



**IMPLEMENTING A BABYWASH
APPROACH: LESSONS LEARNED FROM
CONFLICT-AFFECTED PREGNANT AND
LACTATING WOMEN IN YOBE, NIGERIA**

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TABLE OF CONTENTS

List of Figures.....	iv
List of Tables.....	v
Abbreviations.....	vi
1. Executive Summary.....	1
2. Introduction.....	3
3. Objectives.....	4
4. Methodology.....	6
4.1 Ethical Considerations.....	6
4.2 Key Informant Interviews.....	6
4.3 Household Knowledge, Attitudes, and Practices Survey.....	6
4.4 Community Focus Group Discussions.....	10
4.5 Secondary Data Analysis.....	11
5. Results and Discussion.....	13
5.1 Key Informant Interviews.....	13
5.2 Household Knowledge, Attitudes, and Practices Survey.....	26
5.3 Community Focus Group Discussions.....	43
5.4 Secondary Data Analysis.....	51
6. Conclusions.....	55
6.1 Limitations.....	55
6.2 Identifying the approach.....	56
6.3 Relevance.....	56
6.4 Effectiveness.....	58
6.5 Sustainability.....	59
6.6 Areas for Further Research.....	60
6.7 Significance.....	60
7. Lessons Learned and Recommendations.....	61
7.1 Good practices to continue in future BabyWASH approaches.....	61
7.2 Challenges to address in future BabyWASH approaches.....	61

8. References.....	64
9. Appendices.....	65
Appendix A: Consent forms.....	65
Appendix B: Key informant interview guide.....	67
Appendix C: Knowledge, attitudes, and practices survey questions.....	71
Appendix D: Focus group discussion guide.....	87
Appendix E: Example item distribution records.....	91
Appendix F: Example BabyWASH hygiene message.....	93
Appendix G: Additional KAP household survey results.....	95
Appendix H: WASH'Em Diarrhea Risk Perception Matrix.....	99

LIST OF FIGURES

- Figure 1: Open Data Kit survey on mobile device
- Figure 2: BabyWASH enumerator training
- Figure 3: Focus Group Discussion of Tarmua pregnant and lactating women
- Figure 4: INP+ cash distribution
- Figure 5: Beneficiary card
- Figure 6: BabyWASH program activities for pregnant and lactating women in Nangere
- Figure 7: Schedule of BabyWASH program activities for pregnant and lactating women in Nangere
- Figures 8-9: Tippy tap jerry can and soap
- Figures 10-13: BabyWASH IECs
- Figures 14-18: Complementary feeding items
- Figure 19: ACF Toll free number on beneficiary card
- Figure 20: Hygiene messages in a Nangere primary school
- Figure 21: Traditional kettle used for ablution
- Figure 22: Drinking water service levels according to JMP definitions
- Figure 23: Open well in Yobe
- Figure 24: Sanitation service levels according to JMP definitions
- Figure 25: Handwashing facility levels according to JMP definitions
- Figure 26: Animal feces in a Yobe yard
- Figure 27: Resources and strategies for keeping babies clean and fed
- Figure 28: Barriers to keeping babies clean and fed
- Figure 29: Perceived risk for child diarrhea in next six months in Nangere and Tarmua
- Figure 30: Perceived risk for focus group discussion participant's child to get diarrhea in comparison with their neighbor's child in Nangere and Tarmua
- Figure 31: Perceived risk for focus group discussion participant's child to get diarrhea in comparison with a child living in an urban area in Nangere and Tarmua

Figure 32: Perceived risk of death for someone with diarrhea in their household in Nangere and Tarmua

Figure 33: Moderate Acute Malnutrition Prevalence in Nangere and Tarmua July 2017, July 2018, and February 2019

Figure 34: Severe Acute Malnutrition Prevalence in Nangere and Tarmua July 2017, July 2018, and February 2019

Figure 35: Global Acute Malnutrition Prevalence in Nangere and Tarmua July 2017, July 2018, and February 2019

Figure 36: Diarrhea cases in children under five reported in Nangere and Tarmua health facilities from July 2017 to December 2018

Figure 37: Suggested WASH and nutrition practices pregnancy through 18 months

LIST OF TABLES

Table 1. UNICEF/ WHO Joint Monitoring Programme (2015) service ladders

Table 2. Variables included in exploratory analysis of WASH and nutrition indicators and child diarrhea incidence

Table 3. WHO (2010) definitions of Moderate Acute Malnutrition and Severe Acute Malnutrition

Table 4. Key Informant Interviews

Table 5. Demographic information of KAP survey respondents in Nangere and Tarmua

Table 6. Knowledge, attitudes, and practices about the BabyWASH program in Nangere and Tarmua

Table 7. Maternal and child nutrition in Nangere and Tarmua

Table 8. Knowledge, attitudes, and practices of nutrition and hygiene impact on health in Nangere and Tarmua

Table 9. Water supply in Nangere and Tarmua

Table 10. Sanitation in Nangere and Tarmua

Table 11. Handwashing in Nangere and Tarmua

Table 12. Food hygiene in Nangere and Tarmua

Table 13. Rubbish disposal in Nangere and Tarmua

Table 14. Animal stewardship in Nangere and Tarmua

Table 15. Knowledge, attitudes, and practices in Nangere baseline vs. endline

Table 16. Logistic regression model of diarrhea incidence in children under two in Nangere

Table 17. Focus Group Discussion communities

Table 18. Middle-upper arm circumference data of Nangere and Tarmua

Table 19. Synthesis of BabyWASH Evaluation

ABBREVIATIONS

ACF	Action contre la Faim (Action Against Hunger)
ANC	Antenatal Care
CLTS	Community-Led Total Sanitation
FGD	Focus Group Discussion
FSL	Food Security and Livelihoods
GAM	Global Acute Malnutrition
IEC	Information, Education, and Communication Materials
IDP	Internally displaced person
JMP	WHO/ UNICEF Joint Monitoring Programme for Water Supply, Sanitation, and Hygiene
KAP	Knowledge, Attitudes, and Practices survey
KII	Key Informant Interview
INP+	Integrated Nutrition Program +
ITPp	Intermittent preventive treatment (ITPp)
LGA	Local Government Area
L/P/D	Liters of water per person per day
MAM	Moderate Acute Malnutrition
MUAC	Middle-Upper Arm Circumference
NFI	Non-Food Item Distribution
NGN	Nigerian Naira
NGO	Non-Governmental Organization
PDM	Post Distribution Monitoring
PLW	Pregnant or Lactating Woman
NCA	Nutrition Causal Analysis
SAM	Severe Acute Malnutrition
UNICEF	The United Nations Children's Fund
WASH	Water, sanitation, and hygiene
WHO	World Health Organization

1. EXECUTIVE SUMMARY

According to the International Organization for Migration, over 136,600 persons have been displaced in Yobe, Nigeria by violence from non-state armed groups. Nine years since the conflict began, young children remain particularly vulnerable. According to the Nigerian Food Security Society, the Global Acute Malnutrition prevalence (10.9-14.1% regionally) remains above the emergency threshold.

In response, Action Against Hunger (ACF) applied the BabyWASH approach, a multi-sectorial approach for children within the first 1,000 days of life, or the window of opportunity for preventing malnutrition. ACF targeted 5,562 pregnant and lactating women (PLWs) with training and water, sanitation, and hygiene (WASH) items for 18 months. To determine whether this response was relevant, effective, and sustainable, a mixed-methods study, of 800 household surveys, 11 key informant interviews, and nine focus group discussions, was conducted.

According to the household survey, 46% and 32% of intervention households have access to at least basic drinking water and sanitation respectively as defined by the Joint Monitoring Programme. There were significant improvements in WASH conditions between baseline and endline in Nangere; the amount of time it takes households to fetch water significantly decreased, water treatment practices significantly improved, and there was a significant reduction in open defecation.

Upon observation, a significant ($p < 0.05$) percentage (90.4%) of PLWs washed their hands with soap and water when compared with PLWs from a non-intervention community (73.2%). However, there was low acceptability of the provided “tippy tap”, with 3.95% of PLWs observed using it; instead traditional kettles were used for hand washing. These results suggest that the items should be adjusted in future programming to include traditional hand washing devices.

The child utensils provided for complementary feeding, including a bowl with a lid, a cup, and a spoon, as well as a play mat, were used on a daily basis by 90.9% of PLWs. We found that PLWs in both communities had a low perceived risk of diarrhea for their children according to the WASH'Em risk perception index. The recalled prevalence (two weeks prior to the survey) of diarrhea in children under two years old was significantly ($p < 0.05$) lower in the intervention community (16.7%) than the non-intervention community (23.0%). A binary logistic model showed that children under two years old were significantly impacted by the household's overall sanitation. Children in households that practice open defecation or households that have limited/unimproved sanitation, as defined by the JMP, had 3.910 and 3.020 times the odds of diarrhea than children in households with at least basic sanitation, respectively.

When asked what causes diarrhea, PLWs from the intervention community showed significantly ($p < 0.05$) better knowledge of six transmission routes. However, less than half of PLWs from either community identified routes besides drinking dirty water and flies contaminating food. In addition, there was no significant ($p < 0.05$) difference between PLWs from the intervention community and the non-intervention community that identified child mouthing as a cause of diarrhea. In focus group discussions, diarrhea was largely identified as something that could not be prevented

easily, since PLWs believed it was a natural outcome of teething and that “God sends it”.

Since interventions targeted PLWs who attended the same antenatal care center but were dispersed throughout many communities, this approach was unlikely to neither facilitate peer-to-peer learning nor have a large impact on securing a clean environment. Therefore, BabyWASH approaches may be most effective when accompanied with community-level interventions.

Stakeholders felt that this BabyWASH approach reflected principles of relief, more than those of sustainable development. Therefore future BabyWASH approaches in protracted displacement settings should put local stakeholders at the forefront of implementation, as well as reduce beneficiary dependence on non-food item distribution. We conclude that the BabyWASH approach in Nangere was relevant to the community’s needs, and possibly effective in reducing diarrhea and GAM, however it was unlikely to be sustainable.

2. INTRODUCTION

Malnutrition during pregnancy and/ or childhood has adverse consequences for child well-being, as well as the overall economic productivity of a country (USAID 2016). Therefore, malnutrition remains a large obstacle for development in Nigeria, which has the second highest prevalence of stunting (43%) in the world of children under five years old (UNICEF Nigeria 2019). Children are particularly vulnerable in the northeast, which has been plagued by violence from non-state armed groups, impacting food security and water, sanitation, and hygiene (WASH) infrastructure (World Bank 2017). Nine years into the conflict, the Global Acute Malnutrition (GAM) prevalence remains above the emergency threshold in Yobe state (NFSS 2018).

A Link Nutrition Causal Analysis (LinkNCA) in Yobe state found that inadequate access to safe water, sanitation, and hygiene was a major risk factor for malnutrition in Nangere Local Government Area (LGA) (AAH 2017b). In response, as a part of the Integrated Nutrition Program + (INP+), Action contre la Faim (ACF) piloted a BabyWASH approach, aimed at targeting children within the first 1,000 days of life, or the window of opportunity of preventing malnutrition. Over the course of 18 months, ACF WASH provided 5,562 pregnant and lactating women (PLWs) in Nangere LGA with interventions at the INP+ cash distribution, in partnership with the local government. Interventions included the provision of handwashing resources (soap and materials for constructing a jerry can), training on child WASH and nutrition, and the provision of complementary feeding items (child cup with lid, child bowl with lid, child spoon, child fork, and child play mat).

To determine the relevance, effectiveness, and sustainability of this pilot program, a mixed-methods study was conducted, including 800 household surveys, 11 key informant interviews, and nine focus group discussions. A non-intervention community in Yobe, Tarmua, was surveyed to provide a comparison group that had not been targeted with the interventions at the same time. Finally, the achievements and operational challenges of ACF's approach in Nangere are identified in order to inform future BabyWASH programming.

3. OBJECTIVES

The objective of this study is to assess the relevance, effectiveness, and sustainability of the BabyWASH intervention in Nangere LGA, Yobe State by documenting operational challenges, barriers, achievements and good practices. It sought to address the following research questions:

Identifying the approach

- How was the BabyWASH approach planned in Nangere?
- How was the BabyWASH approach implemented in Nangere?
 - Who were the key stakeholders in the BabyWASH approach?
 - How were beneficiaries identified and targeted?
 - What was the sequencing of activities?
 - How did the ACF BabyWASH approach differ from standard hygiene promotion?
- How was the ACF BabyWASH approach monitored?

Relevance

- How did the project address the community's needs and priorities with regards to child WASH and nutrition in Yobe?
 - What are the current WASH conditions and practices in the community?
 - What are the current child and PLW nutrition practices in the community?
- How did the project address the local government's needs and priorities with regards to child WASH and nutrition in Yobe?
- How did the project address ACF's needs and priorities with regards to child WASH and nutrition in Yobe?

Effectiveness

- How can the degree of effectiveness of this (and future) BabyWASH approaches be measured?
- What were the planned objectives and outcomes of the project?
- Were the planned objectives and outcomes in the project document achieved?
 - To what extent did BabyWASH change behavior among the target group (PLWs) and other members of the household?
 - To what extent did BabyWASH reduce the risk for fecal oral contamination (mouthing)?
 - To what extent did BabyWASH address diarrhea, SAM, and stunting pathways?
- What are the results achieved beyond the logframe?

Sustainability

- To what extent are the project results likely to continue after the project?
- Is stakeholders' engagement likely to continue, be scaled up, replicated, or institutionalized after external funding ceases?
- To what extent is the BabyWASH approach environmentally sustainable?

Challenges

- What obstacles or barriers may have influenced the impact of this BabyWASH intervention?
- How can ACF's BabyWASH approach be improved in the future?

Achievements

- What were the achievements or enablers of this BabyWASH approach?
- Which good practices should be replicated in future BabyWASH programming?

4. METHODOLOGY

Data was collected from the 12-28 of March 2019. A mixed methods approach to data collection was taken, including household Knowledge, Attitudes, and Practices (KAP) surveys, community focus group discussions (FGDs), and key informant interviews (KIIs). Study materials were designed after a literature review of the BabyWASH approach with input from ACF WASH, nutrition, and monitoring and evaluation staff. ACF staff approved all study materials before data collection started.

4.1 Ethical Considerations

Before entering a community, data collectors introduced themselves and the purpose of the study to community leadership. All study participants were also informed of the purpose of the study and assured of the confidentiality of their responses. All participants gave verbal (KAP or FGD) or written (KIIs) consent before data was collected (Appendix A). No incentives were provided to participants for participating.

4.2 Key Informant Interviews

A list of key stakeholders in the BabyWASH approach was provided by ACF. Additional participants were identified through snowball sampling (Sadler et al. 2010) until saturation was achieved (Sandelowski 1995). Participants were contacted individually and asked to participate in the study.

If the key informant did not speak English fluently, a translator was used. Before the interview began, the interviewer explained the purpose of the study, asked to record the interview, and asked for written consent to participate. A semi-structured interview guide was used to organize the interview (Appendix B).

Interviews conducted fully in English were transcribed. An inductive analysis was used to code the transcriptions, as well as notes, in order to identify themes in the responses (Bernard and Ryan 2010). Recordings of the Hausa KIIs were revisited when notes were unclear or incomplete. Recordings were deleted after analysis.

4.3 Household Knowledge, Attitudes, and Practices (KAP) Survey

In order to be eligible for the BabyWASH intervention, beneficiaries had to be in the INP+ program, and therefore be a pregnant or lactating woman attending antenatal care (ANC). PLWs in the non-intervention community, Tarmua, received INP+ cash distribution but no WASH activities during the same time period. Tarmua was chosen as a comparison community since it is close to Nangere and was believed to have similar demographics. There was no risk of PLWs in the non-intervention community being exposed to the BabyWASH intervention, since it was provided only at the cash distribution point for Nangere.

Since there were 5,562 households targeted by BabyWASH, a minimum sample size of 360 households was calculated (for a 5% margin of error and a confidence level of 95%) using Raosoft (<http://www.raosoft.com/samplesize.html>). In order to account for incomplete surveys and non-response, a 25% buffer (90 households) was added to the sample. A simple random sample of 450 households was taken from the beneficiary list. An identical simple random sample of 450 households from Tarmua PLWs was used

as a comparison group. The survey instrument (Appendix C) was uploaded onto the Open Data Kit platform and subsequently onto mobile devices for data collection (Figure 1).

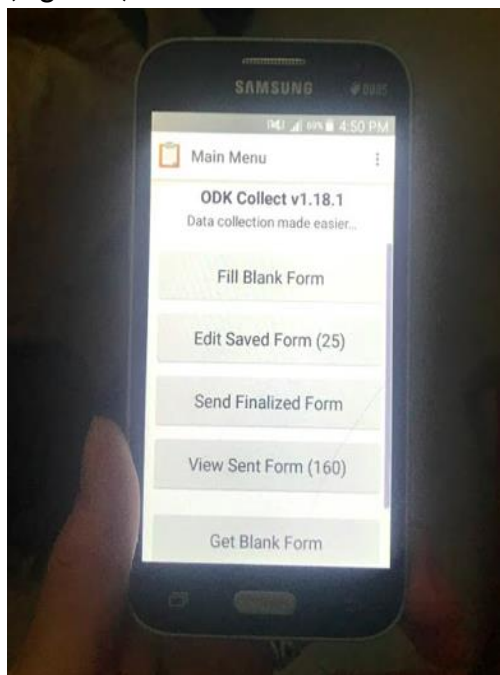


Figure 1: Open Data Kit survey on mobile device

Fifteen enumerators were selected based on their previous experience doing KAP surveys, as well as fluency in English and Hausa. Preference was given to female enumerators because of the cultural context. Enumerators underwent a two-day training. The training included information on ACF, data collection best- practices, the KAP survey instrument, WASH infrastructure, WASH technical terminology, and nutrition technical terminology (Figure 2). Enumerators practiced translating to ensure consensus about difficult-to-translate questions. A pilot survey was performed in Potiskum communities to validate the training of the enumerators, as well as the instrument.



Figure 2: BabyWASH enumerator training

A member of the Potiskum WASH staff supervised teams of three to four enumerators. Enumerators were given the coordinates of the household, which were obtained during INP+ registration, as well as the beneficiary's name. Upon arriving at the household, the enumerator asked the head of household for permission to conduct the survey. If the head of household approved, the enumerator asked the primary caregiver of the children (the beneficiary) for consent to participate. Beneficiaries were interviewed in Hausa, with enumerators translating the questions from English at the time of interview. The enumerators did not read the possible responses outlined by the KAP survey, but instead chose based on interviewee responses. If the head of household or beneficiary could not be identified or was not available at the time of the survey, enumerators returned for one more interview attempt.

Data were cleaned in Microsoft Excel. Questions that asked about the number of children in a certain age group were compared to the total number of children in that age group provided by the respondent. If the respondent provided a number higher than the total number of children they had provided previously, it was replaced with the total number of children in that age group.

Relevant descriptive statistics were calculated in Microsoft Excel. The data from the KAP was compared to relevant data from the INP+ Baseline report (AAH 2017a), however that data studied a different sample of Nangere and Tarmua beneficiaries. Social Science Statistics' (<https://www.socscistatistics.com/>) two-sided difference in proportions test and two-sided difference in means test were used to compare the proportions and means of data for the intervention and non-intervention communities. Two-sided tests were used to determine if the WASH and nutrition conditions, knowledge, attitudes, and practices, as well as demographics, are significantly better or worse in Nangere than Tarmua. P-values less than 0.05 were considered to be significant.

The WHO/ UNICEF Joint Monitoring Programme for Water Supply, Sanitation, and Hygiene (JMP) definitions of service ladders water, sanitation, and handwashing facilities services were applied to assess the adequacy of beneficiary WASH services (Table 1).

Table 1. UNICEF/ WHO Joint Monitoring Programme (2015) service ladders

Service level	Water Supply	Sanitation	Handwashing
Surface water/ Open defecation/ No handwashing facility	Drinking water from a river, dam, lake, pond, stream, canal, or irrigation canal	Disposal of human feces in fields, forests, bushes, open bodies of water, beaches and other open spaces or with solid waste	No handwashing facility on premises
Unimproved	Drinking water from an unprotected dug well or unprotected spring	Use of pit latrines without a slab or platform, hanging latrines or bucket latrines	
Limited	Drinking water from an improved source for which collection time exceeds 30 minutes for a round-trip including queuing	Use of improved facilities shared between two or more households	Availability of a handwashing facility on premises without soap and water
At least basic (basic or potentially safely managed)	Drinking water from an improved source for which collection time does not exceed 30 minutes for a round-trip including queuing	Use of improved facilities which are not shared with other households OR use of improved facilities which are not shared with other households and where excreta are safely disposed in situ or transported and treated off-site	Availability of a handwashing facility on premises with soap and water

Data were coded and uploaded to SPSS Statistics 25 for further analysis. A complete case exploratory analysis was performed to identify any relationships between the explanatory variables (WASH and nutrition indicators) and the dependent variable (recalled incidence of diarrhea in children under two in the household during the last two weeks in Nangere) (Table 2). Households with no children under two years old were not included in the analysis. Since the dependent variable, diarrhea incidence, did not have a normal distribution, a binary logistic regression model was built. Odds ratios for each variable, as well as their standard error, were calculated.

Table 2. Variables included in exploratory analysis of WASH and nutrition indicators and child diarrhea incidence (**according to Joint Monitoring Programme definitions for water supply and sanitation)

Category	Variables
Water supply**	0 = At least basic
	1 = Limited or unimproved
Sanitation**	0 = At least basic
	1 = Limited
	2 = Unimproved
	3 = Open defecation
Handwashing	0 = Beneficiary observed washing hands with soap and water at a handwashing facility
	1 = Beneficiary observed washing hands with soap and water not at a handwashing facility
	2 = Beneficiary did not wash hands with soap and water
BabyWASH Item Utilization and Cleaning	0 = Uses all complementary feeding items daily and cleans them daily
	1 = Uses all complementary feeding items daily but does not clean them daily
	2 = Does not use all complementary feeding items daily
Number of Animals Living at Homestead	Numeric
Percent of children in household under two years old that were ever breastfed	Numeric
Diarrhea incidence	0 = No diarrhea in at least one child under two during the two weeks prior to the survey
	1 = Diarrhea in at least one child under two during the two weeks prior to the survey

4.4 Community Focus Group Discussions

FGDs were conducted in five intervention and four non-intervention communities. The four communities with the most beneficiaries were chosen in both Nangere and Tarmua. One additional smaller rural community was chosen for a FGD by Potiksum ACF WASH staff. After beneficiaries chosen for the KAP survey were

removed from the beneficiary lists, a simple random sample of ten beneficiaries were chosen from each community. Beneficiaries were invited to attend the FGD during a house visit by community mobilizers. Any internally displaced person (IDP) beneficiaries were also asked to participate to ensure their perspective was included in the analysis. Community volunteers made home visits to invite beneficiaries to the FGD, and informed them of the time and location.

A translator and a facilitator/ note-taker conducted all the FGDs (Figure 3). Before starting the FGD, the PLWs were informed of the purpose of the study and that their responses would be recorded for future analysis. After the PLWs were assured their responses would be kept confidential and would not impact future aid, they gave verbal consent to participate. After consent was received from all PLWs, they were informed of FGD rules (e.g, speaking one at a time, there are no correct answers).



Figure 3: Focus Group Discussion of Tarmua pregnant and lactating women

The FGD consisted of two parts (Appendix D). First, the PLWs were asked about their baby care practices (both communities) and their opinions about the BabyWASH program (intervention community only). Second, an adapted version of the WASH'Em Risk Perception activity was used to assess the PLWs' perceived diarrhea risk for their children. The PLWs used green, yellow, and red cards to rate the likelihood of their children getting diarrhea in several scenarios and the likelihood of their children getting diarrhea in comparison to other groups of children. At the end of the FGD the PLWs were reminded of the ACF toll-free feedback hotline in case they had any additional feedback to share.

An inductive analysis was used to code the notes of the FGDs in order to identify themes in responses (Bernard and Ryan 2010). Recordings of the FGDs were reviews when notes were unclear or incomplete. Recordings were deleted after analysis. The results of the WASH'Em Risk Perception activity were entered into the WASH'Em Decision Making Matrix for analysis.

4. 5 Secondary Data Analysis

A secondary data analysis of the diarrhea incidence and malnutrition prevalence was performed. All data was provided in Excel by ACF WASH, Nutrition, or Monitoring & Evaluation staff. Data were analyzed in Microsoft Excel to calculate relevant descriptive statistics.

Diarrhea incidence (cases) of children was provided for health facilities in Nangere and Tarmua.

ACF Nutrition Staff assessed malnutrition in children through a Middle-Upper Arm Circumference (MUAC) survey. The ACF Nutrition Staff calculated the prevalence of Moderate Acute Malnutrition (MAM), Severe Acute Malnutrition (SAM), and Global Acute Malnutrition (GAM) for children in Nangere and Tarmua using the WHO definitions (Table 3). GAM is the sum of MAM and SAM in a population. A GAM of <5% is considered to be acceptable, while a GAM greater than 10% indicates an emergency (WHO, 2000).

