300 (0.215)	0.164	1649

Table 3: Baseline Characteristics of Spouse

	Control Group Mean	Difference: Mother Visit - Control	p-value	Difference: Couple Visit - Control	p-value	N
Age (years)	33.415 (9.052)	-0.866 (0.671)	0.198	-0.077 (0.743)	0.918	1278
Completed secondary education	0.274 (0.447)	-0.022 (0.036)	0.537	-0.085** (0.033)	0.011	1293
Days inactive in last month due to illness	1.544 (4.996)	-0.642** (0.304)	0.035	-0.498 (0.313)	0.113	1315
Working to generate income	0.892 (0.310)	-0.051** (0.026)	0.047	-0.050** (0.024)	0.042	1331
In agriculture	0.344 (0.476)	-0.011 (0.045)	0.808	-0.035 (0.042)	0.395	1100
Hours worked per week	41.166 (23.416)	0.756 (1.964)	0.701	3.271 (2.058)	0.113	1030
Weekly income from all income generating activities	2252.359 (3995.258)	-485.821** (235.727)	0.040	-375.355 (241.360)	0.121	1321
Number of correct answers in nutrition quiz	5.391 (1.863)	0.039 (0.187)	0.836	0.037 (0.187)	0.843	781

Table 4: Baseline Characteristics of Households

	Control Group Mean	Difference: Mother Visit - Control	p-value	Difference: Couple Visit - Control	p-value	N
No. of Household Members	5.193 (2.067)	-0.204 (0.141)	0.149	-0.146 (0.133)	0.274	1671
No. of Main Respondent's Family Living in Same Village	0.904 (2.023)	0.087 (0.133)	0.513	0.026 (0.115)	0.820	1670
No. of Spouse's Family Living in Same Village	2.751 (2.765)	0.052 (0.166)	0.755	-0.219 (0.162)	0.179	1667
Crowding	4.381 (2.114)	-0.185 (0.139)	0.183	-0.118 (0.138)	0.394	1614
Household has Electricity	0.131 (0.337)	-0.007 (0.024)	0.774	0.003 (0.024)	0.911	1671
Household Walls made of Quality Material	0.197 (0.398)	-0.039 (0.034)	0.249	-0.071** (0.032)	0.025	1671
Household Floor made of Quality Material	0.214 (0.410)	-0.055* (0.033)	0.095	-0.071** (0.030)	0.020	1671
Household has Iron Roof	0.520 (0.500)	-0.025 (0.036)	0.484	0.033 (0.037)	0.375	1664
Land Owned by Household (Acres)	1.389 (1.699)	-0.081 (0.130)	0.537	-0.003 (0.126)	0.982	1652
Age of the Household Head	36.056 (12.195)	-0.449 (0.758)	0.554	-0.322 (0.782)	0.681	1585
Mother/Main Caregiver Head of Household	0.118 (0.323)	-0.040** (0.020)	0.046	-0.001 (0.020)	0.966	1671
Spouse Head of Household	0.857 (0.351)	0.044* (0.023)	0.061	0.004 (0.023)	0.853	1418

Table 5: Water Practices of Households

	Control Group Mean	Difference: Mother Visit - Control	p-value	Difference: Couple Visit - Control	p-value	N
Use less risky water source (0/1)	1.293 (0.456)	0.035 (0.060)	0.566	0.069 (0.061)	0.257	1571
Free chlorine present in drinking water	0.316 (0.465)	-0.018 (0.037)	0.635	0.021 (0.037)	0.566	1556
Amount of free chlorine present (ppm)	0.542 (0.665)	0.114 (0.072)	0.114	0.050 (0.083)	0.552	618
Household uses improved sanitation toilet	0.328 (0.470)	0.016 (0.043)	0.705	-0.004 (0.044)	0.923	1671
Any household member practices open defecation	0.183 (0.387)	0.008 (0.030)	0.781	0.014 (0.029)	0.622	1603

Table 6: Household Weekly Food Consumption Expenditures

	Control Group Mean	Difference: Mother Visit - Control	p-value	Difference: Couple Visit - Control	p-value	N
Meat Goods	205.134 (208.923)	4.757 (13.601)	0.727	-8.053 (13.323)	0.546	1672
Nuts and Legumes	28.507 (49.872)	-0.440 (3.388)	0.897	-1.871 (3.396)	0.582	1672
Eggs	32.597 (37.198)	0.728 (3.065)	0.812	-3.874 (2.711)	0.154	1667
Fruits	101.371 (78.507)	-0.354 (6.394)	0.956	-11.139* (5.862)	0.058	1672
Vegetables	101.162 (71.517)	8.250 (5.767)	0.154	-3.241 (5.746)	0.573	1672
Starchy Staples	279.266 (202.046)	-7.880 (14.670)	0.592	-14.823 (14.159)	0.296	1672
Dairy Goods	86.360 (126.737)	0.059 (10.777)	0.996	0.795 (10.663)	0.941	1672
Other Goods	178.520 (92.406)	11.322 (7.318)	0.123	-6.106 (6.452)	0.345	1672
Aggregate Consumption	964.216 (488.852)	12.822 (37.020)	0.729	-49.551 (33.104)	0.135	1672

Appendix C.2: Tables Showing Balance of Endline Sample at Baseline

Table 7: Baseline Characteristics of Index Children (Endline Sample)

	Control Group Mean	Difference: Mother Visit - Control	p-value	Difference: Couple Visit - Control	p-value	N
Age (months)	9.220 (5.400)	0.214 (0.380)	0.575	0.355 (0.341)	0.298	1427
Female	0.472 (0.500)	0.051 (0.035)	0.146	0.019 (0.033)	0.566	1427
Diarrhoea	0.205 (0.404)	0.032 (0.031)	0.303	0.030 (0.029)	0.305	1427
Height-for-age z-score	-0.702 (1.617)	-0.039 (0.116)	0.737	-0.053 (0.117)	0.650	1401
Summary index of other z-scores	0.054 (0.787)	-0.075 (0.052)	0.150	-0.066 (0.052)	0.205	1425
Age introduced to (semi-)solids	5.777 (1.768)	-0.124 (0.153)	0.418	-0.021 (0.173)	0.902	1032
Age introduced to liquids other than breastmilk	4.739 (2.164)	0.225 (0.228)	0.325	0.210 (0.226)	0.353	1090
Still breastfed	0.949 (0.221)	0.018 (0.013)	0.179	-0.012 (0.017)	0.487	1413

Table 8: Baseline Characteristics of Mother/Main Caregiver (Endline Sample)

	Control Group Mean	Difference: Mother Visit - Control	p-value	Difference: Couple Visit - Control	p-value	N
Age (years)	27.362 (8.033)	-0.639 (0.560)	0.255	-0.155 (0.570)	0.786	1426
Married	0.857 (0.351)	-0.006 (0.023)	0.813	0.006 (0.024)	0.814	1427
Days inactive due to illness	1.801 (4.122)	0.034 (0.288)	0.906	0.084 (0.282)	0.765	1427
Completed secondary education	0.128 (0.334)	-0.016 (0.026)	0.531	0.002 (0.028)	0.939	1423
Working to generate income	0.587 (0.493)	-0.027 (0.037)	0.457	-0.048 (0.039)	0.215	1426
In agriculture	0.461 (0.499)	-0.015 (0.041)	0.704	-0.026 (0.040)	0.514	1426
Hours worked per week	15.443 (21.600)	-1.351 (1.498)	0.368	-1.747 (1.433)	0.224	1419
Weekly income from all activities	720.453 (2224.655)	-126.819 (134.923)	0.348	-94.180 (172.212)	0.585	1423
Number of correct answers in nutrition quiz	14.779 (2.554)	-0.154 (0.229)	0.502	-0.079 (0.211)	0.710	1427
Body-mass-index	21.988 (3.453)	-0.140 (0.244)	0.566	-0.208 (0.237)	0.381	1411

Table 9: Baseline Characteristics of Spouse (Endline Sample)

	Control Group Mean	Difference: Mother Visit - Control	p-value	Difference: Couple Visit - Control	p-value	N
Age (years)	33.949 (8.865)	-1.086 (0.727)	0.136	-0.012 (0.823)	0.989	1117
Completed secondary education	0.284 (0.452)	-0.041 (0.039)	0.292	-0.093** (0.036)	0.011	1133
Days inactive in last month due to illness	1.429 (4.781)	-0.465 (0.310)	0.134	-0.325 (0.323)	0.316	1150
Working to generate income	0.899 (0.301)	-0.058** (0.026)	0.028	-0.053** (0.027)	0.048	1162
In agriculture	0.348 (0.477)	-0.007 (0.050)	0.892	-0.024 (0.046)	0.601	965
Hours worked per week	41.308 (23.487)	0.328 (2.098)	0.876	1.729 (2.213)	0.435	907
Weekly income from all income generating activities	2301.372 (4184.802)	-541.887** (263.512)	0.041	-410.011 (265.926)	0.124	1153
Number of correct answers in nutrition quiz	5.463 (1.851)	-0.007 (0.195)	0.972	-0.014 (0.203)	0.946	700

Table 10: Baseline Characteristics of Households (Endline Sample)

	Control Group Mean	Difference: Mother Visit - Control	p-value	Difference: Couple Visit - Control	p-value	N
No. of Household Members	5.331 (2.072)	-0.251 (0.154)	0.104	-0.135 (0.146)	0.355	1427
No. of Main Respondent's Family Living in Same Village	0.857 (1.955)	0.130 (0.140)	0.355	0.046 (0.125)	0.712	1426
No. of Spouse's Family Living in Same Village	2.801 (2.730)	0.018 (0.192)	0.925	-0.260 (0.176)	0.140	1424
Crowding	4.475 (2.123)	-0.207 (0.155)	0.183	-0.095 (0.154)	0.538	1377
Household has Electricity	0.135 (0.342)	-0.015 (0.025)	0.554	0.012 (0.026)	0.649	1427
Household Walls made of Quality Material	0.201 (0.401)	-0.040 (0.035)	0.251	-0.065* (0.033)	0.052	1427
Household Floor made of Quality Material	0.216 (0.412)	-0.063* (0.034)	0.063	-0.070** (0.032)	0.028	1427
Household has Iron Roof	0.524 (0.500)	-0.028 (0.039)	0.468	0.041 (0.040)	0.310	1422
Land Owned by Household (Acres)	1.397 (1.678)	-0.056 (0.135)	0.677	0.052 (0.132)	0.692	1412
Age of the Household Head	36.354 (11.936)	-0.504 (0.810)	0.534	-0.734 (0.837)	0.381	1356
Mother/Main Caregiver Head of Household	0.119 (0.324)	-0.049** (0.022)	0.029	-0.003 (0.023)	0.900	1427
Spouse Head of Household	0.859 (0.348)	0.048* (0.025)	0.056	0.005 (0.026)	0.850	1230

Table 11: Water Practices of Households (Endline Sample)

	Control Group Mean	Difference: Mother Visit - Control	p-value	Difference: Couple Visit - Control	p-value	N
Use less risky water source (0/1)	1.297 (0.457)	0.025 (0.062)	0.687	0.072 (0.062)	0.252	1350
Free chlorine present in drinking water	0.318 (0.466)	-0.037 (0.038)	0.322	0.014 (0.038)	0.710	1337
Amount of free chlorine present	0.517 (0.650)	0.132* (0.077)	0.086	0.034 (0.081)	0.676	531
Household use improved sanitation toilet	0.327 (0.470)	0.022 (0.044)	0.611	-0.001 (0.045)	0.977	1427
Any household member practices open defecation	0.182 (0.386)	0.006 (0.033)	0.849	0.016 (0.031)	0.602	1372

Table 12: Household Weekly Food Consumption Expenditures (Endline Sample)

	Control Group Mean	Difference: Mother Visit - Control	p-value	Difference: Couple Visit - Control	p-value	N
Meat Goods	208.553 (211.211)	4.836 (15.294)	0.752	-11.614 (14.054)	0.409	1428
Nuts and Legumes	27.624 (48.619)	0.757 (3.429)	0.825	-1.867 (3.169)	0.556	1428
Eggs	33.103 (37.011)	-0.096 (3.120)	0.975	-3.512 (2.858)	0.220	1424
Fruits	103.162 (78.474)	-1.582 (6.696)	0.813	-11.811* (6.162)	0.056	1428
Vegetables	103.221 (73.227)	6.305 (6.102)	0.302	-4.502 (6.172)	0.466	1428
Starchy Staples	282.936 (202.548)	-9.985 (15.818)	0.528	-11.953 (15.506)	0.441	1428
Dairy Goods	87.206 (128.040)	-0.285 (11.183)	0.980	1.617 (10.896)	0.882	1428
Other Goods	180.084 (92.558)	9.821 (7.616)	0.198	-5.853 (7.039)	0.406	1428
Aggregate Consumption	978.457 (491.127)	4.704 (39.276)	0.905	-52.735 (34.002)	0.122	1428

Appendix C.3: Differences in attrition between study arms

Table 13: Attrition rates by arm and characteristic

	(1) Attrited	(2) Attrited	(3) Attrited	(4) Attrited
Mother Only	-0.0435* (0.076)	-0.0474** (0.045)		
Couples Visit	-0.0140 (0.577)	-0.0151 (0.526)		
Mother Only – Black & White			-0.0608** (0.018)	-0.0627** (0.012)
Mother Only – Colour			-0.0218 (0.505)	-0.0278 (0.382)
Couples Visit – Black & White			-0.0234 (0.414)	-0.0216 (0.439)
Couples Visit – Colour			-0.00248 (0.937)	-0.00712 (0.807)
Mother's age		-0.00234** (0.040)		-0.00232** (0.042)
Mother married		-0.0595** (0.031)		-0.0585** (0.035)
Mother sec. edu.		-0.00139 (0.943)		-0.000802 (0.967)
Household size		-0.0233*** (0.000)		-0.0233*** (0.000)
Index child gender		0.0188 (0.287)		0.0192 (0.275)
Index child age		-0.00179 (0.287)		-0.00175 (0.303)
Index child height z-score		-0.00120 (0.806)		-0.000929 (0.850)
_cons	0.166*** (0.000)	0.402*** (0.000)	0.166*** (0.000)	0.400*** (0.000)
N	1671	1634	1671	1634

