



**To'os ba Moris Di'ak
Farming for Prosperity**

Nutrition-Related Knowledge, Attitudes & Practices Survey Report

Technical Report 10
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Adam Smith
International



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Abbreviations & Acronyms

ACIAR	Australian Centre for International Agricultural Research
ASI	Adam Smith International Pty Ltd
AVANSA	Avansa Agricultura Project (USAID)
AWPB	Annual workplan and budget
BA	Barrier analysis
BESIK	Community Water, Sanitation and Hygiene Program (Australian Aid)
CA	Conservation agriculture
CDE	Centre for Enterprise Development
CD-NIP	Community Driven Nutrition Improvement Program (Catholic Relief Services)
COMPAC-TL	Combating Malnutrition and Poverty through Inland Aquaculture in Timor-Leste Program (Mercy Corps)
DBC	Designing for behaviour change
DFAT	Australian Department of Foreign Affairs and Trade
DLC	District Liaison Committee
FAO	Food and Agriculture Organisation
FGD	Focus group discussion
GBV	Gender-based violence
GoTL	Government of Timor Leste
GESIA	Gender & social inclusion analysis
HH	Household
H&S	Health & safety
H&SP	Health & safety plan
IADE	Institute for Business Support
IAS	Independent Advisory Services
ICS	Information and Consumption Survey
IDD	Investment design document
IFF	Integrated fish farming
KAP	Knowledge, attitudes & practice
KHG	Keyhole garden
KII	Key informant interview
KONSTANTIL	National council for food security, sovereignty and nutrition in Timor Leste
LTA	Long term adviser
M4P	Making markets work for the poor
MAF	Ministry of Agriculture and Fisheries
MCIE	Ministry of Commerce, Industry and the Environment
MDF	Market Development Facility (Australian Aid)
MEP	Monitoring & evaluation plan
MEP	Monitoring & evaluation framework
MIYCN	Mother infant & young child nutrition
MoH	Ministry of Health
MRG	Monitoring review group
MSG	Mother Support Group
NGO	Non-government organisation
NPO	National Program Office
NSA	Nutrition sensitive agriculture
OFM	Operations & finance manager

PD	Program Director
PGS	Program Guiding Strategy
PHD	Partnership for Human Development (Australian Aid)
PLW	Pregnant and lactating women
PM	Program manager
PNDS	National Program for Village Development Support (GoTL executed, Australian TA support)
PSF	<i>Programa Saude Familia</i> (Family Health Program)
R4D	Roads for Development Program (Australian Aid)
RMF	Results measurement framework
RMP	Risk management plan
RPM	Regional Program Manager
RPO	Regional program office
RTTL	Radio and Television Timor
SBCC	Social behaviour change communication
SEM	Secretariat of State for the Socio-Economic Support of Women
SISCa	<i>Sistema Integrado Saude Comunitaria</i> (Community Health Outreach Service)
SOL	Seeds of Life Program (ACIAR)
ST	Short term
STA	Short term adviser
TL	Team leader
TLFNS	Timor Leste Food and Nutrition Survey
ToR	Terms of reference
TRG	TOMAK Reference Group
VC	Value chain
VfM	Value for money
VSLA	Village Savings and Loans Activities
WEE	Women's economic empowerment
WFP	World Food Program
WSS	Water supply & sanitation

Executive Summary

The *To'os Ba Moris Diak* Program (TOMAK) is a 5-year agricultural livelihoods program funded by the Australian government in Timor-Leste with a goal to ensure rural households live more prosperous and sustainable lives. TOMAK will achieve this through parallel and linked interventions that aim to: (i) establish a foundation of food security and good nutrition for targeted rural households and (ii) to build their capacity to confidently and ably engage in profitable agricultural markets. TOMAK adopts a nutrition sensitive agriculture (NSA) approach, with a focus on social behaviour change communication (SBCC), in its efforts to improve food security and nutrition.

TOMAK's Inception Phase will run through until mid-2017. Its initial focus has been on program establishment, developing a more detailed design, and identifying major field activities. Implementation of field activities will commence in the second half of 2017.

To enable development of a more detailed design of TOMAK's NSA component, three foundational assessments were carried out. This Knowledge, Attitudes and Practices (KAP) Survey was the second of the three assessments. It was designed to gain a broader understanding of the knowledge, attitudes and practices associated with nutrition-related practices among households in the TOMAK target implementation areas

This assessment was largely built on existing secondary data. The supplementary field assessments, designed to fill identified knowledge gaps, comprised a combination of focus group discussions (FGDs), key informant interviews (KIIs) and surveys. Together, these assessments were aimed at gaining an overall understanding of the nutrition-promoting behaviours of targeted households' family members.