Table 3. WHO (2010) definitions of Moderate Acute Malnutrition and Severe Acute Malnutrition

	Weight-for-height z-score range for children 0-59 months	Mid-Upper Arm Circumference measurement for children 6-59 months
Moderate Acute Malnutrition: moderate wasting	$-3 \leq z < -2$	$115 \text{ mm} \leq \text{MUAC} < 125 \text{ mm}$
Severe Acute Malnutrition: severe wasting	$-3 < z$	MUAC < 115 mm or the presence of bilateral pitting edema

5. RESULTS

5.1 Key informant interviews

Fifteen key informants were interviewed (Table 4). Nine individual interviews and two group interviews were conducted. Five interviews were conducted only in English, five interviews were conducted in English and Hausa (with the aid of a translator), and one interview was conducted in Hausa (with the aid of a translator).

Table 4. Key Informant Interviews (* signifies interview conducted with other key informant(s))

Nangere LGA Key Informants (n=5) Health facility coordinator; Health promoter; Nutrition focal person*; Primary health center coordinator*; WASH coordinator
Community Key Informants (n=5) Male community members (n=2)*; Religious leader (imam); Village head*; WASH committee member*
ACF Key Informants (n=5) Community mobilizer; Nutrition lead; WASH coordinators (n=2); WASH field staff

Planning the BabyWASH Approach

The WASH Head of Department for Nigeria suggested the BabyWASH approach in an effort to “address chronic SAM and help the pregnant women”. He learned of the approach from the 2017 ACF BabyWASH Guidance Document, “BabyWASH and the 1,000 days: A practical package for stunting reduction”. BabyWASH started in November 2017 as a part of the larger INP+ approach, which provided PLWs with nutrition, WASH, and food security and livelihood (FSL) interventions. INP+ started in 2014 with implementation in three LGAs. Nangere was chosen as the BabyWASH intervention community because of its relatively stable security situation and INP+ baseline data. Prior to implementation of INP+, the chairman of Nangere LGA identified 200 possible intervention communities in 11 wards. ACF did a baseline survey in these communities and picked the 104 with the greatest needs (e.g, no latrines) for implementation. Stakeholders, including village heads, the donor, ACF, and the LGA, signed a memorandum of understanding before implementation. Community leaders and community volunteers were sensitized to the new programming before implementation among the target group.

Previous versions of INP+ targeted households with children with SAM, but there were reports of families purposely withholding food from their children to benefit from the program. Therefore, ACF started targeting PLWs instead. PLWs attending ANC were eligible for interventions such as a monthly cash disbursement for child food items (Figure 4), FSL training and resources, and the BabyWASH intervention.

A urine test was required to confirm pregnancy. After reports that non-pregnant women faked urine samples, ANCs started providing oversight to the pregnancy test. Women who became pregnant and/ or started attending ANC after initial implementation were added to INP+ and therefore BabyWASH.



Figure 4: INP+ cash distribution

PLWs used their ACF Beneficiary card (Figure 5) and a fingerprint to pick up 5,000 NGN monthly, as well as BabyWASH items (Appendix E).

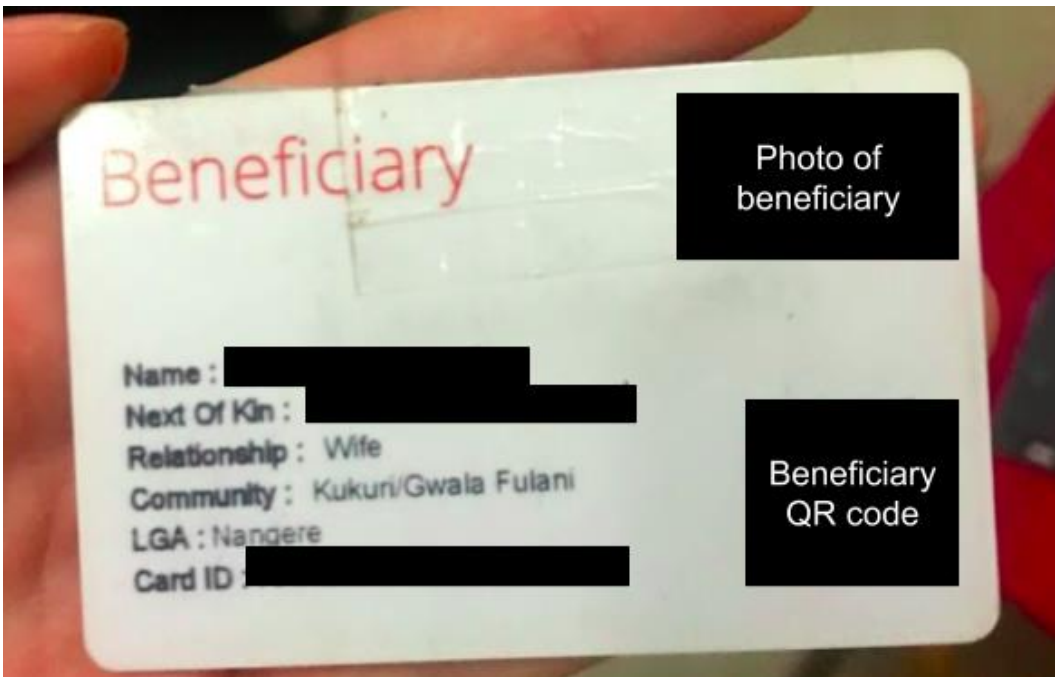


Figure 5: Beneficiary card

Since BabyWASH was a part of INP+, the same PLWs who received monthly cash had to be targeted with the BabyWASH intervention because of donor requirements. The cash distribution point was chosen as the implementation point for BabyWASH implementation for two reasons. First, PLWs spent several hours waiting to pick up their cash. Therefore, BabyWASH provided an opportunity to use this usually “dead time”, without distracting PLWs from their normal domestic duties. Second, since PLWs were dispersed in 104 communities throughout Nangere, going house-to-house with the BabyWASH intervention would have been difficult and resource-intensive.

Initially a sample of cash PLWs (940) was targeted, but by February 2019 “nearly all” known Nangere PLWs in INP+ (4,622 additional PLWs) had received the BabyWASH interventions. To ensure that all the targeted PLWs received the intervention, the cash distribution line was strategically set up so that PLWs had to pass the BabyWASH implementation point before collecting their cash.

The BabyWASH approach had three parts: the provision of handwashing items, child WASH and nutrition training, and the provision of complementary feeding items (Figure 6).

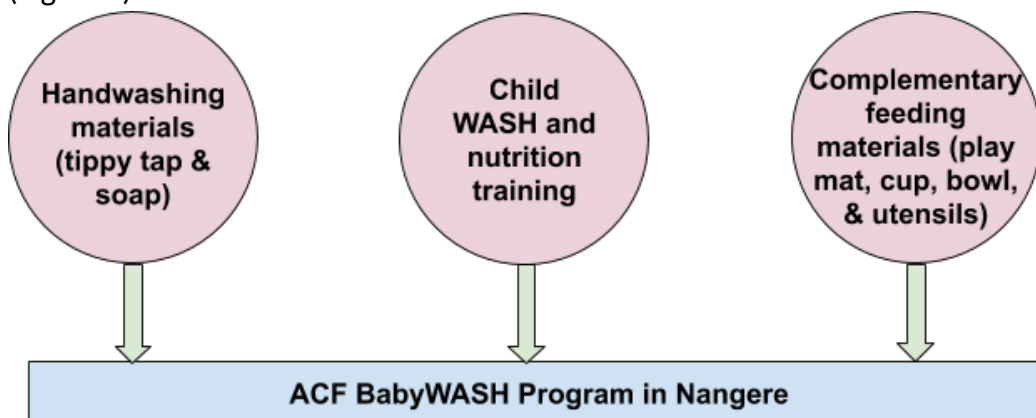


Figure 6: Components of BabyWASH Program in Nangere

Since handwashing is considered to be an essential practice to prevent disease, ACF staff decided to provide handwashing materials to PLWs first (Figure 7). ACF staff chose to make this the first activity as they hoped it would prevent PLWs from spending their new cash on medicine for sick children.

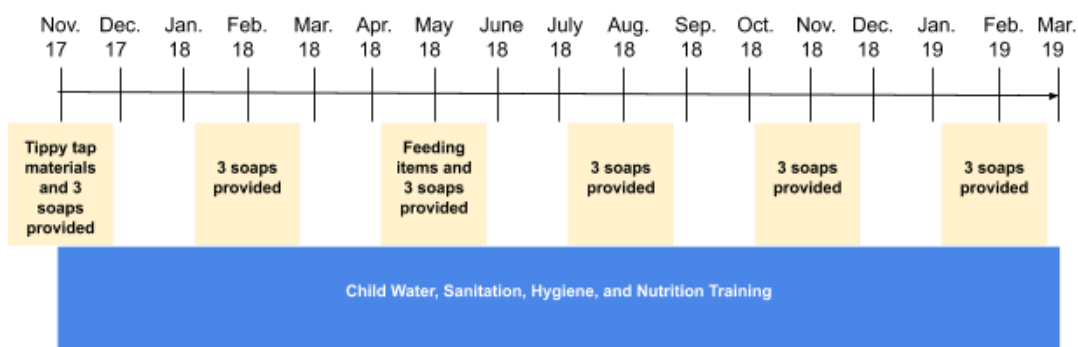


Figure 7: Schedule of BabyWASH program activities for pregnant and lactating women in Nangere

PLWs were initially given three 250-gram pieces of soap and materials to construct a tippy tap (Figure 8-9). PLWs were given three additional pieces of soap every three months for the duration of the intervention. ACF nutrition, ACF WASH, and Nangere LGA WASH staff instructed PLWs how to construct and operate the tippy tap.



Figures 8-9: Tippy tap jerry can and soap

Every month, PLWs were given child WASH and nutrition training using information, education, and communication (IEC) materials (Figure 10-13). PLWs received different messages every month in groups of 20 to 25 (Appendix F). Lessons were taught in Hausa, with LGA staff sometimes translating into Kerikeri or Fulani as necessary. WASH staff used what they coined as a “participatory approach”, focusing on getting PLWs to share knowledge they already had about child WASH and nutrition. IECs were displayed during the training. PLWs were asked to explain the images. After the PLWs shared their thoughts, the team would add on to what the PLWs already knew.



Figures 10-13: BabyWASH IECs

The BabyWASH messages were similar to the messages in standard hygiene promotion (e.g, hygiene messages shared in CARE groups, health facilities, schools, and mosques), however it had a distinct emphasis and included supplemental information. Key messages included critical times for handwashing, principles of food hygiene, water storage, breastfeeding, and maintaining a clean environment. All messages focused on baby care practices, such as keeping a clean play area (e.g, no animal feces), proper disposal of child feces, and how to pack safe water, food, and milk for children (e.g, discouraged use of feeding bottles that are difficult to clean). PLWs were taught to exclusively breastfeed children less than six months old and practice complementary feeding for children six months to two years old. Some traditional components of hygiene promotion, such as malaria prevention and rubbish disposal, were not included in the child WASH and nutrition training.

Six months after the initial intervention, PLWs were given complementary feeding items, including a child play mat, a child cup with a lid, a child bowl with a lid, a child spoon, and a bucket for storage of the items (Figures 14-18). Demonstration items were used to show proper item use, item cleaning, and item drying.



Figures 14-18: Complementary feeding items

There were issues sourcing and procuring some of the complementary feeding items. As a result, some of PLWs received the items more than six months after the distribution of the handwashing items.

If PLWs were absent from cash distribution, ACF staff was tasked with following up with them individually to ensure the provision of the items and the missed training.

ACF spent 5,760 Nigerian Naira (NGN) on item distribution for every beneficiary involved in the program (Table 4).

Table 4. Cost of the BabyWASH items in Nangere

BabyWASH Item	Unit cost	Total cost (5,562 pregnant and lactating women)
Jerry can	400 NGN	2,224,800 NGN
250 grams of soap monthly for 17 months (one piece of 250 grams of soap)	3,060 NGN (180 NGN)	17,019,720 NGN
Play mat	1,700 NGN	9,455,400 NGN
Cup with lid	350 NGN	1,946,700 NGN
Bowl with lid, spoon, and fork	250 NGN	1,390,500 NGN
Total Price	5,760 NGN	32,037,120 NGN

Communities with the most BabyWASH beneficiaries were chosen for the implementation of additional WASH activities, including boreholes and community-led total sanitation (CLTS). Similarly, the health facilities with the most BabyWASH beneficiaries were chosen for borehole drilling, latrine construction, incinerator installation, and the provision of placenta pits. Communities benefiting from additional WASH activities were required to create WASH committees. The committees were made of ten volunteers, 40-50% of which were women, from different areas of the community.

Monitoring BabyWASH

Prior to this study, there was no formal monitoring of the BabyWASH approach. However, the INP+ PDM included questions about WASH conditions and non-food item (NFI) distribution. ACF staff conducted additional informal monitoring, such as observing tippy taps during CLTS visits or complementary feeding items at cash distribution. Communities were able to provide feedback through monthly INP+ meetings between ACF staff, head promoters, and village heads and through the ACF toll free hotline that was provided on the beneficiary cards (Figure 19). When asked

about the toll free hotline, several community members reported using it, but others reported not getting through because of the inadequate network in rural areas.



Figure 19: ACF Toll free number on beneficiary card

Meeting the objectives of the BabyWASH approach

The objectives of the BabyWASH approach were not formally outlined outside of the general INP+ framework. Therefore, key informants had different opinions of the purpose of BabyWASH. Generally, key informants felt the goal was to improve public health by addressing malnutrition in children. Specific objectives included reducing the risk of fecal oral contamination, changing behaviors, and decreasing the incidence of SAM, diarrhea, and stunting.

When asked if the BabyWASH program achieved these objectives, key informants were hesitant to make a judgment without the data from this study. They hypothesized that the objectives were partially achieved. As one key informant shared, “If the women did everything, than yes we achieved [the objectives]”

Impact of BabyWASH

Key stakeholders believed it would be difficult to know the impact of the BabyWASH approach without solid baseline data on BabyWASH specific indicators. However, they suggested that future approaches measure changes in PLW attitudes and practices towards childcare and any resulting changes in health facility visits, malnutrition prevalence, and diarrhea incidence. Other key informants suggested qualitative measures, such as whether or not PLWs shared the messages they learned with others in their communities.

Most key informants felt there were positive behavior changes in the community because of BabyWASH, including more handwashing with soap, more exclusive breastfeeding, more balanced child diets, and more cleaning of the household.

Several key informants noted that PLWs often came to cash distribution with food and water packed for children in their covered plates and cups.

Key informants believed that the number of visits to the health facility had changed. Some believed they had decreased because the number of children suffering from malnutrition and diarrhea had decreased as a result of the intervention. Other key informants thought a dramatic increase in visits to health centers/ ANC was an unplanned outcome of BabyWASH. Some hypothesized that more women got pregnant on purpose in order to receive the INP+/ BabyWASH benefits, while others hypothesized that pregnant women who were not already attending ANC started doing so in order to benefit. As a result of more health center visits, key informants believed more SAM cases were identified. However, it is difficult to attribute this outcome to solely BabyWASH, and not the INP+ program more generally.

Another unplanned outcome observed by the key informants was that the targeted PLWs had a greater sense of ownership and empowerment because of the BabyWASH approach. In this context, women are often marginalized, and this gave them the ability to care for their children without asking for help from their husbands.

Key informants observed that PLWs likely benefited from reduced medical spending. If the BabyWASH interventions effectively prevented disease, families potentially spent less money on child medicine.

Finally, key informants felt that the demand for some of the BabyWASH items may have increased in the local market. Families not benefitting from BabyWASH may have bought the items on their own after seeing the benefits targeted PLWs received from them. However, no quantitative data was available to substantiate this claim.

Addressing stakeholder priorities with BabyWASH

Key informants felt the BabyWASH approach addressed some of the community's needs, but not all of them. First, they believed the approach addressed the need for improved hygiene practices (e.g, keeping meals covered, keeping children off the ground, and proper feces disposal) and nutrition practices (e.g, exclusive breastfeeding and complementary feeding with nutritious food) in the community. It also provided some the resources necessary to make these changes, including soap, child play mats, and child bowls with lids. As one key informant expressed:

“Before [BabyWASH] the community believed the way they lived was best, but now they know that child hygiene is different than their own and it has different needs. This is really important.”

However, they believed the community has other priorities that were not addressed by the BabyWASH approach. As one key informant explained,

“For the community, I think at the time it is not easy to see the impact. The community prefers to see something physical, like a borehole. They want to get water, they want to get latrines. So for BabyWASH, where we are just educating the women and the children, the community does not really see that as a need, because they do not see the impact immediately.”

Community leaders and LGA staff highlighted the many physical needs in the communities, such as the need for boreholes and more soap, without which make it

impossible for PLWs to practice what they have learned from the child WASH and nutrition training. As one explained,

“If you promote safe water, you need to provide the borehole, add it to advocacy and mobilization. But we need to look at all of this. If they don't have access to safe water, we need to provide a means to treat it.”

In addition to these WASH needs, key informants highlighted other community needs such as business training, primary schools, and closer health facilities.

Several community members expressed that they for men to be included in the intervention. As one key informant explained,

“Men need to be involved to have a successful intervention... Just like in the Father's CARE group, they really want others to be involved. I think because really I feel the people down here are really not exposed. But maybe if we can bring in others like mothers who really want to join... Because women are agents of change, generally. Reaching out to more women would be good for us as an organization.”

Conversely, ACF prefers to prioritize the needs of vulnerable populations, including children and PLWs. One key informant explained the difference between the community's preferences and ACF's preferences,

“It is a different thing, community-based need, versus the most vulnerable. What I am trying to say is children, elders, and pregnant women are the most vulnerable people in communities. Here, the women and children are the most vulnerable, especially in Nigeria. This approach we are really targeting them”

In order to address the concerns of those not included in the intervention, one key informant suggested doing a better job explaining why certain groups were targeted before implementation,

“ Some of the items we distributed are clearly for children- but we have to let them know that we are really targeting this kind of people for this reason so they know why.”

ACF headquarters advocates for BabyWASH approaches to prevent child mortality and morbidity, as evidenced by the 2017 “BabyWASH and the 1,000 days” guideline document. The Technical Framework for the ACF Nigeria Mission also includes the BabyWASH approach. A key informant explained how the BabyWASH approach addressed ACF's priority of fighting hunger and malnutrition,

“The mandate of ACF is to fight hunger and malnutrition. So to fight malnutrition we have to come from a different way, prevent it and treat it. For BabyWASH we focus on preventing it because we know that at the time the babies are more vulnerable to diseases, maybe diarrhea, that lead to malnutrition... We need to fight it from all angles.”

The priority of the LGA was to “improve the health of the population in order to eliminate malnutrition and reduce the medicine costs of the primary health centers”. Key informants believed that ACF's approach made progress toward this goal, but did

not fully address it. In order to fully address this goal, the primary health centers have many more needs, including more Ready-to-Use Therapeutic Food (RUTF) supplies, maternity medical equipment (e.g, episiotomy kit, manual vacuum aspirator, delivery kits), furniture (e.g, mats, desks, chairs), as well as laptops to track data. Key informants explained that it is difficult for the LGA to get these resources without the help of non-governmental organizations, like ACF, since they receive no central funding.

Sustainability

Key informants had heterogeneous opinions on the long-term impact of the BabyWASH intervention. Some thought the outcomes were likely to continue, because PLWs were now aware of the importance of good hygiene practices and its impact. As one key informant stated,

“The messages are already injected into our bodies so we adopt it and accept the advantage”

If families saw the importance of good hygiene, they will be more willing to make financial sacrifices to prevent disease. As one key informant explained,

“The whole idea behind the BabyWASH is not to keep on giving material. It is more to mobilize the women to understand the importance of this material and these item, and to know this is what they need to protect the baby. First, they need to see the material and get the material to motivate them. But the idea is not to keep giving the material. You have to promote handwashing with soap. So if you start giving them soap, at a point of time you need to stop so they will know the importance of the soap and have mobilized them.”

If BabyWASH had child health impacts, these changes will outlast the intervention. The approach targeted children in the 1,000-day window of opportunity to prevent malnutrition, possibly impacting the targeted children’s health status for the rest of their lives. If the PLWs continue to apply the new knowledge and use the child items, their future offspring will benefit as well.

Other key informants were more skeptical of the long-term impact of the intervention, especially if PLWs did not see direct impacts. As one explained,

“Sustainability is something that is very difficult. I think sometimes there is no ownership. After we stop giving them items it is up to them to keep up the practices. Only if they have benefited I am sure they will continue.”

Key informants felt that since only PLWs were targeted, BabyWASH would have little impact on the long-term health status of children. Without changing the behavior of the entire community, there could be little impact on the cleanliness of the greater environment.

Other key informants felt PLWs will lose interest in attending ANC and the BabyWASH practices after ACF activities cease. As one explained,

“The likelihood of the impacts continuing after the project is very slim. It has to do with general behavior of this context. If there is something you are doing in the community, and they always see you, it will be working well. But eventually that will stop, and nobody is going back there to follow-up, even like once in a

while, the general behavior is gradually, and people just used to forget... Because what motivates people is any activity that is carried out by NGOs is one thing that motivates them... So if the NGO pulls out they will start to lose interest.”

A key informant thought that up until this point, the BabyWASH approach had been implemented as though it was an emergency situation. He/ she thought that item distribution was not appropriate at this stage of displacement and that there was little ownership or responsibility from local stakeholders. He/ she felt that if ACF pulled out now there would be no long-term impact. Instead, he/ she believed that ACF should focus on building capacity of local stakeholders, gradually giving them ownership over the child WASH and nutrition trainings, and helping them advocate for more funding.

ACF has already given the IECs to the LGA in hopes it will conduct future child WASH and nutrition trainings. The LGA expressed interest in doing so with help from the health workers and community WASH committees. However, it is concerned it will be difficult without providing incentives for the stakeholders to do so. The LGA has no central budget and currently relies on ACF for support in its health-related operations. For example, the LGA currently uses ACF vehicles for transportation to the communities. Therefore, it is possible the LGA will find another supporting non-governmental organization (NGO) as soon as ACF leaves. One key informant suggested partnering with other community institutions, such as schools and mosques to reinforce child WASH and nutrition messages. Both institutions already teach hygiene messages in some capacity already (Figure 20).

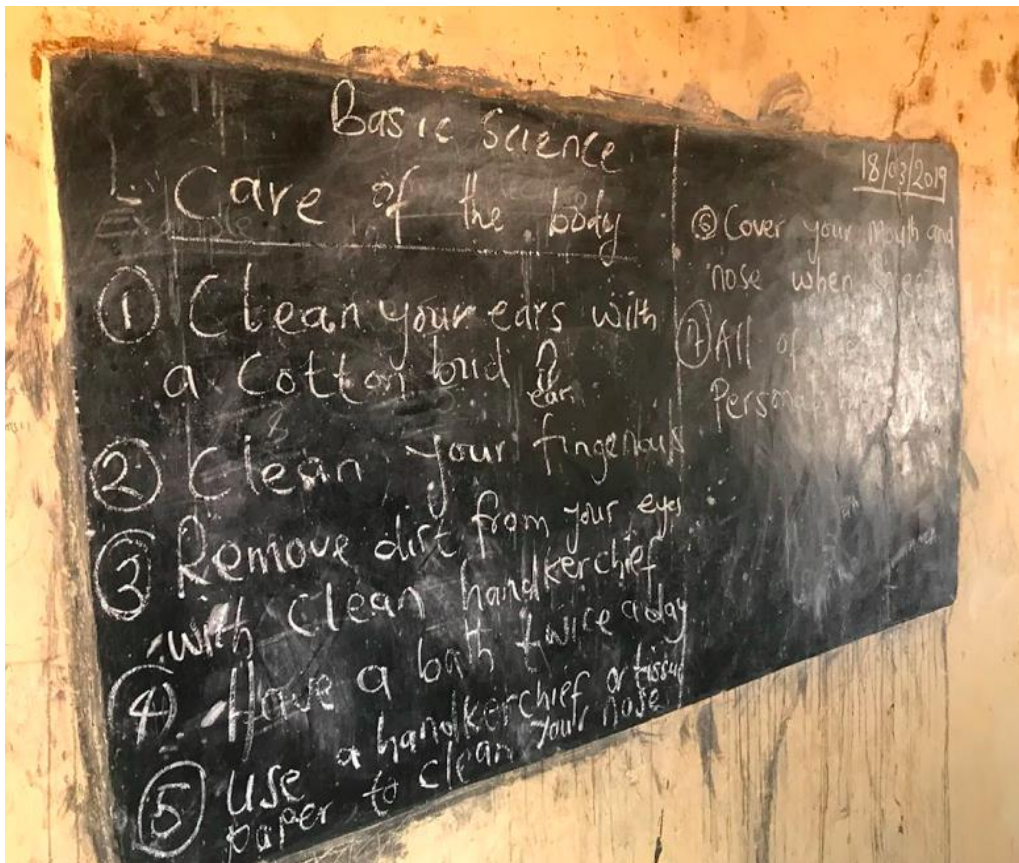


Figure 20: Hygiene messages in a Nangere primary school

The environmental sustainability of the BabyWASH approach is a challenge. Key informants noted that the items were not durable. All the items are plastic and are not biodegradable. Although biodegradable alternatives would be preferred, they are difficult to locally source. On community visits, key informants noted that some of the jerry cans for tippy taps had cracked after sun exposure. Therefore, they suggested instructing future PLWs to keep the handwashing device in a shaded area.

Obstacles

ACF staff did not receive any formal training on the BabyWASH approach prior to implementation. Therefore, they relied upon ACF's 2017 guideline for information. They believed the approach would have been more effective if they had a BabyWASH expert train them on best practices prior to implementation.