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Appendix D: Results

D1. Anthropometrics

Table 14: Anthropometric Indicators (1km cut-off)

	(1) Height-for-age	(2) Height-for-age	(3) Summary index of other z-scores	(4) Summary index of other z-scores
Mother Only - Black & White	0.019 (0.092)		-0.043 (0.046)	
Mother Only - Colour Poster	-0.101 (0.101)		0.007 (0.052)	
Couples Visit - Black & White	-0.020 (0.106)		0.045 (0.047)	
Couples Visit - Colour Poster	-0.034 (0.100)		-0.067 (0.051)	
Treat		-0.030 (0.073)		-0.012 (0.035)
Indirect Effect - 1km	0.265 (0.149)*	0.269 (0.146)*	0.192 (0.081)**	0.183 (0.080)**
Bonacich Cent. - 1km	-0.265 (0.114)**	-0.265 (0.114)**	-0.147 (0.061)**	-0.142 (0.060)**
Age	0.212 (0.057)***	0.211 (0.058)***	0.013 (0.026)	0.014 (0.027)
Age Sqr.	-0.004 (0.001)***	-0.004 (0.001)***	-0.000 (0.000)	-0.000 (0.000)
Female	1.355 (1.505)	1.419 (1.497)	-0.029 (0.629)	-0.041 (0.635)
Age*Female	-0.081 (0.099)	-0.085 (0.098)	0.016 (0.041)	0.016 (0.041)
Age Sqr.*Female	0.001 (0.002)	0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)
zlen_bline	0.358 (0.023)***	0.359 (0.023)***		
sum_index_othz_bline			0.502 (0.025)***	0.503 (0.025)***
TATE		0.188 (0.122)		0.136 (0.065)**
TTE 75th Perc.		0.234 (0.143)		0.167 (0.077)**
TTE 25th Perc.		0.037 (0.073)		0.033 (0.035)
N	1,363	1,363	1,392	1,392

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 15: Anthropometric indicators (2km cut-off)

	(1) Height-for-age	(2) Height-for-age	(3) Summary index of other z-scores	(4) Summary index of other z-scores
Mother Only - Black & White	0.012		-0.033	
	(0.087)		(0.044)	
Mother Only - Colour Poster	-0.091		0.013	
	(0.103)		(0.053)	
Couples Visit - Black & White	-0.005		0.059	
	(0.106)		(0.046)	
Couples Visit - Colour Poster	-0.014		-0.054	
	(0.102)		(0.050)	
Treat		-0.021		-0.002
		(0.073)		(0.034)
Indirect Effect - 2km	0.178	0.169	0.211	0.200
	(0.171)	(0.169)	(0.117)*	(0.116)*
Bonacich Cent. - 2km	-0.115	-0.108	-0.142	-0.135
	(0.115)	(0.114)	(0.078)*	(0.077)*
Age	0.212	0.211	0.013	0.013
	(0.056)***	(0.056)***	(0.027)	(0.027)
Age Sqr.	-0.004	-0.004	-0.000	-0.000
	(0.001)***	(0.001)***	(0.000)	(0.000)
Female	1.475	1.534	-0.020	-0.031
	(1.507)	(1.498)	(0.631)	(0.637)
Age*Female	-0.087	-0.091	0.015	0.016
	(0.099)	(0.098)	(0.041)	(0.042)
Age Sqr.*Female	0.001	0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.001)	(0.001)
zlen_bline	0.357	0.358		
	(0.023)***	(0.023)***		
sum_index_othz_bline			0.504	0.506
			(0.025)***	(0.025)***
TATE		0.349		0.434
		(0.360)		(0.250)*
TTE 75th Perc.		0.360		0.447
		(0.371)		(0.258)*
TTE 25th Perc.		0.123		0.168
		(0.146)		(0.100)*
N	1,363	1,363	1,392	1,392

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

D2. Nutritional Knowledge

Table 16: Nutritional Quiz (1km cut-off)

	(1) Proportion correct	(2) Proportion correct	(3) Latent knowledge	(4) Latent knowledge
Mother Only -	0.011		0.040	
Black & White	(0.009)		(0.068)	
Mother Only -	-0.020		-0.126	
Colour Poster	(0.010)**		(0.084)	
Couples Visit -	0.005		-0.005	
Black & White	(0.010)		(0.079)	
Couples Visit -	0.019		0.186	
Colour Poster	(0.010)*		(0.087)**	
Treat		0.007		0.030
		(0.008)		(0.058)
Indirect Effect -	-0.006	-0.008	0.007	-0.006
1km	(0.017)	(0.018)	(0.133)	(0.135)
Bonacich Cent. -	-0.001	0.001	-0.052	-0.042
1km	(0.013)	(0.014)	(0.104)	(0.106)
Education level	0.011	0.011	0.081	0.081
	(0.003)***	(0.003)***	(0.020)***	(0.020)***
prop_corr_bline	0.017	0.019		
	(0.028)	(0.028)		
lat_know_bline			-0.034	-0.033
			(0.029)	(0.029)
TATE		0.002		0.026
		(0.013)		(0.105)
TTE 75th Perc.		-0.001		0.024
		(0.018)		(0.144)
TTE 25th Perc.		0.005		0.028
		(0.008)		(0.064)
N	1,390	1,390	1,390	1,390

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 17: Nutritional Quiz (2km cut-off)

	(1) Proportion correct	(2) Proportion correct	(3) Latent knowledge	(4) Latent knowledge
Mother Only -	0.010		0.041	
Black & White	(0.009)		(0.068)	
Mother Only -	-0.018		-0.117	
Colour Poster	(0.010)*		(0.083)	
Couples Visit -	0.004		-0.007	
Black & White	(0.009)		(0.078)	
Couples Visit -	0.022		0.205	
Colour Poster	(0.010)**		(0.086)**	
Treat		0.007		0.035
		(0.007)		(0.057)
Indirect Effect -	-0.033	-0.037	-0.105	-0.126
2km	(0.027)	(0.028)	(0.210)	(0.218)
Bonacich Cent. -	0.016	0.020	0.012	0.029
2km	(0.018)	(0.019)	(0.141)	(0.147)
Education level	0.011	0.011	0.087	0.087
	(0.003)***	(0.003)***	(0.020)***	(0.020)***
prop_corr_bline	0.018	0.020		
	(0.028)	(0.029)		
lat_know_bline			-0.027	-0.026
			(0.029)	(0.029)
TATE		-0.055		-0.177
		(0.047)		(0.372)
TTE 75th Perc.		-0.074		-0.242
		(0.061)		(0.484)
TTE 25th Perc.		-0.023		-0.069
		(0.023)		(0.188)
N	1,390	1,390	1,390	1,390

Standard errors clustered by waterpoint in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 18: Nutritional Quiz, Promoter (1km cut-off)

	(1) Proportion correct	(2) Proportion correct	(3) Latent knowledge	(4) Latent knowledge
Mother Only - Black & White	-0.012 (0.019)		-0.221 (0.143)	
Mother Only - Colour Poster	-0.010 (0.020)		-0.056 (0.155)	
Couples Visit - Black & White	0.009 (0.017)		-0.029 (0.137)	
Couples Visit - Colour Poster	-0.007 (0.018)		-0.107 (0.143)	
Treat		-0.004 (0.012)		-0.099 (0.093)
Indirect Effect - 2km	0.038 (0.033)	0.033 (0.033)	0.256 (0.254)	0.216 (0.253)
Bonacich Cent. - 2km	-0.025 (0.023)	-0.021 (0.023)	-0.187 (0.178)	-0.158 (0.176)
Education level	0.004 (0.005)	0.004 (0.005)	0.033 (0.040)	0.031 (0.040)
TATE		0.032 (0.036)		0.137 (0.274)
TTE 75th Perc.		0.031 (0.034)		0.129 (0.266)
TTE 25th Perc.		0.004 (0.013)		-0.045 (0.102)
N	314	314	314	314

Standard errors in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 19: Nutritional Quiz, Promoter (2km cut-off)

	(1) Proportion correct	(2) Proportion correct	(3) Latent knowledge	(4) Latent knowledge
Mother Only - Black & White	-0.010 (0.018)		-0.200 (0.141)	
Mother Only - Colour Poster	-0.008 (0.020)		-0.038 (0.152)	
Couples Visit - Black & White	0.011 (0.017)		-0.021 (0.137)	
Couples Visit - Colour Poster	-0.003 (0.017)		-0.077 (0.139)	
Treat		-0.002 (0.012)		-0.083 (0.091)
Indirect Effect - 2km	0.025 (0.026)	0.023 (0.026)	0.126 (0.223)	0.105 (0.222)
Bonacich Cent. - 2km	-0.018 (0.017)	-0.017 (0.017)	-0.105 (0.147)	-0.090 (0.145)
Education level	0.005 (0.005)	0.005 (0.005)	0.043 (0.040)	0.040 (0.040)
TATE		0.058 (0.069)		0.186 (0.576)
TTE 75th Perc.		0.051 (0.062)		0.158 (0.517)
TTE 25th Perc.		0.016 (0.024)		-0.002 (0.193)
N	314	314	314	314

Standard errors in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

D3. Child Nutritional Intake

Table 20: Number of days that child consumed food, with foods grouped by type i (1km cut-off)

	(1) meat	(2) meat	(3) nuts	(4) nuts	(5) eggs	(6) eggs
Mother Only - Black & White	-0.103		-0.042		0.033	
	(0.230)		(0.112)		(0.086)	
Mother Only - Colour Poster	0.166		0.048		0.167	
	(0.258)		(0.124)		(0.092)*	
Couples Visit - Black & White	0.287		-0.021		-0.003	
	(0.245)		(0.114)		(0.090)	
Couples Visit - Colour Poster	0.340		0.112		0.024	
	(0.235)		(0.125)		(0.103)	
Treat		0.162		0.017		0.052
		(0.168)		(0.090)		(0.069)
Indirect Effect - 1km	-0.447	-0.501	-0.047	-0.053	0.104	0.109
	(0.404)	(0.392)	(0.216)	(0.213)	(0.172)	(0.172)
Bonacich Cent. - 1km	0.404	0.424	0.141	0.139	-0.043	-0.047
	(0.300)	(0.293)	(0.165)	(0.162)	(0.127)	(0.127)
Age	0.042	0.044	-0.090	-0.091	0.017	0.016
	(0.054)	(0.054)	(0.044)**	(0.044)**	(0.021)	(0.021)
Age Sqr.	-0.002	-0.002	0.005	0.005	-0.001	-0.000
	(0.003)	(0.003)	(0.002)**	(0.002)**	(0.001)	(0.001)
Still Breastfed	0.114	0.113	-0.126	-0.125	-0.077	-0.074
	(0.192)	(0.191)	(0.118)	(0.117)	(0.090)	(0.090)
TATE		-0.244		-0.026		0.141
		(0.310)		(0.182)		(0.144)
TTE 75th Perc.		-0.329		-0.035		0.159
		(0.369)		(0.214)		(0.170)
TTE 25th Perc.		0.036		0.004		0.079
		(0.167)		(0.097)		(0.074)
N	1,349	1,349	1,283	1,283	1,298	1,298

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 21: Number of days that child consumed food, with foods grouped by type ii (1km cut-off)

	(1) vita	(2) vita	(3) green	(4) green	(5) fruit	(6) fruit
Mother Only - Black & White	0.085 (0.111)		-0.370 (0.207)*		0.041 (0.463)	
Mother Only - Colour Poster	0.140 (0.143)		-0.146 (0.219)		0.082 (0.431)	
Couples Visit - Black & White	0.228 (0.154)		-0.074 (0.226)		0.034 (0.460)	
Couples Visit - Colour Poster	0.021 (0.107)		-0.334 (0.218)		0.689 (0.418)	
Treat		0.123 (0.085)		-0.229 (0.161)		0.188 (0.320)
Indirect Effect - 1km	-0.006 (0.222)	-0.023 (0.215)	-0.124 (0.462)	-0.161 (0.466)	-0.035 (0.669)	-0.043 (0.672)
Bonacich Cent. - 1km	0.037 (0.167)	0.049 (0.162)	0.167 (0.344)	0.188 (0.349)	0.049 (0.501)	0.036 (0.505)
Age	0.020 (0.025)	0.021 (0.025)	0.093 (0.045)**	0.095 (0.045)**	0.141 (0.085)	0.141 (0.084)*
Age Sqr.	-0.001 (0.001)	-0.001 (0.001)	-0.005 (0.002)**	-0.005 (0.002)**	-0.006 (0.004)	-0.006 (0.004)
Still Breastfed	0.002 (0.111)	0.004 (0.111)	0.104 (0.167)	0.109 (0.166)	-0.437 (0.311)	-0.447 (0.309)
TATE		0.105 (0.184)		-0.359 (0.374)		0.153 (0.567)
TTE 75th Perc.		0.101 (0.217)		-0.387 (0.447)		0.146 (0.666)
TTE 25th Perc.		0.118 (0.095)		-0.270 (0.176)		0.177 (0.327)
N	1,349	1,349	1,324	1,324	1,349	1,349

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 22: Number of days that child consumed food, with foods grouped by type iii (1km cut-off)

