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SCALING UP GROWTH
ADDRESSING STUNTING IN TANZANIA EARLY (ASTUTE)

FINAL EVALUATION REPORT

29th July 2021

Prepared by Development Media International

Survey area
- Waterbody
- Regional boundaries
- District boundaries

ASTUTE REGIONS

EXECUTIVE SUMMARY

Through the ASTUTE Programme (Addressing Stunting in Tanzania Early) IMA World Health and consortium partners set out to assist the Government of Tanzania in operationalising the National Multisectoral Nutrition Action Plan (NMNAP) at scale. The project was implemented in five Lake Zone regions and focused on child nutrition and development indicators related to a child's first 1,000 days – from conception to age two. With funding from UK Aid and the UK Department for International Development (DfID), the 5 year programme aimed to change the behaviours of more than 3 million mothers, caregivers, and decision makers.

As part of the ASTUTE programme, IMA's consortium partner, Development Media International (DMI), developed, implemented, and evaluated a behaviour change communication campaign related to six key message themes: maternal health and nutrition during pregnancy; exclusive breastfeeding for children 0-6 months; complementary feeding for children 6-24 months; early child development; water, sanitation, and hygiene practices; and diarrhoea treatment. The drama-style campaign spots were broadcast on radio and television from June 2017 to March 2020.

This report presents the findings from the evaluation of the ASTUTE media campaign. Three cross-sectional surveys were conducted before, during, and at the end of the campaign, with questions targeted to female caregivers and male heads of households when they were available. The impact of the campaign is estimated by looking at change in key indicators over time (an uncontrolled before-and-after analysis) as well as the association of indicators with reported campaign exposure (cross-sectional analysis at endline). Primary and secondary outcomes were pre-specified for each of the message themes prior to analysis.

Over 21,000 men and women with children under two were surveyed across the three timepoints, and the majority of participants reported exposure to the campaign. At endline, 60% of female caregivers and 70% of men had heard or seen spots on the radio or TV. While exposure was even higher among regular radio listeners, the campaign still reached over 40% of individuals who did not report listening regularly.

This high level of campaign exposure translated to large impacts across several of the programme themes. The strongest, most consistent evidence for impact was observed for engagement in early childhood development-related activities (for both men and women), for outcomes relating to maternal health and nutrition (including antenatal care attendance) and for WASH indicators. Exclusive breastfeeding indicators also improved over the time period of the campaign, and by the end of the campaign the prevalence of positive outcomes for the majority of breastfeeding indicators had reached a high level (>90%) such that the campaign may have had limited ability to achieve further improvements. Complementary feeding indicators also improved over the time span of the campaign. However the proportions of children receiving the target minimum meal frequency and minimum acceptable diet by the end of the campaign remained low with limited evidence that exposure to the campaign had had a substantial impact on these indicators.

Another notable area of campaign impact was on men's knowledge and behaviour. Men's engagement with their young children, including playing and speaking to them, increased substantially over time and by exposure to the campaign. The men who heard or saw a campaign spot were also more likely to know that a woman needs to breastfeed more frequently if she thinks she does not have enough breastmilk and were also more likely to have purchased food for the child in the past month. Given men are often important decision makers, influencing their understanding of maternal health and child development will likely have important effects on the health of their families.

Though neither analysis approach used in this evaluation is free from limitations, taken together, the findings demonstrate the central role of the campaign in driving change over time. Overall, this report describes important shifts in both knowledge and behaviour outcomes that will likely improve the health and wellbeing of young children, their caregivers, and their communities.
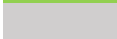
Table 1: Summary of ASTUTE findings

Theme	Indicator	Difference by exposure (pp)*	Change over time (pp)*
Maternal Nutrition (biological mothers)	**Mother ate more types of food during last pregnancy**	+6.8	+12.7
	Attended antenatal care during last pregnancy	+10.3	+48.4
	Attended antenatal care 4+ times during last pregnancy, of those who attended		+20.4
	Worked less during last pregnancy	+6.1	+7.9
	Husband/partner helped with chores frequently during last pregnancy	+7.9	+9.4
Exclusive Breastfeeding (Biological mothers or all female carers)	**Child exclusively breastfed (children 0-5 months; biological mothers)**	-1.5	+13.7
	Agree child should only be given breastmilk for first 6 months		
	Report 6+ months when asked when child should be given other foods/liquids		+12.0
	Usually empty both breasts when breastfeeding (if currently breastfeeding)		+4.6
	Report a woman should breastfeed more often if she doesn't have enough milk		+20.3
	Male partner reports a woman should breastfeed more often if she doesn't have enough milk	+6.3	N/A
Complementary Feeding (Children 6-23 months)	**Child received minimum meal frequency yesterday**		#
	Child received minimum acceptable diet yesterday		
	Man purchased food for child in past month	+10.2	+3.6
	Man helped feed child frequently in past three months		+13.3
Early Child Development (Male or Female Carers)	**Female carer engaged with child through 4+ (of 7) activities in last week**	+5.5	+16.8
	Male carer talked to the child and played with the child in the last week	+10.6	+17.2
	Female carer agrees it is good to talk to a baby	+5.2	#
WASH (Female Carers)	**Female carer identified at least two critical time points for handwashing**	+5.4	+9.8
	Answer 'no' to "Does hand washing with water alone make your hands clean?"		+2.2
	Agree that a mother should wash her hands after cleaning a baby's bottom	+6.9	#
	Thinks most/all of her female friends wash hands w/ soap after cleaning a baby's bottom	+3.8	+2.7
Diarrhoea	**Child with diarrhoea given more than usual to drink**		#
	Child with diarrhoea given ORS or Zinc	+7.5	+13.3

* Percentage point (pp) changes reported for statistically significant results only.

\# Only available for two timepoints

Key:

Significant difference at 1% level
Significant difference at 5% level
No significant difference

Primary outcome

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1. Introduction

1.1 Health and Nutrition in Tanzania

Over the last 25 years, Tanzania has achieved dramatic reductions in child mortality (from 141 under-5 deaths per 1,000 live births in 1990 to 67 under-5 deaths per 1,000 live births in 2015-16) and scaled up nutrition interventions such as those focusing on vitamin A, iron, and folic acid supplementation.[1] However, malnutrition remains a serious public health problem, with an estimated 2.7 million undernourished children.

Tanzania has one of the world's highest rates of chronic malnutrition, as measured by stunting, a well-established risk marker for poor child development.[2] Stunting before age two predicts poor cognitive and educational outcomes in later childhood and adolescence and has important educational and economic consequences for households and communities.[3] In Tanzania, stunting among children under 5 years is estimated at 31.8%,[4] and there has been slow progress in reducing stunting in the past 20 years (Figure 1).[1]

The Addressing Stunting in Tanzania Early (ASTUTE) project tackles the problem of stunting in children and aims to improve the nutritional status of pregnant women, and mothers through improvements in diet and water, sanitation, and hygiene. Early childhood development is also a focus of the programme. ASTUTE enhances the capacity of regional and district government staff, health facility workers, community health workers, CSO volunteers and others to support optimal nutrition practices and to increase families' knowledge about nutrition.

Figure 1: Trends in Nutritional Status of Children[1]

Percentage of children under age 5 classified as malnourished
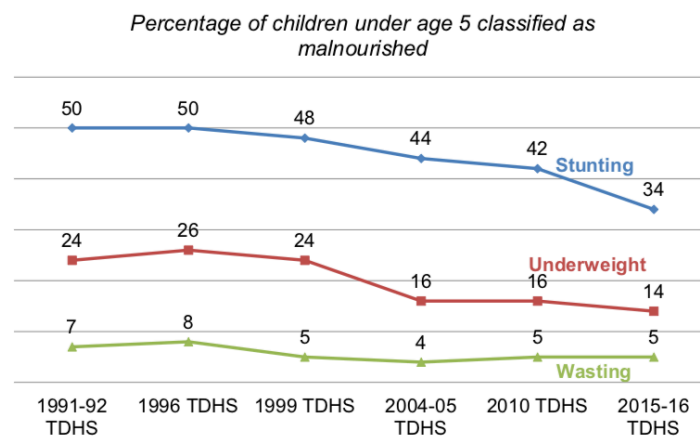
1.2 Overview of the ASTUTE Project

IMA World Health (IMA) was awarded funding by UK Government through UK Aid and the Department for International Development (DFID) to assist the Government of Tanzania to effectively operationalize the NMNAP at scale. The National Multisectoral Nutrition Action Plan (NMNAP) targets the 1,000-day window from pregnancy to a child's second birthday. IMA, along with consortium partners, implemented ASTUTE in all villages in Kagera, Kigoma, Mwanza, Geita, and Shinyanga regions over a five-year period (December 2015–May 2020). The ASTUTE project in the Lake zone has a sister project that started a year prior to ASTUTE/IMA's project. It has been implemented in in the Iringa, Njombe, and Mbeya regions, spearheaded by UNICEF and partners. Both ASTUTE projects gave Tanzanians greater opportunities to lead healthier and more productive lives by giving children a head start so that they enjoy proper

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[1] Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), & ICF. (2016). *Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2015-16*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHCDGEC, MoH, NBS, OCGS, & ICF.