The linkage to cash beneficiaries had significant drawbacks. First, it forced ACF to start with a large-scale intervention of over 5,000 beneficiaries. Second, since beneficiaries were dispersed in a large geographic area there was probably little impact on securing an overall clean environment. Additionally, the beneficiaries were restricted to ANC-attending PLWs.

Key informants observed that not many community members adopted use of the tippy tap. As one key informant explained,

“The tippy tap it is not common here. So the tippy tap after distribution we were able to visit houses to find out their usage. So for the tippy tap we were able to find out most of them had challenges for the tippy tap. Some of them they did not even construct it. Some of them have the tippy tap but did not use it. But the important thing is handwashing, so we are trying to see okay, if they aren't using the tippy tap, what can they do? The current practice, how do they wash hands? So since tippy tap is challenging we try to promote how they are washing hands normally. We focus there, to make sure they know the critical time. So the acceptance of the tippy tap has been very poor.”

Instead, key informants suggested installing tippy taps and encouraging their use in schools first to create demand in the greater community.

Another key informant suggested adjusting the items to include a child potty as well as a larger water storage container. He/ she observed that families without a child potty had no feasible alternative to open defecation for children. A larger water container for short-term water storage was preferable so that PLWs can boil water less frequently.

Key informants identified gaps in the hygiene messages. First, some of the IECs depicted a different context. Therefore, key informants suggested improving the training getting IECs relevant to the local culture. In order to make the messages more memorable, a key informant suggested putting messages to songs. Another key informant felt messages could be improved by including additional information on best child feeding practices, such as teaching the PLWs to feed children one at a time to ensure it gets enough food and how to make nutritious pap, a local porridge.

Finally, all key informants expressed the need for more regular review of the BabyWASH approach, including at least a baseline and midterm survey in addition to this endline evaluation. One key informant expressed it would have been helpful to do a needs assessment for BabyWASH specifically so ACF would have had a better idea of which items the PLWs already had.

Replicating BabyWASH

Key informants thought the BabyWASH approach was beneficial and should be implemented in other communities struggling with chronic malnutrition in children. They suggested it because they thought the multi-sectorial approach was beneficial and resulted in behavior change. As one key informant explained,

“I would suggest to do this program in other communities because the impact is seen directly in the people. They understand the need for child hygiene and to protect their children. Before they feed their children they make sure they wash their hands. And when you ask them they say ah their hands have so many germs and they need to wash it. It can prevent so many diseases.”

However, they believed a few key changes need to be made. First, they believed the intervention needed to be community-wide for a few communities, instead of widespread. Second, they believed it should be implemented prior to any cash distribution. That way, illnesses could be prevented and money will not be spent on medicine.

5.2 Household knowledge, attitudes, and practices survey

Over Nangere households (n=405) and Tarmua households (n=411) completed the KAP survey (Table 5). Males overwhelmingly headed households, with only ten women head of households identified across both communities combined. The average household size was significantly larger in Nangere (8.78) than Tarmua (7.31). The significant differences in household size came from the older age groups. Primary childcare givers were overwhelmingly female in both communities, with only twelve males identifying themselves as the primary caregiver across both communities combined. Caregivers were on average in their late twenties, with Nangere caregivers significantly older. It was common for beneficiaries to not know their exact age, resulting in large clusters of responses at 20, 25, 30, and 35 years old in both communities.

Less than one percent of respondents identified as a displaced person. A significant proportion of Tarmua beneficiaries identified themselves as returnees when compared with Nangere beneficiaries. However, it is possible some returnee beneficiaries were misclassified as host community members if enumerators did not ask them to specify. The significant differences in demographic information suggest that Tarmua is not an ideal comparison community to Nangere. Additional KAP results can be found in Appendix G.

Table 5. Demographic information of KAP survey respondents in Nangere and Tarmua

	<u>Nangere</u> (N=405 unless noted otherwise)	<u>Tarmua</u> (N=411 unless noted otherwise)	<u>p-value</u> ** statistically significant (p<.05)
Head of household gender			
Male	98.3% (398)	99.3% (408)	0.1936
Female	1.72% (7)	0.730% (3)	
Average household size (standard deviation, range)			
Total	8.78 (5.25, 2-35)	7.31 (3.70, 2-23)	<0.00001**
Males 0-6 months	0.141 (0.475, 0-6)	0.129 (0.425, 0-5)	0.708684
Females 0-6 months	0.124 (0.365, 0-2)	0.127 (0.417, 0-5)	0.911201
Males 6-23 months	0.684 (0.710, 0-3)	0.623 (0.577, 0-2)	0.17751
Females 6-23 months	0.580 (0.683, 0-4)	0.489 (0.598, 0-3)	0.042753**
Males 2-5 years	0.879 (0.984, 0-5)	0.781 (0.766, 0-4)	0.112419
Females 2-5 years	0.812 (0.928, 0-7)	0.635 (0.728, 0-3)	0.002444**
Males 5-18 years	1.37 (1.60, 0-8)	1.15 (1.48, 0-12)	0.041993**
Females 5-18 years	1.25 (1.54, 0-8)	0.990 (1.29, 0-9)	0.004939**
Males over 18 years	1.25 (0.721, 0-8)	1.078 (0.394, 0-5)	0.000026**
Females over 18 years	1.69 (1.06, 0-10)	1.31 (0.661, 0-6)	<0.00001**
Gender of respondent (primary caregiver of child and beneficiary)			
Male	1.73% (7)	1.22% (5)	0.5419
Female	98.3% (398)	98.8% (406)	
	N=398	N=406	
Pregnant or lactating status	8.55% (34)	3.94% (16)	0.00694**
Pregnant	88.9% (354)	93.2% (383)	0.00578**
Lactating	27.9 (6.76, 15-50)	26.7 (5.57, 16-49)	0.006308**
Age of respondent (standard deviation, range)			
Displacement status	99.5% (403)	97.8% (402)	0.03572**
Host community member	0.493% (2)	0.973% (4)	0.42372
Internally displaced person	0% (0)	1.22% (5)	0.02574**
Returnee			

Almost all (98.8%) caregivers reported receiving baby materials from ACF (Table 6). Although ACF was not doing BabyWASH training in Tarmua, still 74.9% of respondents reported knowing about environmental sanitation or hygiene training. Prior to 2017, ACF did WASH activities in Tarmua, so it is possible respondents remembered those activities. Otherwise, it is possible they were considering trainings conducted by organizations other than ACF.

Table 6. Knowledge, attitudes, and practices about the BabyWASH program in Nangere and Tarmua

	<u>Nangere</u> (N=405 unless noted otherwise)	<u>Tarmua</u> (N=411 unless noted otherwise)	<u>p-value</u> ** statistically significant (p<.05)
Aware of health, hygiene, and environmental sanitation programs in their area	93.1% (377)	81.5% (335)	<0.00001**
Report being involved in ACF health, hygiene, and environmental sanitation programs			
Yes	90.6% (367)	74.9% (309)	<0.00001**
No	8.64% (35)	24.3% (100)	<0.00001**
Not sure	0.741% (3)	0.730% (3)	0.98404
Report receiving baby items from ACF			
Yes	98.8% (400)	1.22% (5)	<0.00001**
No	1.23% (5)	98.5% (405)	<0.00001**
Not sure	0% (0)	0.243% (1)	0.32218
Materials used to wash hands (observed)			
Soap and water	90.4% (366)	73.2% (301)	<0.00001**
Ash and water	6.67% (27)	8.52% (35)	0.31732
Water only	2.96% (12)	18.0% (74)	<0.00001**
Sand and water	0% (0)	0.243% (1)	0.32218
Where water was retrieved to wash hands			
Kettle	77.5% (314)	84.9% (349)	0.00694**
Water storage container	18.5% (75)	15.1% (62)	0.1902
Tippy tap	3.95% (16)	0% (0)	<0.00001**
Satisfied with tippy tap	N=16 100% (16)	Not applicable	Not applicable
Who uses the tippy tap	N=16 100% (16)	Not applicable	Not applicable
Women	87.5% (14)		
Men	43.8% (7)		
Girls	43.8% (7)		
Boys	98.5% (399)	1.22% (5)	<0.00001**
Respondents who report having a child play mat			

How often play mat is used	N=398	N=5	
Multiple times every day	71.4% (284)	60% (3)	0.5574
Once per day		20% (1)	
Every few days	11.1% (44)	20% (1)	0.5287
Never	10.6% (42)	0% (0)	0.4965
Once a month	1.76% (7)	0% (0)	0.76418
Once a week	0.754% (3)	0% (0)	0.8493
	0.251% (1)		0.1122
Satisfied with child play mat	N=388	N=5	
	100% (388)	100% (5)	<0.00001**
Frequency of cleaning play mat	N=388	N=5	
Multiple times every day	36.9% (143)	20% (1)	0.4354
Every few days	27.3% (106)	0% (0)	0.17068
Once a week	20.6% (80)	20% (1)	0.97606
Once per day	10.1% (39)	60% (3)	0.00034**
Once a month	2.84% (11)	0% (0)	0.70394
Every few months	1.03% (4)	0% (0)	0.8181
Never	1.03% (4)	0% (0)	0.8181
Other	0.258% (1)		
	As needed		
	0.258% (1)		
Respondents who report having child utensils			
All	90.6% (367)	0.730% (3)	<0.00001**
Some	7.90% (32)	0.487% (2)	<0.00001**
None	1.48% (6)	98.8% (406)	<0.00001**
Satisfied with utensils	N=349	N=3	
	100% (349)	100% (3)	<0.00001**
How often child utensils are used	N=367	N=3	
Multiple times per day	80.4% (295)	100% (3)	0.39532
Once per day	10.9% (40)	0% (0)	0.54186
Every few days	3.81% (14)	0% (0)	0.72786
Never	4.90% (18)	0% (0)	0.3933
Frequency of cleaning child utensils	N=349	N=3	
Multiple times per day	80.5% (281)	100% (3)	0.39532
Once per day	14.9% (52)	0% (0)	0.47152
Every few days	3.73% (13)	0% (0)	0.72786
Once per week	0.859% (3)	0% (0)	0.87288

Significantly more (90.4%) beneficiaries washed their hands with soap and water in the intervention group than the non-intervention group. However, few beneficiaries (3.95%) used the tippy tap to wash their hands, with most (77.5%) using traditional

kettles (Figure 21). Of those that used the tippy tap to wash hands, all of them were satisfied with the device. Adults used the tippy tap more frequently than the children.



Figure 21: Traditional kettle used for ablution

Most (93.1%) KAP survey respondents in Nangere reported being aware of health, hygiene, and environmental sanitation programs in their area, with 90.6% reporting involvement with the ACF program specifically (Table 6).

Most PLWs had the child play mat (98.5%). All the beneficiaries that used the child play mat more than once per month reported being satisfied with it. Nearly three-quarters (74.3%) of respondents reported cleaning the child play mat every few days or more, and 96.4% reported doing so with soap and water.

The child utensils, including the cup with lid, bowl with lid, and spoon, were used in some capacity by 98.5% of respondents, all of which were satisfied with them. Most respondents used the utensils multiple times per day (80.4%). The utensils were cleaned more frequently than they were used, and overwhelmingly with soap and water (98.6%).

Nutrition of PLWs and Children

Of the respondents who were pregnant women, more than half of them took iron supplements and the intermittent preventive treatment (ITPp) for malaria (Table 7). There was a significant difference in mosquito net use between the two communities, with 85.3% of pregnant Nangere women sleeping under one the night before, compared with 50% of Tarmua women.

Children under two in Nangere benefitted from significantly better caretaker practices than children in Tarmua. Significantly more children were breastfed in Nangere (83.5%) than Tarmua (67.3%), slept under a mosquito net in Nangere (67.5%) than in Tarmua (56.6%), and were given zinc supplements in Nangere (28.8%) than in Tarmua (21.2%).

According to the PDM report conducted by ACF (2018), a much higher percentage of children in Nangere (100%) and Tarmua (99.5%) were ever breastfed in 2017. It is unclear if the provision of supplements was due to caregiver choice or available resources at the health centers. There were no significant differences between the two regions with regards to exclusive breastfeeding.

Table 7. Maternal and child nutrition in Nangere and Tarmua

	<u>Nangere</u> (N=405 unless noted otherwise)	<u>Tarmua</u> (N=411 unless noted otherwise)	<u>p-value</u> ** statistically significant (p<.05)
Practices of pregnant women	N=34	N=16	
Taking iron tablets or syrup	58.8% (20)	81.3% (13)	0.11876
Taking deworming medication	41.2% (14)	68.8% (11)	0.06876
Took at least one dose of intermittent preventive treatment	61.8% (21)	56.3% (9)	0.71138
Slept under an insecticide treated mosquito net last night	85.3% (29)	50% (8)	0.00804**
Practices for children under two years	N=618	N=562	
Were ever breastfed	83.5% (516)	67.3% (378)	<0.00001**
Who slept under insecticide treated bed net the night before	67.5% (417)	56.6% (318)	0.00012**
Were given vitamin A supplements in last six months	63.2% (391)	58.2% (327)	0.07346
Were given deworming medicine in last six months	50.3% (311)	45.2% (254)	0.0784
Were given zinc supplements in the last seven days	28.8% (178)	21.2% (119)	0.00252**
Children under six months who were exclusively breastfed in last 24 hours	N=107	N=105	
	56.1% (60)	64.8% (68)	0.19706
	N=512	N=457	
	86.9% (445)	85.8% (392)	0.60306
	78.1% (400)	80.1% (366)	0.45326
Practices for children 6-24 months			
Received solid, semi-solid, or soft foods in the last 24 hours			
Received breast milk in the last 24 hours			

Knowledge, attitudes, and practices of nutrition and hygiene impacts on health

Significantly more respondents believe drinking water can transmit disease in Nangere (64.7%) than in Tarmua (51.1%) (Table 8). Stomachache and diarrhea were the two most commonly identified health outcomes of drinking dirty water in both communities. Drinking dirty water, flies landing on food, not washing hands, and dirty

dishes were the most commonly identified causes of diarrhea in both communities, but significantly more Nangere respondents were able to identify five more causes than Tarmua respondents. Caregivers in Nangere recalled that significantly fewer children under two (16.7%) had diarrhea in the last two weeks compared to children of the same age in Tarmua (23.0%). The most common response of caregivers in both communities to diarrhea in children to bring them to the health center, although significantly more caregivers in Tarmua (89.5%) reported this when compared to Nangere caregivers (79.8%).

Table 8. Knowledge, attitudes, and practices of nutrition and hygiene impact on health in Nangere and Tarmua

	<u>Nangere</u> (N=405 unless noted otherwise)	<u>Tarmua</u> (N=411 unless noted otherwise)	<u>p-value</u> ** statistically significant (p<.05)
Belief that drinking water can transmit disease			
Yes	64.7% (262)	51.1% (210)	0.00008**
No	30.1% (122)	36.3% (149)	0.06288
Not sure	5.19% (21)	12.7% (52)	0.00018**
Results of drinking dirty water	N=262	N=210	
Stomach ache	80.9% (212)	74.3% (156)	0.08364
Diarrhea	77.9% (204)	75.2% (158)	0.50286
Vomiting	43.9% (115)	47.1% (99)	0.48392
Typhoid	15.3% (40)	15.7% (33)	0.89656
Parasites	1.91% (5)	0% (0)	0.04444**
Other	1.15% (3)	0% (0)	0.11876
Diarrheal disease is caused by	N=262	N=210	
Drinking dirty water	89.3% (234)	81.9% (172)	0.02088**
Flies landing on food	62.2% (163)	54.3% (114)	0.08186
Not washing hands	47.7% (125)	46.7% (98)	0.8181
Dirty dishes	45.0% (118)	52.3% (110)	0.11184
Unwashed fruit/ vegetables	38.2% (100)	25.2% (53)	0.00288**
Flies landing on child	31.3% (82)	26.2% (55)	0.22628
Undercooked food	23.7% (62)	3.81% (8)	<0.00001**
Contamination from child feces	19.8% (52)	18.6% (39)	0.72634
Contamination from soil	15.3% (40)	7.62% (16)	0.01078**
Contamination from animal feces	15.3% (40)	11.4% (24)	0.22628**
Teething	11.1% (29)	21.9% (46)	0.00138**
Child putting things in mouth	10.3% (27)	10.5% (22)	0.95216
Contamination from adult feces	8.02% (21)	14.8% (31)	0.0198
Not sure	0.382% (1)	0.952% (2)	0.7753
Other	1.15% (3)	0% (0)	
	N=618	N=562	
In the last two weeks, children under two with symptoms of	16.7% (103)	23.0% (129)	0.00672**

Diarrhea (loose, watery stool)	8.41% (52)	8.72% (49)	0.8493
Respiratory infection (chest-related cough with short, rapid breathing)	79.8% (323)	89.5% (368)	0.0001**
Response to diarrhea in children	34.6% (140)	31.4% (129)	0.33204
Bring to health center	29.6% (120)	25.1% (103)	0.1443
Give medicine	6.91% (28)	5.60% (23)	0.4354
ORS	5.19% (21)	3.89% (16)	0.37346
Give pap	2.72% (11)	1.46% (6)	0.20766
Give herbs	1.73% (7)	0.730% (3)	0.1936
Give extra fluids	1.23% (5)	1.22% (5)	0.98404
Nutrition center	0.494% (2)	1.22% (5)	0.26272
Pray	0.494% (2)	0.729% (3)	0.6672
Give more food	0.247% (1)	0.487% (2)	0.56868
Nothing			
Bring to traditional healer			

WASH Data

Table 9 shows the water supply data from the KAP survey in Nangere and Tarmua. Men were identified as the primary water fetchers in both communities, which runs contrary to common understandings of water fetching practices worldwide and findings of the 2017 PDM (UNICEF 2016; AAH 2017a). Caregivers in Nangere report significantly less time (average of 13.5 minutes round-trip) collecting water daily than their counterparts in Tarmua (average 25.7 minutes round-trip). In addition, they were significantly less likely to purchase water, with 71.6% reporting they never purchase water compared to 45.3% in Tarmua. Although 18.7% of Tarmua respondents report that water vendors fetch their water, only 6.10% of them reported water vendors had done so in the last 24 hours. The difference may be partially accounted for by seasonal variation, 11.4% report changing their water source depending on whether it is the wet or the dry season.

Those living in protracted displacement settings should have access to at least 20 liters of water per person per day (L/P/D) (UNHCR 2017). Respondents in both communities received more than double that. Significantly more respondents in Nangere (96.5%) report washing their water storage containers compared with Tarmua (91.0%), and significantly more of those who do report using soap (Nangere 73.7%; Tarmua 57.0%). This was consistent with the team's observations of container cleanliness. In addition, significantly more Nangere respondents had lids for at least some their water storage containers (97.0%) compared with Tarmua respondents (94.1%).

Nangere respondents were more likely to never treat their water (71.6%) compared with Tarmua respondents (45.3%), while the 2017 PDM by ACF found that 43% and 41.3% of Nangere and Tarmua PLWs did not treat respectively. Filtration was the most commonly used treatment method in both communities.

Table 9. Water supply in Nangere and Tarmua

	<u>Nangere</u> (N=405 unless noted otherwise)	<u>Tarmua</u> (N=411 unless noted otherwise)	<u>p-value</u> <u>** statistically</u> <u>significant</u> (p<.05)
Drinking water source today and yesterday			
Open well	53.6% (217)	15.6% (64)	<0.00001**
Protected borehole	34.3% (139)	64.7% (266)	<0.00001**
Tap stand	16.8% (68)	16.8% (69)	1
Water vendor	1.98% (8)	6.60% (27)	0.0012**
Change water source in the wet season	15.6% (63)	11.4% (47)	0.08544
Who fetches the water			
Men	52.8% (214)	60.6% (249)	0.02574
Boys	33.3% (135)	37.5% (154)	0.21498
Women	25.4% (103)	9.7% (40)	<0.00001**
Girls	25.7% (104)	12.4% (51)	<0.00001**
Water vendor	5.68% (23)	18.7% (77)	<0.00001**
Average time it takes to fetch water round trip (standard deviation, range)	13.5 minutes (13.4 minutes, 1-160 minutes)	25.7 minutes (47.7 minutes, 0 minutes-420 minutes)	<0.00001**
How much of the time do you pay for water?			
All of the time	25.7% (104)		<0.00001**
Some of the time	2.71% (11)	53.0% (218)	0.32708
Never	71.6% (290)	1.70% (7)	<0.00001**
Average liters of water per person per day (standard deviation, range)	55.04 liters per person per day (83.6 liters per person per day, 0.118-600 liters per person per day)	50.4 liters per person per day (74.6 liters per person per day, 0- 900 liters per person per day)	0.411337
Report cleaning water containers	96.5% (391)	91.0% (374)	0.00108**
How often containers are cleaned	N=391	N=374	
Before fetching water			0.6672
Once per day	60.9% (238)		0.0251**
Every few days	9.97% (39)	59.4% (222)	0.2304
Once a week	24.0% (94)	5.62% (21)	0.14986
Every few weeks	4.09% (16)	27.8% (104)	0.30772

Other: Sometimes	0% (0)	6.42% (24)	0.74896
Containers that have lids (observed)	1.02% (4)	0.267% (1)	
All		0.802% (3)	0.00278**
Some	69.6% (282)		0.0271**
None	27.4% (111)	59.6% (245)	0.0455**
Frequency of water treatment	2.96% (12)	34.5% (142)	
All of the time		5.84% (24)	0.00062**
Some of the time	35.6% (144)		0.00652**
Never	37.8% (153)	24.6% (101)	0.61708
Water treatment	26.7% (108)	47.2% (194)	
Filtration	N=303	28.2% (116)	0.75656
Let water sit	82.8% (251)	N=217	0.36812
Boil	24.1% (73)	83.9% (182)	0.96012
Chlorinate	15.8% (48)	20.7% (45)	0.9124
Solar disinfection	1.98% (6)	15.7% (34)	0.93624
Other treatment	0.990% (3)	1.84% (4)	
	1.98% (6)	0.922% (2)	
		0% (0)	

According to the JMP service levels for water supply, Tarmua respondents have better access to water than those in Nangere, with over half of Nangere respondents relying on open wells for water (Figure 22; Figure 23). The 2017 PDM report by ACF similarly found that more Tarmua households than Nangere households had access to at least basic water service.

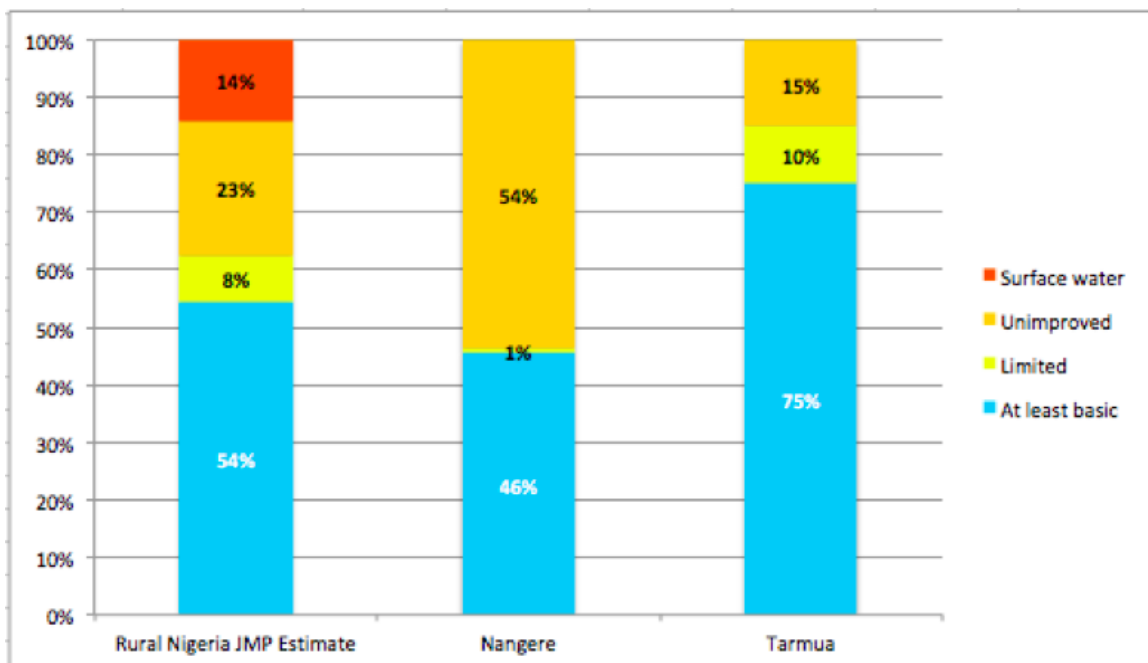


Figure 22: Drinking water service levels according to JMP definitions



Figure 23: Open well in Yobe

Nangere respondents were significantly more likely to share a toilet with more people (8.17 persons per toilet) when compared with Tarmua respondents (6.42 persons per toilet), which is probably a function of the larger household size in Nangere (Table 10). Child potties were used in both communities, with Nangere respondents more likely to clean the child potty with soap.