	(1) dairy	(2) dairy	(3) starch	(4) starch
Mother Only - Black & White	0.021		-0.114	
	(0.348)		(0.259)	
Mother Only - Colour Poster	0.462		-0.369	
	(0.354)		(0.277)	
Couples Visit - Black & White	0.125		-0.314	
	(0.376)		(0.263)	
Couples Visit - Colour Poster	-0.114		-0.208	
	(0.337)		(0.276)	
Treat		0.122		-0.247
		(0.254)		(0.197)
Indirect Effect - 1km	0.205	0.194	-0.343	-0.318
	(0.705)	(0.713)	(0.533)	(0.545)
Bonacich Cent. - 1km	-0.178	-0.170	0.237	0.225
	(0.522)	(0.526)	(0.404)	(0.411)
Age	-0.156	-0.157	0.017	0.017
	(0.075)**	(0.077)**	(0.056)	(0.056)
Age Sqr.	0.007	0.007	-0.002	-0.002
	(0.004)*	(0.004)*	(0.003)	(0.003)
Still Breastfed	-0.639	-0.627	-0.453	-0.458
	(0.259)**	(0.259)**	(0.225)**	(0.225)**
TATE		0.279		-0.505
		(0.593)		(0.449)
TTE 75th Perc.		0.312		-0.559
		(0.705)		(0.535)
TTE 25th Perc.		0.171		-0.327
		(0.287)		(0.218)
N	1,349	1,349	1,307	1,307

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 23: Number of days that child consumed food, with foods grouped by type i (2km cut-off)

	(1) meat	(2) meat	(3) nuts	(4) nuts	(5) eggs	(6) eggs
Mother Only - Black & White	-0.127		-0.034		0.048	
	(0.228)		(0.118)		(0.087)	
Mother Only - Colour Poster	0.147		0.024		0.173	
	(0.256)		(0.122)		(0.091)*	
Couples Visit - Black & White	0.252		-0.018		0.003	
	(0.240)		(0.113)		(0.089)	
Couples Visit - Colour Poster	0.285		0.085		0.022	
	(0.231)		(0.125)		(0.102)	
Treat		0.125		0.009		0.059
		(0.162)		(0.089)		(0.068)
Indirect Effect - 2km	-0.466	-0.530	0.443	0.442	0.023	0.052
	(0.472)	(0.461)	(0.190)**	(0.193)**	(0.158)	(0.157)
Bonacich Cent. - 2km	0.350	0.391	-0.286	-0.285	-0.004	-0.024
	(0.317)	(0.310)	(0.126)**	(0.128)**	(0.105)	(0.105)
Age	0.044	0.046	-0.088	-0.088	0.018	0.016
	(0.054)	(0.054)	(0.044)**	(0.044)**	(0.022)	(0.021)
Age Sqr.	-0.002	-0.002	0.005	0.005	-0.001	-0.000
	(0.003)	(0.003)	(0.002)**	(0.002)**	(0.001)	(0.001)
Still Breastfed	0.109	0.111	-0.131	-0.130	-0.080	-0.077
	(0.192)	(0.191)	(0.119)	(0.118)	(0.090)	(0.090)
TATE		-1.032		0.972		0.172
		(1.003)		(0.426)**		(0.341)
TTE 75th Perc.		-1.066		1.001		0.176
		(1.033)		(0.439)**		(0.351)
TTE 25th Perc.		-0.326		0.385		0.103
		(0.411)		(0.184)**		(0.142)
N	1,349	1,349	1,283	1,283	1,298	1,298

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 24: Number of days that child consumed food, with foods grouped by type ii (2km cut-off)

	(1) vita	(2) vita	(3) green	(4) green	(5) fruit	(6) fruit
Mother Only - Black & White	0.087 (0.111)		-0.336 (0.205)		-0.014 (0.468)	
Mother Only - Colour Poster	0.135 (0.140)		-0.141 (0.216)		0.063 (0.428)	
Couples Visit - Black & White	0.229 (0.154)		-0.080 (0.225)		0.019 (0.451)	
Couples Visit - Colour Poster	0.013 (0.108)		-0.333 (0.211)		0.624 (0.408)	
Treat		0.121 (0.084)		-0.222 (0.156)		0.147 (0.312)
Indirect Effect - 2km	0.128 (0.232)	0.107 (0.231)	-0.069 (0.369)	-0.096 (0.376)	-0.202 (0.952)	-0.228 (0.928)
Bonacich Cent. - 2km	-0.081 (0.153)	-0.068 (0.153)	0.007 (0.253)	0.023 (0.258)	0.261 (0.632)	0.281 (0.621)
Age	0.020 (0.025)	0.021 (0.025)	0.101 (0.045)**	0.103 (0.045)**	0.131 (0.086)	0.130 (0.085)
Age Sqr.	-0.001 (0.001)	-0.001 (0.001)	-0.005 (0.002)**	-0.005 (0.002)**	-0.006 (0.004)	-0.006 (0.004)
Still Breastfed	-0.000 (0.111)	0.002 (0.112)	0.096 (0.167)	0.101 (0.166)	-0.432 (0.308)	-0.440 (0.307)
TATE		0.354 (0.509)		-0.432 (0.828)		-0.350 (1.993)
TTE 75th Perc.		0.361 (0.524)		-0.438 (0.852)		-0.365 (2.053)
TTE 25th Perc.		0.212 (0.212)		-0.304 (0.350)		-0.047 (0.797)
N	1,349	1,349	1,324	1,324	1,349	1,349

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 25: Number of days that child consumed food, with foods grouped by type iii (2km cut-off)

	(1) dairy	(2) dairy	(3) starch	(4) starch
Mother Only - Black & White	-0.066		-0.115	
	(0.339)		(0.265)	
Mother Only - Colour Poster	0.418		-0.379	
	(0.349)		(0.270)	
Couples Visit - Black & White	0.138		-0.328	
	(0.364)		(0.257)	
Couples Visit - Colour Poster	-0.171		-0.195	
	(0.345)		(0.267)	
Treat		0.078		-0.249
		(0.247)		(0.193)
Indirect Effect - 2km	0.707	0.735	-0.080	-0.070
	(0.702)	(0.706)	(0.435)	(0.433)
Bonacich Cent. - 2km	-0.333	-0.355	-0.014	-0.019
	(0.471)	(0.474)	(0.299)	(0.298)
Age	-0.173	-0.173	0.024	0.024
	(0.074)**	(0.075)**	(0.056)	(0.056)
Age Sqr.	0.008	0.008	-0.002	-0.002
	(0.004)**	(0.004)**	(0.003)	(0.003)
Still Breastfed	-0.623	-0.610	-0.454	-0.460
	(0.257)**	(0.258)**	(0.224)**	(0.223)**
TATE		1.681		-0.401
		(1.523)		(0.950)
TTE 75th Perc.		1.729		-0.406
		(1.568)		(0.978)
TTE 25th Perc.		0.704		-0.308
		(0.614)		(0.404)
N	1,349	1,349	1,307	1,307

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 26: Indicator for child meeting 24 hour minimum feed-frequency (1km cut-off)

	(1) food_min_freq	(2) food_min_freq
Mother Only - Black & White	0.034 (0.033)	
Mother Only - Colour Poster	0.021 (0.032)	
Couples Visit - Black & White	0.032 (0.035)	
Couples Visit - Colour Poster	0.067 (0.037)*	
Treat		0.038 (0.026)
Indirect Effect - 1km	-0.044 (0.056)	-0.045 (0.056)
Bonacich Cent. - 1km	0.037 (0.042)	0.037 (0.042)
Age	-0.006 (0.011)	-0.006 (0.011)
Age Sqr.	-0.000 (0.000)	-0.000 (0.001)
Female	-0.004 (0.021)	-0.004 (0.021)
Still Breastfed	0.176 (0.026)***	0.175 (0.026)***
food_min_freq_bline	0.035 (0.039)	0.036 (0.039)
TATE		0.002 (0.048)
TTE 75th Perc.		-0.006 (0.056)
TTE 25th Perc.		0.026 (0.027)
N	1,297	1,297

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 27: Indicator for child meeting 24 hour minimum feed-frequency (2km cut-off)

	(1) food_min_freq	(2) food_min_freq
Mother Only - Black & White	0.027	
	(0.032)	
Mother Only - Colour Poster	0.016	
	(0.033)	
Couples Visit - Black & White	0.029	
	(0.034)	
Couples Visit - Colour Poster	0.060	
	(0.037)	
Treat		0.032
		(0.025)
Indirect Effect - 2km	0.005	0.002
	(0.071)	(0.068)
Bonacich Cent. - 2km	0.004	0.007
	(0.047)	(0.045)
Age	-0.006	-0.006
	(0.011)	(0.011)
Age Sqr.	-0.000	-0.000
	(0.000)	(0.000)
Female	-0.005	-0.005
	(0.021)	(0.021)
Still Breastfed	0.176	0.176
	(0.026)***	(0.026)***
food_min_freq_bline	0.033	0.033
	(0.039)	(0.039)
constant	0.748	0.746
	(0.066)***	(0.065)***
TATE		0.036
		(0.146)
TTE 75th Perc.		0.036
		(0.151)
TTE 25th Perc.		0.034
		(0.059)
N	1,297	1,297

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

D4i. Household Food Consumption (Expenditures)

Table 28: Weekly Household Food Consumption Expenditures in KSHS i (1km cut-off)

	(1) meats	(2) meats	(3) legs	(4) legs	(5) eggs	(6) eggs
Mother Only - Black & White	-25.765 (26.808)		-1.658 (7.171)		3.067 (3.526)	
Mother Only - Colour Poster	-8.717 (29.021)		-2.646 (7.993)		7.737 (4.760)	
Couples Visit - Black & White	-18.682 (28.275)		5.408 (7.328)		0.138 (3.908)	
Couples Visit - Colour Poster	-0.070 (33.780)		6.239 (8.417)		4.473 (4.184)	
Treat		-14.439 (22.974)		1.769 (5.442)		3.616 (3.056)
Indirect Effect - 1km	56.317 (55.680)	55.189 (55.560)	2.280 (13.486)	1.370 (13.486)	0.447 (6.331)	0.783 (6.303)
Bonacich Cent. - 1km	-34.817 (40.037)	-34.910 (39.759)	-1.219 (10.182)	-0.836 (10.181)	-0.570 (4.719)	-0.846 (4.686)
Males: 0 to 5	0.471 (13.018)	0.579 (12.880)	1.067 (4.131)	1.276 (4.194)	0.377 (2.362)	0.293 (2.362)
Males: < 18	8.831 (12.722)	9.048 (12.660)	3.066 (3.357)	3.100 (3.324)	1.033 (1.645)	1.084 (1.652)
Males: Adults	17.101 (20.298)	16.341 (20.220)	15.300 (7.445)**	14.850 (7.406)**	1.130 (4.505)	1.270 (4.499)
Females: 0 to 5	15.526 (11.087)	15.349 (11.107)	-0.302 (3.603)	-0.219 (3.595)	2.246 (1.952)	2.139 (1.950)
Females: < 18	18.343 (12.934)	18.485 (12.903)	-0.395 (2.458)	-0.371 (2.469)	0.813 (1.732)	0.816 (1.723)
Females: Adults	33.586 (37.717)	33.355 (37.687)	9.749 (9.006)	9.722 (9.013)	-3.631 (3.860)	-3.622 (3.829)
meats_bline	0.248 (0.045)***	0.248 (0.044)***				
legs_bline			0.127 (0.054)**	0.125 (0.054)**		
eggs_bline					0.155 (0.040)***	0.158 (0.041)***
TATE		30.238 (54.582)		2.879 (10.762)		4.250 (5.391)
TTE 75th Perc.		39.649 (63.337)		3.112 (12.821)		4.383 (6.313)
TTE 25th Perc.		-0.642 (29.207)		2.112 (5.550)		3.812 (3.142)
N	1,427	1,427	1,427	1,427	1,359	1,359

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 29: Weekly Household Food Consumption Expenditure in KSHS ii (1km cut-off)

	(1) fruit	(2) fruit	(3) veg	(4) veg	(5) starch	(6) starch
Mother Only - Black & White	-1.622		3.977		-68.397	
	(11.925)		(12.178)		(37.532)*	
Mother Only - Colour Poster	19.460		-2.719		-45.464	
	(24.655)		(17.455)		(38.748)	
Couples Visit - Black & White	-1.202		12.200		-19.853	
	(10.599)		(14.983)		(38.418)	
Couples Visit - Colour Poster	6.711		-37.783		53.622	
	(13.802)		(11.511)***		(57.192)	
Treat		5.043		-4.227		-23.591
		(10.531)		(9.661)		(29.228)
Indirect Effect - 1km	-58.242	-58.389	-0.743	-1.081	17.599	10.546
	(23.391)**	(23.065)**	(21.970)	(22.613)	(70.319)	(71.266)
Bonacich Cent. - 1km	37.907	37.592	-3.724	-2.424	-26.909	-25.730
	(18.394)**	(18.136)**	(17.262)	(17.668)	(50.896)	(52.220)
Males: 0 to 5	-10.747	-10.953	-0.161	-0.248	23.636	25.204
	(8.747)	(8.954)	(6.863)	(6.944)	(22.489)	(22.312)
Males: < 18	1.296	1.400	4.729	4.327	52.049	52.910
	(4.477)	(4.468)	(6.705)	(6.719)	(19.941)***	(20.156)***
Males: Adults	-9.035	-8.770	-4.492	-2.659	-3.832	-9.457
	(9.840)	(9.744)	(13.564)	(13.704)	(42.158)	(42.196)
Females: 0 to 5	-2.379	-2.744	-4.518	-4.578	24.862	25.220
	(6.657)	(6.827)	(7.035)	(7.097)	(18.388)	(18.291)
Females: < 18	-0.817	-0.710	0.223	0.101	38.832	39.248
	(4.751)	(4.732)	(5.853)	(5.837)	(14.165)***	(14.200)***
Females: Adults	14.421	14.274	-4.119	-3.771	104.469	103.581
	(10.637)	(10.528)	(15.757)	(15.762)	(47.692)**	(47.689)**
fruit_bline	0.260	0.259				
	(0.066)***	(0.066)***				
veg_bline			0.067	0.066		
			(0.060)	(0.059)		
starch_bline					0.169	0.170
					(0.065)***	(0.065)***
TATE		-42.225		-5.102		-15.054
		(19.056)**		(19.288)		(62.569)
TTE 75th Perc.		-52.182		-5.287		-13.256
		(22.477)**		(22.720)		(73.542)
TTE 25th Perc.		-9.555		-4.497		-20.955
		(10.695)		(10.387)		(33.000)
N	1,427	1,427	1,427	1,427	1,427	1,427