[2] UNICEF. (2015). *Tanzania: The situation*. Retrieved from: http://UNICEF.org/tanzania/nutrition.html

[3] Black, R. E., Allen, L. H., Bhutta, Z. A., Caulfield, L. E., de Onis, M., Ezzati, M., . . . Rivera, J. (2008). Maternal and child undernutrition: global and regional exposures and health consequences. *The Lancet*, 371(9608), 243-260. doi:10.1016/s0140-6736(07)61690-0

[4] Ministry of Health et al. 2018. Tanzania National Nutrition Survey using SMART Methodology (TNNS) 2018. Dar es Salaam, Tanzania: MoHCDGEC, MoH, TFNC, NBS, OCGS, and UNICEF

growth and development. With DfID's investment, the ASTUTE programme implemented by IMA and its partners (hereafter referred to as ASTUTE only) set out to achieve the following:

1. The reduction of stunting prevalence by at least 7 percentage points, thereby preventing stunting in more than 50,000 children < 5 years of age, in Tanzania's Lake Zone.
2. Reaching more than 3 million mothers, caregivers, and decision-makers through home visits, radio campaigns, mobile outreach, positive deviance/hearth, Village Health And Nutrition Days (VHND), Health Facility counselling, support groups, and to change behaviours that affect child nutrition and development.
3. Training at least 6,000 community health workers, health facility workers, and staff and volunteers from 50 civil society organizations to provide leadership and interventions that create a cultural and behavioural shift in child feeding, hygiene, sanitation, and other behaviours.

IMA's partner organization, Development Media International (DMI), developed and conducted baseline, midline and endline surveys to inform program direction and to assess impact during and at the end of the program.

1.3 Campaign Description

As part of the ASTUTE project, DMI developed and implemented a behaviour change communication campaign related to six key message themes: maternal health and nutrition during pregnancy; exclusive breastfeeding for children 0-6 months; complementary feeding for children 6-24 months; early child development; water, sanitation, and hygiene practices; and diarrhoea treatment.

These messages were developed after extensive desk research and qualitative formative research conducted from December 2015 to May 2016. A team of DMI researchers met with key stakeholders – mothers, fathers, elders, and health care workers – in three of the Lake Zone regions and conducted both in-depth interviews and focus group discussions. The purpose of this research was to identify key barriers and facilitators to behaviour change. Findings from this formative research phase were used to determine the key messages and their broadcast weightings, as described in Table 2.

The informational content of the campaign was incorporated into short, dramatic radio and TV spots by DMI Tanzania's team of scriptwriters and social and behaviour change specialists. In each 60-second spot, the crux of the drama relates to one of the barriers identified in the formative research. The spot then ends with an informational tagline to reinforce the implied message. The radio spots went on air in June 2017 and were broadcast 10 times per day until March 2020 on 6 radio stations (5 regional and one national station) in accordance with DMI's proven *Saturation+* behaviour change methodology.[5]

In addition to the radio campaign, four live action television spots were produced, with a storyline following a child's first 1,000 days. The spots were broadcast on TV beginning in May 2019 and covered four of the message themes: maternal nutrition during pregnancy, exclusive breastfeeding, complementary feeding, and early child development.

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[5] Murray, Joanna, Pieter Remes, Rita Ilboudo, et al. 'The Saturation+ Approach to Behavior Change: Case Study of a Child Survival Radio Campaign in Burkina Faso'. *Global Health: Science and Practice* 3, no. 4 (3 November 2015): 544–56. https://doi.org/10.9745/GHSP-D-15-00049.

Table 2. ASTUTE Campaign themes and message weightings

Main Theme	Sub-Messages	Influencers of Behaviour	Message Weightings
Maternal Nutrition	1) Before becoming pregnant young women should eat a nutritious diet. 2) During pregnancy women should get more rest and eat an improved diet. 3) Women should attend ANC as soon as they realize they are pregnant and need to make sure they take the supplements and medicines provided.	Husbands and family members can help by taking women to health centres for ANC, and also by assisting with household chores, fetching water etc. Men are required to accompany women to their first ANC appointment.	15% Sub-messages split with a 1:1:1 ratio
Exclusive Breastfeeding	1) Wait until the child is six months old before giving her anything but breastmilk. 2) Breastfeed more frequently (including emptying one breast before feeding from the other) to maintain sufficient supply.	Mothers-in-law and husbands, health workers	25% Sub-messages split with a 1:1 ratio
Complementary Feeding	1) Feed children aged 6 to 23 months at least 3 nutritious meals per day with healthy snacks in between. 2) Starting at 6 months, continue to breastfeed your child, but also add animal source foods such as eggs, poultry, and fish; green leafy vegetables; and orange-fleshed foods such as vitamin A rich fruits and orange tubers.	Husbands often control the money available to women for purchasing food for the family and decide what animals are owned and sold.	20% Sub-messages split with a 1:1 ratio
Early Childhood Development	From birth, stimulate your child by telling him or her about objects at home and your interactions with others. Play, Talk, Praise.	Other caregivers such as grandmothers and older siblings	20%
WASH	1) Handwash with soap and running water (at critical moments, especially before you prepare food and before you feed your child). 2) Safe disposal of children's stools / Cleanliness of household compound (keep chickens and other small animals in coops).	Husbands and other caregivers, wider family network	15% (2:1 ratio)
Diarrhoea Treatment	Give children with diarrhoea oral rehydration solution (ORS) and increased fluids and foods to rehydrate them.	Mothers-in-law and husbands, health workers	5%

2. Aim and objectives

This study aimed to evaluate the impact of DMI's ASTUTE campaign on key programme indicators corresponding to message themes on maternal health and nutrition during pregnancy; exclusive breastfeeding; complementary feeding; water, sanitation and hygiene; early child development; and diarrhoea treatment. Table 3 below outlines how exposure to the campaign was measured. Primary and secondary outcomes relating to each of these message themes were defined prior to data analysis and are reflected in Table 4 below.

The findings presented in this report address the following objectives:

- Estimate the reach of the campaign and describe characteristics associated with exposure including demographics, radio and TV ownership, and media consumption habits.

- Estimate the change in all key indicators (related to the message themes) over the course of the three surveys.

- Estimate the association between reported exposure to one or more of the campaign components and all key indicators at endline.

In addition to this quantitative evaluation, qualitative focus groups were conducted throughout the campaign period to understand *how* the campaign may have influenced knowledge and behaviour. Thematic analysis of these focus groups is ongoing.

3. Methods

3.1 Study Design

A series of three cross-sectional surveys were conducted before (January-February 2017), during (March-April 2018), and at the end (January-February 2020) of the campaign, with the purpose of both shaping the campaign content and estimating its impact. This evaluation combines two approaches to understand the impact of the campaign. First, an uncontrolled before-and-after analysis demonstrates how indicators changed over the period of the campaign in all five intervention regions. These findings are interpreted alongside a second cross-sectional analysis of the endline survey, which measures the association between reported exposure to the campaign and the outcomes adjusted for potential confounders. Taken together, these approaches allow us to estimate the potential role of the campaign in improving the health behaviours it sought to promote.

3.2 Data collection

Eligibility criteria

Households with children aged 0-23 months were eligible for participation, and the majority of questions were addressed to the female caregiver of the youngest child in the household. Where there was more than one child under 5, questions related to the youngest child only. When the male head of household (typically the father) was available and consented, he was also interviewed. The local research partner, Ipsos, was responsible for all training, data collection, and data management.

Ethics approval

Approval for this study was obtained from the National Institute for Medical Research in Tanzania (NIMR/HQ/R.8a/vol. IX/2344). Additional authorisation was obtained from regional and local authorities prior to data collection. Research teams introduced themselves to Regional Medical Officers (RMOs) and/or District Medical Officers (DMOs) and outlined the objectives of their work and presented permits obtained from national and local levels. Within each village, the survey team began the survey with the assistance of the Village Executive Officer or another village/street guide who introduced the survey team to households. Participation in the study was voluntary and data was collected only where informed consent was obtained.

Questionnaire design

The questionnaire was designed to primarily measure exposure to DMI's media campaign and the related programme outcomes. Additional questions were included to measure additional indicators related to the ASTUTE programme, as well as exposure to other ASTUTE social and behaviour change (SBC) interventions. The survey instrument was

written in English, translated into Kiswahili by DMI/Ipsos, and checked by the DMI and IMA team. Following piloting, additional adjustments were made to the Swahili to improve comprehension. The questionnaire was programmed using Ipsos' iField software and all data were captured digitally using smartphones and Personal Digital Assistants (PDAs).

The questionnaires used in the three survey rounds covered similar topics, but substantial changes were made to some questions between baseline and midline—especially those related to breastfeeding and Water, Sanitation, and Hygiene (WASH)—to rectify data quality issues. There were also questions omitted following the baseline survey round to shorten the interview. As a result, some indicators are not directly comparable across all survey rounds, and this is noted where applicable in the findings. Data from a given survey round are omitted where necessary to ensure that indicators are comparable..

Training and piloting

Training of the field teams was conducted in Mwanza, Tanzania, over the two weeks immediately prior to each survey round. The field team was comprised of up to 50 enumerators (39 for the baseline) and 8-10 supervisors, selected based on performance from an initial larger pool of enumerators and supervisors. Training was facilitated by the Ipsos Tanzania project lead team and was attended by representatives from DMI. On a regular basis, IMA staff were kept informed of the progress of training, including successes and challenges. Key topics covered included the survey objectives, sampling methodology, research ethics, questionnaire contents, and mobile data collection protocols.

Following initial classroom training, the field team conducted a series of 'dummy interviews' in groups and pairs to test the questionnaire programming and familiarise themselves with the software. Additional piloting was then conducted with respondents in Mwanza, and modifications were made to the questions and programming as needed.

Study power and sampling procedures

The study was powered to be able to detect a 4-percentage point difference in exclusive breastfeeding between those exposed versus unexposed to the campaign at endline ($\alpha = 0.05$, 80% power); this was the smallest effect we aimed to capture. To detect this effect, the required sample size was a total of 5,000 households in each survey round.

At baseline, a total of 243 villages were selected using a stratified, multi-stage random sample design. The most recent Tanzania census (2012) was used as the sampling frame. The sample was stratified by region, with all five intervention regions included. Districts were then selected from within each region, with probability proportional to size (PPS) to ensure a self-weighting sample. Wards were then similarly selected from within each district, and 1-2 randomly selected villages or streets formed the enumeration areas within each ward. The same set of villages was visited at midline and endline, but participants within each village were randomly sampled at each round. By chance alone, a small number of households that participated in the endline had also participated in the baseline or midline.