Table 10. Sanitation in Nangere and Tarmua

	<u>Nangere</u> (N=405 unless noted otherwise)	<u>Tarmua</u> (N=411 unless noted otherwise)	<u>p-value</u> <u>** statistically</u> <u>significant</u> (<u>p<.05</u>)
Has access to a latrine	80.2% (325)	79.6% (327)	0.81034
Of those that do not have access to a latrine, where they defecate	N=80 In the bush 100% (80)	N=84 In the bush 100% (84)	<0.00001**
Average persons per toilet (standard deviation, range)	8.17 persons per toilet (5.69 persons per toilet, 2-50 persons per toilet)	6.42 persons per toilet (4.18 persons per toilet, 2- 21 persons per toilet)	<0.00001**
Type of toilet			
Pit latrine without slab	N=325	N=327	0.03318**
Pit latrine with slab	54.5% (177)	62.7% (205)	0.82588
Pour flush	33.8% (110)		

VIP	6.46% (21)	33.0% (108)	0.2187
Other	4.31% (14)	4.28% (14)	0.00652**
Frequency of latrine cleaning	0.923% (3)	0% (0)	0.08186
		0% (0)	
	N=325		0.2113
Once per day or more	48.3% (157)	N=327	0.0601
Multiple times per week	33.8% (110)	43.4% (142)	0.4009
Once per week	10.2% (33)	41.0% (134)	0.78716
Once per month	2.46% (8)	8.26% (27)	0.84148
Never	3.38% (11)	2.14% (7)	0.04444**
Not sure	1.23% (4)	3.67% (12)	0.56868
Other	0.615% (2)	0% (0)	
	As needed	0.612% (2)	
	0.308% (1)	As needed	
	Toilet under construction	0.612% (2)	
	0.308% (1)		
Where children under five defecate			0.33204
Child potty	88.4% (358)		0.77948
Latrine	18.0% (73)	86.1% (354)	0.06148
Open defecation	11.1% (45)	17.3% (71)	0.65272
Diapers	1.98% (8)	15.6% (64)	0.15272
Not sure	0.494% (2)	2.43% (10)	
		0% (0)	
Where child feces is disposed	77.5% (314)		0.65272
In latrine	14.6% (59)	78.8% (324)	0.3125
Buried	4.69% (19)	12.2% (50)	0.90448
In the bush	1.23% (5)	4.87% (20)	0.41794
Nothing	0.247% (1)	1.95% (8)	0.00228**
	1.23% (5)	2.92% (12)	0.02382**
		0% (0)	
Burned			
Not sure			

According to the JMP definitions, Nangere and Tarmua have similar access to sanitation services, with Nangere beneficiaries having slightly better access (Figure 24). Service levels appear to have increased in both communities since the 2017 PDM, as only 22.1% and 4.9% of Nangere and Tarmua PLWs respectively had at least limited sanitation at the time.

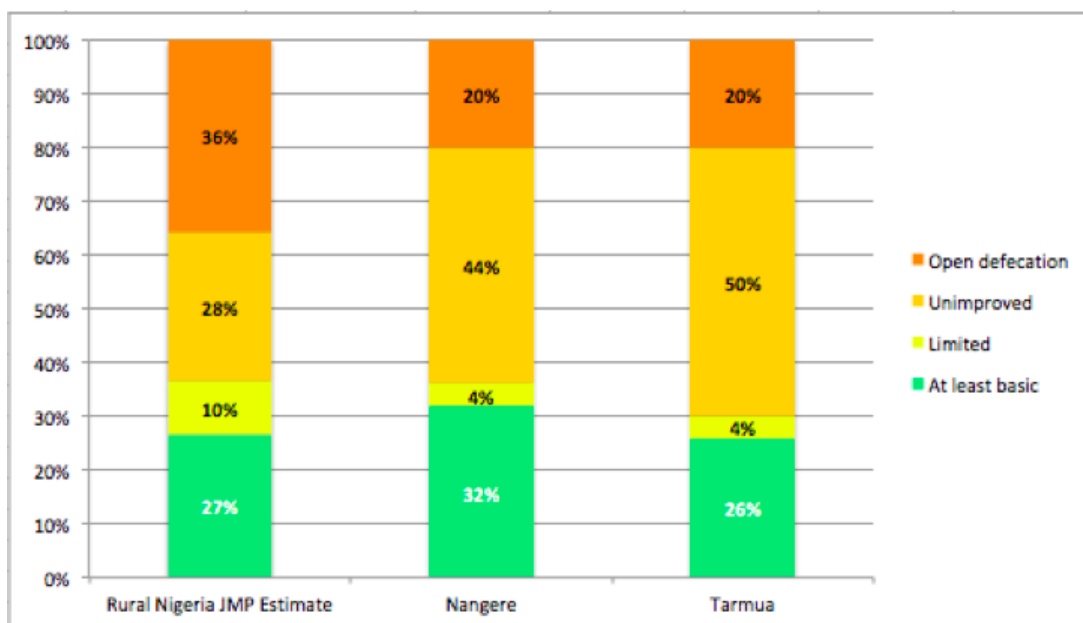


Figure 24: Sanitation service levels according to JMP definitions

Table 11 shows that significantly more Nangere participants reporting washing hands at all five critical handwashing times (36.5%), than Tarmua participants (21.9%).

Table 11. Handwashing in Nangere and Tarmua

	<u>Nangere</u> (N=405 unless noted otherwise)	<u>Tarmua</u> (N=411 unless noted otherwise)	<u>p-value</u> <u>** statistically</u> <u>significant (p<.05)</u>
Times hands were washed in the last 24 hours			
Before eating	86.7% (351)	81.3% (334)	0.03572**
After defecating	79.8% (323)	72.3% (297)	0.01242**
Before cooking	79.0% (320)	64.5% (265)	<0.00001**
After eating	77.3% (313)	77.6% (319)	0.9124
After handling child feces	58.0% (235)	48.9% (201)	0.00906**
Before feeding a child	57.5% (233)	44.5% (183)	0.0002**
After feeding child	46.7% (189)	33.1% (136)	0.00008**
Before praying	42.7% (173)	41.6% (171)	0.74896
After urinating	38.3% (155)	32.6% (134)	0.09102
After handling animals	27.9% (113)	29.2% (120)	0.6818
After praying	5.43% (22)	7.30% (30)	0.27572
Never	0.494% (2)	0.243% (1)	0.5552
Percent of caretakers reporting handwashing at all five critical times	36.5% (148)	21.9% (90)	<0.00001**

According to the JMP definitions, only the Nangere participants who use a tippy tap (4%) have access to a basic handwashing facility (Figure 25). However, the PDM reports that 5.8% of Nangere PLWs and 16.2% of Tarmua PLWs had access to a

handwashing station in 2017. The differences may be accounted for due to varying definitions of handwashing station.

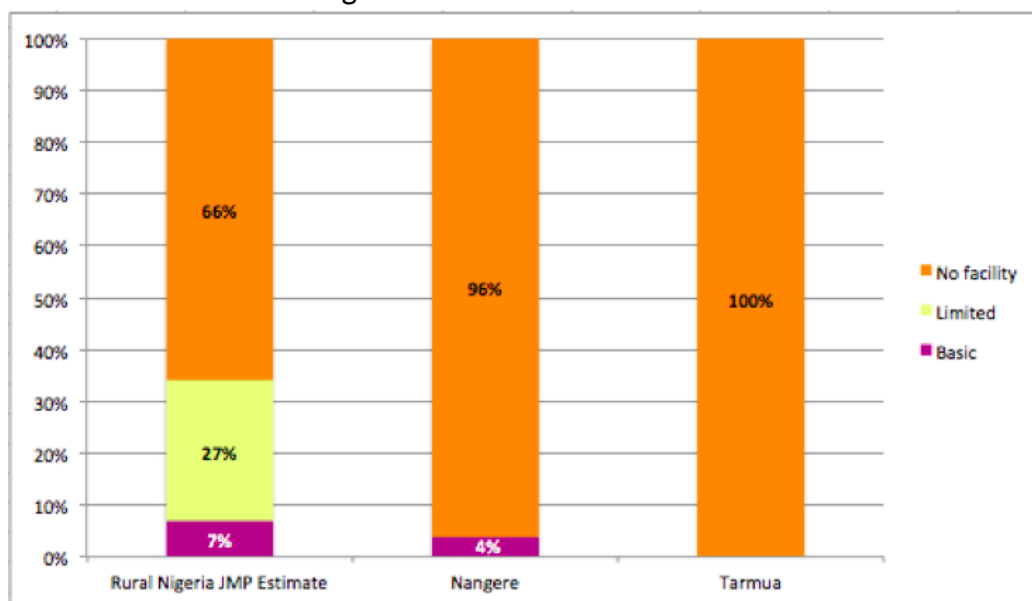


Figure 25: Handwashing facility levels according to JMP definitions

Table 12 shows data relevant to food hygiene practice. Significantly more Nangere respondents (98.8%) reported using a lid or some other method to keep flies off of food, compared with Tarmua respondents (96.6%).

Table 12. Food hygiene in Nangere and Tarmua

	<u>Nangere</u> (N=405 unless noted otherwise)	<u>Tarmua</u> (N=411 unless noted otherwise)	<u>p-value</u> <u>** statistically significant</u> (<u>p<.05</u>)
Respondents who report heating or boiling food the last time they fed their child under two	90.4% (366)	86.6% (356)	0.09296
Respondents who report using a lid or other method to keep flies and other pests from food	98.8% (400)	96.6% (397)	0.0394**
Respondents who did not cook/ boil food because of fuel scarcity in the previous month	9.38% (38)	7.54% (31)	0.34722

Table 13 shows data relevant to rubbish disposal. A designated field was most commonly used in both communities.

Table 13. Rubbish disposal in Nangere and Tarmua

	<u>Nangere</u> (N=405 unless noted otherwise)	<u>Tarmua</u> (N=411 unless noted otherwise)	<u>p-value</u> <u>** statistically</u> <u>significant (p<.05)</u>
Where rubbish is disposed of			
Designated field	31.4% (127)	19.2% (79)	0.65994
On the street	20.3% (82)	18.7% (77)	0.71138
Pit at home	18.0% (73)	15.1% (62)	0.79486
Non-designated field	11.1% (45)	9.25% (38)	0.09296
Burning	9.38% (38)	7.79% (32)	0.9442
Communal/ neighbor	8.64% (35)	0% (0)	0.65272
pit	1.23% (5)		0.02382
None			

Table 14 shows that significantly more Nangere households have animals (89.6%) compared with Tarmua households (65.0%), however Tarmua households have more animals on average.

Table 14. Animal stewardship in Nangere and Tarmua

	<u>Nangere</u> (N=405 unless noted otherwise)	<u>Tarmua</u> (N=411 unless noted otherwise)	<u>p-value</u> <u>** statistically</u> <u>significant (p<.05)</u>
Households with animals	89.6% (363)	65.0% (267)	<0.00001**
Average (standard deviation, range) number of animals per household	6.44 animals (8.24 animals, 0-82 animals)	8.08 animals (12.2 animals, 0-110 animals)	0.756995
Households with a fence or barrier to keep animals contained	N=362 68.0% (246)	N=267 62.2% (166)	0.13104
Households with human feces observed in their yard	7.41% (30)	8.76% (36)	0.4777
Households with animal feces observed in their yard	67.2% (272)	49.4% (203)	<0.00001**

Additionally, Nangere households were significantly more likely (67.2%) to have animal feces visible in their yard (Figure 26) compared with Tarmua households (49.4%).



Figure 26: Animal feces in a Yobe yard

Comparison of Nangere Knowledge, Attitudes, and Practices Survey Data to Baseline INP+ Data

Table 15 shows the indicators that were comparable between the INP+ baseline data set and this endline data set for Nangere (AAH 2017a). There were significant demographic differences in the two samples, with more males sampled at baseline and larger households sampled at endline. Significantly more households reported ever breastfeeding their children at baseline. This difference could be due to the question being phrased in an unclear manner at endline, potentially causing PLWs to underreport breastfeeding. There were significant improvements in childcare practices and WASH conditions between baseline and endline in Nangere. Namely, significantly more children received Vitamin A supplements, water fetching times decreased, water treatment practices improved, and there was a dramatic reduction in open defecation. More households at endline reported having a water source other than a borehole or open well (tapstands and water vendors), which were improved sources as seen in Table 9.

Table 15. Knowledge, attitudes, and practices in Nangere baseline vs. endline

	<u>Nangere baseline (N=429 unless noted otherwise)</u>	<u>Nangere endline (N=405 unless noted otherwise)</u>	<u>p-value</u> <u>** statistically significant (p<.05)</u>
Respondent gender			
Male		1.73% (7)	0.00056**
Female		98.3% (398)	
Household size	6.52% (28)		
1-2 people	93.5% (401)	0.741% (3)	0.28914
3-6 people		42.2% (171)	<0.00001**
7-10 people	0.233% (1)	27.4% (111)	0.78716
11-14 people	60.6% (260)	16.0% (65)	0.00044**
15-19 people	26.6% (114)	10.1% (41)	<0.00001**
More than 20 people	8.16% (35)	3.46% (14)	0.09296
Displacement status	2.80% (12)	1.63% (7)	

IDP		0.493% (2)	0.95216
Host community		99.5% (403)	
Returnee	4.66% (2)	0% (0)	
Children ever breastfed	99.5% (427)	N=385	
Yes	0% (0)	91.2% (351)	<0.00001**
No	N=395	8.83% (34)	
Child has received Vitamin A	100% (395)	N=385	
Yes	0% (0)	77.1% (297)	<0.00001**
No	N=395	22.9% (88)	
Main source of water	33.4% (132)		
Borehole	66.6% (263)	34.3% (139)	0.63122
Open well		53.6% (217)	0.37346
Other	35.9% (154)	18.8% (76)	<0.00001**
Time to fetch water	56.6% (243)		
Less than 30 minutes	7.46% (32)	88.4% (358)	<0.00001**
30 minutes to 1 hour		10.9% (44)	<0.00001**
More than 1 hour	17.9% (77)	0.741% (3)	0.00148**
Water treatment method	77.9% (334)		
Boil	4.20% (18)	11.9% (48)	<0.00001**
Filter		62.0% (251)	<0.00001**
Chlorinate	0.233% (1)	1.48% (6)	0.4654
Other	11.9% (51)	2.22% (9)	0.37346
Do not treat	0.932% (4)	25.2% (102)	<0.00001**
Type of toilet	1.39% (6)		
No toilet/ open defecation	85.6% (367)	19.8% (80)	0.01046**
Pit latrine without slab		43.7% (177)	0.52218
Pit latrine with slab	27.3% (117)	27.2% (110)	0.09296
Pour flush	45.9% (197)	51.9% (21)	0.30772
VIP	22.1% (95)	3.46% (14)	0.00046**
Other	3.73% (16)	0.741% (3)	0.9442
Handwashing station available	0.233% (1)		
Yes	0.699% (3)	3.95% (16)	0.2113
No		96.1% (389)	
	5.83% (25)		
	94.2% (404)		

Multivariable Regression

Odds ratios for diarrhea were significant for three variables (Table 15). If a household had unimproved sanitation (e.g, pit latrine without a slab, hanging latrine, or bucket latrine), they had 3.020 higher odds of one of their children having diarrhea than households with at least basic sanitation (a household pit latrine with a slab). If a household reported open defecation, than their odds were 3.910 higher than a

household with at least basic sanitation. However, for every fewer animal a household had, the odds were 1.060 higher of a child under two having diarrhea. We hypothesize that this is due to the correlation between animal ownership and economic status.

Table 16. Logistic regression model of diarrhea incidence in children under two in Nangere (**significant a 0.05 level)

Variable	Odds of Diarrhea (Standard Error)	p-value
Compared to at least basic water supply		
Limited or unimproved water supply	0.580 (0.357)	0.127
Compared to at least basic sanitation		
Limited sanitation	0.420 (1.102)	0.431
Unimproved sanitation	3.020 (0.395)	0.005**
Open defecation	3.910 (0.506)	0.007**
Compared to handwashing with a tippy tap and soap		
Handwashing: Did not use tippy tap but used soap	0.306 (0.877)	0.176
Handwashing: Did not use soap	0.198 (1.087)	0.136
Compared to using and washing BabyWASH items daily		
BabyWASH: Uses items daily but does not clean daily	0.805 (0.395)	0.583
BabyWASH: Does not use item daily	2.030 (0.376)	0.060
Compared to no animals		
Number of animals	0.943 (0.026)	0.025**
Compared to no breastfeeding		
Percent of children under two ever breastfed	1.900 (67.261)	0.992

5.3 Community focus group discussions

Forty-two (79%) of the invited Nangere PLWs, three of whom were pregnant, participated in the five FGDs (Table 16). In Tarmua, twenty-four (60%) of the invited PLWs, one of whom was pregnant, participated in four FGDs. The 19% difference in response rate between the two communities was likely attributed to a miscommunication about the time of the FGDs in Chikosuko and Koriyel, resulting in relatively poor attendance.

Table 17. Focus Group Discussion communities

LGA	Pregnant % (n)	Lactating % (n)
Nangere (Intervention)		
Dawasa	7.32% (1)	22.0% (9)
Duddaye	0% (0)	24.3% (10)
Fakarau	0% (0)	19.5% (8)
Garin Kolo	2.44% (1)	12.2% (5)
New Nangere	2.44% (1)	14.6% (6)
Total Nangere Focus Group Participants	7.32% (3)	92.7% (38)
Tarmua (Non-intervention)		
Babbangida	0% (0)	29.2% (7)
Chikosuko	4.17% (1)	12.5% (3)
Jumbam	0% (0)	33.3% (8)
Koriyel	0% (0)	20.8% (5)
Total Tarmua Focus Group Participants	4.17% (1)	95.8% (23)

Resources and strategies used to keep babies clean and fed

In both communities, PLWs described the importance of frequent burping, using clean water, brushing teeth, washing hands with soap after defecating, and washing hands with soap before eating in order to keep babies clean (Figure 27). Nangere PLWs also stressed the importance of washing hands before cooking, as well as after the baby has been playing on the ground with sand. Nangere PLWs report getting their soap mostly from ACF, while Tarmua PLWs most commonly buy soap from the store. Both groups report using ash after they run out of soap although some Nangere PLWs report buying additional soap. PLWs in Tarmua described using mattresses and blankets to keep babies off the dirty ground, while PLWs in Nangere emphasized the importance of sweeping. Tarmua PLWs also described using mosquito nets, using napkins, using lids for food, storing dishes properly, and washing their breasts before breastfeeding.

FGD participants in Nangere and Tarmua report complementary feeding children over six months old. To provide additional food besides breastmilk after six months, PLWs from both communities report farming beans, groundnuts (peanuts), millet, corn, okra, rice, and vegetables to provide food for their babies. They also mentioned using income from small business, as well as the money ACF gave them through INP+, to buy other items such as milk, eggs, pasta, meat, yogurt, and fruit. In Nangere, FGD participants reported borrowing money from neighbors in non-harvest seasons to buy additional food.

Tarmua FGD participants said they tried to eat nutritious food themselves in order to transfer the nutrients to their babies during breastfeeding. They reported providing baby formula to children when they could not produce enough breast milk,

via “feeders”. Finally, some Tarmua FGD participants reported feeding their babies pap with spoons and covered bowls.

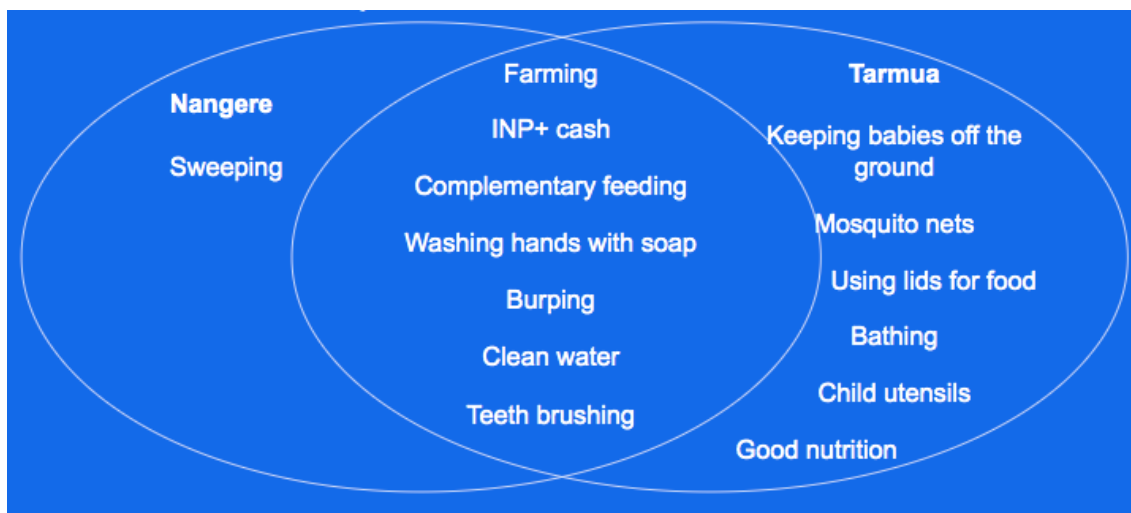


Figure 27: Resources and strategies for keeping babies clean and fed

Barriers to keeping babies clean and fed

Some PLWs in both communities could not identify any barriers to keeping their babies clean. However, some Nangere PLWs explained that a scarcity of soap and clean water made it difficult (Figure 28). Although they were given soap from ACF, they expressed it was not enough and most of it was used for laundry.

In Tarmua, PLWs thought it was difficult to keep their babies clean if they were suffering from sickness or weakness themselves. Additionally, it is difficult when they are busy with other domestic work, or when they have no income to buy soap and new clothes.

FGD participants in both communities reported that not having enough money prevents them from keeping their babies fed. Nangere participants also mentioned the rainy season as a barrier, since it is before harvest time. Tarmua participants said sickness was a barrier since PLWs may be too weak to care for their babies and that sick babies have poor appetites.

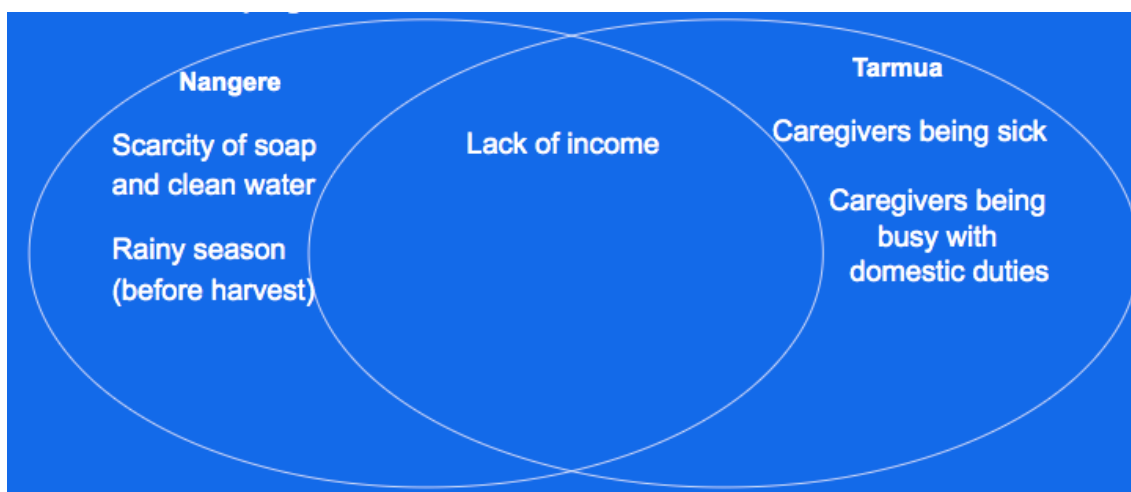


Figure 28: Barriers to keeping babies clean and fed

Illnesses of concern

In Nangere, malaria, diarrhea (including cholera), vomiting, respiratory infections (including pneumonia/ cough), and measles were the conditions that PLWs were most concerned about for their children. Others included hepatitis, headaches, typhoid, and stomach pain. They were worried about measles because they felt it could not be prevented from good hygiene practices like other illnesses, since it was airborne. Another PLW explained she was most worried about hepatitis because it can be deadly for the child if it is not caught early enough.

In Tarmua, beneficiaries were most concerned with diarrhea (including cholera), teething, vomiting, malaria, typhoid, tuberculosis, headaches, and fever. Pneumonia, yellow fever, sickle cell, calcium deficiency, ulcers, cough, and eye infections were also mentioned. They were worried about teething because it naturally causes diarrhea in children. PLWs also dread hot weather because they believed it also causes diarrhea in children.

Preventing diarrhea in children

In Tarmua and Nangere, PLWs expressed the importance of exclusive breastfeeding until six months, and then complementary feeding with clean water to prevent diarrhea. FGD participants reported giving babies bottled water if they could afford it. If not, PLWs tried to boil or filter water. This is supported by the KAP survey data, which showed that over 82 and 15 percent of beneficiaries in both communities reported filtering and boiling, respectively. PLWs expressed the importance of washing both the child's and the mother's hands with soap before feeding and after defecating, keeping food closed to flies, washing dishes with soap, and keeping their house clean by sweeping in order to prevent diarrhea.

Recognizing that diarrhea is communicable, FGD participants in both communities recommended immediately treating other children infected with diarrheal diseases. In Nangere PLWs suggested giving sick children oral rehydration salts, while in Tarmua PLWs suggested bringing the children to the hospital. However, bringing children with diarrhea to the hospital was the most common response for both Nangere and Tarmua respondents in the KAP survey, albeit significantly more in Tarmua (89.5%) suggested doing so when compared with Nangere (79.8%). This finding highlights that previous WASH programming focused on health center attendance, while the BabyWASH approach is more focused on what the PLWs can do at home.