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 30: Weekly Household Food Consumption Expenditure in KSHS iii (1km cut-off)

	(1) dairy	(2) dairy	(3) other	(4) other	(5) agg	(6) agg
Mother Only -	-12.510		21.555		-87.226	
Black & White	(14.452)		(57.688)		(93.838)	
Mother Only -	-4.535		119.057		72.284	
Colour Poster	(16.326)		(69.019)*		(119.902)	
Couples Visit -	-1.814		-47.430		-54.854	
Black & White	(15.176)		(52.890)		(92.667)	
Couples Visit -	-29.514		-72.325		-68.504	
Colour Poster	(15.348)*		(55.311)		(116.075)	
Treat		-11.396		4.193		-38.182
		(11.758)		(41.353)		(76.460)
Indirect Effect	2.146	1.214	-62.217	-53.632	-60.799	-64.686
- 1km	(24.789)	(25.120)	(97.974)	(100.670)	(152.315)	(150.526)
Bonacich Cent.	-4.353	-3.459	33.428	29.621	19.102	19.566
- 1km	(19.372)	(19.566)	(80.675)	(82.935)	(118.439)	(117.699)
Males: 0 to 5	-2.522	-2.549	-12.619	-16.124	-4.293	-5.667
	(7.460)	(7.453)	(25.392)	(25.675)	(46.850)	(47.131)
Males: < 18	-3.430	-3.584	-6.348	-6.865	50.666	50.892
	(5.066)	(5.093)	(23.169)	(23.312)	(39.633)	(39.896)
Males: Adults	10.105	11.189	96.401	103.692	92.593	96.529
	(13.510)	(13.477)	(80.875)	(83.401)	(105.864)	(107.412)
Females: 0 to 5	-4.907	-5.107	-29.479	-32.149	-1.678	-4.570
	(6.862)	(6.878)	(26.087)	(25.915)	(42.085)	(42.069)
Females: < 18	2.598	2.635	18.746	18.731	58.650	59.277
	(5.315)	(5.341)	(20.650)	(20.899)	(31.010)*	(31.127)*
Females:	-3.354	-3.232	109.253	108.538	229.517	228.654
Adults	(13.673)	(13.637)	(81.818)	(81.997)	(115.617)**	(115.402)**
dairy_bline	0.162	0.159				
	(0.039)***	(0.039)***				
other_bline			0.091	0.124		
			(0.203)	(0.202)		
agg_bline					0.411	0.412
					(0.076)***	(0.076)***
TATE		-10.414		-39.224		-90.548
		(20.893)		(91.821)		(145.037)
TTE 75th Perc.		-10.207		-48.370		-101.579
		(24.594)		(107.429)		(167.399)
TTE 25th Perc.		-11.093		-9.215		-54.354
		(11.920)		(48.663)		(85.835)
N	1,427	1,427	1,427	1,427	1,427	1,427

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 31: Weekly Household Food Consumption Expenditure in KSHS i (2km cut-off)

	(1) meats	(2) meats	(3) legs	(4) legs	(5) eggs	(6) eggs
Mother Only - Black & White	-22.352		-1.691		2.982	
	(27.508)		(6.797)		(3.391)	
Mother Only - Colour Poster	-4.789		-2.399		7.827	
	(29.145)		(7.868)		(4.781)	
Couples Visit - Black & White	-16.536		5.365		0.110	
	(29.520)		(7.338)		(3.909)	
Couples Visit - Colour Poster	-0.669		5.870		4.442	
	(34.441)		(8.334)		(4.089)	
Treat		-12.254		1.669		3.598
		(23.755)		(5.225)		(2.986)
Indirect Effect - 2km	-12.825	-12.829	-4.913	-6.882	-2.202	-1.022
	(46.368)	(44.944)	(15.469)	(15.349)	(7.678)	(7.541)
Bonacich Cent. - 2km	17.723	17.693	4.428	5.742	1.722	0.928
	(31.960)	(30.920)	(10.510)	(10.393)	(5.174)	(5.101)
Males: 0 to 5	0.357	0.399	1.135	1.359	0.392	0.292
	(12.813)	(12.662)	(4.133)	(4.195)	(2.369)	(2.368)
Males: < 18	9.454	9.664	3.122	3.143	1.041	1.103
	(12.679)	(12.620)	(3.368)	(3.337)	(1.645)	(1.654)
Males: Adults	19.539	19.034	15.632	15.198	1.189	1.348
	(20.264)	(20.215)	(7.422)**	(7.390)**	(4.484)	(4.473)
Females: 0 to 5	16.194	15.987	-0.179	-0.099	2.266	2.154
	(11.061)	(11.069)	(3.600)	(3.589)	(1.959)	(1.957)
Females: < 18	18.596	18.697	-0.378	-0.358	0.815	0.815
	(12.951)	(12.926)	(2.443)	(2.456)	(1.745)	(1.736)
Females: Adults	36.214	36.015	9.922	9.883	-3.575	-3.550
	(38.314)	(38.257)	(9.090)	(9.084)	(3.860)	(3.826)
meats_bline	0.243	0.243				
	(0.044)***	(0.044)***				
legs_bline			0.129	0.127		
			(0.053)**	(0.054)**		
eggs_bline					0.154	0.157
					(0.040)***	(0.041)***
TATE		-40.241		-13.345		1.369
		(104.467)		(33.903)		(16.218)
TTE 75th Perc.		-41.082		-13.796		1.302
		(107.338)		(34.897)		(16.704)
TTE 25th Perc.		-23.184		-4.194		2.728
		(48.146)		(14.095)		(6.614)
N	1,427	1,427	1,427	1,427	1,359	1,359

Standard errors clustered by waterpoint in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 32: Weekly Household Food Consumption Expenditure in KSHS ii (2km cut-off)

	(1) fruit	(2) fruit	(3) veg	(4) veg	(5) starch	(6) starch
Mother Only - Black & White	-6.489		1.150		-72.672	
	(11.732)		(11.775)		(36.166)**	
Mother Only - Colour Poster	17.905		-2.826		-46.495	
	(25.636)		(17.433)		(38.868)	
Couples Visit - Black & White	-5.878		11.565		-18.335	
	(11.025)		(15.070)		(38.895)	
Couples Visit - Colour Poster	3.149		-38.964		55.940	
	(13.447)		(11.425)***		(58.228)	
Treat		1.172		-5.376		-24.841
		(10.561)		(9.481)		(29.369)
Indirect Effect - 2km	-75.729	-73.090	-11.590	-12.225	47.799	33.281
	(44.653)*	(41.953)*	(25.697)	(27.348)	(80.824)	(77.457)
Bonacich Cent. - 2km	51.491	49.639	11.225	11.465	-32.463	-22.663
	(30.479)*	(28.617)*	(17.420)	(18.585)	(53.276)	(51.148)
Males: 0 to 5	-9.417	-9.682	-0.013	-0.059	22.677	24.508
	(8.453)	(8.695)	(6.880)	(6.945)	(22.698)	(22.493)
Males: < 18	0.813	0.966	5.066	4.622	52.807	53.704
	(4.624)	(4.603)	(6.675)	(6.680)	(20.070)***	(20.325)***
Males: Adults	-8.649	-8.311	-2.964	-1.248	-2.966	-8.784
	(9.876)	(9.726)	(13.709)	(13.901)	(41.866)	(41.929)
Females: 0 to 5	-1.941	-2.365	-4.067	-4.183	24.849	25.262
	(6.574)	(6.756)	(7.044)	(7.105)	(18.378)	(18.273)
Females: < 18	-0.786	-0.688	-0.004	-0.055	38.026	38.336
	(4.764)	(4.748)	(5.843)	(5.833)	(14.059)***	(14.101)***
Females: Adults	12.896	12.735	-3.580	-3.317	105.664	104.706
	(10.653)	(10.522)	(15.670)	(15.663)	(48.021)**	(48.046)**
fruit_bline	0.257	0.257				
	(0.068)***	(0.069)***				
veg_bline			0.069	0.068		
			(0.060)	(0.060)		
starch_bline					0.171	0.173
					(0.065)***	(0.065)***
TATE		-158.272		-32.044		47.760
		(86.870)*		(60.918)		(172.452)
TTE 75th Perc.		-163.060		-32.845		49.940
		(89.603)*		(62.688)		(177.455)
TTE 25th Perc.		-61.096		-15.791		3.512
		(31.961)*		(25.630)		(73.105)
N	1,427	1,427	1,427	1,427	1,427	1,427

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 33: Weekly Household Food Consumption Expenditure in KSHS iii (2km cut-off)

	(1) dairy	(2) dairy	(3) other	(4) other	(5) agg	(6) agg
Mother Only - Black & White	-14.646 (13.989)		13.624 (57.220)		-104.394 (91.956)	
Mother Only - Colour Poster	-4.137 (15.734)		112.031 (70.203)		66.640 (121.613)	
Couples Visit - Black & White	-2.462 (15.303)		-49.207 (53.260)		-59.878 (93.981)	
Couples Visit - Colour Poster	-30.999 (14.943)**		-71.770 (56.511)		-73.794 (118.596)	
Treat		-12.418 (11.433)		0.400 (42.366)		-47.438 (77.782)
Indirect Effect - 2km	-19.980 (25.731)	-20.344 (26.395)	68.000 (78.203)	98.519 (81.730)	-14.967 (156.420)	-3.226 (153.514)
Bonacich Cent. - 2km	17.655 (17.658)	17.716 (18.003)	-55.272 (52.404)	-76.274 (54.557)	16.880 (105.330)	8.048 (103.089)
Males: 0 to 5	-2.287 (7.421)	-2.301 (7.411)	-13.200 (24.792)	-16.839 (25.087)	-3.672 (46.575)	-4.987 (46.892)
Males: < 18	-3.167 (5.085)	-3.341 (5.108)	-6.447 (23.109)	-6.743 (23.249)	51.884 (39.735)	52.281 (40.004)
Males: Adults	11.655 (13.554)	12.714 (13.520)	94.821 (80.263)	101.823 (82.599)	97.923 (105.461)	101.556 (106.896)
Females: 0 to 5	-4.389 (6.826)	-4.646 (6.848)	-30.197 (26.153)	-32.904 (25.982)	-0.245 (42.031)	-3.309 (42.037)
Females: < 18	2.420 (5.301)	2.482 (5.327)	18.067 (20.596)	18.087 (20.813)	57.508 (31.051)*	58.069 (31.172)*
Females: Adults	-2.651 (13.737)	-2.605 (13.702)	106.202 (82.152)	105.543 (82.310)	229.715 (116.398)**	228.594 (116.096)**
dairy_bline	0.167 (0.038)***	0.164 (0.038)***				
other_bline			0.111 (0.206)	0.141 (0.205)		
agg_bline					0.411 (0.076)***	0.412 (0.076)***
TATE		-56.797 (58.134)		215.317 (176.394)		-54.475 (335.193)
TTE 75th Perc.		-58.130 (59.831)		221.771 (181.600)		-54.686 (344.987)
TTE 25th Perc.		-29.749 (24.706)		84.331 (75.359)		-50.186 (144.471)
N	1,427	1,427	1,427	1,427	1,427	1,427

Standard errors clustered by waterpoint in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

D4ii. Household Food Consumption (Quantities)

Table 34: Weekly household consumption of key foods in quantities i (1km cut-off)

	(1) meat_qtty	(2) meat_qtty	(3) gn_qtty	(4) gn_qtty	(5) omena_qtty	(6) omena_qtty
Mother Only - Black & White	0.046 (0.051)		-0.031 (0.035)		0.019 (0.055)	
Mother Only - Colour Poster	0.082 (0.059)		-0.027 (0.040)		0.049 (0.055)	
Couples Visit - Black & White	0.047 (0.047)		-0.021 (0.035)		-0.007 (0.046)	
Couples Visit - Colour Poster	0.111 (0.061)*		-0.026 (0.038)		0.013 (0.059)	
Treat		0.068 (0.036)*		-0.026 (0.029)		0.017 (0.038)
Indirect Effect - 1km	0.058 (0.097)	0.057 (0.096)	0.055 (0.054)	0.054 (0.053)	-0.042 (0.081)	-0.039 (0.080)
Bonacich Cent. - 1km	-0.037 (0.072)	-0.039 (0.071)	-0.022 (0.042)	-0.021 (0.041)	0.033 (0.065)	0.031 (0.064)
Males: 0 to 5	-0.023 (0.024)	-0.023 (0.024)	-0.006 (0.019)	-0.006 (0.019)	-0.017 (0.023)	-0.018 (0.023)
Males: < 18	0.022 (0.020)	0.023 (0.020)	0.001 (0.012)	0.001 (0.012)	0.035 (0.021)*	0.035 (0.021)*
Males: Adults	0.007 (0.047)	0.005 (0.047)	0.012 (0.027)	0.012 (0.027)	-0.127 (0.044)***	-0.126 (0.044)***
Females: 0 to 5	0.001 (0.023)	0.001 (0.023)	-0.015 (0.017)	-0.015 (0.017)	0.031 (0.024)	0.030 (0.024)
Females: < 18	-0.019 (0.018)	-0.018 (0.018)	0.006 (0.012)	0.006 (0.012)	0.027 (0.024)	0.028 (0.025)
Females: Adults	0.012 (0.055)	0.011 (0.055)	-0.016 (0.024)	-0.016 (0.024)	-0.029 (0.055)	-0.029 (0.055)
meat_bline	0.257 (0.035)***	0.256 (0.035)***				
gn_bline			0.054 (0.032)*	0.054 (0.032)*		
omena_bline					0.124 (0.034)***	0.127 (0.034)***
TATE		0.114 (0.084)		0.018 (0.046)		-0.014 (0.060)
TTE 75th Perc.		0.124 (0.099)		0.027 (0.053)		-0.021 (0.071)
TTE 25th Perc.		0.083 (0.043)*		-0.013 (0.029)		0.008 (0.034)
N	1,389	1,389	1,342	1,342	1,276	1,276