Household selection was done in the field by enumerators, using a random-walk and Kish grid procedure.[6] Upon arrival to the enumeration area, each enumerator identified a landmark (e.g. a church or phone tower). They then counted off houses based on the date, starting at the 7th house on the 7th of the month, for example. In rural areas, enumerators visited a household after every 200m and in urban areas, they visited every 5th house. Within each household, the Kish grid was used to randomly select a respondent where there might be multiple people eligible.

If the selected eligible respondent was not present during the initial visit, up to three call backs were made at various times or on the following day. In the case that there were no eligible and/or consenting participants available in a household after the call backs, the enumerator visited the next immediate household to identify a replacement participant. The enumerator continued visiting consecutive households until a successful interview was completed.

Each participant was informed of the purpose of the study as well as any risks and benefits they might expect from participation. Participants were asked for their voluntary and informed consent prior to any data collection and were able to terminate the interview at any time. They were given a bar of soap at the end of the interview as a token of appreciation for their time.

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[6] Gaziano, Cecilie. 'Comparative Analysis of Within-Household Respondent Selection Techniques'. *Public Opinion Quarterly* 69, no. 1 (1 January 2005): 124–57. https://doi.org/10.1093/poq/nfi006.

Data quality

A team of 11 quality controllers (QC) conducted on-the-ground quality spot checks by revisiting households, and a subset of respondents were also selected for phone back-checking from the Ipsos office. Where quality issues were identified, QCs contacted supervisors for clarification. If the quality of an interview could not be validated it was rejected and another interview conducted to replace it. In addition to Ipsos' quality-checking, DMI contracted an independent consultant to review the raw data daily and flag any issues with Ipsos supervisors for resolution.

3.3 Data management and variable definitions

Upon receipt of the raw endline dataset from Ipsos, the data were further checked for outliers and implausible responses. Variables were created for each of the pre-specified indicators (Table 4) as well as for a number of demographic characteristics. Variables were recategorized as necessary to avoid data sparsity (low frequencies for some response categories), and unless otherwise specified 'don't know' responses were conservatively coded as 'no' for binary outcomes. Any participants missing data on the key exposure variables were excluded from all analyses.

Exposure definition

Participants were asked multiple questions relating to their exposure to the campaign and their responses were combined to create a single binary definition of exposure (Table 3). To measure exposure to the radio spots, participants were asked whether they had heard a spot ending with a laughing baby (enumerator played example) or whether they had heard a spot giving advice relating to one of the campaign themes. To measure exposure to the TV campaign, participants were similarly shown an example still image from the end of the TV spots. They were also asked whether they had seen a TV spot giving advice about one of the campaign themes. Participants who were exposed to either radio or TV were considered exposed, as compared to individuals exposed to neither.

Exposure status was calculated separately for female and male respondents but, except where otherwise stated, analyses by exposure relate to the woman's exposure status.

Table 3. Exposure definitions

Campaign Component	Definition
Exposure to Radio	• Reported 'yes' to hearing the example spot/ a spot that ends with a 'laughing baby' sound <u>OR</u> • Reported hearing messages on the radio that give advice about maternal/child health/child development
Exposure to TV	• Reported 'yes' to seeing the example image frame on TV <u>OR</u> • Reported seeing messages on the TV that give advice about maternal/child health/child development
Campaign exposure	• Exposure to Radio OR Television components of the campaign

Outcome definitions

Primary outcomes were specified for each message theme prior to data analysis based on the programme log frame, data quality, and comparability across surveys. All outcomes are binary, and the denominator population varies depending on the topic. Most outcomes relate to questions answered by the female carer/biological mother unless otherwise noted.

Table 4. Definition of primary and secondary outcomes by message theme

Message Theme	Outcome Indicator
Maternal Health and Nutrition During Pregnancy *Denominator = biological mothers*	**Primary:** Proportion who ate more types of food during pregnancy.
	Secondary: • Proportion who ate more food during pregnancy. • Proportion who attended antenatal care during their pregnancy. • Proportion who attended antenatal care 4+ times, of those attending antenatal care. • Proportion of women who worked less during pregnancy. • Proportion of women who report their partner helped with chores during pregnancy (e.g. fetch water, farming, washing clothes)
Exclusive Breastfeeding *Denominator = Female carers (knowledge) or biological mothers (behaviour)*	**Primary:** Proportion of mothers of children 0-6 months who are currently breastfeeding and report they haven't given the child any other food/liquids
	Secondary: • Proportion of women who usually empty both breasts when feeding • Proportion who agree that children should not be given anything other than breastmilk in the first 6 months • Proportion who report 6+ months when asked about the appropriate time to introduce other liquids/foods • Proportion of women who know what to do if they do not have enough milk • Proportion of men who know what a woman should do if she does not have enough milk
Complementary Feeding *Denominator = Female or male carers of children 6-23 months*	**Primary:** Proportion of children getting minimum meal frequency
	Secondary: • Proportion of children getting minimum acceptable diet • Proportion of male respondents who reported purchasing food for their child in the last month • Proportion of male respondents who reported helping to feed the child in the past 3 months
Early Child Development *Denominator = All female or male carers*	**Primary:** Female carer engaged in 4+ activities with child in the last week
	Secondary: • Male carer both played and talked with the child in the last week • Proportion of women who agree it's good to talk to babies
WASH *Denominator = Female carers*	**Primary:** Proportion of women who identify at least two critical time points for handwashing
	• Proportion of women who know that washing with water alone does not make your hands clean • Proportion of women who agree she should wash hands with soap and water after cleaning a baby's bottom • Proportion of women who believe most other mothers/caregivers wash their hands with soap and water after cleaning a baby's bottom
Diarrhoea *Denominator = Female carers of children who had diarrhoea in past two weeks*	**Primary:** Proportion of women who gave children with diarrhoea more to drink than usual in the past 2 weeks
	• Proportion of children given ORS or Zinc for diarrhoea in the past 2 weeks

Several of the indicators above—especially those related to infant and young child feeding—depend on the correct calculation of age. Where a child's health card was available, their date of birth was recorded as shown on the health card. For children who did not have health cards, female carers were asked to report their child's date of birth and months of age, and enumerators were trained to clarify where this information did not match. Child's age in completed months was calculated from their date of birth.

3.4 Statistical methods

Descriptive analyses

Household and sociodemographic characteristics of male and female respondents and their youngest child were tabulated for each survey sample. Descriptive analyses for the midline and endline samples were stratified by reported exposure to the campaign.

Additional descriptive analyses were conducted of campaign exposure by media consumption patterns. For these analyses, regular listenership/viewership was defined as last listening to the radio/watching TV in the past week. Exposure at endline was stratified by channel (TV/radio/either) to further understand how people were exposed to campaign messages. Descriptive analyses were not stratified by region, but as noted below, we adjusted for region in regression analyses.

Regression analyses

To estimate the change in indicators over the course of the campaign period, data from all three survey rounds were pooled. Multi-level mixed-effects logistic regression models were used to estimate the effect of the survey round on each outcome. Random effects allowed for the geographic clustering of responses based on the complex sampling, and the regional strata were accounted for through a fixed effect. For all outcomes, sample proportions, odds ratios (ORs), and 95% confidence intervals (CIs) are presented to estimate the size of the effect over survey round. P-values were obtained using likelihood ratio tests and used to assess the strength of evidence for the observed effect.

A similar approach, but additionally adjusting for potential confounders[7], was used for the cross-sectional analysis of the endline sample alone. For this analysis, mixed-effects logistic regression models were used to estimate the association between exposure to the campaign and each outcome, accounting for the multi-stage sample. A fixed effect for region was included to reflect the stratified sampling, and p-values were obtained using likelihood ratio tests.

In order to adjust for differences in socioeconomic status, we used principal components analysis (PCA) to generate a socio-economic position (SEP) score based on household asset ownership. Assets measured included a watch, mobile phone, bicycle, motorcycle, cart, car or truck, and a boat. The latter three were excluded from the index due to little variation in the sample (<2% owning or not owning). The assets were combined using a polychoric correlation matrix and the predicted SEP scores were grouped into tertiles.

All analyses were done using Stata SE 16.1 (College Station, TX).

Sensitivity analysis

For consistency, and because of the potential risk of bias associated with the relatively low response rates for men, all primary analyses by exposure status were conducted based on the woman's exposure to the campaign. However, for the outcomes relating to the man's behaviour, we also conducted a *post hoc* sensitivity analysis to assess whether using the man's exposure status rather than the woman's exposure status affected the interpretation of our findings. For these analyses we re-ran the unadjusted analyses described above to calculate sample proportions, odds ratios (ORs), and 95% CIs by exposure, separately for both male and female exposure. In order to ensure that differences

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[7] Woman's age group (14-17, 18-19, 20-29,30-39, 40+),socio-economic position tertile, urban vs rural setting, occupation (farmer or not), primary language (Swahili, Sukuma, other), parity (0-1, 2, 3-5, 6-8, 9+), marital status (single, married – monogamous, married – polygamous), woman's household decision-making involvement (number of areas (out of 3) of sole or joint decision taking) , woman's education level (None or incomplete primary, completed primary or above), literacy (can read), and child's age group (<6 months, 6-23 months).

were not due to selection bias in the male sample, we ran all analyses for both men and women in the restricted sample of respondents from households where the man had participated. This enabled us to assess to what extent using female rather than male exposure status in our analyses might have affected our interpretation.

4. Results

All results tables can be found immediately following the main text of the report (pp 18- 31).

4.1 Sample size and characteristics

Sample size

A total of 14,985 female carers and 6,730 male heads of household were surveyed across the three survey rounds. This represents a 94% household response rate. In total, 25% of records were quality-checked through re-visits and phone checks.