In Nangere, PLWs thought they could prevent diarrhea by cutting fingernails and washing produce before feeding the child. In Tarmua, PLWs believed that diarrhea was an act of God, so there was no way to avoid it.

Diarrhea symptoms

PLWs in Nangere and Tarmua identified similar symptoms of diarrhea in children namely: frequent watery stool (one PLW specified more than three in one day), vomiting, weakness of the body, and hotness of the body. Nangere PLWs also thought the child might be crying, have stomach pain, and have sunken eyes. Tarmua PLWs thought that a child with diarrhea would lose weight and become malnourished. Others believed that diarrhea in children will also cause the mother to feel weak.

Causes of diarrhea

In both communities, teething was the most commonly identified cause of diarrhea. PLWs held one of two views: 1) teething makes the child feverish, which causes diarrhea or 2) diarrhea was a natural part of teething. As one mother explained, “it is just natural, you cannot prevent [diarrhea].” No PLW identified the connection between teething and mouthing behaviors, which may introduce pathogens through a child’s mouth. The second most identified cause of diarrhea in both communities was hot weather. PLWs in both communities also noted that poor hygiene could cause diarrhea, namely having uncovered food open to flies and dust, leaving water open without a lid, not washing a child’s hands before they eat, not washing PLW hands after defecating, the baby having a dirty play area, and/ or the child eating spoiled food. In Nangere, PLWs also thought that eating too many vegetables or eating a new kind of food could cause diarrhea. In Tarmua, PLWs thought that if they ate spoiled food and breastfed a child, it could cause diarrhea.

Perceived risk of diarrhea in children

The WASH’Em Diarrhea Risk Perception Matrix can be found in Appendix H. When asked what the likelihood was of a child in their family getting diarrhea in the next six months, most Nangere and Tarmua FGD participants believed it was unlikely (Figure 29). They explained that although they could not predict diarrhea, because it was from God, it was possible their child could get it because it is a natural outcome of teething. However, one FGD participant in Nangere believed it was very unlikely since her child was not susceptible to diarrhea.

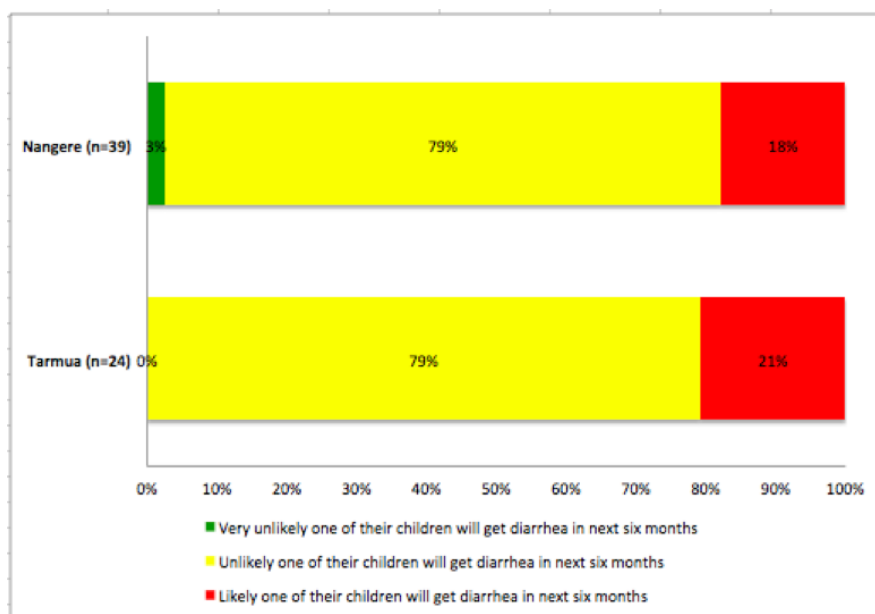


Figure 29: Perceived risk for child diarrhea in next six months in Nangere and Tarmua

When asked to compare the likelihood of their child getting diarrhea in comparison with their neighbor’s child, most thought their child was less likely. In Nangere and Tarmua, 64% and 79% of FGD participants respectively thought their child

was less likely to get diarrhea than their neighbor's child (Figure 30). FGD participants expressed that they had better knowledge of diarrhea, were cleaner, fed their children better foods, and were more likely to bring their child to a health center than their neighbor. Other participants explained that diarrhea was communicable, so both children could get diarrhea when they play together. It seemed to be common practice for the children to play together in one place so that the PLWs could trade off doing their domestic duties while the other watched the children.

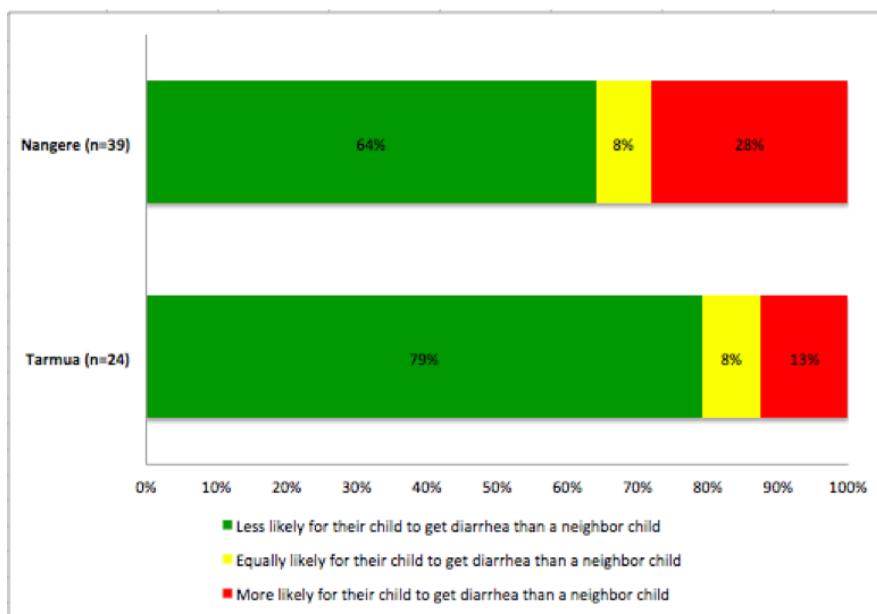


Figure 30: Perceived risk for focus group discussion participant's child to get diarrhea in comparison with their neighbor's child in Nangere and Tarmua

When asked to compare their child's risk of diarrhea with that of a child living in an urban area, participants in Nangere most commonly believed their child was less at risk (Figure 31). They believed they had better hygiene knowledge and cleaner environments than urban families. Conversely, participants from Tarmua most commonly believed that their children were more at risk of diarrhea than urban children. They explained that people in their village had poorer hygiene practices, such as open defecation, which led to a less clean environment for babies.

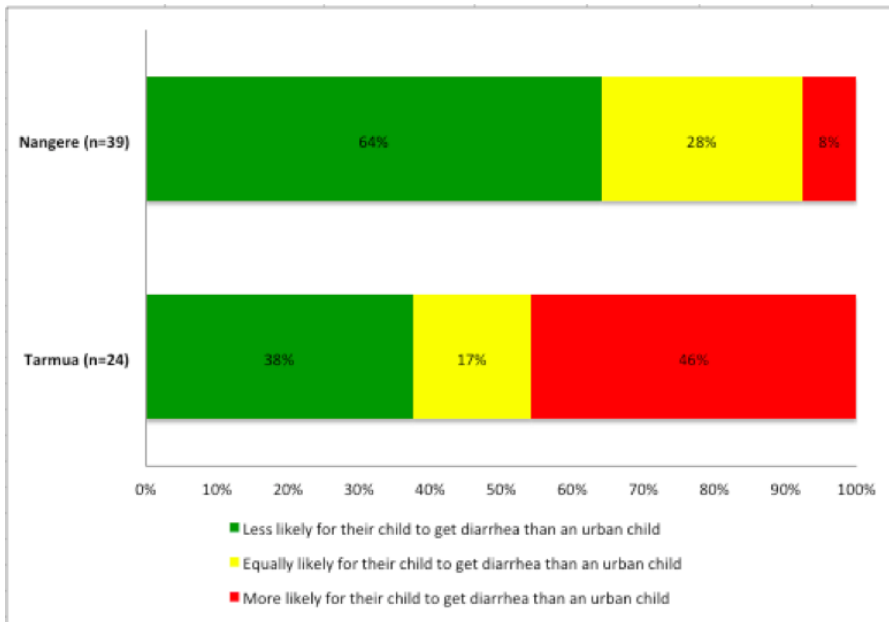


Figure 31: Perceived risk for focus group discussion participant’s child to get diarrhea in comparison with a child living in an urban area in Nangere and Tarmua

When asked the likelihood of someone of dying if they got diarrhea, most FGD participants thought it was unlikely (Figure 32). They reiterated their belief that it was God’s decision. However, they also believed it depended how quickly the ill person was brought to the health center. Nangere PLWs additionally noted that it depended on the severity of the diarrhea, although one Nangere PLW insisted that diarrhea could not cause death in children.

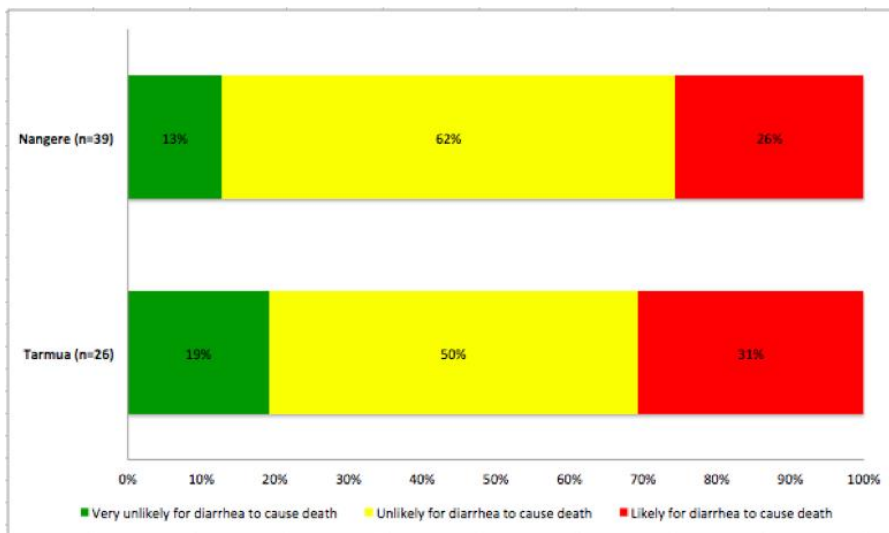


Figure 32: Perceived risk of death for someone with diarrhea in their household in Nangere and Tarmua

Impact of diarrhea in children

In both communities, PLWs reported that diarrhea would cause emotional impacts, namely worry about the child’s well being. In Nangere, PLWs emphasized that diarrhea would be an interruption in their daily activities, causing them to be more busy. Since they would be distracted from home-making responsibilities such as cooking, they

would seek help from other members of the household. They described the cycle of poverty linked to illness. A child with diarrhea would prevent them from fulfilling their farming or business duties, thereby preventing them from growing food or making the money needed to feed their families.

In Tarmua, PLWs described the stress they would feel over the financial burden of diarrhea, as they might not be able to afford treatment for the child. Tarmua PLWs also noted that diarrhea could cause long-term impacts on their child's wellbeing, including SAM and stunting.

Opinion on BabyWASH

PLWs liked the BabyWASH program and believed the new knowledge and items improved their lives. It was initially difficult to get constructive feedback about the BabyWASH program. Many PLWs said there was nothing to improve. This suggests that the PLWs were either highly satisfied with the BabyWASH program, or did not feel empowered to share their honest opinions about it.

FGD participants expressed that they were open to any interventions ACF wanted to do, but they believed they were not entitled to anything. As one shared, "It is not our right to say what to improve because it is free"

When probed further to ask how the items could be improved, PLWs expressed a desire for additional items including dental floss, bed sheets, food items that are difficult to farm, and more play mats. When asked what specific training they could benefit from, PLWs expressed the need for business training and skills so they could generate income for their families after the INP+ cash assistance ended.

We had to press the PLWs by asking, "if I went to your house would your tippy tap be constructed?" before they started sharing any issues they had with the handwashing device. After probing, we found that some beneficiaries were not using the tippy tap but instead preferred their traditional kettle for handwashing. Some new beneficiary PLWs had not picked up the materials to construct it as of yet. Other PLWs repurposed the materials. One beneficiary reported giving the jerry can to her husband for farming before she knew it was for handwashing. Other PLWs reported their children had removed it or broken it with improper use. Several PLWs reported that the jerry can cracked after being stationed in the sun. Few PLWs reported using the tippy tap consistently. Those who used it liked it because of the convenience of the soap being there. PLWs preferred having it near the toilet so that it reminds their children to wash hands after defecating.

PLWs had positive opinions on the child WASH and nutrition training. They believed they learned new skills for ensuring good hygiene, including the importance of washing hands before cooking and after using the toilet, how to clean dishes, and how to cover food. They believed the training also impacted others in the community since they sometimes shared what they learned with their neighbors.

PLWs were very excited about the complementary feeding materials. They said they were happy about them because they were free and they did not have to buy them, but still would have liked them even if they had bought them with their own money. The child play mat was particularly popular. PLWs liked the mat because it kept children off the ground so they could not eat sand and soil. Additionally, the PLWs like

the mat because it gives the child one area to play on before they can crawl off of it, allowing them to concentrate on their domestic activities. PLWs also liked the covered bowl as it made it easy for them to keep flies and dust off of food, as well as transport food to cash distribution.

5.4 Secondary data analysis

Malnutrition data

Table 17 shows the MUAC data from a cohort survey of Nangere (n=42,595) and Tarmua children (n=26,279) completed by ACF's nutrition section in July 2017, July 2018, and February 2019.

Table 18. Middle-upper arm circumference data of Nangere and Tarmua

	<u>Nangere</u> N=42,595	<u>Tarmua</u> N=26,279	<u>p-value</u> ** statistically significant (p<.05)
Moderate Acute Malnutrition			
July 2017	14.34% (6,108)	25.17% (6,614)	<0.00001**
July 2018	12.2% (5,197)	18.37% (4,827)	<0.00001**
February 2019	14.27% (6,078)	15.62% (4,105)	<0.00001**
Severe Acute Malnutrition			
July 2017	1.38% (588)	0.94% (247)	<0.00001**
July 2018	1.18% (503)	1.13% (297)	0.5485
February 2019	0.92% (392)	2.21% (581)	<0.00001**
Global Acute Malnutrition			
July 2017	15.72% (6,696)	26.11% (6,861)	<0.00001**
July 2018	13.38% (5,699)	19.5% (5,124)	<0.00001**
February 2019	15.19% (6,470)	17.83% (4,686)	<0.00001**

The prevalence of MAM in Tarmua was significantly higher than Nangere for the entire period of study (Figure 33).

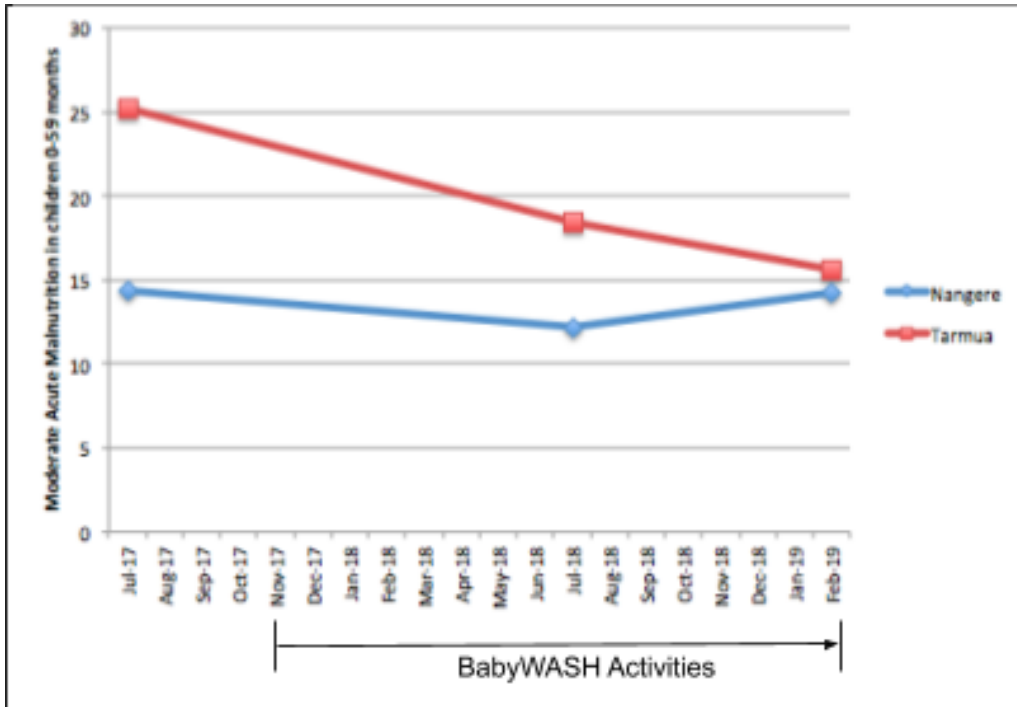


Figure 33: Moderate Acute Malnutrition Prevalence in Nangere and Tarmua July 2017, July 2018, and February 2019

The prevalence of SAM was initially significantly higher in Nangere than Tarmua, but declined over the study period. In February 2019, the SAM prevalence was found to be significantly lower in Nangere than Tarmua (Figure 34).

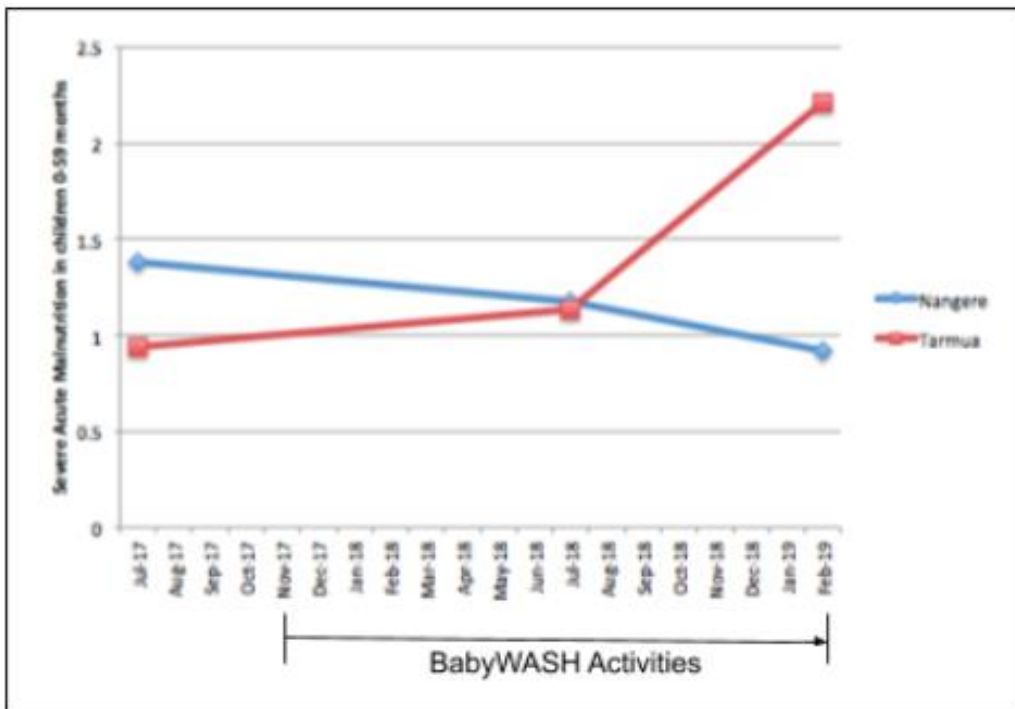


Figure 34: Severe Acute Malnutrition Prevalence in Nangere and Tarmua July 2017, July 2018, and February 2019

For the entire study period, the GAM prevalence was above the emergency threshold for both communities (Figure 35). The prevalence of GAM was significantly higher in Tarmua than Nangere at all three study points. The GAM prevalence declined in both communities over the course of twenty months, declining by 0.53% and 8.23% for Nangere and Tarmua respectively.

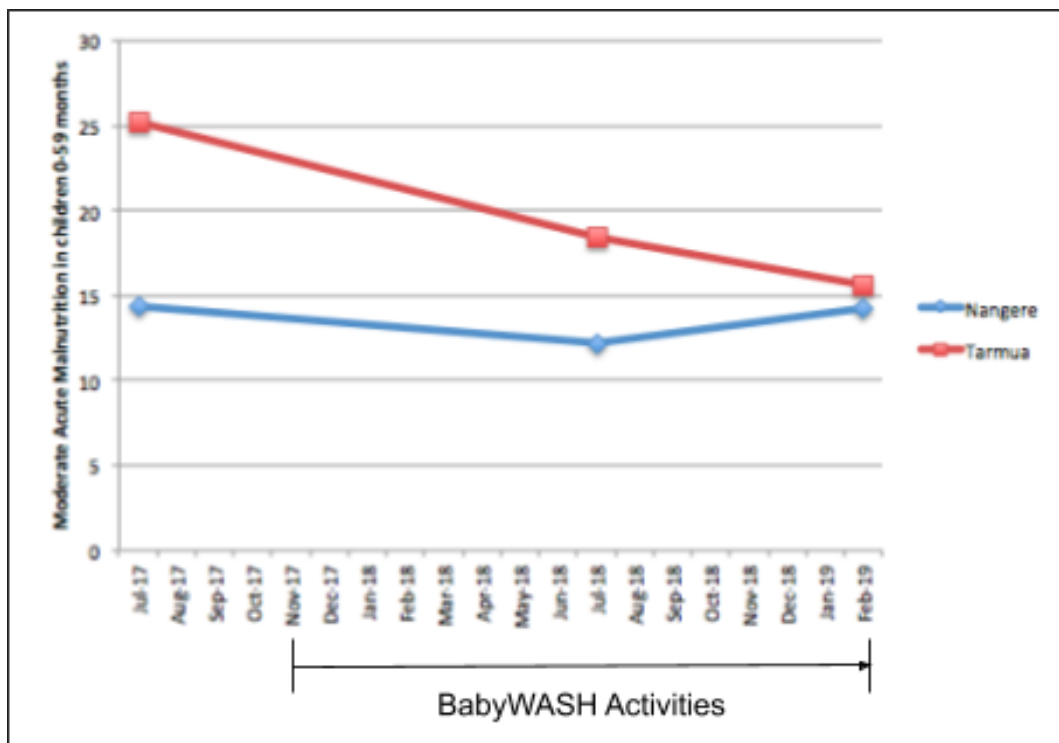


Figure 35: Global Acute Malnutrition Prevalence in Nangere and Tarmua July 2017, July 2018, and February 2019

Diarrhea incidence

Figure 36 shows the monthly diarrhea incidence in children under five, reported to health facilities. The incidence of diarrhea decreased by over 50% by the end of the 17 months. This decrease may be in part from BabyWASH, however the data represents all of Nangere (not just the targeted PLWs). Therefore, it is not possible to attribute the depicted results to the intervention solely. The peaks in diarrhea incidence in Nangere roughly corresponded with the rainy season, but did not have the same impact in Tarmua. This may be due to the poorer access to protected water sources in Nangere, resulting in increased risk of contamination of open wells during the rains.

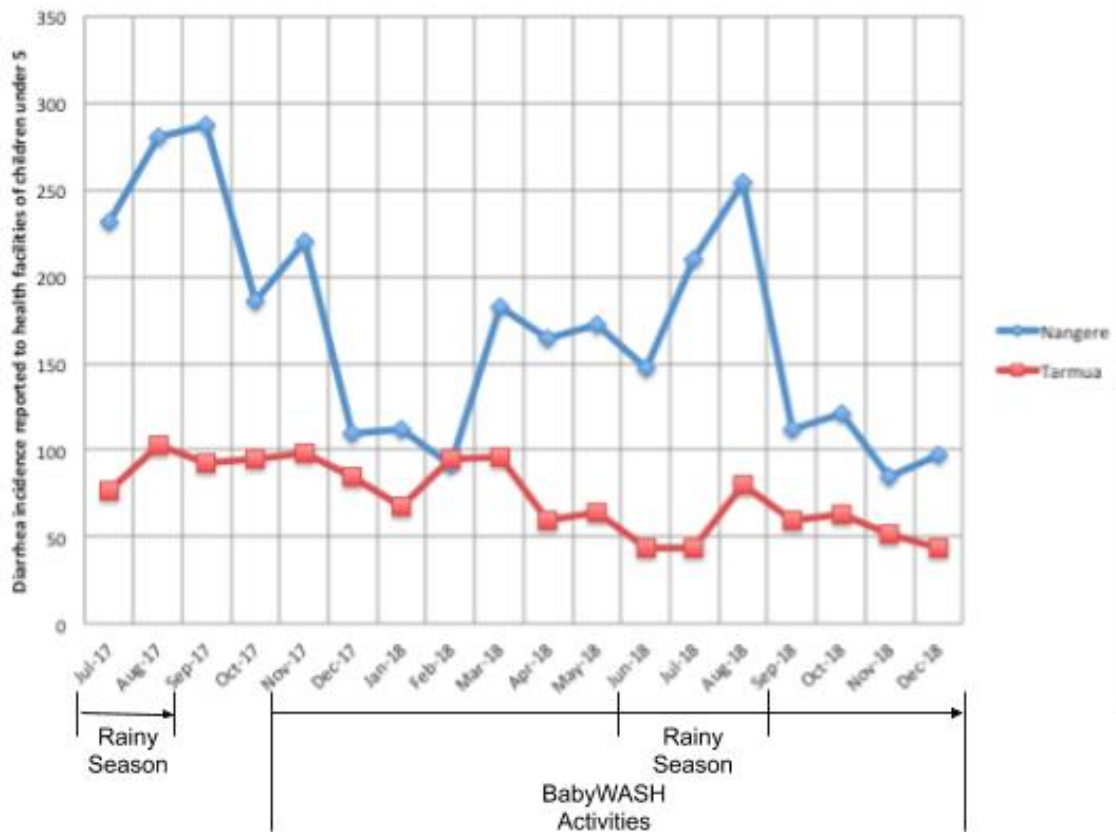


Figure 36: Diarrhea cases in children under five reported in Nangere and Tarmua health facilities from July 2017 to December 2018

6. CONCLUSIONS

6.1 Limitations

This study had several limitations. First, it is a cross-sectional study. However, secondary data from the ACF nutrition section were included and shows change over time. First, cohort data from a MUAC survey in Nangere and Tarmua provides context on change in malnutrition rates. Second, ecological data from health facilities in Nangere and Tarmua provides context on change in diarrhea incidence. However, these are population-wide snapshots, which do not speak only to the BabyWASH beneficiaries.