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 35: Weekly household consumption of key foods in quantities ii (1km cut-off)

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

	(1) eggs_qtty	(2) eggs_qtty	(3) gl_qtty	(4) gl_qtty	(5) tom_qtty	(6) tom_qtty
Mother Only -	0.235		0.716		-0.078	
Black & White	(0.264)		(0.692)		(1.113)	
Mother Only -	0.452		-0.345		1.719	
Colour Poster	(0.324)		(0.683)		(1.473)	
Couples Visit -	-0.084		0.517		-1.783	
Black & White	(0.281)		(0.761)		(1.122)	
Couples Visit -	0.327		-0.792		-0.412	
Colour Poster	(0.321)		(0.509)		(1.240)	
Treat		0.215		0.100		-0.202
		(0.225)		(0.440)		(0.896)
Indirect Effect	0.044	0.081	-0.062	0.009	-5.775	-5.551
- 1km	(0.464)	(0.465)	(1.441)	(1.520)	(4.623)	(4.611)
Bonacich Cent.	-0.087	-0.114	0.071	0.072	4.368	4.228
- 1km	(0.350)	(0.349)	(1.064)	(1.107)	(3.605)	(3.601)
Males: 0 to 5	-0.006	-0.012	0.170	0.186	-0.917	-0.965
	(0.163)	(0.163)	(0.366)	(0.359)	(0.543)*	(0.547)*
Males: < 18	0.080	0.084	0.377	0.360	-0.007	0.017
	(0.117)	(0.117)	(0.354)	(0.351)	(0.404)	(0.407)
Males: Adults	0.081	0.085	-0.179	-0.141	-0.535	-0.480
	(0.276)	(0.277)	(0.646)	(0.647)	(1.084)	(1.098)
Females: 0 to 5	0.103	0.098	-0.466	-0.446	-0.939	-0.983
	(0.134)	(0.134)	(0.337)	(0.335)	(0.519)*	(0.529)*
Females: < 18	0.051	0.051	-0.156	-0.154	0.154	0.161
	(0.120)	(0.120)	(0.326)	(0.325)	(0.517)	(0.517)
Females:	-0.062	-0.063	-0.421	-0.417	0.422	0.407
Adults	(0.245)	(0.244)	(0.647)	(0.650)	(0.856)	(0.871)
eggs_bline	0.117	0.119				
	(0.029)***	(0.028)***				
gl_bline			0.012	0.013		
			(0.039)	(0.039)		
tom_bline					0.021	0.020
					(0.015)	(0.015)
TATE		0.281		0.107		-4.696
		(0.391)		(1.311)		(4.070)
TTE 75th Perc.		0.295		0.109		-5.643
		(0.459)		(1.558)		(4.841)
TTE 25th Perc.		0.236		0.103		-1.590
		(0.228)		(0.584)		(1.642)
N	1,376	1,376	1,165	1,165	1,310	1,310

Table 36: Weekly household consumption of key foods in quantities iii (1km cut-off)

	(1) maizef_qtty	(2) maizef_qtty	(3) pmilk_qtty	(4) pmilk_qtty	(5) ban_qtty	(6) ban_qtty
Mother Only - Black & White	-0.828 (0.449)*		-0.176 (0.268)		0.344 (0.804)	
Mother Only - Colour Poster	-0.770 (0.468)		0.293 (0.308)		0.241 (0.754)	
Couples Visit - Black & White	-0.635 (0.478)		-0.177 (0.283)		-0.031 (0.840)	
Couples Visit - Colour Poster	-0.260 (0.583)		-0.376 (0.275)		-0.165 (0.923)	
Treat		-0.639 (0.399)		-0.113 (0.216)		0.108 (0.666)
Indirect Effect - 1km	0.958 (0.644)	0.925 (0.645)	0.564 (0.502)	0.554 (0.505)	0.116 (1.723)	0.165 (1.738)
Bonacich Cent. - 1km	-1.221 (0.500)**	-1.215 (0.504)**	-0.561 (0.390)	-0.552 (0.394)	-0.303 (1.260)	-0.318 (1.259)
Males: 0 to 5	0.167 (0.229)	0.175 (0.228)	0.026 (0.129)	0.019 (0.128)	0.269 (0.526)	0.258 (0.523)
Males: < 18	0.703 (0.187)***	0.707 (0.189)***	-0.067 (0.087)	-0.069 (0.087)	-0.102 (0.243)	-0.104 (0.243)
Males: Adults	0.583 (0.424)	0.555 (0.423)	0.341 (0.300)	0.365 (0.304)	-0.012 (0.522)	0.002 (0.528)
Females: 0 to 5	0.166 (0.236)	0.170 (0.236)	-0.065 (0.117)	-0.074 (0.118)	0.402 (0.755)	0.399 (0.752)
Females: < 18	0.496 (0.164)***	0.498 (0.164)***	0.044 (0.092)	0.045 (0.092)	0.368 (0.451)	0.366 (0.451)
Females: Adults	0.950 (0.499)*	0.946 (0.497)*	0.161 (0.241)	0.161 (0.238)	0.441 (0.742)	0.441 (0.740)
TATE		0.110 (0.513)		0.335 (0.409)		0.242 (1.250)
TTE 75th Perc.		0.267 (0.595)		0.430 (0.485)		0.270 (1.518)
TTE 25th Perc.		-0.408 (0.365)		0.026 (0.220)		0.150 (0.605)
N	1,386	1,386	1,200	1,200	1,346	1,346

Standard errors clustered by waterpoint in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 37: Weekly household consumption of key foods in quantities i (2km cut-off)

	(1) meat_qtty	(2) meat_qtty	(3) gn_qtty	(4) gn_qtty	(5) omena_qtty	(6) omena_qtty
Mother Only - Black & White	0.044 (0.050)		-0.029 (0.035)		0.014 (0.051)	
Mother Only - Colour Poster	0.081 (0.059)		-0.030 (0.039)		0.053 (0.053)	
Couples Visit - Black & White	0.050 (0.048)		-0.016 (0.034)		-0.011 (0.046)	
Couples Visit - Colour Poster	0.108 (0.061)*		-0.030 (0.036)		0.005 (0.060)	
Treat		0.067 (0.037)*		-0.026 (0.028)		0.014 (0.035)
Indirect Effect - 2km	0.094 (0.112)	0.094 (0.110)	0.151 (0.064)**	0.148 (0.065)**	-0.150 (0.102)	-0.138 (0.098)
Bonacich Cent. - 2km	-0.050 (0.074)	-0.051 (0.073)	-0.092 (0.043)**	-0.090 (0.043)**	0.115 (0.070)*	0.107 (0.068)
Males: 0 to 5	-0.024 (0.024)	-0.024 (0.024)	-0.007 (0.019)	-0.007 (0.019)	-0.015 (0.023)	-0.016 (0.023)
Males: < 18	0.024 (0.020)	0.024 (0.020)	0.003 (0.012)	0.003 (0.012)	0.035 (0.021)	0.034 (0.021)
Males: Adults	0.013 (0.047)	0.012 (0.047)	0.017 (0.027)	0.017 (0.027)	-0.125 (0.044)***	-0.124 (0.044)***
Females: 0 to 5	0.003 (0.023)	0.002 (0.023)	-0.014 (0.017)	-0.014 (0.017)	0.032 (0.024)	0.031 (0.024)
Females: < 18	-0.019 (0.018)	-0.019 (0.018)	0.006 (0.012)	0.006 (0.012)	0.029 (0.025)	0.029 (0.025)
Females: Adults	0.015 (0.055)	0.015 (0.055)	-0.015 (0.024)	-0.015 (0.024)	-0.031 (0.056)	-0.031 (0.055)
meat_bline	0.253 (0.034)***	0.252 (0.034)***				
gn_bline			0.056 (0.032)*	0.056 (0.032)*		
omena_bline					0.126 (0.033)***	0.129 (0.033)***
TATE		0.273 (0.238)		0.297 (0.141)**		-0.286 (0.213)
TTE 75th Perc.		0.279 (0.245)		0.307 (0.146)**		-0.295 (0.219)
TTE 25th Perc.		0.148 (0.097)		0.100 (0.059)*		-0.103 (0.086)
N	1,389	1,389	1,342	1,342	1,276	1,276

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 38: Weekly household consumption of key foods in quantities ii (2km cut-off)

	(1) eggs_qtty	(2) eggs_qtty	(3) gl_qtty	(4) gl_qtty	(5) tom_qtty	(6) tom_qtty
Mother Only - Black & White	0.217 (0.254)		0.655 (0.735)		-0.486 (1.218)	
Mother Only - Colour Poster	0.454 (0.329)		-0.352 (0.686)		1.488 (1.590)	
Couples Visit - Black & White	-0.083 (0.280)		0.459 (0.770)		-2.174 (1.264)*	
Couples Visit - Colour Poster	0.331 (0.314)		-0.888 (0.509)*		-0.821 (1.359)	
Treat		0.212 (0.222)		0.055 (0.463)		-0.560 (1.055)
Indirect Effect - 2km	-0.036 (0.600)	0.056 (0.596)	-0.791 (1.471)	-0.734 (1.489)	-5.126 (2.569)**	-4.440 (2.558)*
Bonacich Cent. - 2km	0.033 (0.406)	-0.027 (0.404)	0.687 (1.011)	0.649 (1.022)	3.560 (1.755)**	3.103 (1.749)*
Males: 0 to 5	-0.007 (0.164)	-0.013 (0.164)	0.175 (0.360)	0.190 (0.351)	-0.791 (0.532)	-0.849 (0.537)
Males: < 18	0.082 (0.117)	0.087 (0.118)	0.383 (0.353)	0.366 (0.349)	-0.045 (0.405)	-0.015 (0.408)
Males: Adults	0.086 (0.276)	0.091 (0.277)	-0.141 (0.643)	-0.102 (0.647)	-0.489 (1.050)	-0.420 (1.063)
Females: 0 to 5	0.104 (0.135)	0.099 (0.135)	-0.451 (0.345)	-0.431 (0.342)	-0.912 (0.516)*	-0.957 (0.526)*
Females: < 18	0.049 (0.121)	0.048 (0.120)	-0.159 (0.325)	-0.155 (0.324)	0.177 (0.531)	0.184 (0.531)
Females: Adults	-0.056 (0.245)	-0.056 (0.244)	-0.398 (0.649)	-0.396 (0.650)	0.210 (0.860)	0.201 (0.873)
eggs_bline	0.117 (0.029)***	0.118 (0.029)***				
gl_bline			0.014 (0.039)	0.015 (0.039)		
tom_bline					0.022 (0.015)	0.021 (0.015)
TATE		0.334 (1.260)		-1.546 (3.311)		-10.246 (5.772)*
TTE 75th Perc.		0.338 (1.298)		-1.594 (3.408)		-10.537 (5.937)*
TTE 25th Perc.		0.260 (0.498)		-0.571 (1.378)		-4.343 (2.505)*
N	1,376	1,376	1,165	1,165	1,310	1,310

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 39: Weekly household consumption of key foods in quantities iii (2km cut-off)

	(1) maizef_qtty	(2) maizef_qtty	(3) pmilk_qtty	(4) pmilk_qtty	(5) ban_qtty	(6) ban_qtty
Mother Only - Black & White	-0.831		-0.179		0.270	
	(0.439)*		(0.260)		(0.800)	
Mother Only - Colour Poster	-0.709		0.319		0.293	
	(0.468)		(0.306)		(0.717)	
Couples Visit - Black & White	-0.566		-0.140		-0.040	
	(0.462)		(0.287)		(0.835)	
Couples Visit - Colour Poster	-0.070		-0.326		-0.155	
	(0.576)		(0.271)		(0.822)	
Treat		-0.570		-0.088		0.101
		(0.383)		(0.213)		(0.616)
Indirect Effect - 2km	0.280	0.197	0.279	0.337	-1.451	-1.369
	(0.828)	(0.825)	(0.495)	(0.511)	(2.473)	(2.390)
Bonacich Cent. - 2km	-0.361	-0.304	-0.181	-0.222	1.108	1.053
	(0.546)	(0.547)	(0.332)	(0.343)	(1.718)	(1.665)
Males: 0 to 5	0.137	0.148	0.013	0.006	0.282	0.270
	(0.230)	(0.229)	(0.128)	(0.127)	(0.522)	(0.518)
Males: < 18	0.703	0.708	-0.057	-0.059	-0.094	-0.095
	(0.188)***	(0.190)***	(0.088)	(0.088)	(0.250)	(0.249)
Males: Adults	0.510	0.475	0.366	0.389	-0.003	0.012
	(0.424)	(0.424)	(0.301)	(0.305)	(0.527)	(0.531)
Females: 0 to 5	0.139	0.144	-0.063	-0.073	0.419	0.414
	(0.238)	(0.238)	(0.117)	(0.118)	(0.754)	(0.752)
Females: < 18	0.477	0.478	0.035	0.037	0.362	0.362
	(0.162)***	(0.162)***	(0.091)	(0.092)	(0.452)	(0.452)
Females: Adults	0.992	0.987	0.198	0.197	0.468	0.469
	(0.500)**	(0.498)**	(0.241)	(0.238)	(0.734)	(0.731)
TATE		-0.411		0.185		-1.008
		(0.711)		(0.456)		(2.114)
TTE 75th Perc.		-0.378		0.242		-1.241
		(0.833)		(0.534)		(2.507)
TTE 25th Perc.		-0.521		-0.004		-0.241
		(0.403)		(0.243)		(0.918)
N	1,386	1,386	1,200	1,200	1,346	1,346

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

D5. Household Non-food Consumption

Table 40: Average aggregate weekly household non-food consumption expenditure (1km cut-off)