More men were reached in later rounds as Ipsos improved efforts to reach them (such as scheduling call backs for a time when men would be available). The proportion of responding household in which the male head of household was interviewed increased from 23% at baseline to 50% at midline and 62% at endline. At the time of the midline survey, only the radio component of the campaign was on air. TV spots began airing later and their effect is captured in the endline survey alone. Table 5 summarises the data collected in each survey round.

Table 5. Survey timing and sample size

	Baseline	Midline	Endline
Female Carers	n = 5,000	n = 4,992	n = 4,993
Male Head of Household	n = 1,144	n = 2,498	n = 3,080
Survey Dates	January-February 2017	March-April 2019	January-February 2020
Campaign components	None	Radio	Radio + TV

Demographic characteristics

Tables 6-9 describe the characteristics of the respondents, the household, and the youngest child. Each table describes characteristics by survey round (baseline, midline and endline) and, for midline and endline surveys, shows the proportion of individuals with the given characteristic where the female (Tables 6-8) or male (Table 9) respondent in the household was exposed to the campaign.

The majority of women were aged 20-29 (55-62%), whereas male respondents were most likely to be 30-39 (39-40%). Around three quarters of the women were able to read and around two thirds had completed primary education; 10% or less of women were in polygamous marriages. There was a wide spread of child ages, although relatively fewer children in the older age strata. Most households contained one or two children aged under 5 years.

Approximately 40% of households reported owning a working radio in each round, whereas just 12-14% reported having a working television (Table 7). Broadly speaking, exposure tended to be higher among participants in categories associated with higher socioeconomic position (SEP). For example, exposure to the campaign was higher for women who had completed primary school, were able to read at least part of a sentence card, or who had a greater number of durable household assets (e.g. car, bicycle). Reported exposure also tended to decline with parity, with higher exposure among women who had given birth to fewer children. Few of the demographic characteristics changed substantially over the survey rounds.

4.2 Exposure to the campaign

Overall, 60 percent of female participants were exposed to one or more components of the campaign at midline and endline (Table 10). Unsurprisingly, exposure to the radio campaign was higher (78% midline; 73% endline) among female participants who last listened to the radio in the past seven days as compared to non-regular female listeners

(45% midline; 37% endline). The same is true for exposure to the TV campaign which was twice as high among regular female TV viewers at endline (48%) compared to non-regular viewers (12%).

Regular radio listenership was higher among men (73%, endline) compared to women (53%, endline), and this may have contributed to the slightly higher level of campaign exposure among the men interviewed (70% compared to 60% among women).

Most participants who were exposed to TV (24% women; 38% men) had also been exposed to the campaign through the radio, increasing the intensity of their exposure.

4.3 Campaign Impact

Tables 11-22 present estimates of the impact of the campaign in two ways: first in terms of changes in outcome indicators over time; and second by comparing outcomes by reported exposure at endline. For each message theme, the primary outcome is highlighted at the top of the table. All of the effect estimates presented are unadjusted, and therefore do not account for SEP and other background characteristics.

Maternal health and nutrition during pregnancy

Mothers were asked about their diet, workload, and antenatal care attendance during their pregnancy with their youngest child. These indicators both improved over time (Table 11) and were higher at endline (Table 12) among those exposed to the campaign.

- Maternal diet during pregnancy: The proportion of mothers reporting that they ate more types of food during pregnancy (primary outcome) was small but increased over time to nearly 20% at endline from 7% at baseline (p<0.001). There was also a substantial difference by exposure (16% vs 23%), indicating that those who had heard the campaign were more likely to have increased their dietary diversity (aOR=1.33, CI=1.11-1.59, p=0.002).

- Antenatal care attendance: The proportion of mothers attending any antenatal care rose sharply from baseline (34%) to midline (79%) and continued to rise to endline (83%). While much of this rise was likely due to the construction of new health centres, there remained a 10% difference at endline between those exposed and unexposed (aOR=1.52, CI=1.25-1.84, p<0.001). Amongst women who attended any antenatal care, there was also a steady increase in the proportion attending care at least 4 times during their pregnancy over time, from 53% at baseline to 73% at endline. At endline the difference by exposure (75% vs 70%) was not significant after adjustment (aOR 1.13, CI 0.96 – 1.34, p=0.15).

- Workload during pregnancy: The majority of women reported working less during pregnancy at all time points, and this figure increased slightly over time from 60% at baseline to 68% at endline. This was coupled with an increase in women reporting that their husband or partner frequently helped them with chores during pregnancy so they could rest. At endline, women were more likely to report help from their husband if they also reported hearing/seeing campaign content (53% vs 45%, aOR=1.34 CI=1.15-1.54, p<0.001).

Exclusive breastfeeding for children 0-6 months

The exclusive breastfeeding indicators rely on the direct self-report of mothers in response to two questions: '*are you still breastfeeding [child's name]?*' and '*have you given [child's name] any other fluids or foods besides breastmilk?*'. Due to the fact that the child dietary recall questions were not asked in a comparable way between study rounds, these could not be reasonably used to estimate exclusive breastfeeding prevalence. Instead, we used the mother's self-report (currently breastfeeding and has not introduced other food or liquids). Following the midline results, an additional knowledge question was added for men regarding the message to breastfeed more often if a mother thinks she doesn't have enough milk. This was after recognising that many of the spots on this message were targeted at men. Overall, the evidence for the campaign's impact on exclusive breastfeeding indicators is mixed, due in part to high pre-existing levels of knowledge among participants.

- Exclusive breastfeeding behaviour: Based on self-reports as described above, exclusive breastfeeding rates appeared high (79-92%) (primary outcome). Although this increased over time from 79% to 92%, the difference between the exposed and unexposed was small (92% vs 93%) and did not indicate a positive effect on exclusive breastfeeding.

- Knowledge of exclusive breastfeeding: Indicators relating to women's knowledge of when to exclusively breastfeed were similarly high at all time points. While there was an increase over time in women reporting a child should be 6+ months old before being given other foods or liquids (85% to 97%), there was no evidence of a significant association with exposure at endline (although rates were already high).

- Breastfeeding amount and frequency: At endline, there was strong evidence for an effect of exposure on men's knowledge that a woman should breastfeed more often if she thinks she does not have enough milk (64% vs 58%; aOR=1.30, CI=1.08-1.57, p=0.01). There was no evidence for an association between campaign exposure and women's knowledge of what to do if she thinks she does not have enough milk, nor the proportion of women reporting they usually empty both breasts when breastfeeding, which over 90% of women reported doing.

Complementary feeding

There was strong evidence that the prevalence of three of the four complementary feeding indicators increased over time but differences at endline between those exposed and unexposed to the campaign were significant after adjustment for only one of the four indicators ('man purchased food for child in past month'). However, even with these important increases over time, a very small proportion of children received the minimum acceptable diet the day prior to the interview (15% at endline).

- Minimum meal frequency and acceptable diet: It was not possible to estimate the proportion of children receiving the minimum meal frequency (2-4 meals depending on age and breastfeeding status; primary outcome) nor minimum acceptable diet (4+ food groups in addition to meal frequency) at baseline due to lack of comparability between survey items. However, there is evidence that these indicators increased between midline and endline (minimum meal frequency: 23% vs 27%, OR =1.28, CI=1.14-1.44, p<0.001). At endline there was no significant difference in minimum meal frequency between those exposed and not exposed to the campaign (29% vs 25%).

- Men's involvement in child feeding: There was strong evidence for an association between campaign exposure and the proportion of men purchasing food for their child and this indicator also increased over time. At endline, the proportion of men reporting that they purchased food for their child in the past month was 10% higher among those exposed to the campaign (76% vs 66%, aOR=1.42, CI=1.12-1.81, p=0.004). There was an increase over time in the proportion of men reported to help feed their child, but at endline the difference in this outcome by exposure (50% vs 43%) was not significant.

Early child development (ECD)

Mass media messages encouraged parents to stimulate their children from birth, including through talking and playing. Engagement was measured by a series of survey items asking both male and female carers whether they had engaged in specific ECD-related activities (see footnote to Table 17 for list of activities). There was strong evidence for a substantial association between campaign exposure and reported child engagement among both men and women.

- Women's engagement with children: Female carers were asked whether they engaged with each of seven activities with their child, such as drawing, singing, and naming objects. The percent of women reporting at least four of these activities (primary outcome) rose substantially over the course of the campaign, from 62% at baseline to 79% at endline. Women were also more likely to report 4+ activities if they had been exposed to the campaign (81% vs 76%, aOR=1.25, CI=1.05-1.50, p=0.01). Although there was generally high agreement among women that it is good to talk to a baby (92% at both midline and endline), this was around 5% higher at endline (94% vs 89%) among those exposed to the campaign (aOR 1.72, CI=1.33-2.24, p<0.001)

- Male engagement with children: Men were asked whether they had talked to the child (named objects around them) or spent time playing with the child in the past week. As with women's engagement, the proportion of men reporting both of these activities rose over time from 51% at baseline to 69% at endline and was also 10% higher among those exposed to the campaign versus not (73% vs 62%, aOR=1.47, CI= 1.21-1.79, p<0.001).

Water, Sanitation, and Hygiene

A number of knowledge questions were asked to female respondents to gauge their understanding of critical time points for handwashing and the necessity of washing with soap. Capturing changes in behaviour (rather than knowledge) through the questionnaire was difficult, as participants were reluctant to show enumerators their

handwashing facilities, for example. While knowledge was generally high at baseline, nearly all showed improvement over time as well as by campaign exposure.