Next, the significant differences between the demographic information for Nangere and Tarmua suggest Tarmua was not an ideal comparison community, possibly leading to bias in the results. Although no ACF WASH interventions were provided in Tarmua at the time of BabyWASH implementation, there had been activities in the past in that community, which could have impacted the results.

It is difficult to untangle the impacts of the BabyWASH approach from that of the INP+ program more generally. This was especially evident in the FGDs and KIIs with non-ACF staff, where the participants would often bring up the impacts of the cash program, CARE groups, and FSL programming while they were being asked about the BabyWASH program.

There were some issues with the KAP survey. First, questions from the KAP were not uniformly translated, potentially impacting data quality. The enumerators were generally better at reading and writing in English than Hausa, so the team decided it was best to allow them to read questions in English and translate the question to Hausa on-the-spot. This could have resulted in different translations between enumerators, or generally poor translation of questions. However, the team attempted to address this issue by creating consensus about the more difficult to translate questions during enumerator training.

Next, PLWs were uncertain about the age of people in their household, including themselves. As a result, many of them estimated the ages of their children, impacting the accuracy of the age-dependent indicators.

These issues became evident during data cleaning, when sometimes the number of children provided for one question exceeded the total number of children in the survey. For example, one question asked:

“How many of the children (under six months) in your household have been given food besides breastmilk in the last 24 hours?”

This question was either confusing, poorly translated, or PLWs were giving estimates of the number of children under six months because PLWs in both communities provided a larger number of breastfed children under six months than the total number of children under six months that they had previously provided in an earlier question. During data cleaning, 61 responses had to be deleted (for households with no children under six months) or modified (to the number of children under six months in the household), because they exceeded the total number of children under six months in the survey. Therefore, indicators that relied upon a number of children of

a certain age (e.g, exclusive breastfeeding and diarrhea incidence) should be considered estimates.

Next, the data on the number of L/P/D should be considered estimates. The enumerator team estimated L/P/D data, based on the size of water storage containers.

6.2 Identifying the Approach

ACF's BabyWASH approach in Nangere LGA, Yobe State, Nigeria was conducted through a partnership of ACF WASH staff, ACF nutrition staff, LGA primary health care staff, LGA nutrition staff, LGA WASH staff, community leaders, and community members. Although the ACF staff led implementation, the LGA staff facilitated relationships with the community and provided translation services. The community leaders and members provided on-the-ground support in the form of mobilization of the PLWs.

Over 5,500 PLWs in Nangere LGA were targeted between November 2017 and March 2019. Several of the project documents stated that the intervention was targeting displaced PLWs. However, only two PLWs in Nangere identified as internally displaced persons. Nangere was chosen as the pilot community because of its good security situation and available baseline data from INP+. PLWs were identified through the INP+ program and selected based on ANC attendance. Pregnant status was confirmed through a urine test.

The programming included an initial distribution of a handwashing device (tippy tap), a monthly distribution of soap, a monthly child WASH and nutrition training, and the distribution of complementary feeding items (play mat, child utensils, child cup with lid, and child bowl with lid) after six months. The child WASH and nutrition training was administered at the monthly INP+ cash distribution. Messages included information on safe water storage for babies, critical handwashing times, exclusive breastfeeding, complementary breastfeeding, and safe play spaces.

No formal monitoring of this approach specifically was conducted until this study, although the INP+ PDM included questions on NFIs, WASH, and nutrition. ACF WASH staff made home visits during CLTS programming and noted conditions during cash disbursement that provided informal qualitative data about the use of the NFIs.

6.3 Relevance

Table 17 shows a synthesis of the quantitative and qualitative results with respect to the research questions.

Table 19. Synthesis of BabyWASH Evaluation

Data source	Knowledge, attitudes and practices survey	Focus group discussions	Key informant interviews
Relevance			
Meeting stakeholder priorities	46% and 32% of Nangere households have access to at least basic water and sanitation respectively	PLWs desire more resources (e.g, boreholes, latrines) to practice good hygiene	-Improved public health by reducing diarrhea and malnutrition -Include additional beneficiaries (e.g, men) in future implementation
Effectiveness			
Proposed indicators to measure effectiveness	X	X	-Reduction in GAM -Reduction in Diarrhea -Improvement in overall health
Achieving project objectives	-Widespread use of BabyWASH items besides tippy tap -90.6% of PLWs observed washing hands -Recalled diarrhea incidence in two weeks prior to survey 16.7% -Daily use and cleaning of BabyWASH item not a significant predictor of diarrhea -Reduction in overall Nangere GAM prevalence and diarrhea incidence	-PLWs believe diarrhea is a natural part of teething -PLWs believe God determines if their child gets diarrhea	PLWs have better caregiving and hygiene practices
Unplanned results	Households with fewer animals had higher odds of one of their children having diarrhea	PLWs felt empowered	Increased antenatal care attendance
Sustainability			
Social sustainability	X	PLWs will continue practices they have learned for current and future children	-PLWs will quit new practices after they stop receiving items and training -Health facilities have IECs to continue hygiene promotion
Financial sustainability	X	PLWs need means to buy food and hygiene items for children	No central LGA funding to continue activities

Environmental sustainability	X	Tippy taps not durable; crack from sun-exposure	Everything made of non-biodegradable plastic
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This project addressed most of the stakeholders' needs and priorities for Nangere. The KAP survey shows that there are still widespread needs for adequate WASH services in Nangere. Only 46% and 32% of households have access to safe water and sanitation respectively. Although PLWs were given handwashing devices, few (3.95%) used them, showing the need for alternative handwashing facilities. In addition to WASH needs, the community needs business training, primary schools, and closer health facilities. Although ACF's priority was to serve the most vulnerable members of the society, the community seems to prefer to have interventions that targeted everyone in the community, including men.

ACF's and the LGA's priorities were to fight hunger and improve public health respectively, which are inherently connected. As evidenced by ACF's 2017 LinkNCA, inadequate WASH knowledge and services are a major threat to adequate nutritional status and therefore public health in the region. Key informants highlighted the fact that ACF prioritizes providing services to the most vulnerable and marginalized populations, which includes PLWs and children in this context. Providing WASH training and NFIs for babies in the 1,000 days window of opportunity for preventing malnutrition directly addressed these priorities. Key informants noted that the LGA often prioritizes tangible interventions, such as boreholes and latrines, in their programming. This project addressed that priority while providing training to accompany NFIs.

6.4 Effectiveness

Prior to implementation, there were no objectives or outcomes explicitly outlined in the INP+ log frame specific to BabyWASH. However, key informants hoped that increased PLW knowledge would result in the use of the NFIs and behavior changes. Key informants hypothesized that this would subsequently reduce fecal oral contamination in the target population and result in reductions of the incidence of diarrheal disease, stunting, and SAM in children under two.

Childcare practices and WASH conditions significantly improved between baseline and endline. The endline survey showed that significantly more children received vitamin A supplements, water fetching times significantly decreased, water treatment practices significantly improved, and there was a significant reduction in open defecation.

According to the KAP survey, Nangere PLWs correctly identified six transmission routes of diarrheal disease at a significantly higher rate than Tarmua PLWs. However, both communities had a low perceived risk of diarrhea, except during times of teething when they believed it was an unavoidable, natural part of the process.

The improved knowledge from the BabyWASH programming resulted in improved hygiene and caregiving practices. Most PLWs reported using the child play mat (82.5%) and child utensils (91.3%) at least once per day, and every PLW reported being satisfied with both items. The tippy tap was less accepted, with only 3.95% of

beneficiaries were observed using it to wash their hands. However, most PLWs were still observed using soap and water, even if they did not use the tippy tap. Significantly more PLWs in the intervention community (90.4%) were observed washing with soap and water than PLWs in the non-intervention community (73.2%). In addition, significantly more Nangere PLWs reported washing hands at all five critical handwashing times in the last 24 hours (36.5%) than Tarmua PLWs (21.9%). This suggests that the provision of soap, coupled with the WASH and nutrition training, was successfully induced good handwashing behavior.

Although a change in stunting is impossible to measure in a short study period like this one, diarrheal disease and GAM incidence data were available for Nangere and Tarmua. The KAP survey showed that the recalled prevalence (two weeks prior to the survey) of diarrhea in children under two years old was significantly lower in Nangere (16.7%) than Tarmua (23.0%). This is consistent with the 2017 PDM findings for all age groups, that found 17.4% of Nangere and 22.1% of Tarmua respondents reported diarrhea in their household in two weeks prior to the survey (AAH 2017a).

A multivariable regression suggested that the focus of this BabyWASH approach, namely handwashing and BabyWASH item utilization, were not significant predictors of diarrhea in children under two years old. However, inadequate sanitation at the household level was significant, with children in households without adequate sanitation more than three times as likely to have diarrhea than those in households with a household pit latrine with a slab.

According to secondary data from the ACF nutrition section, there was a dramatic 58.0% reduction in Nangere diarrhea incidence for children under five, in comparison to 44.2% reduction in Tarmua. These data represent cases reported to health facilities, which includes cases for children not targeted by BabyWASH (ages two to five).

The MUAC survey of 42,595 children under 59 months showed a 0.26% reduction in SAM prevalence for Nangere and a 1.08% increase in SAM prevalence for Tarmua between July 2018 and February 2019. However these results cannot be directly attributed to BabyWASH since it includes such a much larger survey population. It is unclear what caused the increase of SAM in Tarmua.

Key informants reported additional unplanned outcomes of the BabyWASH approach. First, key informants reported an increase in visits to the ANC center by PLWs in the community. They hypothesized that PLWs wanted to benefit from the INP+ program, including BabyWASH, so pregnant women who were not previously attending started coming and/ or more women purposely got pregnant so they could benefit from the program, however there was no quantitative data available to substantiated this perception. Key informants also hypothesized that families now spend less money on health facility visits for child illnesses, resulting in improved financial health. However, this theme did not emerge from FGDs. However, FGD participants did report that the program gave them a new sense of empowerment since ACF provided BabyWASH items instead of having to ask their husbands for money to buy them.

6.5 Sustainability

Key informants believed that the behavior changes adopted because of this intervention would have the most sustainable impact on Nangere LGA. If PLWs fully adopted the behaviors, it has the potential not only to impact their current children, but their future children and others in their household. However, other key informants felt that the PLWs will lose interest in these behaviors after ACF left and they were no longer reminded of good practices.

The LGA WASH, nutrition, and health stakeholders were quick to highlight that they have no central funding. Therefore, although it is possible the health facility staff of the LGA will continue teaching the PLWs the BabyWASH messages, there is no guarantee. They were given the IECs but were not given explicit incentives to continue the programming.

All of the items provided in BabyWASH were made of non-biodegradable plastic, besides the soap. Therefore these items may not be very durable, as evidenced by the reported issues with the tippy taps cracking in the sun. It is possible that PLWs will have to use their resources to buy new items eventually.

6.6 Areas for Future Research

Effectiveness and sustainability were particularly difficult to measure in this study due to the available resources. Future studies could benefit from specifying a control group and an intervention group before implementing the intervention, matching for factors such as age, number of children, and socioeconomic status. In order to more accurately measure the effectiveness of the intervention, researchers could collect data on the diarrhea incidence and MUACs of children in study households at baseline, midline, and endline. In order to measure the sustainability of BabyWASH, it would be beneficial collect data on childcare practices in six months to a year through KAP survey.

In order to transition the BabyWASH approach in Nangere from relief framework to one of sustainable development, it is necessary to explore ways to curb beneficiary dependence from item distribution. A pilot program of commodity vouchers could inform what types of WASH items PLWs would buy if given the opportunity to choose. Otherwise, providing additional cash assistance and training the PLWs which items to provide in the market could be another alternative. A rapid market assessment would be necessary to ensure WASH items are available for purchase locally.

6.7 Significance

By the end of 2019, Nigeria is projected to overtake India as the number one country in the world for open defecation (Premium Times 2018). Children in the conflict-affected Northeast are particularly vulnerable to inadequate WASH conditions, where an estimated 75% of the WASH infrastructure has been destroyed from ongoing violence between non-state armed groups (World Bank 2017). Malnutrition and diarrheal diseases are major public health concerns for Nigeria, especially for PLWs and children. Seven percent of women of childbearing age in Nigeria suffering from acute malnutrition (UNICEF Nigeria 2019). In 2017, diarrheal diseases caused 10.4% of deaths of Nigerian children under 5 years old (UNICEF 2018). Therefore, a BabyWASH approach is essential to improving the public health of Nigeria.

7. LESSONS LEARNED AND RECOMMENDATIONS

7.1 Good practices to continue in future BabyWASH approaches

- Strong collaboration between ACF sectors
The ACF WASH, ACF nutrition and health, and ACF monitoring, evaluation, and learning sectors collaborated in every phase of this BabyWASH pilot. The teams in Potiskum and Damaturu were extraordinarily knowledgeable and hardworking.
- Positive relationships with community of operation
The partnerships with the communities of operation were obviously very strong. During every visit for FGDs, community leadership thanked the staff for the work they were doing to improve their community. The community mobilizers and WASH committee members were eager to take part in bettering their communities.
- Accurate targeting of a vulnerable population
This approach did an excellent job of targeting children in the first 1,000 days of life. This was achieved by targeting women who were confirmed to be pregnant and attending ANC.
- Provision of soap and complementary feeding items
The KAP survey shows that PLWs consistently use the soap and complementary feeding items. Every PLW that used the complementary feeding items were satisfied with them.

7.2 Challenges to address in future BabyWASH approaches

- Accompany the BabyWASH household approach with community-level interventions
Community-level interventions are necessary to truly impact child health. The regression showed that inadequate sanitation service, as defined by the JMP's definitions, was a significant predictor of diarrhea in children under two years old for this dataset. In addition, PLWs expressed that they wanted to implement what they learned through BabyWASH, but sometimes did not have the resources to do so. For example, although the PLWs were taught to provide safe water to their babies, 54% of Nangere PLWs did not have access to a safe water source such as a borehole. Therefore, interventions must address the cleanliness of the greater environment, as well as the households' environment.
- Engage local stakeholders directly in implementation
Although local stakeholders were involved in the BabyWASH approach, the LGA and community should have a more prominent role in implementation to increase the odds of long-term sustainability. ACF should invest resources in training LGA workers and WASH committee members to facilitate trainings. In addition, local institutions such as mosques and schools could be engaged to reinforce child WASH and nutrition messages.
- Develop behavior change strategy that includes items and training tailored to different times of childhood
Future approaches could benefit from a comprehensive behavior change strategy that addresses all determinants of behavior. It should include appropriate items (or the means to attain them) as well as a formal BabyWASH

curriculum, informed by the ACF BabyWASH best practices at different milestones during the first 1,000 days (Figure 35).

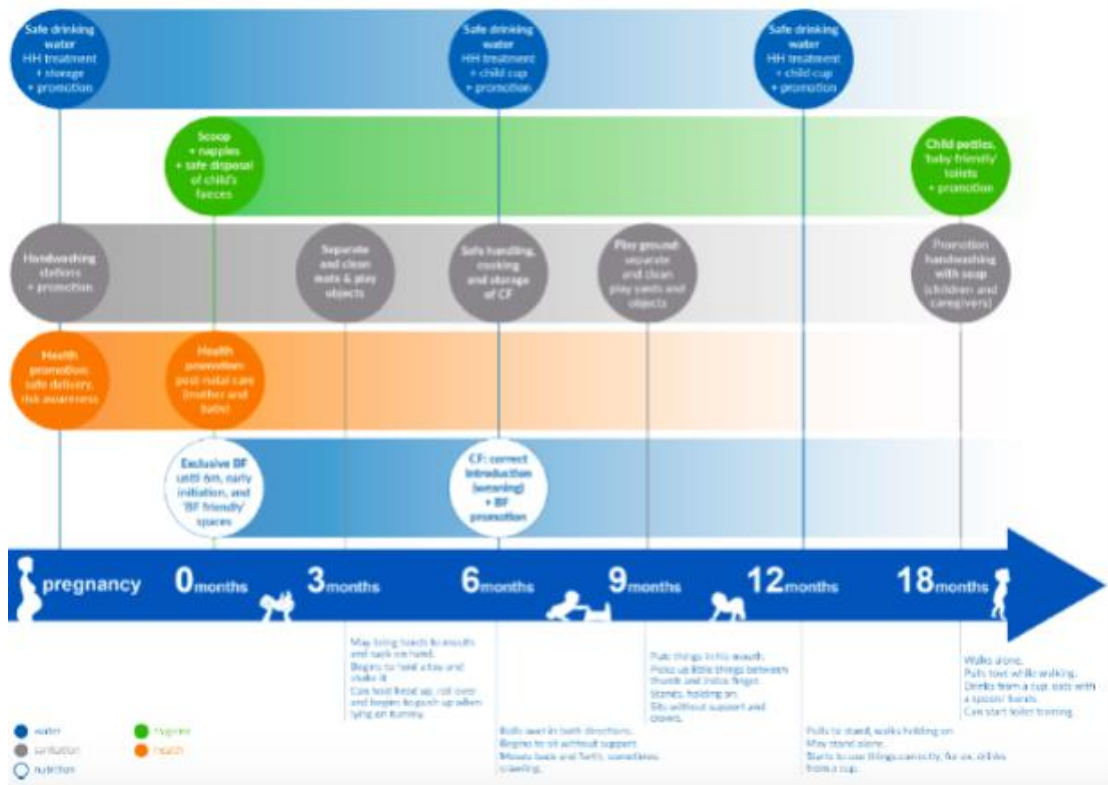


Figure 37: Suggested WASH and nutrition practices pregnancy through 18 months

Ideally, PLWs should be grouped based on the age of their children so that certain practices can be emphasized at different times. At the age of teething, it is important to educate PLWs that diarrhea is not a natural outcome, but instead can be prevented.

- **Develop training modules and provide training to implementing teams**
 The field teams believed they would have benefitted from additional training on the approach, or behavior change more generally, prior to the implementation of the program. ACF does not currently have formal training modules on BabyWASH. Therefore, training materials should be developed to ensure that the staff has the resources and skills necessary to implement a successful BabyWASH approach.
- **Include other caregivers**
 Although PLWs are often primary caregivers, it would be helpful to include other caregivers, such as fathers and the elderly, in future approaches. Men have a lot of power over household affairs in this context, so it would be beneficial to include them in future programming so they can reinforce the messages to their family. If it is not possible to include everyone, it is best to explain to the community why some people are being targeted and some are not prior to implementation.
- **Reduce dependence on non-food item distribution**
 During a protracted displacement crisis, it is important to start incorporating principles of sustainable development (UNHCR 2017). Therefore it is important to create less dependence on the provision of NFIs. Instead, PLWs could be advised which items to buy on their own, perhaps with a commodity voucher or cash assistance. If NFI distribution is necessary, it is important to pilot items,

including other handwashing devices, to see which are culturally accepted. Items should be chosen that are easy to procure locally so that delays can be avoided.

- Improve monitoring by focusing the geographic area
Without baseline and midline data on predetermined BabyWASH specific indicators, it is hard to measure the impact of this BabyWASH intervention. In the future, the key indicators for a BabyWASH approach should be chosen ahead of implementation so they can be monitored throughout. Starting on such a large scale (5,562 PLWs) and having PLWs dispersed in 20 communities, made it difficult for the staff to adequately monitor what is actually happening on a household-level.
- Incorporate aspects of early childhood development
According to the 2017 ACF BabyWASH guidance document, BabyWASH is a partnership between WASH, maternal and child health, and early childhood development. This intervention did not attempt to include aspects of early childhood development. In the future, experts from this area should be included in designing the intervention.

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9. APPENDIX

Appendix A: Consent forms

[Key Informant Written Consent to Participate in Research

Study Title: Evaluation of the BabyWASH program in Yobe, Nigeria

Investigator responsible: Brandie Banner

Sponsor of the study: ACF

You are being asked to take part in a research project currently being conducted by ACF. We are assessing the BabyWASH program implemented between 2017 and 2019, to provide water, sanitation, hygiene, and nutrition interventions to pregnant and lactating women (PLWs). Specifically, we are collecting data on the program's relevance, effectiveness, and sustainability.

Since you were involved in this program as an ACF staff (technical, administrative or financial department), in an organization that partnered with ACF in this program, as a community leader of our implementation communities, or as a beneficiary, we would like to ask you a few questions in this regard.

The risks to participants arising as a result of this study are minimal. The information being requested is not anticipated to cause harm or discomfort to participants. This research will be used by ACF to improve the BabyWASH Program and to improve the conditions for PLWs and their children in the future.

The format of the interview will be a discussion, preferably in a closed room. We expect that the interview will take approximately 45 minutes to 1.5 hours and would be conducted at a time and place that are convenient to you. While the results of this research will be published, the identity or individual information of those who have participated will not be revealed. Any information recorded during the study will be maintained confidentially. Please feel free to ask any questions about the study at any time. You may contact the research team by emailing: brandiebanner@gmail.com.

SIGNATURE: I confirm that the purpose of the research, the study procedures, and confidentiality concerns have been explained to me. All my questions have been answered. My signature below indicates my willingness to participate in this study.

Signature of Participant: _____ Date: _____

Participant Name Printed: _____

Signature of Investigator: _____ Date: _____

Signature of Witness: _____ Date: _____

Information Sheet & Informed consent: Verbal Script
Evaluating the BabyWASH Program for PLWs in Yobe, Nigeria

Investigator responsible: Brandie Banner **Sponsor of the study:** ACF

You are being asked to take part in a research project currently being conducted by ACF. We are assessing the BabyWASH program implemented between 2017 and 2019, to provide water, sanitation, hygiene, and nutrition interventions to pregnant and lactating women (PLWs). Specifically, we are collecting data on the program's relevance, effectiveness, and sustainability. Since you are a member of this community, we would like to ask you a few questions in this regard.

If you accept to participate in this study, you will answer questions about the program, as well as your water, sanitation, and hygiene conditions. This will take about ninety minutes of your time.

Your participation in this study is completely voluntary. You have the right to refuse to participate in this study, and your decision will not affect your ability to participate in any future ACF programs. If you do decide to participate, you can choose not to answer any particular questions if you wish. You do not have to give a reason for not answering the questions.

While the results of this research may be published, the identity of those who have participated will not be revealed. Any information recorded during the study will be maintained confidentially. Your name will not appear in any reports or publications resulting from this study. After the study is completed, you may request information about the study results. In case you have questions about this study, you may contact the research team by contacting the research coordinator, Brandie Banner, at the ACF Yobe office.

The risks to participants arising as a result of this study are minimal. The information being requested is not anticipated to cause harm or discomfort to participants. This research will be used by ACF to improve the BabyWASH Program and to improve the conditions for PLWs and their children in the future.

Do you agree to participate in this study? **YES or NO** **YES or NO** **YES or NO**
YES or NO **YES or NO** **YES or NO** **YES or NO** **YES or NO**
YES or NO **YES or NO** **YES or NO** **YES or NO** **YES or NO**
YES or NO

I certify that this statement has been read verbatim to the beneficiaries registered for this study and that they have agreed verbally to participate accordingly.

Signature of Investigator: _____ Date: _____

Signature of Witness (enumerator): _____ Date: _____

Appendix B: Key informant interview guide

Required Resources

Contact information for proposed key informants; a quiet space to conduct interviews; interview guide; extra paper and pens; voice recorder on cell phone; one translator

Interview Question #	Question	Optional Probes
Introductory Questions		
1	Can you tell me a little about yourself?	What role do you play in WASH or nutrition for the community?
		How long have you been involved in this role?
RQ1: What was ACF's approach to BabyWASH in Nangere?		
2	ACF has been targeting pregnant and lactating women, as well as their children under two years old, with water, sanitation, hygiene, and nutrition interventions in Nangere. This is called the BabyWASH program. To your knowledge, how was the BabyWASH approach implemented in Nangere?	How were beneficiaries targeted?
		What activities were planned?
		What was the sequencing of activities?
3	Who are the key stakeholders involved in the BabyWASH approach?	None
4	[Provide copy of hygiene messages -- see Appendix] To what extent did the ACF BabyWASH approach differ from standard hygiene promotion?	None
RQ2: What were the <i>operational challenges</i> and <i>barriers</i> to the BabyWASH approach in Nangere?		
5	How can ACF's BabyWASH approach be improved in the future?	None
6	What are the main obstacles or barriers that may have influenced the impact of the BabyWASH intervention?	What are the gaps of the BabyWASH approach in terms of targeting?