	(1) Aggregate Non-food cons.	(2) Aggregate Non-food cons.
Mother Only - Black & White	-142.899 (139.376)	
Mother Only - Colour Poster	-5.522 (129.898)	
Couples Visit - Black & White	-270.020 (126.972)**	
Couples Visit - Colour Poster	211.564 (131.728)	
Treat		-158.561 (118.402)
Indirect Effect - 1km	-293.968 (320.345)	-285.202 (322.235)
Bonacich Cent. - 1km	264.547 (253.444)	258.317 (253.562)
Males: 0 to 5	-6.409 (63.392)	-8.726 (63.240)
Males: < 18	50.723 (67.825)	51.569 (67.280)
Males: Adults	-12.611 (101.487)	-14.926 (101.324)
Females: 0 to 5	-11.183 (82.112)	-12.280 (82.116)
Females: < 18	100.810 (84.719)	101.275 (84.431)
Females: Adults	151.561 (155.620)	152.488 (157.257)
nf_cons_agg_bline	0.411 (0.100)***	0.412 (0.099)***
TATE		-389.440 (243.476)
TTE 75th Perc.		-438.078 (293.548)
TTE 25th Perc.		-229.862 (116.069)**
N	1,155	1,155

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 41: Average aggregate weekly household non-food consumption expenditure (2km cut-off)

	(1) Aggregate Non-food cons.	(2) Aggregate Non-food cons.
Mother Only - Black & White	-195.469	
	(132.529)	
Mother Only - Colour Poster	11.860	
	(128.320)	
Couples Visit - Black & White	-293.950	
	(118.952)**	
Couples Visit - Colour Poster	190.475	
	(134.639)	
Treat		-198.007
		(109.721)*
Indirect Effect - 2km	132.330	139.561
	(252.548)	(246.850)
Bonacich Cent. - 2km	-39.015	-43.170
	(173.542)	(169.304)
Males: 0 to 5	-3.516	-5.387
	(63.024)	(62.928)
Males: < 18	56.044	57.166
	(67.243)	(66.755)
Males: Adults	18.631	16.704
	(100.252)	(99.575)
Females: 0 to 5	-5.513	-6.609
	(81.105)	(81.115)
Females: < 18	102.442	102.934
	(84.084)	(83.832)
Females: Adults	141.387	142.022
	(153.820)	(154.936)
nf_cons_agg_bline	0.401	0.401
	(0.101)***	(0.100)***
TATE		106.442
		(529.909)
TTE 75th Perc.		115.585
		(545.751)
TTE 25th Perc.		-79.111
		(219.042)
N	1,155	1,155

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

D6. Age When Breastfeeding Stops

Table 42: Age Breastfeeding Stopped, Months (1km cut-off)

	(1) Age stopped (months)	(2) Age stopped (months)
Mother Only -	0.299	
Black & White	(0.574)	
Mother Only -	-0.578	
Colour Poster	(0.745)	
Couples Visit -	-0.162	
Black & White	(0.611)	
Couples Visit -	0.179	
Colour Poster	(0.742)	
Treat		-0.021
		(0.428)
Indirect Effect	-1.170	-1.094
- 1km	(1.137)	(1.118)
Bonacich Cent.	0.859	0.814
- 1km	(0.876)	(0.874)
TATE		-0.907
		(0.933)
TTE 75th Perc.		-1.093
		(1.106)
TTE 25th Perc.		-0.295
		(0.470)
N	1,075	1,075

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 43: Age Breastfeeding Stopped, Months (2km cut-off)

	(1) Age stopped (months)	(2) Age stopped (months)
Mother Only -	0.388	
Black & White	(0.554)	
Mother Only -	-0.591	
Colour Poster	(0.729)	
Couples Visit -	-0.239	
Black & White	(0.584)	
Couples Visit -	0.297	
Colour Poster	(0.758)	
Treat		0.013
		(0.418)
Indirect Effect	-2.528	-2.436
- 2km	(1.115)**	(1.091)**
Bonacich Cent.	1.542	1.485
- 2km	(0.744)**	(0.729)**
TATE		-5.302
		(2.389)**
TTE 75th Perc.		-5.461
		(2.460)**
TTE 25th Perc.		-2.062
		(0.994)**
N	1,075	1,075

Standard errors clustered by waterpoint in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

D7. Chlorine Adoption

Table 44: Chlorine Adoption (1km cut-off)

	(1) Presence of any chlorine	(2) Presence of any chlorine	(3) Presence of free chlorine	(4) Presence of free chlorine
Mother Only -	-0.013		-0.026	
Black & White	(0.045)		(0.044)	
Mother Only -	-0.046		-0.073	
Colour Poster	(0.046)		(0.044)*	
Couples Visit -	0.004		-0.017	
Black & White	(0.050)		(0.047)	
Couples Visit -	0.053		0.033	
Colour Poster	(0.050)		(0.047)	
Treat		-0.000		-0.020
		(0.035)		(0.034)
Indirect Effect	0.132	0.127	0.145	0.141
- 1km	(0.088)	(0.088)	(0.078)*	(0.077)*
Bonacich Cent.	-0.097	-0.095	-0.118	-0.116
- 1km	(0.067)	(0.067)	(0.058)**	(0.058)**
pres_any_bline	0.056	0.059		
	(0.029)*	(0.028)**		
pres_free_bline			0.037	0.039
			(0.029)	(0.029)
constant	0.372	0.370	0.382	0.379
	(0.083)***	(0.084)***	(0.076)***	(0.076)***
TATE		0.102		0.094
		(0.073)		(0.063)
TTE 75th Perc.		0.124		0.118
		(0.087)		(0.075)
TTE 25th Perc.		0.031		0.015
		(0.038)		(0.035)
N	1,155	1,155	1,145	1,145

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 45: Chlorine Adoption (2km cut-off)

	(1) Presence of any chlorine	(2) Presence of any chlorine	(3) Presence of free chlorine	(4) Presence of free chlorine
Mother Only -	-0.011		-0.020	
Black & White	(0.044)		(0.044)	
Mother Only -	-0.037		-0.061	
Colour Poster	(0.045)		(0.043)	
Couples Visit -	0.010		-0.008	
Black & White	(0.049)		(0.047)	
Couples Visit -	0.056		0.043	
Colour Poster	(0.050)		(0.047)	
Treat		0.004		-0.012
		(0.034)		(0.034)
Indirect Effect	0.037	0.022	0.040	0.024
- 2km	(0.098)	(0.099)	(0.094)	(0.095)
Bonacich Cent.	-0.011	-0.000	-0.023	-0.011
- 2km	(0.066)	(0.067)	(0.063)	(0.063)
tcr_adoption_bline	0.055	0.058		
	(0.029)*	(0.029)**		
fcr_adoption_bline			0.038	0.040
			(0.029)	(0.029)
constant	0.248	0.236	0.259	0.246
	(0.073)***	(0.074)***	(0.068)***	(0.069)***
TATE		0.051		0.041
		(0.216)		(0.209)
TTE 75th Perc.		0.053		0.042
		(0.223)		(0.215)
TTE 25th Perc.		0.022		0.009
		(0.089)		(0.087)
N	1,155	1,155	1,145	1,145

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

D8. Labour Supply

Table 46: Female respondent labour supply (1km cut-off)

	(1) Mother working	(2) Mother working	(3) Mother working second job	(4) Mother working second job
Mother Only - Black & White	0.041 (0.047)		0.015 (0.024)	
Mother Only - Colour Poster	-0.116 (0.052)**		-0.042 (0.021)**	
Couples Visit - Black & White	0.017 (0.046)		-0.032 (0.020)	
Couples Visit - Colour Poster	-0.021 (0.042)		-0.028 (0.021)	
Treat		-0.015 (0.036)		-0.020 (0.017)
Indirect Effect - 1km	0.013 (0.084)	0.017 (0.087)	-0.055 (0.048)	-0.049 (0.050)
Bonacich Cent. - 1km	-0.009 (0.063)	-0.009 (0.065)	0.047 (0.036)	0.045 (0.037)
mi_working_bline	0.111 (0.028)***	0.111 (0.028)***		
mi_work_oth_bline			0.106 (0.045)**	0.107 (0.044)**
constant	0.447 (0.085)***	0.445 (0.086)***	0.025 (0.042)	0.026 (0.043)
TATE		-0.001 (0.072)		-0.060 (0.040)
TTE 75th Perc.		0.002 (0.085)		-0.068 (0.048)
TTE 25th Perc.		-0.010 (0.038)		-0.032 (0.019)*
N	1,393	1,393	1,393	1,393

Standard errors clustered by waterpoint in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 47: Female respondent labour supply (2km cut-off)

	(1) Mother working	(2) Mother working	(3) Mother working second job	(4) Mother working second job
Mother Only -	0.044		0.012	
Black & White	(0.046)		(0.024)	
Mother Only -	-0.113		-0.045	
Colour Poster	(0.051)**		(0.021)**	
Couples Visit -	0.017		-0.035	
Black & White	(0.046)		(0.020)*	
Couples Visit -	-0.020		-0.033	
Colour Poster	(0.041)		(0.021)	
Treat		-0.012		-0.023
		(0.035)		(0.017)
Indirect Effect	-0.072	-0.084	-0.016	-0.011
- 2km	(0.096)	(0.099)	(0.043)	(0.044)
Bonacich Cent.	0.049	0.058	0.011	0.009
- 2km	(0.064)	(0.066)	(0.029)	(0.029)
mi_working_bline	0.111	0.111		
	(0.028)***	(0.028)***		
mi_work_oth_bline			0.104	0.104
			(0.045)**	(0.044)**
constant	0.387	0.377	0.068	0.070
	(0.075)***	(0.077)***	(0.033)**	(0.034)**
TATE		-0.196		-0.048
		(0.218)		(0.097)
TTE 75th Perc.		-0.201		-0.049
		(0.224)		(0.100)
TTE 25th Perc.		-0.084		-0.033
		(0.090)		(0.041)
N	1,393	1,393	1,393	1,393

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 48: Spousal labour supply (1km cut-off)

	(1) Spouse working	(2) Spouse working	(3) Spouse working second job	(4) Spouse working second job
Mother Only -	0.029		0.028	
Black & White	(0.035)		(0.030)	
Mother Only -	-0.072		-0.008	
Colour Poster	(0.043)*		(0.026)	
Couples Visit -	-0.045		-0.008	
Black & White	(0.046)		(0.025)	
Couples Visit -	-0.062		0.000	
Colour Poster	(0.042)		(0.027)	
Treat		-0.033		0.004
		(0.030)		(0.020)
Indirect Effect	0.025	0.039	-0.003	0.003
- 1km	(0.069)	(0.068)	(0.065)	(0.065)
Bonacich Cent.	-0.003	-0.008	0.000	-0.002
- 1km	(0.054)	(0.053)	(0.049)	(0.049)
sp_working_bline	0.053	0.055		
	(0.041)	(0.041)		
sp_work_oth_bline			0.010	0.011
			(0.029)	(0.029)
constant	0.649	0.651	0.091	0.092
	(0.074)***	(0.074)***	(0.055)*	(0.055)*
TATE		-0.002		0.006
		(0.058)		(0.053)
TTE 75th Perc.		0.004		0.007
		(0.068)		(0.064)
TTE 25th Perc.		-0.024		0.005
		(0.032)		(0.024)
N	1,125	1,125	1,125	1,125

Standard errors clustered by waterpoint in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 49: Spousal labour supply (2km cut-off)

	(1) Spouse working	(2) Spouse working	(3) Spouse working second job	(4) Spouse working second job
Mother Only -	0.033		0.029	
Black & White	(0.035)		(0.029)	
Mother Only -	-0.070		-0.006	
Colour Poster	(0.043)		(0.027)	
Couples Visit -	-0.044		-0.009	
Black & White	(0.045)		(0.025)	
Couples Visit -	-0.063		-0.000	
Colour Poster	(0.042)		(0.027)	
Treat		-0.031		0.005
		(0.029)		(0.020)
Indirect Effect	-0.011	-0.001	-0.067	-0.061
- 2km	(0.079)	(0.083)	(0.058)	(0.057)
Bonacich Cent.	0.014	0.008	0.047	0.043
- 2km	(0.053)	(0.055)	(0.039)	(0.039)
sp_working_bline	0.053	0.055		
	(0.041)	(0.041)		
sp_working_other_bline			0.010	0.011
			(0.029)	(0.029)
constant	0.630	0.633	0.041	0.044
	(0.067)***	(0.067)***	(0.043)	(0.043)
TATE		-0.034		-0.129
		(0.183)		(0.122)
TTE 75th Perc.		-0.034		-0.133
		(0.189)		(0.126)
TTE 25th Perc.		-0.032		-0.047
		(0.077)		(0.049)
N	1,125	1,125	1,125	1,125

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

D9. Time Spent Cooking

Table 50: Time spent cooking/feeding children (1km cut-off)

	(1) Time spent cooking	(2) Time spent cooking	(3) Time feeding children	(4) Time feeding children
Mother Only - Black & White	0.046		0.075	
	(0.078)		(0.071)	
Mother Only - Colour Poster	-0.029		-0.007	
	(0.085)		(0.059)	
Couples Visit - Black & White	-0.010		0.036	
	(0.068)		(0.057)	
Couples Visit - Colour Poster	-0.034		0.000	
	(0.090)		(0.068)	
Treat		-0.004		0.029
		(0.056)		(0.044)
Indirect Effect - 1km	-0.241	-0.234	0.008	0.013
	(0.155)	(0.153)	(0.122)	(0.122)
Bonacich Cent. - 1km	0.149	0.147	0.005	0.004
	(0.123)	(0.122)	(0.095)	(0.095)
time_cook_bline	0.018	0.017		
	(0.015)	(0.015)		
hrs_feed_bline			0.002	0.001
			(0.008)	(0.008)
constant	1.311	1.312	0.736	0.736
	(0.139)***	(0.138)***	(0.122)***	(0.121)***
TATE		-0.193		0.040
		(0.137)		(0.108)
TTE 75th Perc.		-0.233		0.042
		(0.162)		(0.127)
TTE 25th Perc.		-0.062		0.033
		(0.068)		(0.053)
N	1,396	1,396	1,396	1,396

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 51: Time spent cooking/feeding child (2km cut-off)