Conclusions are as follows:

- Almost half of all households spend half their income to buy food. 44% of households reporting using half of their incomes to buy food. Therefore, it appears that even though most rural households produce their own food, a large percentage are not food self-sufficient. Follow-up questions found that over 80% of respondents reported prioritising consuming food over selling it i.e. it appears that households are likely not simply selling food to purchase excess food or to buy other items.
- Basic nutrition knowledge is still lacking. Rice, one of the most commonly consumed foods, was used as a proxy test of respondents' nutrition knowledge. Only 57% of respondents were able to indicate that they know red rice is more nutritious than white rice, while 21% were not sure and 22% were incorrect.
- Opportunities for cooking using electricity. While firewood remains the dominant fuel source for cooking, households are increasingly using electric stoves. This shift not only presents potential opportunities to reduce respiratory-related illnesses from cleaner kitchens, but may also signal an opportunity to simultaneously change other cooking habits. These could include the preparation of foods that are more nutritious and preparing those foods in ways that better retain nutrients during the cooking process.
- A significant percentage of new-born babies do not receive colostrum. 75% of respondents or their spouses reported early initiation of breastfeeding within one hour of birth – much lower than the 93% national figure (TLFNS, 2013). Based on these self-reports, there is a high likelihood that a significant percentage of new-born babies do not receive colostrum in target areas.
- Critical deficiencies remain in caregiver knowledge and/or beliefs around critical basic feeding practices of babies 0-24 months. Findings from this assessment support other studies that find there remain many contrary beliefs about how long a baby should be breastfed for, and when supplemental foods should be added to babies' diets.
- Animal assets, not essential food. Although respondents indicated a strong demand for animal source foods, especially for babies 6-24 months, evidence from other surveys indicates that animal source foods are considered primarily as assets for sale, gifts, etc and not own-food consumption.
- Formal education may be failing to educate future parents about infant and young child feeding (IYCF) practices. Assessment results indicate that education level does not appear to have a positive impact on

the knowledge of IYCF practices. One potential conclusion to draw is that the formal educational system is not addressing the need for this type of critical information well.

- Handwashing strongly correlated to critical health outcomes. According to the TLFNS, stunting was significantly lower among children from households having a hand-washing facility compared to those without.
- Is handwashing being effectively done in target areas? This assessment found that 80% of respondents reported washing hands with soap, but the TLFNS found only 22% of households had hand-washing facilities. It is possible that washing hands using improper technology (i.e. not using a hand-washing station) could be resulting in high rates of re-contamination during handwashing.
- Handwashing is not occurring at critical times. Only 11% of respondents reported washing hands during at least 4 different 'critical times'.
- Diarrhoea is not well understood. Only 40% of all respondents reported having ever heard of diarrhoea. While more respondents may know what diarrhoea is by other local names, respondents' low rates indicate a potentially important danger from this common and deadly health issue.
- Respondents not linking faeces with stunting. Less than 30% of respondents appear to understand the linkages between faeces and stunting.
- Women require permission to cook to more nutritious foods. While the TOMAK Gender Equality and Social Inclusion Analysis (GESIA) assessment found that women were responsible for cooking, it also indicated that women require permission to cook more nutritious food, such as animal source foods. This was found to still be true even if such foods were available to the household.

Based on the conclusions from the secondary data analysis and this assessment, recommendations for TOMAK include:

- 1. Prioritise activities that address household decision-making.** In particular, such activities should focus on (i) use of income to purchase nutritional food; (ii) use of available protein-rich resources, such as chickens, in meal preparation; (iii) use of income to invest in handwashing stations; and (iv) utilisation of knowledge from others around agriculture, nutrition, health and hygiene in making critical household decisions.
- 2. Prioritise activities that support more intense production of foods, especially healthy foods.** With a majority of households spending half their income on food, this represents a significant burden on food-producing households. At the same time, women's time burdens are already extremely high from the many tasks they undertake, including farming. Therefore, activities that increase food production through intensification, and where possible through close-to-home farming systems, should be prioritised. Both nutritious and high-value crops should be considered where possible.
- 3. Consider activities that tap into high food purchasing rates.** With a majority of households spending high percentages of income on food, there are important opportunities for income-generating activities in local, micro-scale food production activities. Such activities should be calibrated to both current and anticipated demand characteristics (type of food, quantity, time, terms of trade, etc), as well as climate-smart (i.e. water and soil nutrient efficient).
- 4. Engage in activities that increase household purchasing power.** With a majority of households forced to spend half their income on food, activities that enhance savings and lending capacities of households will likely have a significant impact on overall nutrition and food security. Activities that support savings and lending clubs should be closely linked to other household decision-making activities and agricultural intensification activities (i.e keyhole gardening, integrated fish farming, etc).
- 5. Capitalise on opportunities to layer critical nutrition and health related messaging.** Informal savings and lending clubs are known for being powerful vehicles to deliver other critical messages to targeted groups. Given this study's significant findings around gaps in IYCF practices, understanding relationships between faeces, handwashing and diarrhoea, etc, TOMAK should strategise how to leverage such clubs in the delivery of critical nutrition and health messaging.

6. **Expand gender empowerment to more than only talking to women.** As these studies have found, women make decisions in constant consultation with men, men with women, mothers with their children, mothers with extended family, and women with women. The empowerment of women and girls is therefore a process that TOMAK should take a holistic approach to.
7. **Formative research required.** Given the significant gaps in not just knowledge, but also attitudes and practices, concerning nutrition-smart agriculture, nutrition and health-related behaviours, TOMAK needs to develop a deeper understanding of the barriers and obstacles to addressing these gaps. Timor-Leste has seen a marked increase in agriculture, nutrition and health programs but household-level change in behaviours is lagging. If TOMAK wants its activities to result in lasting, transformative change, it needs to understand how to enable its investments to cut through an array of cultural, educational and other norms and practices that have so far inhibited change.
8. **Take advantage of kitchen technology change to promote food preparation change.** Changing food preparation habits is one of the hardest things to achieve. It is why food companies spend so much money on marketing. However, this assessment and the 2015 Census found that change is afoot in rural Timorese kitchens. With upwards of 20% of respondents reporting that they now use electrical cooking devices, such rapid and radical change presents an opportunity for TOMAK to introduce important new food preparation activities. Such activities should focus on: (i) how ingredients and foods are being prepared; and (ii) how foods are prepared so that fewer critical nutrients are lost during the food preparation process. Also, the technology shift can be utilised to (iii) drive home critical messages around illness associated with indoor air pollution resulting from using traditional stoves.
9. **Consider coordination with other, complementary initiatives – especially formal education systems.** While this assessment did not look directly at complementary programs like formal education programs, church programs etc, it's finding that formal education did not appear to have an impact on nutrition-related behaviours is alarming. TOMAK may have an opportunity to reach a wider range of its target population if it looks for ways to integrate and coordinate its NSA and SBCC programming through formal education channels.

Main Report

1. Introduction

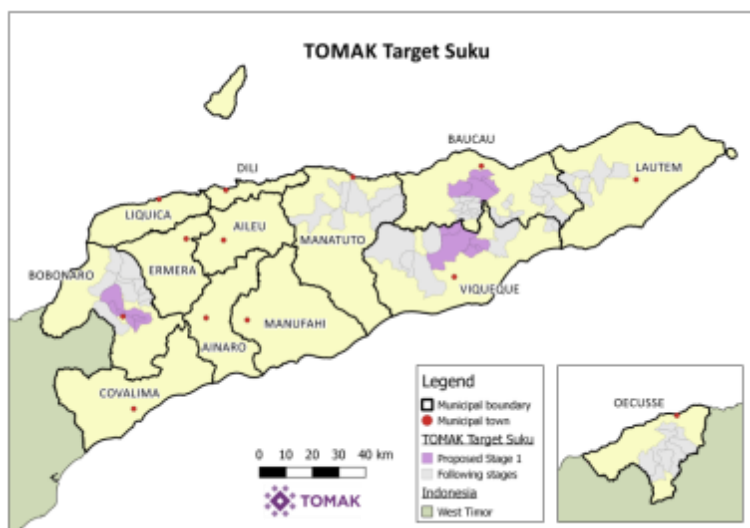
1.1. Background

The *To'os Ba Moris Diak* Program (TOMAK) is a A\$25 million, 5-year agricultural livelihoods program funded by the Australian government in Timor-Leste. Its goal is to ensure rural households live more prosperous and sustainable lives. TOMAK will achieve this through parallel and linked interventions that aim to:

- Establish a foundation of food security and good nutrition for targeted rural households.
- Build their capacity to confidently and ably engage in profitable agricultural markets.