		What are the gaps of the BabyWASH approach in terms of the hygiene training?
		What are the gaps of the BabyWASH approach in terms of the hygiene items?
		What are the gaps of the BabyWASH approach in terms of the sequencing of activities?
		How can we avoid these difficulties in future BabyWASH programming?
RQ3: What were the <i>achievements and good practices</i> of the BabyWASH approach in Nangere?		
7	What positive changes have been made in the community as a result of the BabyWASH intervention (if any)?	What enabled these positive changes to happen?
		What are the strengths of the BabyWASH approach in terms of targeting?
		What are the strengths of the BabyWASH approach in terms of the hygiene training?
		What are the strengths of the BabyWASH approach in terms of the hygiene items?
		What are the strengths of the BabyWASH approach in terms of the sequencing of activities?

		How can we ensure these good things will happen in future BabyWASH programming?
8	Would you suggest the BabyWASH approach for another context (community, country, etc.)? Why?	[If no] what would need to change in order for you to recommend the BabyWASH approach?
RQ4: Was the BabyWASH approach <i>relevant</i> in Nangere?		
9	[If community member] Did the BabyWASH program address the community's needs and priorities in regards to child WASH and nutrition? Why?	What are the community's needs and priorities with regards to child WASH and nutrition?
		How did BabyWASH address community needs and priorities?
10	[If ACF or MOH staff] Did the BabyWASH program address ACF/ MOH's needs and priorities in regards to child WASH and nutrition? Why?	What are ACF/ MOH's needs and priorities with regards to child WASH and nutrition?
		How did BabyWASH address ACF/ MOH needs and priorities?
RQ5: Was the BabyWASH approach <i>effective</i> in bringing positive outcomes in Nangere?		
11	Were the planned objectives and outcomes in the project document achieved? Why?	What were the planned objectives and outcomes of the project?
		Did it create behavior change among the target group (PLWs) and other members of the household? Why?

		Did/ to what extent did the intervention reduce the risk for fecal oral contamination from mouthing? Why?
		Is it likely to reduce the prevalence of stunting by addressing the major pathways? Why?
12	What, if any, unplanned project outcomes were there?	None
13	How should the effectiveness of this (and future) BabyWASH approaches be measured?	What indicators would be helpful to measure?
RQ6: Was the BabyWASH approach <i>sustainable</i> in Nangere?		
14	To what extent are the project results (impact if any, and outcomes) likely to continue after the project?	None
15	Is stakeholders' engagement likely to continue, be scaled up, replicated, or institutionalized after external funding ceases?	None
16	To what extent is the BabyWASH approach environmentally sustainable?	None
17	Is there anything else that you'd like to share about BabyWASH, or more generally about WASH and nutrition in Nangere?	None

Appendix C: Knowledge, Attitudes, and Practices survey questions

Verbal consent: You are being asked to take part in a research project currently being conducted by ACF. We are assessing the BabyWASH program implemented between 2017 and 2019, to provide water, sanitation, hygiene, and nutrition interventions to pregnant and lactating women (PLWs). Specifically, we are collecting data on the program's relevance, effectiveness, and sustainability. Since you are a member of this community, we would like to ask you a few questions in this regard.

If you accept to participate in this study, you will answer a questionnaire about the program, as well as your water, sanitation, and hygiene conditions. This will take about one hour of your time.

Your participation in this study is completely voluntary. You have the right to refuse to participate in this study, and your decision will not affect your ability to participate in any future ACF programs. If you do decide to participate, you can choose not to answer any particular questions if you wish. You do not have to give a reason for not answering the questions.

While the results of this research may be published, the identity of those who have participated will not be revealed. Any information recorded during the study will be maintained confidentially. Your name will not appear in any reports or publications resulting from this study. After the study is completed, you may request information about the study results. In case you have questions about this study, you may contact the research team by contacting the ACF beneficiary hotline (08002255223).

The risks to participants arising as a result of this study are minimal. The information being requested is not anticipated to cause harm or discomfort to participants. This research will be used by ACF to improve the BabyWASH Program and to improve the conditions for PLWs and their children in the future.

Do you agree to participate in this study? **YES** or **NO**

[If participant says no, cease survey]

Interview Question #	Question	Acceptable Answer Choices
Demographic/ Introductory Questions		
0	Name of enumerator	Text

1	Location	Latitude, Longitude
2	LGA	a. Nangere b. Tarmuwa
3	Community	Text
4	Name of participant	Text
5	How old are you?	a. Integer b. Not sure
6	Are you an IDP or host community member?	a. IDP b. Host community c. Returnee
7	Who is the head of the household?	a. A man b. A woman c. A boy under 18 years old d. A girl under 18 years old
8	How many people live in the household?	Integer
9	How many male children under 6 months live in the household?	Integer
10	How many female children under 6 months live in the household?	Integer
11	How many male children 6 months - 2 years live in the household?	Integer
12	How many female children 6 months - 2 years live in the household?	Integer
13	How many male children 2 years - 5 years live in the household?	Integer

14	How many female children 2 years - 5 years live in the household?	Integer
15	How many male children 5 years - 18 years live in the household?	Integer
16	How many female children 5 years - 18 years live in the household?	Integer
17	How many adult males (over 18 years old) live in the household?	Integer
18	How many adult females (over 18 years old) live in the household?	Integer
19	Observation: What is the gender of the participant?	a. Male b. Female
19.1	[If b for 19] Are you currently lactating?	a. Yes b. No
19.2	[If b for 19] Are you currently pregnant?	a. Yes b. No
19.2.1	[If b for 19] Have you had any antenatal (pregnancy) health care?	a. Yes b. No
19.2.2	[If a for 19.2] Are you currently taking iron tablets or syrup?	a. Yes b. No
19.2.3	[If a for 19.2] Are you currently taking deworming medication?	a. Yes b. No
19.2.4	[If a for 19.2] Have you taken at least one dose of Intermittent Preventive Treatment (IPT)?	a. Yes b. No
19.2.5	[If a for 19.2] Did you sleep under an insecticide treated mosquito net last night?	a. Yes b. No
BabyWASH Participation		

20	Are you aware of any health, hygiene, or environmental sanitation programs being conducted in your local area?	a. Yes b. No
20.1	[If a for 20] How have you been involved? Check all that apply.	a. Attended a meeting b. Had a home visit c. Part of a committee or group d. Through school e. Other: _____ f. Not involved
20.2	[If a for 20] When did you last take part in these programs?	a. Within the last week b. Within the last two weeks c. Within the last month d. Over a month ago e. Never
20.3	[If a for 20] What are the topics of these health campaigns? Check all that apply.	a. Sanitation b. Safe water c. Menstrual hygiene d. Handwashing e. Solid waste f. Animal handling g. Other: _____ h. Not sure
20.4	[If a for 20] Who conducts these programs? Check all that apply.	a. Female community health volunteers b. Women's group c. Water user committee d. Schools e. Non-profit/ NGOs f. Other: _____ g. Not sure
21	Have you, or another member of your household, received hygiene promotion training from ACF since November 2017? ***	a. Yes b. No c. Not sure
22	Has your household received any of the following items from ACF since November 2017: soap, jerry can, child bowl, child cup, child spoon, child play mat? ***	a. Yes b. No c. Not sure

21.1/ 22.1	[If yes to 21 or 22] How did you hear about the training and item distribution (BabyWASH)? Check all that apply. ***	a. Antenatal care/ health center b. A community member (CM) or community volunteer (CV) c. ACF worker d. CARE group e. Other: _____ f. Not sure
Child nutrition/ health		
23	Are you a primary caregiver of the children in the household?	a. Yes b. No
24	How many of the children in the household (under two years old) were given vitamin A supplements in the past six months?	Integer
25	How many of the children in the household (under two years old) were given deworming medication in the past six months?	Integer
26	How many of the children in the household (under two years old) were given iron supplements in the past seven days?	Integer
27	How many of the children in the household (under two years old) slept under an insecticide treated mosquito net the night before the survey?	Integer
28	How many of the children in the household (under two years) were ever breastfed? ***	Integer
29	How many of the children (under 6 months) in your household have been given food besides breast milk in the last 24 hours? ***	Integer
30	How many of the children (6 months - 24 months) in your household have been given breast milk in the last 24 hours? ****	Integer

31	How many of the children (6-24 months) in your household have been given solid, semi-solid, or soft foods in the last 24 hours? ***	Integer
32	What kinds of foods have child(ren) (6-24 months) received in the last 24 hours? Check all that apply.	<ul style="list-style-type: none"> a. Solid b. Semi-solids c. Soft foods d. Not sure e. None
33	How many of the children under two years old in your household have had symptoms of an acute respiratory infection (chest-related cough accompanied by short, rapid breathing) in the last two weeks?	Integer
34	How many of the children under two years old in your household have had diarrhea (three loose, watery stools within 24 hours) in the last two weeks?	Integer
35	What do you do if a child in the household has diarrhea? Check all that apply.	<ul style="list-style-type: none"> a. Bring them to the health center b. Give them pap c. Give Oral rehydration salts (ORS) d. Visit nutrition center e. Extra breast milk or water f. Keep giving food g. Give medicine from market h. Herbs i. Stop giving them food j. Visit traditional healer k. Read the Koran or Bible l. Pray m. Nothing n. Other: _____
Fluids: Water		

36	What source(s) did you fetch water from today and yesterday? Check all that apply.	<ul style="list-style-type: none"> a. Surface water (river, lake) b. Protected borehole (well with hand pump) c. Unprotected borehole (open shallow well) d. Water vendor e. Tap stand f. Other: _____ g. Not sure
37	What source(s) did your family fetch drinking water from today or yesterday? Check all that apply. ***	<ul style="list-style-type: none"> a. Protected borehole (well with hand pump) b. Unprotected borehole (open shallow well) c. Water vendor d. Tap stand e. Other: _____ f. Not sure
38	Do you change your water source(s) in the wet and dry season?	<ul style="list-style-type: none"> a. Yes b. No
39	Who fetches the water? Check all that apply.	<ul style="list-style-type: none"> a. Boys (under 18 years old) b. Girls (under 18 years old) c. Women d. Men e. Water Vendor f. Not sure
40	How long does it take you (or whoever fetches the water) to collect it (round trip in minutes)?	Integer
41	Do you pay for the water?	<ul style="list-style-type: none"> a. Yes b. No c. Sometimes
42	[If a or c to 41] how much do you pay (in NGN) for a 25 liter jerry can full of water?	Integer
43	How many water storage containers do you have?	Integer

44	[Ask to see water storage containers]: Observation: What kind of water storage containers do they use? Check all that apply.	a. Jerry cans b. Water pot c. Buckets d. Bowls/ basin e. Drums f. Other: _____
45	Observation: What kind of water fetching containers do they use? Check all that apply.	a. Jerry cans b. Water pot c. Buckets d. Bowls/ basin e. Drums f. Other: _____
46	How many times per day do you fill up the water fetching container[s]?	a. Numeric: _____ b. Not sure
47	Observation: How many liters of water do the fetching container[s] hold in total?	a. Numeric: _____ b. Not sure
48	Do you clean the water containers? ***	a. Yes b. No
48.1	[If a for 48] How do you clean the water containers? ***Check all that apply.	a. Water only b. Soap and water c. Ash and water d. Sand and water e. Sand only f. Other: _____
48.2	[If yes for 48] How often do you clean the water containers? ***	a. Before fetching water b. Once per day c. Every few days d. Once a week e. Other: _____
49	Observation: Which of the water containers appear clean? ***	a. All b. Some c. None

50	Observation: Which of the water containers have lids? ***	a. All b. Some c. None
51	How do you feel your water? Check all that apply.	a. No taste b. Has taste c. No odor d. Has odor e. Colorless f. Muddy g. None h. Other: _____
52	How frequently do you treat your water? ***	a. All of the time b. Some of the time c. Never
52.1	[If a or b for 52] How do you treat your water? Check all that apply. ***	a. Boiling b. Adding a chemical (chlorination) c. Filtering d. Solar disinfection e. Letting the water sit Other: _____
Feces: Sanitation		
53	Do you have access to a toilet/latrine?	a. Yes: household toilet b. Yes: communal/neighbor toilet c. No
53.1	[If a or b for 53] How many persons do you share a toilet with (including yourself)?	Integer

53.2	[If a or b for 53 -- ask to see toilet] Observation: What kind of toilet facility does the household use? [If unsure ask to see it and make observation]	a. Pour flush toilet with septic system b. Pit latrine with slab c. Pit latrine without slab d. Ventilated pit latrine (VIP) e. Other: _____ f. None g. Unsure
53.3	[If a or b for 53] How often do you clean the toilet?	a. Once per day or more b. Multiple times per week c. Once per week d. Once per month e. Never f. Other: _____ g. Not sure
53.4	[If a or b for 53] Observation: Which of the following describes the latrine? Check all that apply.	a. Clean b. Dirty (visible feces) c. Functional d. Full e. Flies/ insects visible f. Cement slab g. Plastic slab h. Permanent superstructure i. Temporary superstructure j. Has a lock for the door
53.5	[If c for 53] Where do you defecate?	a. Digging a hole by the homestead b. In the bush c. In the farming field d. In a stream e. Other: _____

54	How do you clean up after defecation? Check all that apply.	a. Water b. Hand c. Leaf d. Sand e. Tissue f. Sticks g. Other: _____
55	Where do the children (under 5 years) defecate? Check all that apply.	a. Child potty b. Diapers c. Plastic bag d. Latrine e. Open defecation f. Other: _____ g. Not sure
56	Where do you dispose of child feces? Check all that apply. ***	a. Picked up and thrown in latrine b. Plastic bag c. Buried d. Burned e. Nothing f. Other: _____ g. Not sure
56.1	[If a for 56] How do you clean the child potty after disposing of feces? Check all that apply. ***	a. Soap b. Ash c. Sand d. Water e. Other: _____ f. Do not clean child potty
57	Where do you throw your garbage?	a. Pit at home b. Communal/ neighbor pit c. On the street d. Designated field e. Non-designated field f. Burning g. Other: _____ h. None

Feces: Animal feces		
58	Are there animals at the homestead?	a. Yes b. No
58.1	[If a to 58] How many animals?	Integer
58.2	[If a to 58] How many poultry (chickens and ducks) do you have?	Integer
58.3	[If a to 58] How many goats do you have?	Integer
58.4	[If a to 58] How many sheep do you have?	Integer
58.5	[If a to 58] How many cattle do you have?	Integer
58.6	[If a to 58] How many horses do you have?	Integer
58.7	[If a to 58] How many camels do you have?	Integer
58.8	[If a to 58] How many cats do you have?	Integer
58.9	[If a to 58] How many dogs do you have?	Integer
58.10	[If a to 58] Observe: Is there a fence or barrier to keep the animals contained away from the homestead ***	a. Yes b. No
53	[Transect walk across the yard] Observation: Is there human feces visible in the yard? ***	a. Yes b. No
54	Observation: Is there animal feces visible in the yard? ***	a. Yes b. No
Fingers: Hand hygiene		

55	Yesterday and today, when did you wash your hands? Check all that apply. ***	<ul style="list-style-type: none"> a. Never b. Before preparing food c. Before eating d. Before feeding children e. Before praying f. After eating g. After feeding children h. After handling child feces i. After defecating j. After urinating k. After touching animals l. After praying
55.1	[If b-j for 55] Why do you wash your hands? Check all that apply. ***	<ul style="list-style-type: none"> a. Removes germs b. Removes dirt c. Smells nice d. Feels clean e. Religious reasons f. Other: _____ g. Not sure
55.2	[If b-j for 55] What materials did they use to wash their hands? ***	<ul style="list-style-type: none"> a. Water only b. Soap and water c. Ash and water d. Sand and water e. Other: _____
55.3	[If b-j for 55]: Ask participant to wash hands. Observation: Where did they get water to wash hands?	<ul style="list-style-type: none"> a. Tippy tap b. Water storage container c. Kettle d. Other: _____
55.3.1	[If a to 55.3] Are you satisfied with the tippy tap? ***	<ul style="list-style-type: none"> a. Yes b. No
55.3.2	[If a to 55.3] Who in the household uses the tippy tap? Check all that apply. ***	<ul style="list-style-type: none"> a. Boys (under 18 years old) b. Girls (under 18 years old) c. Women d. Men e. Not sure
Fomites: Child		

56	Do you have a child play mat? ***	a. Yes b. No
56.1	[If a to 56] How often do you use the child play mat? ***	a. Multiple times every day b. Once per day c. Every few days d. Once a week e. Never f. Other: _____
56.1.1	[If a-d to 56.1] Are you satisfied with the child play mat? ***	a. Yes b. No
56.1.2	[If a-d to 56.1] How often do you clean the child play mat? ***	a. Multiple times per day b. Once per day c. Every few days d. Once a week e. Never f. Other: _____
56.1.3	[If a-d to 56.1] What do you use to clean the child play mat? Check all that apply. ***	a. Water only b. Soap and water c. Ash and water d. Sand and water e. Sand only f. Other: _____
56.2	[If a to 56 - ask to see play mat] Observation: Does the child play mat appear to be clean? ***	a. Yes b. No
57	Do you have a child bowl, spoon, and cup (child utensils)? ***	a. Yes b. No: only some of the items c. No: none of the items
57.1	[If a to 57] How often do you use the child utensils? ***	a. Before feeding or multiple times every day b. Once per day c. Every few days d. Once a week e. Never f. Other: _____

57.1.1	[If a-d to 57.1] Are you satisfied with the child utensils? ***	a. Yes b. No
57.1.2	[If a-d to 57.1] How often do you clean the child utensils? ***	a. Multiple times per day b. Once per day c. Every few days d. Once a week e. Never f. Other: _____
57.1.3	[If a-d to 57.1] What do you use to clean the child utensils? ***	a. Water only b. Soap and water c. Ash and water d. Sand and water e. Sand only f. Other: _____
57.2	[If a to 57 - ask to see utensils] Observation: Do the child utensils appear to be clean? ***	a. Yes b. No
Food hygiene and Flies		
58	Did you heat food to boiling or steaming the last time you fed the child(ren) in your household under two years old? ***	a. Yes b. No
59	Do you use a lid (or another method) to keep flies and rodents from food? ***	a. Yes b. No
60	In the last month, was there a time you did not cook/ boil your food because you did not have enough fuel?	a. Yes b. No
Knowledge		
61	Do you think that drinking water can transmit diseases?***	a. Yes b. No c. Not sure

61.1	[If a to 61] What can cause diarrheal diseases? Check all that apply. ***	<ul style="list-style-type: none"> a. Drinking dirty water b. Eating undercooked food c. Eating unwashed fruit or vegetables d. Not washing hands e. Flies landing on food f. Flies landing on child g. Dirty dishes h. Contamination from soil on the ground i. Contamination from animal feces j. Contamination from child feces k. Contamination from adult feces l. Child putting things in its mouth m. Child teething n. Not sure o. Other: _____
61.2	[If a to 61] What can happen if you drink dirty water? Check all that apply. ***	<ul style="list-style-type: none"> a. Stomach ache b. Diarrhea c. Vomiting d. Parasites e. Typhoid f. Other: _____ g. Nothing

Appendix D: Focus group discussion guide

Theme	Interview Question #	Question
Questions for Nangere and Tarmuwa		
Demographic	0	Ask participants to pair up into groups of 2-3. Tell them they will be asked to introduce the following information about their neighbor: Age Number of children Ages of children Currently Pregnant (Y/ N) Currently Lactating (Y/N) IDP, Returnee, or Host Community? Favorite food
General Clean & Fed Questions	1	What resources and strategies do you use to keep your baby clean?
	2	What, if anything, makes it difficult to keep your baby clean?
	3	What resources and strategies do you use to keep your baby fed?
	4	What, if anything, makes it difficult to keep your baby fed?
Risk Perception Activity	5	What are the five illnesses that you are most worried about for you and/ or your baby? [If diarrhea is not mentioned, ask if it is a concern and how much of a concern it is in relation to other illnesses?] Please rank the illnesses in order of which ones you are most worried about.
	6	What are the symptoms of diarrhea?
	7	What causes diarrhea in children? [If they do not mention any, ask for specific answers like types of behaviors, such as teething]

	8	<p>We are now going to do a guessing activity. You will be asked the chances of a bad thing happening. [Give each woman a set of 3 cards]. Each one of you should have three cards. The green card means that something is very unlikely to happen, the yellow card means it is unlikely to happen, and the red card means it is likely to happen. Let's do a practice question. Although we do not know for sure, we can guess what the weather will be like. How likely is it to rain tomorrow? Show us a green card if it is very unlikely to rain, the yellow card if it is unlikely to rain, and the red card if it is very likely it will rain. [If the women understand proceed. If not, do another practice question like "How likely is it that a celebrity will visit the community tomorrow?"]</p>
	9	<p>Now I would like to learn about diarrhea from you. How likely is it for one of the children in your household to get diarrhea in the next six months? [Ask a few participants to share why they answered how they did].</p>
	10	<p>If someone in your household gets diarrhea, how likely is it to cause death? [Ask a few participants to share why they answered how they did].</p>
	11	<p>For the next questions, the scale will change a little. Now green means "less likely than others", yellow means "equal to others", and red means "more likely than others". How likely is it for a child in your household getting diarrhea compared to your neighbors' child? Show us the green card if your child is less likely to get diarrhea than your neighbors' child, the yellow card if your child is equally likely to get diarrhea than your neighbors' child, and the red card if your child is more likely to get diarrhea than your neighbors' child. [Ask a few participants to share why they answered how they did].</p>

	12	You live in a rural area. How likely is your child to get diarrhea compared to children living in an urban area? Show us the green card if your child is less likely to get diarrhea than a child in an urban area, the yellow card if your child is equally diarrhea than a child in an urban area, and the red card if your child is more likely to get diarrhea than a child in an urban area. [Ask a few participants to share why they answered how they did].
	13	If a child in your family got diarrhea, what impact would it have on your day-to-day life?
	14	What can families like yours do to prevent your children from getting diarrhea?
Questions for Nangere only		
BabyWASH	15	How do you feel about the training you received from ACF on environmental hygiene?
	16	How do you feel about the training and material you received from ACF for tippy tap construction?
	17	How do you feel about the items you received from ACF for your child (soap, play mat, bowl/ cup/ spoon)?
	18	The trainings and item distribution are part of a program called BabyWASH. Think about all the parts of the BabyWASH program. What was your favorite part of the BabyWASH program? Why?
	19	How could the BabyWASH program be improved?

	20	Is there anything else you'd like to say about the BabyWASH program?
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Appendix E: Example item distribution records

FID- Baby WASH Complementary feeding Item Distribution Reviewing List 22/01/2019 Dazigau Ward

S/N	S/N	Name	Age	Id	Primary Phone	LGA	Ward	Community Name	Weeks of Pregn	Kit Content	Sign
1	[Redacted]	[Redacted]	[Redacted]	[Redacted]	000000000000	Nangere	Dazigau	Bayan lamba	18	1 litre plastic baby food bowl, plastic cup, 5 litre plastic container with lid	[Redacted]
2	[Redacted]	[Redacted]	[Redacted]	[Redacted]	000000000000	Nangere	Dazigau	Zindiwa	35	1 litre plastic baby food bowl, plastic cup, 5 litre plastic container with lid	[Redacted]
3	[Redacted]	[Redacted]	[Redacted]	[Redacted]	000000000000	Nangere	Dazigau	Lafiya	28	1 litre plastic baby food bowl, plastic cup, 5 litre plastic container with lid	[Redacted]
4	[Redacted]	[Redacted]	[Redacted]	[Redacted]	000000000000	Nangere	Dazigau	Nzamai	29	1 litre plastic baby food bowl, plastic cup, 5 litre plastic container with lid	[Redacted]
5	[Redacted]	[Redacted]	[Redacted]	[Redacted]	000000000000	Nangere	Dazigau	Garin Lamba	30	1 litre plastic baby food bowl, plastic cup, 5 litre plastic container with lid	[Redacted]
6	[Redacted]	[Redacted]	[Redacted]	[Redacted]	000000000000	Nangere	Dazigau	Jambadai	20	1 litre plastic baby food bowl, plastic cup, 5 litre plastic container with lid	[Redacted]
7	[Redacted]	[Redacted]	[Redacted]	[Redacted]	000000000000	Nangere	Dazigau	Yaro	26	1 litre plastic baby food bowl, plastic cup, 5 litre plastic container with lid	[Redacted]
8	[Redacted]	[Redacted]	[Redacted]	[Redacted]	000000000000	Nangere	Dazigau	Jambadai	32	1 litre plastic baby food bowl, plastic cup, 5 litre plastic container with lid	[Redacted]
9	[Redacted]	[Redacted]	[Redacted]	[Redacted]	000000000000	Nangere	Dazigau	Sabon Kaura	34	1 litre plastic baby food bowl, plastic cup, 5 litre plastic container with lid	[Redacted]

AAH Representative Umar Bulsa Date/Sign 22/1/19 

Appendix F: Example BabyWASH hygiene message

Baby WASH Hygiene Promotion Session

This message has been designed to help WASH community mobilizer/public health promoters in the INP+ deliver health Education session to mothers and caregivers, husbands, fathers and all men and women in the communities they support.