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

	(1) Time spent cooking	(2) Time spent cooking	(3) Time feeding children	(4) Time feeding children
Mother Only -	0.021		0.067	
Black & White	(0.077)		(0.070)	
Mother Only -	-0.038		-0.008	
Colour Poster	(0.086)		(0.058)	
Couples Visit -	-0.027		0.033	
Black & White	(0.069)		(0.057)	
Couples Visit -	-0.049		-0.013	
Colour Poster	(0.092)		(0.068)	
Treat		-0.020		0.024
		(0.056)		(0.044)
Indirect Effect	-0.268	-0.263	-0.047	-0.046
- 2km	(0.162)*	(0.161)	(0.117)	(0.116)
Bonacich Cent.	0.183	0.180	0.058	0.058
- 2km	(0.110)*	(0.110)	(0.083)	(0.081)
time_cook_bline	0.021	0.020		
	(0.015)	(0.015)		
hrs_feed_bline			0.004	0.003
			(0.009)	(0.009)
constant	1.267	1.271	0.630	0.631
	(0.129)***	(0.129)***	(0.117)***	(0.115)***
TATE		-0.594		-0.076
		(0.354)*		(0.256)
TTE 75th Perc.		-0.612		-0.079
		(0.365)*		(0.263)
TTE 25th Perc.		-0.244		-0.015
		(0.147)*		(0.107)
N	1,396	1,396	1,396	1,396

D10. Chats in Past 3 Days

Table 52: Chats about nutrition in past 3 days i (1km cut-off)

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

	(1) Had chat with family member	(2) Had chat with family member	(3) Had chat with friend	(4) Had chat with friend
Mother Only -	-0.017		0.015	
Black & White	(0.037)		(0.033)	
Mother Only -	0.037		0.071	
Colour Poster	(0.043)		(0.048)	
Couples Visit -	-0.019		0.041	
Black & White	(0.043)		(0.037)	
Couples Visit -	0.006		0.026	
Colour Poster	(0.050)		(0.043)	
Treat		-0.008		0.049
		(0.030)		(0.027)*
Indirect Effect	0.060	0.063	0.023	0.024
- 1km	(0.081)	(0.081)	(0.083)	(0.083)
Bonacich Cent.	-0.041	-0.044	-0.009	-0.014
- 1km	(0.064)	(0.063)	(0.065)	(0.066)
chat_fam _bline	0.043	0.043		
	(0.026)	(0.026)		
chat_friend _bline			0.036	0.036
			(0.025)	(0.025)
constant	0.418	0.422	0.231	0.238
	(0.078)***	(0.078)***	(0.075)***	(0.075)***
TATE		0.033		0.065
		(0.059)		(0.059)
TTE 75th Perc.		0.050		0.071
		(0.078)		(0.079)
TTE 25th Perc.		0.007		0.055
		(0.035)		(0.033)*
N	1,396	1,396	1,396	1,396

Table 53: Chats in past 3 days i (2km cut-off)

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

	(1) Had chat with family member	(2) Had chat with family member	(3) Had chat with friend	(4) Had chat with friend
Mother Only -	-0.020		0.011	
Black & White	(0.037)		(0.033)	
Mother Only -	0.032		0.070	
Colour Poster	(0.043)		(0.047)	
Couples Visit -	-0.009		0.044	
Black & White	(0.042)		(0.037)	
Couples Visit -	-0.010		0.016	
Colour Poster	(0.048)		(0.041)	
Treat		-0.009		0.046
		(0.030)		(0.027)*
Indirect Effect	0.215	0.224	0.073	0.092
- 2km	(0.131)	(0.129)*	(0.130)	(0.133)
Bonacich Cent.	-0.109	-0.116	-0.019	-0.031
- 2km	(0.089)	(0.088)	(0.089)	(0.090)
chat_fam_bline	0.037	0.037		
	(0.026)	(0.026)		
chat_friend_bline			0.036	0.036
			(0.025)	(0.025)
constant	0.433	0.440	0.196	0.209
	(0.098)***	(0.097)***	(0.095)**	(0.097)**
TATE		0.354		0.195
		(0.212)*		(0.217)
TTE 75th Perc.		0.456		0.237
		(0.270)*		(0.278)
TTE 25th Perc.		0.172		0.120
		(0.110)		(0.111)
N	1,396	1,396	1,396	1,396

Table 54: Chats in the past 3 days ii (1km cut-off)

	(1) Had chat with spouse	(2) Had chat with spouse
Mother Only - Black & White	0.018	
	(0.035)	
Mother Only - Colour Poster	-0.028	
	(0.046)	
Couples Visit - Black & White	0.009	
	(0.035)	
Couples Visit - Colour Poster	0.007	
	(0.040)	
Treat		0.009
		(0.027)
Indirect Effect - 1km	0.009	0.010
	(0.062)	(0.061)
Bonacich Cent. - 1km	0.007	0.007
	(0.048)	(0.047)
constant	0.729	0.730
	(0.060)***	(0.060)***
TATE		0.017
		(0.048)
TTE 75th Perc.		0.019
		(0.057)
TTE 25th Perc.		0.012
		(0.027)
N	1,258	1,258

Standard errors clustered by waterpoint in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 55: Chats in the past 3 days ii (2km cut-off)

	(1) Had chat with spouse	(2) Had chat with spouse
Mother Only -	0.018	
Black & White	(0.033)	
Mother Only -	-0.032	
Colour Poster	(0.045)	
Couples Visit -	0.011	
Black & White	(0.034)	
Couples Visit -	0.003	
Colour Poster	(0.041)	
Treat		0.008
		(0.026)
Indirect Effect	0.107	0.104
- 2km	(0.068)	(0.067)
Bonacich Cent.	-0.069	-0.068
- 2km	(0.046)	(0.046)
constant	0.810	0.808
	(0.052)***	(0.052)***
TATE		0.236
		(0.147)
TTE 75th Perc.		0.243
		(0.151)
TTE 25th Perc.		0.097
		(0.061)
N	1,258	1,258

Standard errors clustered by waterpoint in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

D11. Incidence of Diarrhoea

Table 56: Incidence of Diarrhoea (1km cut-off)

	(1) Index child had diarrhoea in past week	(2) Index child had diarrhoea in past week
Mother Only - Black & White	0.023	
	(0.027)	
Mother Only - Colour Poster	-0.020	
	(0.027)	
Couples Visit - Black & White	-0.007	
	(0.030)	
Couples Visit - Colour Poster	0.052	
	(0.039)	
Treat		0.011
		(0.022)
Indirect Effect - 1km	-0.152	-0.150
	(0.096)	(0.097)
Bonacich Cent. - 1km	0.132	0.130
	(0.073)*	(0.074)*
ic_diarrhoea_bline	0.027	0.030
	(0.022)	(0.022)
constant	-0.030	-0.028
	(0.074)	(0.075)
TATE		-0.110
		(0.084)
TTE 75th Perc.		-0.136
		(0.100)
TTE 25th Perc.		-0.026
		(0.034)
N	1,397	1,397

Standard errors clustered by waterpoint in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 57: Incidence of Diarrhoea (2km cut-off)

	(1) Index child had diarrhoea in past week	(2) Index child had diarrhoea in past week
Mother Only - Black & White	0.021 (0.029)	
Mother Only - Colour Poster	-0.026 (0.029)	
Couples Visit - Black & White	-0.017 (0.031)	
Couples Visit - Colour Poster	0.042 (0.040)	
Treat		0.004 (0.025)
Indirect Effect - 2km	-0.131 (0.061)**	-0.131 (0.063)**
Bonacich Cent. - 2km	0.085 (0.042)**	0.085 (0.043)**
ic_diarrhoea_bline	0.028 (0.022)	0.030 (0.022)
constant	0.050 (0.045)	0.048 (0.046)
TATE		-0.282 (0.142)**
TTE 75th Perc.		-0.290 (0.146)**
TTE 25th Perc.		-0.107 (0.061)*
N	1,397	1,397

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

D12. Hygiene Practices

Table 58: Summary index for abidance by proper hygiene practices (1km cut-off)

	(1) Summary index of hygiene practices	(2) Summary index of hygiene practices
Mother Only - Black & White	-0.037 (0.051)	
Mother Only - Colour Poster	-0.013 (0.065)	
Couples Visit - Black & White	0.024 (0.051)	
Couples Visit - Colour Poster	0.018 (0.060)	
Treat		-0.006 (0.040)
Indirect Effect - 1km	-0.035 (0.091)	-0.044 (0.090)
Bonacich Cent. - 1km	0.019 (0.071)	0.023 (0.070)
sum_index_hp_bline	0.027 (0.032)	0.026 (0.032)
constant	-0.011 (0.088)	-0.013 (0.087)
TATE		-0.041 (0.077)
TTE 75th Perc.		-0.049 (0.090)
TTE 25th Perc.		-0.017 (0.042)
N	1,396	1,396

Standard errors clustered by waterpoint in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Table 59: Summary index for abidance by proper hygiene practices (2km cut-off)

	(1) Summary index of hygiene practices	(2) Summary index of hygiene practices
Mother Only - Black & White	-0.052	
	(0.048)	
Mother Only - Colour Poster	-0.005	
	(0.065)	
Couples Visit - Black & White	0.022	
	(0.050)	
Couples Visit - Colour Poster	0.011	
	(0.059)	
Treat		-0.015
		(0.039)
Indirect Effect - 2km	0.059	0.039
	(0.096)	(0.097)
Bonacich Cent. - 2km	-0.026	-0.012
	(0.065)	(0.067)
sum_index_hp_bline	0.025	0.023
	(0.033)	(0.032)
constant	0.004	-0.009
	(0.078)	(0.079)
TATE		0.069
		(0.210)
TTE 75th Perc.		0.072
		(0.216)
TTE 25th Perc.		0.018
		(0.086)
N	1,396	1,396

Standard errors clustered by waterpoint in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix E. Auxiliary Anthropometric Results

Anthropometric outcomes, comparison with DHS data:
To supplement our findings, we also performed a before-after analysis on height-for-age and weight-for-age. To control for potential age effects, a subset (children aged 0 – 44 months, from rural Western Province) of data for children from the 2014 Kenya DHS was included in the regression sample. Figures 4 and 5 on page 49 show kernel density plots of the residuals from a regression of the outcome variable in the dataset in question on a cubic in age. For both height-and weight-for-age, the z-scores in our baseline sample appear to exhibit slightly more mass at lower z-scores compared to those for children of similar ages (0- 19 months for looking at the baseline sample for NEEP, 19 – 44 months when looking at the endline sample), from rural Western Province, in the Kenyan DHS data. At endline the two distributions appear to have converged somewhat, although the effect is small. Results from the before-after regression, using the appended (DHS + NEEP baseline + NEEP endline) data are below.

The highly significant, positive coefficient of the indicator variable for an observation being from the endline NEEP sample, in the height-for-age regression is suggestive of a positive impact of NEEP along this dimension, of just under 0.2 standard deviation on average. The weight-for-age regression implies no impact of NEEP on this metric.

Table 60: Before-after analysis of NEEP utilising DHS data as a control group

	(1) Height-for-age	(2) Weight-for-age
age	-0.092^{***}	-0.106^{***}
	(0.017)	(0.012)
age_sqr	0.002	0.004^{***}
	(0.001)	(0.001)
age_cub	-0.000	-0.000^{***}
	(0.000)	(0.000)
NEEP_bline	-0.073	-0.120
	(0.070)	(0.063)
NEEP_eline	0.189^{**}	-0.072
	(0.068)	(0.055)
_cons	0.016	0.430^{***}
	(0.108)	(0.089)
N	4012	4043

Clustered standard errors in parentheses. NB: the unit of cluster differs between the NEEP data and the DHS data.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 1