- Identification of critical time points for handwashing: By endline, nearly all female participants were able to name at least two critical timepoints for handwashing (94%; primary outcome), up 10% from baseline (84%). Female carers' ability to identify two critical timepoints was also associated with campaign exposure (96% vs 91%, aOR=1.86, CI=11.38-2.51, p<0.001). There was a small decrease between midline and endline in the proportion of women who agreed that a mother should wash her hands after cleaning a baby's bottom (95% down to 92%). However, levels of agreement that mothers should wash their hands after cleaning a baby's bottom were generally very high, and at endline the proportion was higher among those exposed to the campaign (94% vs 87%, aOR 1.84, CI=1.42-2.39, p<0.001). In contrast, few female carers believed that most of their female friends washed their hands with soap after cleaning a baby's bottom (17% at endline), although the proportion was higher at endline amongst those exposed to the campaign (19% vs 15%, aOR 1.37, CI=1.14-1.64, p=0.001)

- Washing with Soap: The majority of participants correctly disagreed with the statement that washing with water alone makes your hands clean (89% at endline). Despite high baseline knowledge, there was some evidence for an increase over time. There was also a small, non-significant, difference between those exposed versus unexposed to the campaign, with those exposed more likely to disagree that water alone is sufficient (90% vs 87%).

Diarrhoea management

Errors in the skip patterns in the survey programming limit the comparability of results between survey rounds. At midline, only participants who reported seeking advice about their child's diarrhoea were asked follow-up questions. Both indicators are therefore restricted to participants who reported that their child had diarrhoea in the past two weeks, reducing the sample size as compared to other outcomes. However, there remains some evidence for improvements in diarrhoea management.

- Given more to drink than usual: Only about 6% of children who had diarrhoea in the past two weeks were given more than usual to drink (primary outcome). In this small, restricted sample there was no evidence that those who reported exposure to the campaign were more likely to give their child more to drink.

- Given Zinc or ORS treatment: There was an improvement in ORS or Zinc treatment for diarrhoea, both over time and by campaign exposure. Treatment rose from 47% at baseline to 61% at endline and participants who were exposed to the campaign were more likely to report giving their child this treatment for diarrhoea (63%) than those unexposed (56%) (aOR=1.42, CI=1.04-1.97, p=0.03).

4.4 Sensitivity analysis - Impact of male vs female exposure to the campaign on male knowledge behaviours

The sensitivity analysis explored whether the interpretation of findings relating to male knowledge and behaviour outcomes was affected by using male campaign exposure for the analysis rather than female exposure. Across all indicators considered, the associations observed were broadly similar irrespective of the measure of exposure used (Table 23). For example, the proportion of husbands reported to help with chores frequently during the last pregnancy was 60% vs 52% for the exposed vs not exposed when analysed by male exposure and 61% vs 53% when analysed by female exposure.

5. Conclusions

These results demonstrate largely consistent associations between exposure to DMI's media campaign and improvements in behaviours that the ASTUTE program promoted (and their social determinants). Significant improvements were observed over time for all of the primary outcomes, and also for most of the primary outcomes amongst those exposed to DMI's mass media campaign versus those not exposed at endline. These quantitative results are also consistent with testimonies provided through qualitative focus groups with parents and caregivers.

It is often challenging to evaluate the impact of mass media campaigns because of their wide reach and the impossibility of randomising individual-level exposure. However, in this report we were able to combine two different observational study designs to 'triangulate' evidence and build a case for the impact of the campaign. It is reassuring

to observe that not only did most indicators improve over time, this improvement was also associated with exposure to one or more channels of the media campaign even after adjustment for differences in the characteristics of those exposed and unexposed to the campaign. Our large sample sizes further allowed us to estimate the indicators and impact with considerable precision. However, as noted previously, there were a number of social and behaviour change (SBC) interventions that were a part of ASTUTE programming over and above the media campaigns. It is possible that at least some of the improvements we describe, related to behaviours and their determinants, were due in part to home visits, support groups, positive deviance/hearth, community mobilization or other SBC activities. IMA plans to conduct additional analyses to explore associations between ASTUTE's other SBC efforts and the indicators described in this report.

Exposure to the campaign was high at both midline and endline, reinforcing the importance of mass media campaigns as effective tools for reaching large proportions of populations. While the addition of TV spots at endline did not appear to dramatically increase the overall reach of the campaign, it meant that twenty percent of participants heard messages through more than one channel – a known strategy for reinforcing messages and improving retainment of information. Additional work will be carried out to estimate this dose-response relationship in the case of ASTUTE.

Also notable is the high proportion of exposure even among participants who did not own a radio or TV (46% and 54% for women, respectively) as well as among participants who were not regular radio/TV listeners (42% and 52% for women, respectively). It is likely these individuals were exposed more passively, for example through open air TV halls or radios in shops and public transportation. Our qualitative research also suggests that some of the men who heard the campaign spots on the radio or TV shared the information with their wives and other family members, leading to additional indirect exposure to the campaign messages. These findings further underscore the power of media campaigns to truly reach masses, even in the absence of deliberate media consumption.

Though the vast majority of indicators demonstrated the effectiveness of the campaign, the strongest, most consistent evidence for impact was observed for engagement in ECD-related activities (for both men and women), for outcomes relating to maternal health and nutrition (such as dietary diversity during pregnancy and antenatal care attendance) and for WASH indicators, (such as critical timepoints for handwashing). For example, in the case of ECD-related activities, men and women surveyed at endline were far more likely to report engaging with their young children through multiple activities. For women, this represented a 17 percentage point increase from baseline to endline. Looking at the strong association between exposure and child engagement, it is possible that the radio and TV campaign played a part in driving this increase over time.

Although there was an increase over the course of the campaign in the proportion of children receiving the minimum meal frequency, the findings suggest that the campaign may have had a limited impact on the proportion of children receiving the minimum meal frequency. The related exclusive breastfeeding outcomes were limited by the difficulty of administering dietary recall questions, especially relating to liquids and 'drinks'. Men's knowledge of a woman's need to breastfeed more often was associated with campaign exposure. This question was added at endline to reflect the fact that many of the spots related to exclusive breastfeeding were targeted at men. Their influence over women's workload was found to be a key barrier to women adopting this behaviour through qualitative research, and it is notable that the campaign was able to improve their understanding of multiple maternal and child health topics.

A key focus of the campaign was on reducing stunting, but the cost of conducting large scale anthropometric measurement meant that it was not feasible to evaluate the impact on stunting directly. Instead, as described above, we evaluated outcomes across a range of indicators measuring behaviours known to have an impact (direct or indirect) on stunting. Nevertheless, recent time trends in the prevalence of child stunting available based on data from the two most recent Tanzania National Nutrition Surveys (NNS) are consistent with an impact on stunting in the campaign regions. These show that in the period 2014 to 2018, the prevalence of stunting in children aged 0-59 months in Tanzania declined from 34.7% to 31.8% nationally (a 2.9 percentage point reduction) compared with a more substantial decline from 42.7% to 35.9% (a 6.8 percentage point reduction) in the five regions targeted in the ASTUTE mass media campaign. Further data covering the latter period of the campaign will be available from the 2022 survey in due course.

This evaluation is of course limited by the potential for confounding, as individuals with higher socioeconomic position may be more likely to be exposed to the campaign. We addressed this by adjusting for a number of potential confounders but there may still be unmeasured differences between the groups. Additionally, although the response rate for female carers was extremely high, the relatively low response rate for male heads of household increases the risk of selection bias in the male sample. Our main analyses were all conducted in the sample of female

respondents to minimise the risk of selection bias, It is also possible that many of these indicators, especially those related to health seeking behaviours such as diarrhoea management and antenatal care attendance, improved over time due to efforts external to the ASTUTE programme. However, the fact that we can demonstrate *both* an increase over time and an association with campaign exposure allows us to be more confident in attributing at least a portion of this effect to the influence of the campaign. Ongoing analysis of over 50 qualitative focus group discussions, conducted in all regions throughout the campaign period, also support these findings, particularly with regard to messages targeted at men.

Overall, this report describes important shifts in both knowledge and behaviour outcomes that will likely improve the health and wellbeing of young children, their caregivers, and their communities.

Tables

SAMPLE DEMOGRAPHICS

Table 6. Women's characteristics by survey round and exposure status

		Baseline		Midline				Endline			
		All		All		Exposed		All		Exposed	
		n	col%	n	col%	n	row%	n	col%	n	row%
Women's characteristics											
Age (years)	14-17	22	(0.5)	92	(1.8)	51	(55.4)	93	(1.9)	48	(51.6)
	18-19	449	(10.3)	477	(9.6)	291	(61.0)	405	(8.1)	233	(57.5)
	20-29	2409	(55.3)	2697	(54.0)	1681	(62.3)	2865	(57.4)	1789	(62.4)
	30-39	1183	(27.2)	1357	(27.2)	807	(59.5)	1352	(27.1)	791	(58.5)
	40+	290	(6.7)	305	(6.1)	170	(55.7)	273	(5.5)	147	(53.9)
	Missing	647	(12.9)	64	(1.3)	30	(46.9)	5	(0.1)	0	(0.0)
Primary language	Swahili	1848	(37.0)	2005	(40.2)	1283	(64.0)	1672	(33.5)	1615	(69.7)
	Sukuma	1357	(27.1)	1481	(29.7)	860	(58.1)	1652	(33.1)	923	(55.9)
	Other	1795	(35.9)	1506	(30.2)	887	(58.9)	1669	(33.4)	920	(55.1)
Able to read[1]	No	1316	(26.3)	1208	(24.2)	621	(51.4)	1092	(21.9)	473	(43.4)
	Yes	3684	(73.7)	3784	(75.8)	2409	(63.7)	3901	(78.1)	2535	(65.0)
Occupation	Crop farmer	3576	(71.5)	3429	(68.7)	1977	(57.7)	3495	(70.0)	1913	(54.7)
	Other	1424	(28.5)	1563	(31.3)	1053	(67.4)	1498	(30.0)	1095	(73.1)
Completed primary school	No	1546	(30.9)	1489	(29.8)	757	(50.8)	1480	(29.6)	689	(46.6)
	Yes	3454	(69.1)	3503	(70.2)	2273	(64.9)	3513	(70.4)	2319	(66.0)
Marital Status[2]	Single	293	(5.9)	273	(5.5)	160	(58.6)	211	(4.2)	127	(60.2)
	Monogamous	3549	(71.0)	3474	(69.6)	2131	(61.3)	3848	(77.1)	2366	(61.5)
	Polygamous	291	(5.8)	506	(10.1)	305	(60.3)	490	(9.8)	284	(58.0)
	Other	867	(17.3)	739	(14.8)	434	(58.7)	444	(8.9)	231	(52.0)
Parity	0	0	(0.0)	5	(0.1)	5	(100)	2	(0.0)	2	(100.0)
	1	1177	(23.5)	1110	(22.2)	729	(65.7)	1130	(22.6)	714	(63.2)
	2	969	(19.4)	1001	(20.1)	656	(65.5)	1058	(21.2)	678	(64.1)
	3 to 5	1918	(38.4)	1879	(37.6)	1092	(58.1)	1944	(38.9)	1185	(61.0)
	6 to 8	771	(15.4)	785	(15.7)	435	(55.4)	705	(14.1)	358	(50.8)
	9+	165	(3.3)	212	(4.3)	113	(53.3)	154	(3.1)	71	(46.1)
Currently Pregnant	No	4815	(96.3)	4796	(96.1)	2892	(60.3)	4814	(96.4)	2899	(60.2)
	Yes	185	(3.7)	196	(3.9)	138	(70.4)	179	(3.6)	109	(60.9)
Total		5000	(100)	4992	(100)	3030	(60.7)	4993	(100)	3008	(60.2)