Specific Objectives

- To achieve the safe storage and use of water for the baby.
- To maintain good hygiene practices in the preparation and storage of complementary food (food safety).

Processes

§ Beneficiaries (lactating mothers) are target during cash disbursement in the health facility

§ Beneficiaries to be put into maximum group of 25 per session for effective communication, active listening and participation

Hygiene Promotion Key Message

Ø Complementary feeding and Hygiene

With introduction of food and water to the baby at this stage (6 month), it increase the risk of contact with microorganism.

Possible route of contact/ingestion of faecal microorganism by the baby

1. Community water source, especially unprotected well is at high risk of contamination with microorganism.
2. In proper water storage at the household level will expose the water to dirt. This will occur as a result of not covering the water and also using dirty storage container
3. Preparing food for the baby without washing hand with soap and running water
4. Feeding baby without washing hand with soap/ash and running water
5. Leaving babies food open to flies

Good Hygiene Practice to promote (Prevention)

1. Always treat the water by boiling in other to kill germ and allow it to cool before given to the baby
2. Store the treated water in a clean container/cup and always cover with lid to protect it
3. Always wash your hand with soap or ash and running water before food preparation
4. Wash your hand with soap and water before feeding and after feeding the baby
5. Warm the food before given to the baby, always put it in a clean bowl, and close it with lid to protect food from flies, rats and other animals.

Ø Keeping the environment clean

The household environment in which children develop and grow is highly related to their nutritional status.

To avoid ingestion of faecal matter during children's mouthing and exploratory play

Safe and clean play spaces: mats/ plastic sheets and/or play yards for the baby

Ø Disposing Child feces

- Feces in the yard spread germs to others.
 - Flies will come to feed on the feces (bad).
 - Animals will feed on the feces (bad).
 - Worms in feces can crawl into the soil and infect others (bad).
- Bury feces away from the house to keep flies away before construction of latrine. This is better than leaving feces in the yard.

- Throwing feces into a latrine protects others from germs.
 - It keeps the feces far away from the house
 - Animal and children will not step in feces that is in the latrine
 - Worms in the feces will not infect others.
 - Keeps flies away from feces
 - Keeps away odor from the house

Appendix G: Additional household KAP survey results

	<u>Nangere</u> <u>(N=405 unless</u> <u>noted otherwise)</u>	<u>Tarmua</u> <u>(N=411 unless</u> <u>noted otherwise)</u>	<u>p-value</u> <u>** statistically</u> <u>significant</u> <u>(p<.05)</u>
Percent (number) of survey households in each ward	Watinani 15.6% (63) Dawasa 12.1% (49) Dazigau 9.88% (40) Fakarau/ Duddaye 9.38% (38) Kukuri 9.14% (37) Nangere 9.14% (37) Tikau 8.64% (35) Chukuriwa 7.90% (32) Chillariye 6.67% (27) Degubi 6.67% (27) Darin Langawa 4.94% (20)	Babbangida 38.9% (160) Birir/ Churokusko 18.0% (74) Koriyel 16.8% (69) Jumbam 13.1% (54) Mandadawa 5.11% (21) Lantewa 4.62% (19) Sheaku 3.41% (14)	
Topics of programs			
Sanitation	N= 377	N=335	0.32708
Handwashing	92.8% (350)	94.6% (317)	0.02144**
Safe water	84.6% (319)	77.9% (261)	0.30772
Handling animals	68.4% (258)	71.9% (241)	0.03236**
Waste	50.4% (190)	42.3% (142)	0.34722
Menstrual hygiene management	37.4% (141)	34.0% (114)	0.56868
Not sure	18.0% (68)	19.7% (66)	0.0139**
	3.71% (14)	0.896% (3)	
Who conducts the programs			
Non-governmental organization	N=377	N=335	0.02852**
Female volunteers	58.4% (220)	50.2% (168)	0.0232**
Women's group	54.9% (207)	63.3% (212)	0.00018**
Water user committee	23.9% (90)	36.7% (123)	0.04884**
Not sure	1.86% (7)	0.299% (1)	0.00228**
	4.78% (18)	0.896% (3)	
Involvement in the programs			
Attended a meeting	N=377	N=335	0.21498
Had a home visit	57.8% (218)	62.4% (209)	0.14156
Personally involved	44.6% (168)	39.1% (131)	0.92034
Part of a group	14.1% (53)	14.3% (48)	0.08914
Not involved	9.02% (34)	5.67% (19)	0.03236**
Through school	3.71% (14)	1.19% (4)	0.34722
Other	0.265% (1)	0% (0)	
	0.796% (3)	5.08% (17)	
	Disbursement point 0.531% (2)	Disbursement point 3.88% (13)	0.00188**
	Neighbor 0.265% (1)	Not involved 1.19% (4)	
When involved in programs			
Never	N=377	N=335	0.10524
		2.09% (7)	

Over a month ago	4.24% (16)	33.7% (113)	0.01928**
Within the last month	25.7% (97)	40.3% (135)	0.07346
Within the last two weeks	46.9% (177)	13.4% (45)	0.20408
Within the last week	10.3% (39)	10.5% (35)	0.34212
Learned of ACF program from	12.7% (48)	N=309	
Community volunteers	N=402	52.4% (162)	0.00252**
Antenatal care	63.7% (256)	42.1% (139)	0.11184
ACF staff	39.1% (157)	13.9% (43)	<0.00001**
CARE group	30.9% (124)	4.53% (14)	0.77948
Other	4.98% (20)	25.2% (78)	
	0.498% (2)	Not aware 25.2%	<0.00001**
	Not aware	(78)	
	0.280% (1)		
	Family		
	member		
	0.280% (1)		
Play mat cleaning materials		N=5	
Soap and water	N=388	60% (3)	<0.00001**
Water only	96.4% (374)	20% (1)	0.242
Ash and water	6.70% (26)	20% (1)	0.14156
Sand and water	5.15% (20)	0% (0)	0.9124
Other	0.258% (1)	20% (1)	
	0% (0)	Broom: 20% (1)	
Play mat appears to be clean		N=5	
	N=399	60% (3)	0.00086**
	94.7% (378)		
Child utensil cleaning materials		N=3	
Soap and water	N=349	66.7% (2)	<0.00001**
Water only	98.6% (344)	33.3% (1)	<0.00001**
Ash and water	1.15% (4)	0% (0)	0.92828
	0.287% (1)		
Child utensils appear to be clean		N=3	
	N=367	100% (3)	0.65272
Types of foods given to children 6-24 months in last 24 hours	89.1% (327)		
	N=360	N=360	
Soft	73.1% (263)	66.6% (240)	0.06148
Semi-solid	71.1% (256)	63.3% (228)	0.02642**
Solid	63.3% (228)	64.7% (233)	0.69654
No food	10.3% (37)	5.83% (21)	0.02852**
Not sure	0.278% (1)	0.278% (1)	1
Water source today and yesterday			
Open well		15.3% (63)	<0.00001**
Protected borehole	53.6% (217)	65.9% (271)	<0.00001**
Tap stand	35.3% (143)	16.1% (66)	0.77948
Water vendor	16.8% (68)	6.10% (25)	0.00288**
Surface water	1.98% (8)	0.200% (1)	0.30772
	0.741% (3)		
Average cost (standard deviation, range) of 25 liter jerry can of water for those paying for water some or all of the time	13.3 NGN (15.9 NGN, 2-100 NGN)	13.16 NGN (15.2 NGN, 5-200 NGN)	0.919537
Average number (standard deviation, range) of water storage containers	2.97 containers (6.29 containers, 1-125 containers)	3.32 containers (2.30 containers, 0-20 containers)	0.29215
Water storage containers			

Water pot		78.3% (322)	0.39532
Drum	80.7% (327)	40.4% (166)	0.5485
Jerry can	42.5% (172)	39.7% (163)	<0.00001**
Bucket	23.5% (95)	8.03% (33)	0.4902
Bowls/ basins	9.38% (38)	5.35% (22)	0.42952
	6.67% (27)		
Water fetching containers		3.16% (13)	0.9681
Water pot	3.21% (13)	2.19% (9)	0.79486
Drum	2.47% (10)	95.9% (394)	<0.00001**
Jerry can	71.1% (288)	9.98% (41)	<0.00001**
Bucket	43.5% (176)	2.19% (9)	0.00672**
Bowls/ basins	5.93% (24)		
		3.52 times	0.000065**
Average number (standard deviation, range) of daily trips to fetch water	4.52 times (3.61 times, 1-25 times)	(3.51 times, 1-30 times)	
	101.9 liters (128.7 liters, 1-980 liters)	109.8 liters (106.6 liters, 0-695 liters)	0.341273
Average capacity in liters (standard deviation, range) of water storage containers		N=374	
	N=391		
Materials used to clean water containers		94.7% (354)	0.03**
Water	90.5% (354)	57.0% (213)	<0.00001**
Soap	73.7% (288)	9.63% (36)	0.02202**
Ash	15.1% (59)	12.0% (45)	0.01046**
Sand	6.65% (26)	0% (0)	
Other: Sponge	1.53% (6)		
		43.1% (177)	<0.00001**
Containers that appear clean by observation	57.5% (233)	50.4% (207)	0.0198**
All	42.2% (171)	6.57% (27)	0.00906**
Some	2.72% (11)		
None			
		51.3% (211)	0.82588
Description of the water	52.1% (211)	35.5% (146)	0.99202
No taste	35.6% (144)	34.8% (143)	0.41794
Has taste	37.5% (152)	2.92% (12)	0.5287
No odor	2.22% (9)	51.8% (213)	0.00008**
Odor	38.0% (154)	7.54% (31)	0.28462
Colorless	5.68% (23)	11.9% (49)	0.28914
Muddy	9.63% (39)		
None		N=327	
	N=325	64.8% (212)	0.267
Description of latrine	68.9% (224)	20.8% (68)	0.54186
Clean	22.8% (74)	40.4% (132)	0.02088**
Feces visible	31.7% (103)	2.45% (8)	0.35758
Functional	3.69% (12)	8.87% (29)	0.87288
Full	9.23% (30)	15.9% (52)	0.00694**
Flies/ insects	8.92% (29)	1.22% (4)	0.99202
Cement slab	1.23% (4)	15.3% (50)	0.00086**
Plastic slab	7.08% (23)	2.95% (26)	0.06576
Permanent superstructure	12.3% (40)	0.306% (1)	0.3125
Temporary superstructure	0.923% (3)		
Lock			
		97.3% (400)	0.07186
Materials used for ablution	99.0% (401)	49.6% (204)	0.25848
Water	45.7% (185)	14.1% (58)	0.33706

Hand	11.9% (48)	0.487% (2)	0.14986
Sticks	1.48% (6)	3.41% (14)	0.07508
Sand	1.48% (6)	0.973% (4)	0.42372
Leaf	0.494% (2)		
Tissue		81.3% (334)	0.41222
	83.5% (338)	47.7% (196)	0.00244**
How child potty is cleaned	58.3% (236)	20.2% (83)	0.00308**
Water	29.1% (118)	3.16% (13)	0.02926**
Soap	0.988% (4)	4.87% (20)	0.3125
Ash	3.46% (14)	2.68% (11)	0.07186
Sand	0.988% (4)		
No potty			
Do not clean child potty		89.5% (368)	0.3125
	91.6% (371)	48.4% (199)	0.20766
Why do respondents wash hands	52.8% (214)	18.7% (77)	0.18684
Dirt	22.5% (91)	23.4% (96)	0.07346
Germs	18.3% (74)	13.6% (56)	0.7414
Feels clean	12.8% (52)	0% (0)	0.3125
Religious reasons	2.47% (1)		
Smell		N=2158	
Not sure	N=2609	46.8% (1010)	<0.00001**
	56.3% (1469)	38.1% (822)	0.08914
Types of animals	40.5% (1057)	18.1% (390)	<0.00001**
Poultry	24.8% (648)	25.2% (544)	<0.00001**
Goats	9.50% (248)	3.06% (66)	0.0151**
Sheep	4.41% (115)	0.788% (17)	0.00038**
Cattle	2.03% (53)	0.556% (12)	0.78716
Dogs	0.498% (13)	0.185% (4)	0.20766
Cats	0.383% (10)	0% (0)	
Horses/ Donkeys	0.307% (8)		
Camels			
Other: Rabbits and turtles			

Appendix H: WASH'Em Diarrhea Risk Perception Matrix
Nangere

Question	Responses	Findings: For each FGD, place a '1' if the answer did emerge and leave it blank if this answer did not emerge.						Total	Interpretation: If the consensus from 3 or more of your FGDs is the same then you should prioritise these findings and the associated behaviour change tasks.	Behaviour change challenges
		1	2	3	4	5				
Was diarrhoea one of the 5 illnesses of greatest concern to your population ?	yes	1	1	1	1	1	5	People who perceive diarrhoea to be an important health issue affecting them are more likely to be receptive to hygiene promotion programs and more likely to practice good hygiene.	No need to change anything here	
	no	0	0	0	0	0	0	If people are worried about other health issues they may not care about your hygiene program or see handwashing as an important behaviour	1) Identify whether there are services and information to prevent or treat these other health issues that are important to the community 2) Help people to	

									view diarrhoea as something that is affecting many people in their community
	No – but they did mention other diseases that spread through the faecal oral route.	0	0	0	0	0	0	If people care about other faecal oral diseases, then you might then your program could be strengthened by linking with these.	Use your program to highlight the multiple positive benefits of handwashing.
1. How likely is it that someone in your family gets diarrhoea in the next 6 months?	Very unlikely	1	0	0	0	0	1	If people do not think they are likely to get diarrhoea they will be less likely to want to take preventative action.	Help people to view diarrhoea as something that is affecting many people in their community
	Unlikely	1	1	1	1	1	5	If people do not think they are likely to get diarrhoea they will be less likely to want to take preventative action.	Help people to view diarrhoea as something that is affecting many people in their community
	Likely	1	1	0	1	0	3	If people think that they are at risk of diarrhoea, they may be more receptive to hygiene programs and	No need to change anything here

								more likely to take preventive action.	
2. If someone in your family got diarrhoea, how likely is it that it could result in serious illness or death?	Very unlikely	1	1	0	1	0	3	If people do not consider diarrhoea to be serious then they will be less likely to want to take preventative action.	Help people to realise that diarrhoea is a serious disease but one that can be easily prevented.
	Unlikely	1	1	1	1	1	5	If people do not consider diarrhoea to be serious then they will be less likely to want to take preventative action.	Help people to realise that diarrhoea is a serious disease but one that can be easily prevented.
	Likely	1	1	1	0	0	3	If people consider diarrhoea to be serious then they may be more receptive to hygiene programs and more likely to take preventive action.	No need to change anything here
3. How likely is it that someone in your family gets diarrhoea compared to your neighbours?	Less likely than others	1	0	1	1	1	4	People often think that they are cleaner than others and this may mean that they get complacent about handwashing with soap.	1) Help people to realise that their situation may have changed due to the humanitarian crisis. 2) Help people to realise that diarrhoea

									can affect anyone. 3) Help people to realise that handwashing needs to be done all the time not just some of the time in order to stop diarrhoea.
	Equal likelihood	0	1	0	1	0	2	This may indicate that people feel their circumstances are similar to those around them and that who gets diarrhoea is random.	Help people to realise that although anyone can get diarrhoea it is not completely random and can be prevented.
	More likely than others	0	1	1	0	1	3	If people respond in this way, then this is likely to mean that they think there is something about their circumstances which increases their vulnerability to diarrhoea.	Work with the community to identify factors that may increase individual or collective vulnerability to diarrhoea.
4. How likely is it that someone in your family gets diarrhoea compared to someone	Less likely than others	1	1	1	1	1	5		
	Equal likelihood	1	1	1	1	0	4		
	More likely than others	0	0	1	0	1	2		

living in an urban area?									
5. What were some of the perceived impacts of diarrhoea? (more than one answer may be true for this question)	Short and long term health impacts	0	0	0	0	0	0	People are predominantly worried about the health impacts of diarrhoea	Help people to see that there could be other consequences of getting diarrhoea.
	Might not impact them	1	0	0	0	0	1		
	An economic impact - loss of income whilst sick	0	1	1	0	0	2	People are not only worried about the health impacts of diarrhoea. Heightening the economic impact of diarrhoea could be an effective way to motivate handwashing.	Help people to understand the economic consequences of a family member getting diarrhoea.
	An economic impact - treatment would cost money, getting to a health centre would cost money.	0	0	0	0	0	0	People are not only worried about the health impacts of diarrhoea. Heightening the economic impact of diarrhoea could be an effective way to motivate handwashing.	Help people to understand the economic consequences of a family member getting diarrhoea.
	A cognitive/ physical impact - less mentally alert, malnourishment	0	0	0	0	0	0	People are not only worried about the health impacts of diarrhoea. Heightening the cognitive impact of diarrhoea could be an effective way to	Help people to understand the cognitive consequences of a family member getting diarrhoea.

								motive handwashing.	
	An emotional impact-worried about the child	0	0	1	0	1	2	People are not only worried about the health impacts of diarrhoea. Heightening the social impact of diarrhoea could be an effective way to motivate handwashing.	Help people to understand the social consequences of a family member getting diarrhoea.
	A social impact - other family members or friends have fulfil the responsibilities of the sick person	1	1	1	1	1	5	People are not only worried about the health impacts of diarrhoea. Heightening the social impact of diarrhoea could be an effective way to motivate handwashing.	Help people to understand the social consequences of a family member getting diarrhoea.
6. Did people think that they can take action to prevent diarrhoea? (more than one answer may be true for this question)	yes - people feel like they have the ability to reduce their chance of getting diarrhoea (including by washing their hands)	1	1	1	1	1	5	This means that people know what they should do and feel that there are no major barriers to practicing handwashing.	Great! No need to change anything here
	yes - people can identify things that would prevent diarrhoea but feel that they don't have	0	0	0	0	0	0	This means that people know what they should be doing but find it difficult to practice for a variety of reasons. People will often say that they find it	Help people to develop local solutions to overcome these barriers to handwashing.

the means or ability to do them (including handwashing)								difficult to wash their hands because they cannot always afford soap, because they have limited or intermittent water access, or because they work away from home where there are no facilities.	
Yes – people think it is possible to prevent diarrhoea but do not think that handwashing is an effective mode of prevention.	0	0	0	0	0	0	0	This means that there may be some knowledge barriers preventing people from regularly handwashing. It could also mean that people know that they should wash their hands but that there are local beliefs that are preventing them from practicing.	1) Heighten the link between diarrhoea and handwashing. 2) Understand local beliefs around handwashing and address these through the support of local leaders.
no - people think diarrhoea is random or unpreventable	1	1	1	1	1	1	5	This may indicate that people feel their circumstances do not determine who gets diarrhoea, but rather that it is random.	Help people to realise that although anyone can get diarrhoea it is not completely random and can be prevented.

Tarmua

Question	Responses	Findings: For each FGD, place a '1' if the answer did emerge and leave it blank if this answer did not emerge.					Total	Interpretation: If the consensus from 3 or more of your FGDs is the same then you should prioritise these findings and the associated behaviour change tasks.	Behaviour change challenges
		FG D 1	FG D 2	FG D 3	FG D 4				
Was diarrhoea one of the 5 illnesses of greatest concern to your population ?	yes	1	1	1	1	4	People who perceive diarrhoea to be an important health issue affecting them are more likely to be receptive to hygiene promotion programs and more likely to practice good hygiene.	No need to change anything here	
	no	0	0	0	0	0	If people are worried about other health issues they may not care about your hygiene program or see handwashing as an important behaviour	1) Identify whether there are services and information to prevent or treat these other health issues that are important to the community.	

								2) Help people to view diarrhoea as something that is affecting many people in their community
	No – but they did mention other diseases that spread through the faecal oral route.	0	0	0	0	0	If people care about other faecal oral diseases, then you might then your program could be strengthened by linking with these.	Use your program to highlight the multiple positive benefits of handwashing.
1. How likely is it that someone in your family gets diarrhoea in the next 6 months?	Very unlikely	0	0	0	0	0	If people do not think they are likely to get diarrhoea they will be less likely to want to take preventative action.	Help people to view diarrhoea as something that is affecting many people in their community
	Unlikely	1	1	1	0	3	If people do not think they are likely to get diarrhoea they will be less likely to want to take preventative action.	Help people to view diarrhoea as something that is affecting many people in their community
	Likely	0	0	0	1	1	If people think that they are at risk of diarrhoea, they may be more	No need to change anything here

							receptive to hygiene programs and more likely to take preventive action.	
2. If someone in your family got diarrhoea, how likely is it that it could result in serious illness or death?	Very unlikely	0	0	0	1	1	If people do not consider diarrhoea to be serious then they will be less likely to want to take preventative action.	Help people to realise that diarrhoea is a serious disease but one that can be easily prevented.
	Unlikely	0	1	0	0	1	If people do not consider diarrhoea to be serious then they will be less likely to want to take preventative action.	Help people to realise that diarrhoea is a serious disease but one that can be easily prevented.
	Likely	1	0	1	0	2	If people consider diarrhoea to be serious then they may be more receptive to hygiene programs and more likely to take preventive action.	No need to change anything here
3. How likely is it that someone in your family gets diarrhoea	Less likely than others	1	1	1	1	4	People often think that they are cleaner than others and this may mean that they get	1) Help people to realise that their situation may have changed due to the

compared to your neighbours?							complacent about handwashing with soap.	humanitarian crisis. 2) Help people to realise that diarrhoea can affect anyone. 3) Help people to realise that handwashing needs to be done all the time not just some of the time in order to stop diarrhoea.
	Equal likelihood	1	0	0	0	1	This may indicate that people feel their circumstances are similar to those around them and that who gets diarrhoea is random.	Help people to realise that although anyone can get diarrhoea it is not completely random and can be prevented.
	More likely than others	0	0	1	1	2	If people respond in this way, then this is likely to mean that they think there is something about their circumstances which increases their vulnerability to diarrhoea.	Work with the community to identify factors that may increase individual or collective vulnerability to diarrhoea.
4. How likely is it	Less likely than others	0	1	0	1	2		

that someone in your family gets diarrhoea compared to someone living in an urban area?	Equal likelihood	0	0	1	0	1		
	More likely than others	1	1	0	0	2		
5. What were some of the perceived impacts of diarrhoea? (more than one answer may be true for this question)	Short and long term health impacts	1	0	0	0	1	People are predominantly worried about the health impacts of diarrhoea	Help people to see that there could be other consequences of getting diarrhoea.
	Might not impact them	0	0	0	0	0		
	An economic impact - loss of income whilst sick	0	0	0	0	0	People are not only worried about the health impacts of diarrhoea. Heightening the economic impact of diarrhoea could be an effective way to motivate handwashing.	Help people to understand the economic consequences of a family member getting diarrhoea.
	An economic impact - treatment would cost money, getting to a health centre would cost money.	1	1	0	0	2	People are not only worried about the health impacts of diarrhoea. Heightening the economic impact of	Help people to understand the economic consequences of a family member getting diarrhoea.

							diarrhoea could be an effective way to motivate handwashing.	
	A cognitive/ physical impact - less mentally alert, malnourishment	1	0	0	1	2	People are not only worried about the health impacts of diarrhoea. Heightening the cognitive impact of diarrhoea could be an effective way to motivate handwashing.	Help people to understand the cognitive consequences of a family member getting diarrhoea.
	An emotional impact- worried about the child	1	1	1	1	4	People are not only worried about the health impacts of diarrhoea. Heightening the social impact of diarrhoea could be an effective way to motivate handwashing.	Help people to understand the social consequences of a family member getting diarrhoea.
	A social impact - other family members or friends have fulfil the responsibilities of the sick person	0	0	0	0	0	People are not only worried about the health impacts of diarrhoea. Heightening the social	Help people to understand the social consequences of a family member

							impact of diarrhoea could be an effective way to motivate handwashing.	getting diarrhoea.
6. Did people think that they can take action to prevent diarrhoea? (more than one answer may be true for this question)	yes - people feel like they have the ability to reduce their chance of getting diarrhoea (including by washing their hands)	1	1	1	1	4	This means that people know what they should do and feel that there are no major barriers to practicing handwashing.	Great! No need to change anything here
	yes - people can identify things that would prevent diarrhoea but feel that they don't have the means or ability to do them (including handwashing)	0	0	0	0	0	This means that people know what they should be doing but find it difficult to practice for a variety of reasons. People will often say that they find it difficult to wash their hands because they cannot always afford soap, because they have limited or intermittent water access, or because they work away from home where there are no facilities.	Help people to develop local solutions to overcome these barriers to handwashing.

	Yes – people think it is possible to prevent diarrhoea but do not think that handwashing is an effective mode of prevention.	0	0	0	0	0	This means that there may be some knowledge barriers preventing people from regularly handwashing. It could also mean that people know that they should wash their hands but that there are local beliefs that are preventing them from practicing.	1) Heighten the link between diarrhoea and handwashing. 2) Understand local beliefs around handwashing and address these through the support of local leaders.
	no - people think diarrhoea is random or unpreventable	1	0	0	0	1	This may indicate that people feel their circumstances do not determine who gets diarrhoea, but rather that it is random.	Help people to realise that although anyone can get diarrhoea it is not completely random and can be prevented.