As set out in the *Investment Design Document* (IDD), TOMAK will adopt a nutrition sensitive agriculture (NSA) approach in its efforts to improve food security and nutrition. TOMAK will work on both the supply and demand sides of nutrition. On the supply side, TOMAK will aim to improve the supply and availability of nutritious food. On the demand side, TOMAK will work to influence nutrition-related knowledge and behaviour of target households through social behaviour change communication (SBCC) approaches. To build the capacity of target households to engage profitably in agricultural markets so as to increase household incomes, TOMAK will develop value chains (VCs) that are assessed to have high commercial potential. TOMAK will emphasise application of the making markets work for the poor (M4P) approaches.

Figure 1: TOMAK target communities



TOMAK's primary target area as defined in the IDD comprises inland (non-coastal) suku that have reasonable agricultural potential. Agricultural potential was defined as access to irrigation resources. This zone¹ includes 70-80 suku (villages). They are located in three clusters: (i) the Maliana basin (including most of Bobonaro municipality); (ii) the eastern mountain regions (including large parts of Baucau and Viqueque municipalities and parts of Lautem and Manatuto); and (iii) Oecussi municipality.

Adam Smith International (Australia) Pty Ltd (ASI), in partnership with Mercy Corps, was awarded the contract for management of TOMAK in May 2016. Core staff were mobilised to Dili at the beginning of June 2016 to commence start-up of TOMAK's

one-year Inception Phase.

As specified in the contract, TOMAK's Inception Phase will run through mid-2017. The Inception Phase will focus on program establishment, developing a more detailed design, and identifying major field activities to commence in 2017.

To enable development of a more detailed design of TOMAK's NSA component, three foundational assessments were carried out. This Knowledge, Attitudes and Practices (KAP) Survey is the second of three

¹ Identified in the IDD as the 'Inland Irrigable Watersheds' Zone (IIWZ).

assessments. It was designed to gain a broader understanding of the knowledge, attitudes and practices associated with nutrition-related practices among households in TOMAK's target area.

This assessment was largely built on a review of existing secondary data, supplemented with a field survey to fill identified knowledge gaps. The field assessment comprised a combination of focus group discussions (FGDs), key informant interviews (KIIs) and surveys aimed at gaining an overall understanding of target households and their members' nutrition-promoting behaviours.

The findings will be used by TOMAK to develop a theory of change to trigger household demand for year-round production and utilisation of diverse and sufficient foods.

1.2. Objectives

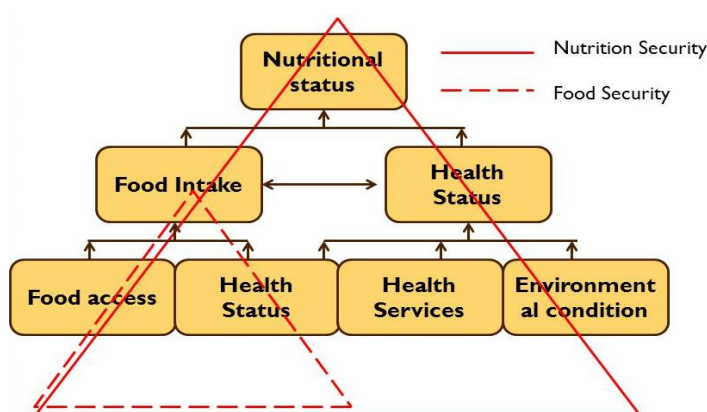
The purpose of the field survey was to gather up-to-date and gender-specific information on the KAPs of a cross-section of the TOMAK's target population related to nutrition.

Establishing a foundation of food security and good nutrition requires stimulating household demand for year-round production and utilisation of nutritionally diverse and sufficient foods. To effectively stimulate this demand, TOMAK needs to understand the demographic profile and context in which choices are made around nutrition of its target beneficiaries. With this information, TOMAK will be able to design and invest in both NSA and SBCC interventions. Such an understanding requires data on the target groups: (i) present food consumption patterns; (ii) knowledge, attitudes and practices related to food consumption; and (iii) how these households commonly access and use information.