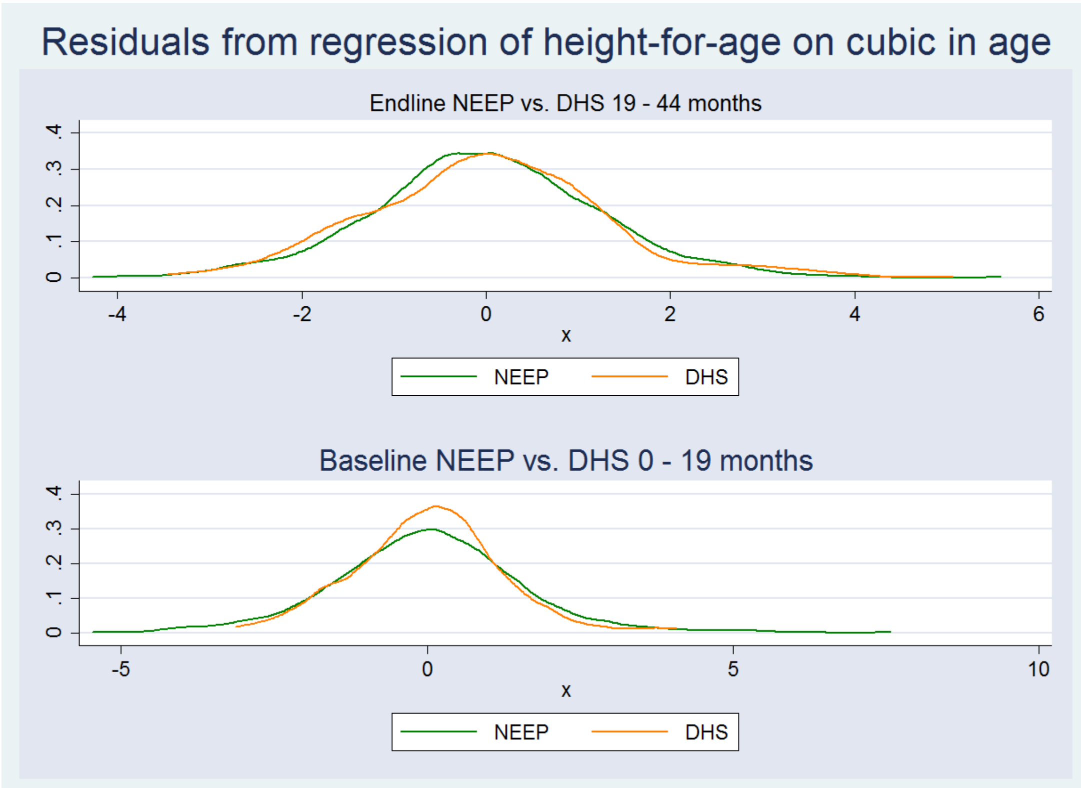
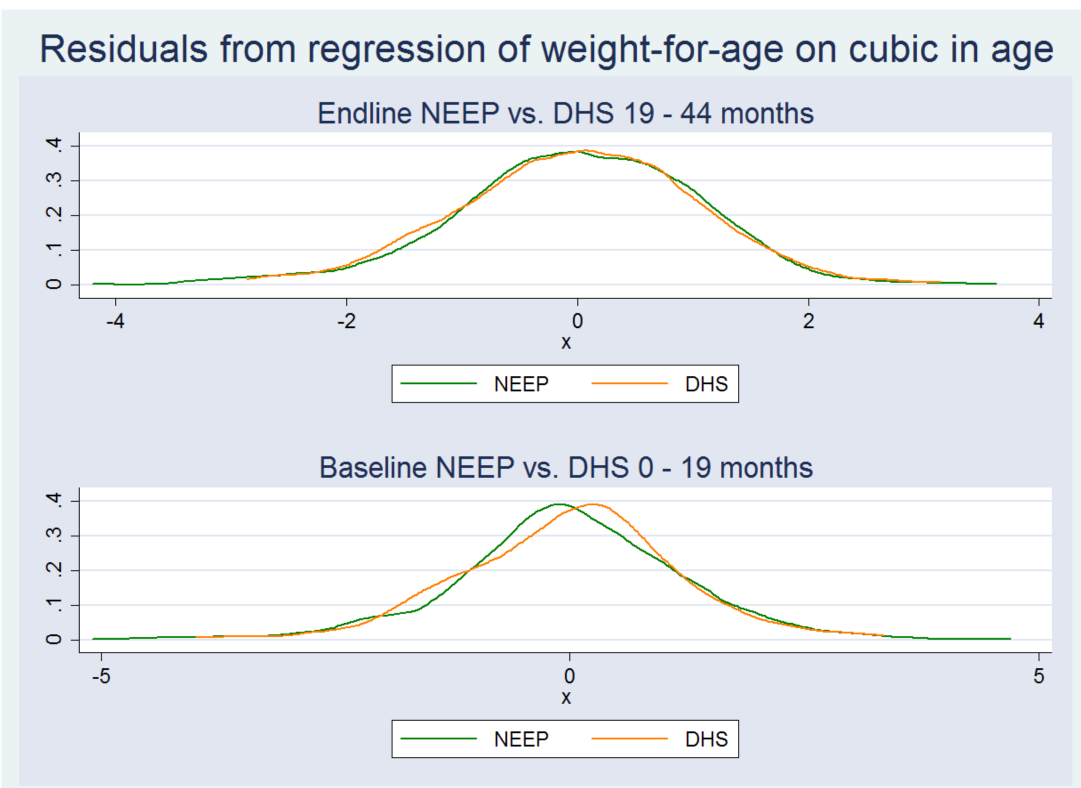


Figure 2



Original Regression Specification (Anthropometrics)

Anthropometric outcomes, original specifications:
As a check of the sensitivity of our results to the way that spillovers are measured, also included below are the results from our original specification for the anthropometric regressions. Tables 65 - 69 present these results; the variables diff_monly, diff_monlycol etc. simply count the number of waterpoints within a 1/2km radius of the individual-of-observation's waterpoint that belong to that treatment arm, and the variable any_cluster counts the total number of waterpoints (to act as a rough control for any general geo-spatial effects).

The results using the 1km radius are implicative of no treatment effects, and no significant spillover effects as a result of having more treated waterpoints within a 1km radius of one's own waterpoint. The specification considering a 2km radius again implies no direct treatment effects, but several of the coefficients capturing potential spillover effects are now positively signed and statistically significant. When considering a 3km radius, the results are similar to in the 2km case; while at 5km significant spillover effects disappear again.

Table 61: Anthropometric Indicators (original contamination controls, 1km cut-off)

	(1) Height-for-age	(2) Height-for-age	(3) Summary index of other z-scores	(4) Summary index of other z-scores
monly	0.028 (0.090)		-0.023 (0.044)	
monlycol	-0.088 (0.104)		0.021 (0.052)	
mandf	0.008 (0.109)		0.067 (0.048)	
mandfcol	-0.004 (0.101)		-0.049 (0.050)	
treat		-0.011 (0.074)		0.005 (0.034)
diff_monly1	0.019 (0.066)	0.016 (0.065)	0.011 (0.032)	0.006 (0.034)
diff_monlycol1	-0.063 (0.086)	-0.062 (0.086)	0.013 (0.033)	0.015 (0.034)
diff_mandf1	0.040 (0.077)	0.033 (0.076)	0.045 (0.040)	0.039 (0.040)
diff_mandfcol1	-0.028 (0.074)	-0.026 (0.073)	0.033 (0.039)	0.027 (0.040)
any_cluster1	0.004 (0.041)	0.008 (0.041)	-0.015 (0.020)	-0.015 (0.020)
zlen_bline	0.359*** (0.023)	0.360*** (0.023)		
sum_index_oth z_bline			0.502*** (0.024)	0.503*** (0.025)
age	0.209*** (0.057)	0.209*** (0.057)	0.012 (0.026)	0.012 (0.027)
agesqr	-0.004*** (0.001)	-0.004*** (0.001)	-0.000 (0.000)	-0.000 (0.000)
fem	1.484 (1.507)	1.553 (1.496)	-0.032 (0.632)	-0.045 (0.637)
age_fem	-0.087 (0.099)	-0.092 (0.098)	0.015 (0.041)	0.016 (0.042)
agesqr_fem	0.001 (0.002)	0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)
_cons	-4.145*** (0.912)	-4.154*** (0.911)	0.022 (0.430)	0.010 (0.437)
N	1359	1359	1388	1388

Table 62: Anthropometric Indicators (original contamination controls, 2km cut-off)

	(1) Height-for-age	(2) Height-for-age	(3) Summary index of other z-scores	(4) Summary index of other z-scores
monly	0.024 (0.086)		-0.007 (0.043)	
monlycol	-0.084 (0.099)		0.029 (0.050)	
mandf	0.027 (0.106)		0.074 (0.046)	
mandfcol	0.006 (0.101)		-0.046 (0.050)	
treat		-0.005 (0.070)		0.013 (0.033)
diff_ monly2	0.070^{**} (0.034)	0.064^{*} (0.034)	0.020 (0.017)	0.016 (0.017)
diff_ monlycol2	0.051 (0.038)	0.053 (0.037)	0.044^{**} (0.019)	0.043^{**} (0.020)
diff_ mandf2	0.030 (0.041)	0.022 (0.039)	0.043^{**} (0.022)	0.039^{*} (0.022)
diff_ mandfcol2	0.008 (0.034)	0.009 (0.034)	0.042^{**} (0.021)	0.038^{*} (0.021)
any_cluster2	-0.025 (0.020)	-0.023 (0.020)	-0.033^{***} (0.011)	-0.032^{***} (0.010)
zlen_bline	0.357^{***} (0.023)	0.359^{***} (0.023)		
sum_index_oth z_bline			0.506^{***} (0.024)	0.507^{***} (0.024)
age	0.212^{***} (0.056)	0.212^{***} (0.056)	0.015 (0.026)	0.016 (0.027)
agesqr	-0.004^{***} (0.001)	-0.004^{***} (0.001)	-0.000 (0.000)	-0.000 (0.000)
fem	1.387 (1.483)	1.444 (1.475)	-0.084 (0.629)	-0.093 (0.635)
age_fem	-0.081 (0.097)	-0.085 (0.097)	0.019 (0.041)	0.019 (0.041)
agesqr_fem	0.001 (0.002)	0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)
_cons	-4.176^{***} (0.903)	-4.191^{***} (0.903)	0.037 (0.427)	0.031 (0.433)
N	1359	1359	1388	1388

Table 63: Anthropometric Indicators (original contamination controls, 3km cut-off)

	(1) Height-for-age	(2) Height-for-age	(3) Summary index of other z-scores	(4) Summary index of other z-scores
monly	0.014 (0.086)		-0.018 (0.044)	
monlycol	-0.091 (0.102)		0.033 (0.053)	
mandf	0.019 (0.107)		0.064 (0.047)	
mandfcol	-0.009 (0.101)		-0.048 (0.051)	
treat		-0.015 (0.071)		0.009 (0.034)
diff_ monly3	0.049* (0.028)	0.043 (0.027)	0.006 (0.014)	0.005 (0.013)
diff_ monlycol3	0.041 (0.027)	0.045* (0.026)	0.026** (0.013)	0.024* (0.013)
diff_ mandf3	0.023 (0.031)	0.019 (0.030)	0.021 (0.017)	0.020 (0.017)
diff_ mandfcol3	-0.000 (0.026)	-0.002 (0.026)	0.021 (0.014)	0.022 (0.014)
any_cluster3	-0.014 (0.015)	-0.013 (0.015)	-0.015* (0.008)	-0.015* (0.008)
zlen_bline	0.357*** (0.023)	0.358*** (0.023)		
sum_index_oth z_bline			0.505*** (0.025)	0.506*** (0.025)
age	0.210*** (0.056)	0.210*** (0.056)	0.011 (0.026)	0.012 (0.027)
agesqr	-0.004*** (0.001)	-0.004*** (0.001)	-0.000 (0.000)	-0.000 (0.000)
fem	1.281 (1.500)	1.321 (1.493)	-0.122 (0.630)	-0.125 (0.636)
age_fem	-0.074 (0.098)	-0.076 (0.098)	0.021 (0.041)	0.021 (0.041)
agesqr_fem	0.001 (0.002)	0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)
_cons	-4.222*** (0.923)	-4.225*** (0.924)	0.076 (0.431)	0.067 (0.438)
N	1359	1359	1388	1388

Table 64: Anthropometric Indicators (original contamination controls, 5km cut-off)

	(1) Height-for-age	(2) Height-for-age	(3) Summary index of other z-scores	(4) Summary index of other z-scores
monly	0.012 (0.084)		-0.033 (0.043)	
monlycol	-0.125 (0.100)		0.036 (0.053)	
mandf	0.005 (0.108)		0.053 (0.045)	
mandfcol	-0.039 (0.100)		-0.048 (0.051)	
treat		-0.033 (0.071)		0.003 (0.033)
diff_ monly5	0.017 (0.023)	0.010 (0.023)	-0.022 (0.014)	-0.020 (0.014)
diff_ monlycol5	0.009 (0.020)	0.009 (0.020)	0.006 (0.011)	0.004 (0.012)
diff_ mandf5	0.010 (0.022)	0.005 (0.022)	0.001 (0.013)	0.002 (0.013)
diff_ mandfcol5	-0.033 (0.023)	-0.034 (0.022)	0.011 (0.012)	0.013 (0.012)
any_cluster5	0.003 (0.012)	0.006 (0.013)	0.000 (0.007)	-0.000 (0.007)
zlen_bline	0.361*** (0.023)	0.362*** (0.023)		
sum_index_oth z_bline			0.504*** (0.024)	0.505*** (0.025)
age	0.217*** (0.056)	0.217*** (0.056)	0.013 (0.026)	0.013 (0.026)
agesqr	-0.004*** (0.001)	-0.004*** (0.001)	-0.000 (0.000)	-0.000 (0.000)
fem	1.336 (1.490)	1.431 (1.484)	0.044 (0.622)	0.020 (0.630)
age_fem	-0.077 (0.098)	-0.084 (0.097)	0.010 (0.041)	0.011 (0.041)
agesqr_fem	0.001 (0.002)	0.001 (0.002)	-0.000 (0.001)	-0.000 (0.001)
_cons	-4.426*** (0.907)	-4.427*** (0.909)	0.039 (0.420)	0.037 (0.429)
N	1359	1359	1388	1388

Appendix F: Other

Item Characteristic Curves

Figure 3

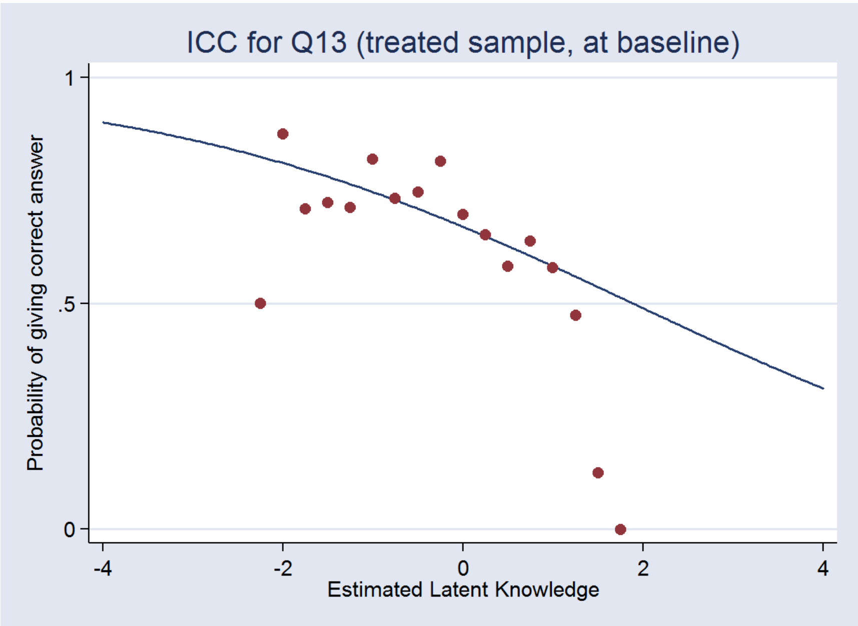


Figure 4