[1] Defined as being able to read aloud some or all of the sentence, "Unaweza kusoma na kuandika"
[2] Other includes informal union, widowed, divorced, or separated.

Table 7. Household characteristics by survey round and woman's exposure status (n=14,985)

		Baseline		Midline				Endline			
		All		All		Exposed		All		Exposed	
		n	col%	n	col%	n	row%	n	col%	n	row%
Household characteristics											
Own working radio	No	3087	(61.7)	2944	(59.0)	1401	(47.6)	2874	(57.6)	1325	(46.1)
	Yes	1913	(38.3)	2048	(41.0)	1629	(79.5)	2119	(42.4)	1683	(79.4)
Own working TV	No	4415	(88.3)	-	-	-	-	4270	(85.5)	2276	(54.8)
	Yes	585	(11.7)	-	-	-	-	723	(14.5)	638	(88.2)
Children aged under 5 in household	1	2362	(47.2)	2124	(42.6)	1354	(63.8)	2362	(47.3)	1483	(83.3)
	2	2205	(44.1)	2229	(44.7)	1308	(58.7)	2132	(42.7)	1267	(62.8)
	3+	433	(8.7)	639	(12.8)	368	(57.6)	493	(9.9)	253	(59.4)
Number of household assets[1]	0	728	(14.6)	534	(10.7)	256	(47.9)	442	(8.9)	190	(43.0)
	1	2306	(46.1)	2160	(43.3)	1295	(60.0)	2257	(45.2)	1330	(58.9)
	2+	1966	(39.3)	2298	(46.0)	1479	(64.4)	2294	(45.9)	1488	(64.9)
Total		5000	(100)	4992	(100)	3030	(60.7)	4993	(100)	3008	(60.2)

[1] Assets include mobile phone, bicycle, motorcycle, cart, car or truck, boat with motor

Table 8. Child characteristics by survey round and woman's exposure status (n=14,985)

		Baseline		Midline				Endline			
		All		All		Exposed		All		Exposed	
		n	col%	n	col%	n	row%	n	col%	N	row%
Child characteristics											
Age (months)	0-3m	904	(18.1)	844	(16.9)	484	(57.4)	911	(18.3)	533	(58.5)
	3-5m	777	(15.5)	812	(16.3)	492	(60.6)	801	(16.0)	483	(60.3)
	6-8m	688	(13.8)	768	(15.4)	482	(62.8)	661	(13.2)	408	(61.7)
	9-11m	635	(12.7)	633	(12.7)	380	(60.0)	632	(12.7)	361	(57.1)
	12-14m	652	(13.0)	626	(12.5)	369	(59.0)	610	(12.2)	386	(63.3)
	15-17m	541	(10.8)	506	(10.1)	318	(62.9)	564	(11.3)	353	(62.6)
	18-20m	435	(8.7)	482	(9.7)	298	(61.8)	449	(9.0)	272	(60.6)
	21-23m	344	(6.9)	321	(6.4)	207	(64.5)	365	(7.3)	212	(58.1)
Sex	Male	2476	(49.5)	2511	(50.3)	1518	(60.5)	2494	(50.0)	1497	(60.0)
	Female	2524	(50.5)	2481	(49.7)	1512	(60.9)	2499	(50.1)	1511	(60.5)
Total		5000	(100)	4992	(100)	3030	(60.7)	4993	(100)	3008	(60.2)

Table 9. Male characteristics by survey round and man's exposure status (n=6722)

		Baseline		Midline				Endline			
		All		All		Exposed (M)[1]		All		Exposed (M)[1]	
		n	col%	n	col%	n	row%	n	col%	n	row%
Men characteristics											
Age (years)	17-29	365	(31.9)	805	(32.2)	560	(69.6)	1151	(37.4)	801	(69.6)
	30-39	452	(39.5)	966	(38.7)	698	(72.3)	1245	(40.4)	881	(70.8)
	40+	319	(27.9)	701	(28.1)	244	(65.2)	682	(22.1)	479	(70.2)
	Missing	8	(0.7)	26	(1.0)	16	(61.5)	2	(0.1)	2	
Completed primary school	No	215	(18.8)	549	(22.0)	330	(60.1)	529	(17.2)	315	(59.6)
	Yes	929	(81.2)	1949	(78.0)	1401	(71.9)	2551	(82.8)	1848	(72.4)
Total		1144	(100.0)	2498	(100.0)	1731	(69.3)	3080	(100.0)	2163	(70.2)

[1] Exposed (M)= man exposed to campaign;

CAMPAIGN EXPOSURE

Table 10. Media consumption habits and exposure to the campaign at midline and endline for women and men

		Midline				Endline								
		All		Exposed Radio[1]		All		Exposed Radio[2]		Exposed TV[3]		Exposed Either	
		n	col%	n	row%	n	col%	n	row%	n	row%	n	row%
Media Consumption - Women													
Regular Radio	No	2607	(52.2)	1172	(45.0)	2361	(47.3)	889	(37.7)	338	(14.3)	989	(41.9)
Listener[4]	Yes	2385	(47.8)	1858	(77.9)	2632	(52.7)	1933	(73.4)	837	(31.8)	2019	(76.7)
Regular TV	No	3532	(70.8)	1970	(55.8)	3330	(66.7)	1666	(50.0)	385	(11.6)	1739	(52.2)
Viewer[5]	Yes	1460	(29.3)	1060	(72.6)	1663	(33.3)	1156	(69.5)	790	(47.5)	1269	(76.3)
Both regular	No	3958	(79.3)	2234	(56.4)	3723	(74.6)	1861	(50.0)	550	(14.8)	1984	(53.3)
TV and Radio	Yes	1034	(20.7)	796	(77.0)	1270	(25.4)	961	(75.7)	625	(49.2)	1024	(80.6)
Total		4992	(100.0)	3030	(60.7)	4993	(100.0)	2822	(56.5)	1175	(23.5)	3008	(60.2)
Media Consumption – Men[9]													
Regular Radio	No	826	(33.1)	387	(46.9)	832	(27.0)	312	(37.5)	188	(22.6)	388	(46.6)
Listener	Yes	1672	(66.9)	1344	(80.4)	2248	(73.0)	1701	(75.7)	966	(43.0)	1775	(79.0)
Regular TV	No	3622	(75.6)	712	(63.1)	1341	(43.5)	738	(55.0)	243	(18.1)	771	(57.5)
Viewer	Yes	1370	(27.4)	74.3	(58.9)	1739	(56.5)	1275	(73.3)	911	(52.4)	1392	(80.1)
Both regular	No	1429	(57.2)	872	(61.0)	1617	(52.5)	869	(53.7)	363	(22.5)	957	(59.2)
TV and Radio	Yes	1069	(42.8)	859	(80.4)	1463	(47.5)	1144	(78.2)	791	(54.1)	1206	(82.4)
Total		2498	(100.0)	1731	(69.3)	3080	(100.0)	2013	(65.4)	1154	(37.5)	2163	(70.2)

[1]*Radio exposure defined as reported hearing example spot or spot with advice on one of the campaign themes*
[2]*Radio exposure at endline inclusive of those exposed to both radio and TV*
[3]*TV exposure inclusive of those exposed to both TV and radio*
[4]*Regular listenership defined as having last listened to the radio in the past 7 days*
[5]*Regular TV viewership defined as having last watched TV in the past 7 days*
[9]*Exposure date for men relates to male exposure to radio and TV*

MATERNAL HEALTH AND NUTRITION DURING PREGNANCY INDICATORS

Table 11. Maternal nutrition indicators and association with survey round

Message Theme (denominator)	Outcome	Round	Total	N	%	Crude OR	95% CI	P value (LRT)
Maternal Nutrition (biological mothers)	**Mother ate more types of food during last pregnancy**	Baseline	4645	328	7.1	1		p<0.001
		Midline	4927	1200	24.4	4.42	(3.88-5.05)	
		Endline	4954	978	19.7	3.34	(2.91-3.82)	
	Attended antenatal care during last pregnancy	Baseline	4655	1584	34.0	1		p<0.001
		Midline	4927	3903	79.2	8.5	(7.71-9.36)	
		Endline	4954	4085	82.5	10.6	(9.59-11.72)	
	Attended antenatal care 4+ times during last pregnancy[1]	Baseline	1584	836	52.8	1		p<0.001
		Midline	3903	2441	62.5	1.59	(1.40-1.80)	
		Endline	4085	2989	73.2	2.63	(2.31-2.99)	
	Worked less during last pregnancy	Baseline	4655	2776	59.6	1		p<0.001
		Midline	4927	3434	69.7	1.58	(1.45-1.72)	
		Endline	4954	3351	67.6	1.43	(1.32-1.56)	
	Partner helped with chores frequently during last pregnancy[2]	Baseline	4655	1897	40.8	1		p<0.001
		Midline	4927	2468	50.1	1.47	(1.36-1.60)	
		Endline	4954	2485	50.2	1.48	(1.36-1.60)	

[1]Among those who attended any antenatal care
[2]Chores including fetching water, farming, or 'something else so that you could rest'

Table 12. Maternal nutrition indicators at endline and association with exposure status

Message Theme (denominator)	Outcome	Exposure status	Total	n	%	Crude OR	95% CI	P value (LRT)	Adjusted OR[1]	95% CI	P value (LRT)
Maternal Nutrition (biological mothers)	**Mother ate more types of food during last pregnancy**	Unexposed	1966	307	15.6	1	(1.17-1.64)	p<0.001	1		0.002
		Exposed	2988	671	22.5	1.38				1.33	(1.11-1.59)
	Attended antenatal care during last pregnancy	Unexposed	1966	1499	76.25	1	(1.48-2.11)	p<0.001	1		p<0.001
		Exposed	2988	2586	86.55	1.77				1.52	(1.25-1.84)
	Attended antenatal care 4+ times during last pregnancy[2]	Unexposed	1966	1046	69.8	1	(1.06-1.46)	0.01	1		0.15
		Exposed	2988	1943	75.1	1.25				1.13	(0.96-1.34)
	Worked less during last pregnancy	Unexposed	1966	1258	64.0	1	(1.11-1.46)	0.001	1		0.03
		Exposed	2988	2093	70.1	1.27				1.18	(1.02-1.37)
	Partner helped with chores frequently during last pregnancy[2]	Unexposed	1966	892	45.4	1	(1.24-1.60)	p<0.001	1		p<0.001
		Exposed	2988	1593	53.3	1.41				1.34	(1.15-1.54)

[1]Adjusted for: woman's age group, SEP tertile measured by PCA of asset index, urban vs rural setting, occupation (farmer or not), primary language, parity, marital status, woman's household decision-making involvement, woman's education level, literacy (can read), and child's age group

[2]Among those who attended any antenatal care

[3]Chores including fetching water, farming, or 'something else so that you could rest'

EXCLUSIVE BREASTFEEDING INDICATORS

Table 13. Exclusive breastfeeding indicators and association with survey round

Message Theme (denominator)	Outcome	Round	Total	N	%	Crude OR	95% CI	P value (LRT)
Exclusive Breastfeeding (Biological mothers or all female carers)	**Child exclusively breastfed** (children 0-5 months; biological mothers)[1]	Baseline	1552	1220	78.6	1		
		Midline	1617	1394	86.2	1.75	(1.44-2.11)	p<0.001
		Endline	1651	1524	92.3	3.41	(2.73-4.26)	
	Agree child should only be given breastmilk for first 6 months	Baseline	--	--	--			
		Midline	4992	4584	91.83	1		0.23
		Endline	4993	4617	92.47	1.1	(0.94-1.27)	
	Report 6+ months when asked when child should be given other foods/liquids	Baseline	5000	4234	84.68	1		
		Midline	4992	4771	95.57	4.02	(3.43-4.70)	p<0.001
		Endline	4993	4825	96.64	5.36	(4.50-6.37)	
	Usually empty both breasts when breastfeeding (if currently breastfeeding)	Baseline	4015	3597	89.6	1		
		Midline	4332	3915	90.4	1.1	(0.95-1.27)	p<0.001
		Endline	4390	4316	94.2	1.92	(1.63-2.26)	
	Report a woman should breastfeed more often if she thinks she doesn't have enough milk	Baseline	5000	557	11.1	1		
		Midline	4992	667	13.4	1.24	(1.10-1.40)	p<0.001
		Endline	4993	1571	31.5	3.98	(3.56-4.44)	

[1]*Defined as the biological mother reporting she is both currently breastfeeding and has not introduced any other foods or liquids yet; dietary recall questions not used in definition due to lack of comparability*

Table 14. Exclusive breastfeeding indicators at endline and association with exposure status

Message Theme (denominator)	Outcome	Exposure Status	Total	n	%	Crude OR	95% CI	P value (LRT)	Adjusted OR[1]	95% CI	P value (LRT)
Exclusive Breastfeeding (Biological mothers or all female carers)	**Child exclusively breastfed** (children 0-5m; biological mothers)[2]	Unexposed	663	618	93.2	1		0.16	1		0.05
		Exposed	988	906	91.7	0.75	(0.49-1.13)		0.64	(0.41-1.01)	
	Agree child should only be given breastmilk for first 6 months	Unexposed	1985	1813	91.34	1		0.22	1		0.70
		Exposed	3008	2804	93.22	1.16	(0.91-1.48)		1.05	(0.81-136)	
	Report 6+ months when asked when child should be given other foods	Unexposed	1985	1904	95.92	1		0.09	1		0.71
		Exposed	3008	2921	97.11	1.33	(0.96-1.85)		1.07	(0.75-1.53)	
	Usually empty both breasts when breastfeeding (if currently breastfeeding)	Unexposed	1985	1625	93.5	1		0.29	1		0.25
		Exposed	3008	2511	94.7	1.16	(0.89-1.51)		1.18	(0.89-1.57)	
	Report a woman should breastfeed more often if she thinks she doesn't have enough milk	Unexposed	1985	610	30.7	1		0.72	1		0.09
		Exposed	3008	961	32.0	0.97	(0.84-1.13)		0.87	(0.75-1.02)	
	Male partner reports a woman should breastfeed more often to produce more breastmilk if she thinks she doesn't have enough milk[3]	Unexposed	1222	708	57.9	1		0.001	1		0.01
		Exposed	1858	1193	64.2	1.35	(1.13-1.60)		1.30	(1.08-1.57)	

[1]Adjusted for: woman's age group, SEP tertile measured by PCA of asset index, urban vs rural setting, occupation (farmer or not), primary language, parity, marital status, woman's household decision-making involvement, woman's education level, literacy (can read), and child's age group

[2]Defined as the biological mother reporting she is both currently breastfeeding and has not introduced any other foods or liquids yet; dietary recall questions not used in definition due to lack of comparability

[3]Question 'What should a woman do to produce more breastmilk if she thinks she does not have enough?' added to endline survey to measure knowledge among men since many spots on this message were targeted towards men

COMPLEMENTARY FEEDING INDICATORS

Table 15. Complementary feeding indicators and association with survey round

Message Theme (denominator)	Outcome	Round	Total	n	%	Crude OR	95% CI	P value (LRT)
	Child received minimum meal frequency yesterday[1]	Baseline			--	--		
		Midline	3336	758	22.7	1		p<0.001
		Endline	3281	898	27.4	1.28	(1.14-1.44)	
Complementary Feeding (Children 6-23 months)	Child received minimum acceptable diet yesterday[2]	Baseline						
		Midline	3336	453	13.6	1		0.07
		Endline	3281	501	15.3	1.14	(0.99-1.31)	
	Man purchased food for child in past month	Baseline	753	519	68.9	1		
		Midline	1680	111	66.6	0.91	(0.75-1.10)	0.001
		Endline	2007	1455	72.5	1.20	(0.99-1.44)	
	Man helped feed child frequently in past three months	Baseline	753	253	33.6	1		
		Midline	1680	724	43.1	1.54	(1.28-1.86)	p<0.001
		Endline	2007	942	46.9	1.81	(1.51-2.17)	

[1]For children not breastfed = 4+ meals; for children aged 6-8m and breastfed = 2+ meals; for children aged 9-23m and breastfed = 3+ meals. Note dietary recall questions not comparable to baseline.

[2]Defined as minimum meal frequency and 4+ food groups yesterday. Food groups included breastmilk, dairy, grains and roots, legumes and nuts, meats and fish, eggs, vitamin A rich fruits and vegetables, and other fruits and vegetables. Note dietary recall questions not comparable to baseline.

Table 16. Complementary feeding indicators at endline and association with exposure status

Message Theme (denominator)	Outcome	Exposure status	Total	n	%	Crude OR	95% CI	P value (LRT)	Adjusted OR[1]	95% CI	P value (LRT)
Complementary Feeding (Children 6-23 months)	**Child received minimum meal frequency yesterday[2]**	Unexposed	1289	329	25.2	1		0.12	1		
		Exposed	1992	569	28.6	1.16	(0.96-1.39)		1.07	(0.88-1.29)	0.5
	Child received minimum acceptable diet yesterday[3]	Unexposed	1289	159	12.3	1		0.001	1		
		Exposed	1992	342	17.2	1.45	(1.16-1.82)		1.25	(0.98-1.58)	0.07
	Man purchased food for child in past month	Unexposed	779	516	66.2	1		<0.001	1		
		Exposed	1228	939	76.5	1.63	(1.30-2.03)		1.42	(1.12-1.81)	0.004
	Man helped feed child frequently in past three months	Unexposed	779	334	42.9	1		0.04	1		
		Exposed	1228	608	49.5	1.25	(1.01-1.55)		1.19	(0.95-1.49)	0.14

[1]*Adjusted for: woman's age group, SEP tertile measured by PCA of asset index, urban vs rural setting, occupation (farmer or not), primary language, parity, marital status, woman's household decision-making involvement, woman's education level, literacy (can read), and child's age group*

[2]*For children not breastfed = 4+ meals; for children aged 6-8m and breastfed = 2+ meals; for children aged 9-23m and breastfed = 3+ meals*

[3]*Defined as minimum meal frequency and 4+ food groups yesterday. Food groups included breastmilk, dairy, grains and roots, legumes and nuts, meats and fish, eggs, vitamin A rich fruits and vegetables, and other fruits and vegetables.*

EARLY CHILD DEVELOPMENT INDICATORS

Table 17. Early child development indicators and association with survey round

Message Theme (denominator)	Outcome	Round	Total	n	%	Crude OR	95% CI	P value (LRT)
	Female carer engaged with child through 4+ (of 7) activities in last week[1]	Baseline	5000	3120	62.4	1		
		Midline	4992	3509	70.3	1.45	(1.33-1.57)	p<0.001
		Endline	4993	3954	79.2	2.26	(2.16-2.58)	
Early Child Development (Male or Female Carers)	Male carer talked to the child and played with the child in the last week[2]	Baseline	1144	587	51.3	1		
		Midline	2498	1445	57.9	1.33	(1.15-1.54)	p<0.001
		Endline	3080	2110	68.5	2.09	(1.81-2.41)	
	Female carer agrees it is good to talk to a baby	Baseline						
		Midline	4992	4593	92.0	1		0.71
		Endline	4993	4604	92.2	1.02	(0.89-1.20)	

[1]Seven potential activities included: talked to child about other people in your family; talked to child while feeding; sang to child; done any drawing with child; counted things in front of child; named objects around child; played with child e.g. chasing, playing a game, playing with a toy.

[2]Defined as both spending time playing with the child and naming objects around the child while holding him/her

Table 18. Early child development indicators at endline and association with exposure status

Message Theme (denominator)	Outcome	Exposure status	Total	n	%	Crude OR	95% CI	P value (LRT)	Adjusted OR[1]	95% CI	P value (LRT)
	Female carer engaged with child through 4+ (of 7) activities in last week[2]	Unexposed	1985	1506	75.9	1		0.001	1		0.01
		Exposed	3008	2448	81.4	1.32	(1.13-1.54)		1.25	(1.05-1.50)	
Early Child Development (Male or Female Carers)	Male carer talked to the child and played with the child in the last week[3]	Unexposed	1222	759	62.1	1		<0.001	1		p<0.001
		Exposed	1858	1351	72.7	1.63	(1.37-1.94)		1.47	(1.21-1.79)	
	Female carer agrees it is good to talk to a baby	Unexposed	1985	1768	89.1	1		<0.001	1		p<0.001
		Exposed	3008	2836	94.3	1.80	(1.41-2.30)		1.72	(1.33-2.24)	

[1]Adjusted for: woman's age group, SEP tertile measured by PCA of asset index, urban vs rural setting, occupation (farmer or not), primary language, parity, marital status, woman's household decision-making involvement, woman's education level, literacy (can read), and child's age group

[2]Seven potential activities included: talked to child about other people in your family; talked to child while feeding; sang to child; done any drawing with child; counted things in front of child; named objects around child; played with child e.g. chasing, playing a game, playing with a toy.

[3]Defined as both spending time playing with the child and naming objects around the child while holding him/her

WASH INDICATORS

Table 19. WASH indicators and association with survey round

Message Theme (denominator)	Outcome	Round	Total	n	%	Crude OR	95% CI	P value (LRT)
WASH *(Female Carers)*	**Female carer identified at least two critical time points for handwashing[1]**	Baseline	5000	4215	84.3	1		
		Midline	4992	4692	94.0	3.06	(2.66-3.53)	p<0.001
		Endline	4993	4696	94.1	3.1	(2.68-3.57)	
	Answer 'no' to "Does hand washing with water alone make your hands clean?"	Baseline	5000	4346	86.9	1		
		Midline	4992	4646	93.1	2.05	(1.79-2.35)	p<0.001
		Endline	4993	4448	89.1	1.23	(1.09-1.40)	
	Agree that a mother should wash her hands after cleaning a baby's bottom[2]	Baseline	--	--	--			
		Midline	4992	4754	95.2	1		p<0.001
		Endline	4993	4570	91.5	0.51	(0.43-0.60)	
	Thinks most/all of her female friends wash hands w/ soap after cleaning a baby's bottom	Baseline	5000	726	14.5	1		
		Midline	4992	904	18.1	1.32	(1.18-1.47)	p<0.001
		Endline	4993	859	17.2	1.23	(1.11-1.38)	

[1]Critical time points included: After latrine use; after assisting a child who has defecated; before preparing food; before feeding a child; after cleaning the compound; after contact with animal faeces.

[2]Question not asked in comparable way at baseline.

Table 20. WASH indicators at endline and association with exposure status

Message Theme (denominator)	Outcome	Exposure status	Total	n	%	Crude OR	95% CI	P value (LRT)	Adjusted OR[1]	95% CI	P value (LRT)
WASH (Female Carers)	**Female carer identified at least two critical time points for handwashing[2]**	Unexposed	1985	1803	90.8	1		p<0.001	1		p<0.001
		Exposed	3008	2893	96.2	2.12	(1.60-2.81)		1.86	(1.38-2.51)	
	Answer 'no' to "Does hand washing with water alone make your hands clean?"	Unexposed	1985	1726	87.0	1		0.002	1		0.08
		Exposed	3008	2722	90.5	1.36	(1.12-1.66)		1.2	(0.98-1.48)	
	Agree that a mother should wash her hands after cleaning a baby's bottom	Unexposed	1985	1734	87.4	1		p<0.001	1		p<0.001
		Exposed	3008	2836	94.3	2.23	(1.74-2.85)		1.84	(1.42-2.39)	
	Thinks most/all of her female friends wash hands w/ soap after cleaning a baby's bottom	Unexposed	1985	296	14.9	1		0.003	1		0.001
		Exposed	3008	563	18.7	1.3	(1.09-1.54)		1.37	(1.14-1.64)	

[1]Adjusted for: woman's age group, SEP tertile measured by PCA of asset index, urban vs rural setting, occupation (farmer or not), primary language, parity, marital status, woman's household decision-making involvement, woman's education level, literacy (can read), and child's age group

[1]Critical time points included: After latrine use; after assisting a child who has defecated; before preparing food; before feeding a child; after cleaning the compound; after contact with animal faeces.

DIARRHOEA TREATMENT INDICATORS

Table 21. Diarrhoea treatment indicators and association with survey round

Message Theme (denominator)	Outcome	Round	Total	N	%	Crude OR	95% CI	P value (LRT)
Diarrhoea (Children with diarrhoea in past 2 weeks)	**Child with diarrhoea given more than usual to drink[1]**	Baseline			--			
		Midline	845	38	4.5	1		0.23
		Endline	1026	58	5.7	1.29	(0.85-1.98)	
	Child with diarrhoea given ORS or Zinc	Baseline	1295	614	47.4	1		
		Midline	850	619	72.8	3.45	(2.81-4.22)	p<0.001
		Endline	1026	623	60.7	1.97	(1.64-2.37)	

[1]Question not asked at baseline; at midline, only carers who reported seeking advice for their child's diarrhoea were asked follow up questions, introducing potential selection bias

Table 22. Diarrhoea treatment indicators and association with survey round

Message Theme (denominator)	Outcome	Exposure status	Total	n	%	Crude OR	95% CI	P value (LRT)	Adjusted OR[1]	95% CI	P value (LRT)
Diarrhoea (Children with diarrhoea in past 2 weeks)	**Child with diarrhoea given more than usual to drink**	Unexposed	355	23	6.5	1		0.3	1		0.68
		Exposed	671	35	5.2	0.73	(0.40-1.32)		0.87	(0.45-1.69)	
	Child with diarrhoea given ORS or Zinc	Unexposed	355	198	55.8	1		0.01	1		0.03
		Exposed	671	425	63.3	1.46	(1.09-1.97)		1.42	(1.04-1.97)	

[1]Adjusted for: woman's age group, SEP tertile measured by PCA of asset index, urban vs rural setting, occupation (farmer or not), primary language, parity, marital status, woman's household decision-making involvement, woman's education level, literacy (can read), and child's age group

Table 23: Impact on male knowledge and behaviours by men's exposure status

Analyses restricted to households with data for male respondent.

Theme	Outcome	Exposure status	By male exposure status						By female exposure status					
			Total	n	%	Crude OR	95% CI	P value (LRT)	Total	n	%	Crude OR	95% CI	P value (LRT)
Maternal nutrition	Husband/partner helped with chores frequently during last pregnancy (F)	Unexposed	909	474	52.2	1			1216	640	52.6	1		
		Exposed	2160	1302	60.3	1.40	(1.18-1.66)	p<0.001	1853	1136	61.3	1.42	(1.21-1.67)	p<0.001
Exclusive breastfeeding	Man reports a woman should breastfeed more often if she thinks doesn't have enough milk (M)	Unexposed	917	536	58.5	1			1222	708	57.9	1		
		Exposed	2163	1365	63.1	1.25	(1.04-1.49)	0.02	1858	1193	64.2	1.34	(1.29-1.60)	p<0.001
Complementary feeding (children 6-23 months)	Man purchased food for child in past month (M)	Unexposed	584	385	65.9	1			779	616	66.2	1		
		Exposed	1423	1070	75.2	1.63	(1.29-2.05)	p<0.001	1228	939	76.5	1.63	(1.29-2.03)	p<0.001
	Man helped feed child frequently in past three months (M)	Unexposed	584	265	45.4	1			779	334	42.9	1		
		Exposed	1423	677	47.6	1.09	(0.87-1.36)	0.46	1228	608	49.5	1.25	(1.01-1.54)	0.04
Early Child Development	Male carer talked to the child and played with the child in the last week (M)	Unexposed	917	573	62.5	1			1222	759	61.1	1		
		Exposed	2163	1537	71.1	1.54	(1.29-1.85)	-	1858	1351	72.7	1.63	(1.37-1.93)	<0.001

(F)= Reported by female respondent ; (M)= reported by male respondent