The specific areas of enquiry were related to the following behaviours:

- Infant and Young Child Feeding (IYCF) practices;
- Feeding practices during pregnancy and lactation;
- Critical handwashing practices;
- Income allocation for household nutrition; and
- Relevant roles around decision-making within the household.

2. Methodology



Acknowledging existing grey and published literature related to food insecurity and malnutrition in Timor-Leste, the assessment commenced with a review of relevant secondary data in order to determine gaps and to design the survey questions. Review of the secondary data is attached as Appendix 1. The survey design was developed during a series of consultations with Mercy Corps, TOMAK and DFAT's Senior Nutrition Adviser. The conceptual framework for the survey was based on the United Nation's Food and Agricultural Organization's (FAO's) 'Conceptual Framework of Nutritional Status at Household Level'. In this framework, the unit of analysis is the household. Specific attention is given to

pregnant and lactating mothers and infants and young children aged up to 2 years, thereby covering the first 1,000 days of life.

Selection of geographic locations: The survey was conducted across three clusters of suku within the TOMAK priority implementation areas. Each cluster is in itself distinct. Within the cluster, socio-cultural and agro-ecological contexts are generally homogeneous. The clusters are defined as the: (i) Maliana Basin in Bobonaro municipality; (ii) the West Viqueque-Baucau municipalities; and (iii) the East Viqueque-Baucau municipalities.

Respondent selection and sampling methodology: Data was collected through household surveys from a total of 130 households across 15 sukus and 39 aldeias who were interviewed using a standard questionnaire (see Table 1).

The survey was designed to capture differences in knowledge, attitudes and practices from a range of target households. The survey was not aimed at collecting data on the underlying constraints or barriers to behavioural-level determinants, as this will be assessed separately.

As far as possible, the number of respondent households were distributed equally among selected suku. Households were randomly selected, starting from the first household in the centre of the suku. Subsequent households were selected by taking a right turn from the first household and then selecting every other household. Inclusion criteria included households with women 15-49 years and/or women (of reproductive age) with children under 5 years of age.

Enumerators were trained at Mercy Corps' office from 18-21 October 2016. The training was facilitated by the Survey Team Leader, Co-Team Leader and M&E Specialist. During the training, the Mercy Corps Program Director and TOMAK Nutrition Specialist provided technical reference and guidance. During the training, participants were familiarised with the survey tools, household selection procedure, as well as the inclusion and exclusion criteria. During this process, tools were further refined for language clarity, and again during translation to Tetum.

A total of seven enumerators attended the training. Four enumerators were designated to conduct the survey in Baucau and Viqueque municipalities, with three assigned to conduct the survey in Maliana municipality.

In addition, one coordinator per cluster was appointed. Each coordinator participated in the training. Coordinators were Mercy Corps' core staff, selected based on their familiarity with target geography and their past experience with this kind of survey. Coordinators conducted field-level coordination of survey activities and cross-checked data on the surveyors' tablets.

Table 1: Number of Participating Households

Municipality	Post Adm	Suku (Village)	Aldeia (Enclave)	Survey Resps
Bobonaro	Balibo	Batugade	Batugade	7
			Nu-badak	2
			Lotan	2
	Cailaco	Purugua	Heda	5
			Lesu-pu	5
	Maliana	Raifun	Raifun Villa	12
		Ritabou	Maganuto	3
			Ritabou	6
			Maahui	1
Baucau	Baucau Vila	Buibau	Buibau	10
			Loidua	3
		Gariuai	Gariuai	2
			Uaturau	6
			Maukale	2
			Ossuluga	6
		Samalari	Sorulai	3
			Samalari	1
			Ulusoru	1
	Quelicai	Laisorulai-Kraik	Daraoma	1
			Lego	3
			Batikasa	5
		Laisorulai-Leten	Uataliu	1
			Dauaduka	7
		Lelalai	Dessa	1
			Ossoliro	3
		Maluro	Samafano	1
Viqueque	Ossu	Ossurua	Raimuti	3
			Uaibobo	4
			Umabere	2
		Ossu-Leten	Baka-isi	3
			Belas	6
			Cai-uai-hoo	1
		Uabubo	Laritame	2
		Uagia	Dolibati	2
			Manulari	1
			Uatumanutuku	1
			Luhabere	3
			Dasarai	2
			Uaitutumata	1
Grand Total	6	15	39	130

Survey limitations:

- The sample size was chosen to provide a cross-section of the target households and not for statistical significance.
- The timing of the survey clashed with suku elections and this meant that some suku had to be selected outside of TOMAK's primary target area in the Baucau and Viqueque clusters.
- Additional supervision was required for some enumerators who were not familiar with using a tablet device for data collection.
- The data collected was based on respondent recall.
- The respondents included men or women living with at least one child under five years of age. An assumption was made that the respondents were responsible for providing care to the children but this was not validated.
- Questions related to IYCF perceptions and practices (including Q5.1 'Have you or your spouse ever breastfed your child?'; Q6.2 'Did you or your spouse feed your youngest child with colostrum immediately after delivery?'; and maternal feeding practice (Section 6; Q6.5 and Q6.6)) were questions targeted for female respondents. However, since not all respondents were women, an assumption was made that men who were asked these questions responded accurately on behalf of their spouse.

Ethical Clearance: Clearance was gained from the *Instituto Saude Nasional* (INS) with permission also obtained from local authorities including the municipal administration, Postu Administrativu (sub-district), and the suku (village). Participation was voluntary. Respondents were questioned only after they gave their informed consent. All data was treated confidentially and used only for the purpose of this study.

3. Research Questions

Based on the results of the secondary data analysis, the following broad research questions were further investigated through the field assessment. The specific aim of these questions was to provide a clearer understanding on the level of KAP around maternal, infant and young child feeding (MIYCF) practices, hand-washing, income utilisation and gender in TOMAK's target areas.

- What are the current KAPs of men and women concerning MIYCF practices and nutrition in general? What factors are contributing to the current KAPs of men, women and other caregivers around nutrition in general, and MIYCF practices in particular?
- What are the current KAPs around sharing different roles in the house and outside of the house?
- What are current KAPs around handwashing at critical times?
- What are the current KAPs of target households around allocation of income or generating income in relation to household nutrition? Is there any aspiration to earn more income to access more nutritious food?

4. Findings and Analysis

Findings are presented under seven sub-themes as follows: (i) Respondent Profile; (ii) Housing Condition (iii) Income and Expenditure; (iv) Perceptions and Practice around IYCF; (v) Perceptions and Practice around Maternal Feeding; (vi) Critical Handwashing Practice; and (vii) Gender and Mobility.

Table 2 Profile of surveyed communities (Census 2015)

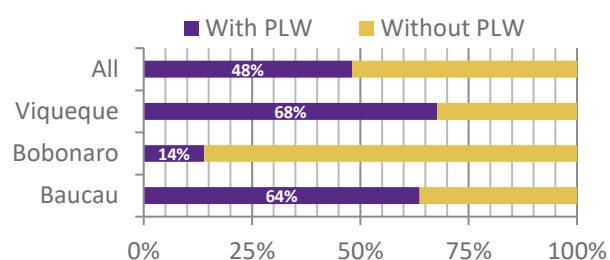
Munipal	Post Adm.	Suku	Aldeia	Number		
				HH	Population	
Bobonaro	Balibo	Batugade	Batugade	86	494	<div>Male</div> <div>Female</div>
			Nu-badak	48	311	
			Lotan	370	1873	
	Cailaco	Purugua	Heda	120	652	
			Lesu-pu	48	279	
	Maliana	Raifun	Raifun Villa	183	1297	
Baucau	Baucau Vila	Buibau	Buibau	130	771	
			Loidua	247	1469	
		Gariuai	Gariuai	39	191	
			Uaturau	56	289	
			Maukale	69	363	
		Samalari	Ossuluga	79	323	
			Sorulai	36	134	
			Samalari	3	16	
	Quelicai	Laisorulai-Kraik	Ulusoru	22	88	
			Daraoma	118	472	
			Lego	40	183	
		Laisorulai-Leten	Batikasa	98	348	
			Uataliu	83	329	
		Lelalai	Dauaduka	113	441	
			Dessa	45	243	
			Ossoliro	5	16	
		Maluro	Samafano	11	51	
Viqueque	Ossu	Ossurua	Raimuti	33	120	
			Uaibobo	20	106	
			Umabere	33	177	
		Ossu-Leten	Baka-isi	130	598	
			Belas	162	775	
			Cai-uai-hoo	175	853	
		Uabubo	Laritame	64	324	
		Uagia	Dolibati	58	283	
			Manulari	4	17	
			Uatumanutuku	23	113	
			Luhabere	4	7	
			Dasarai	151	731	
			Uaitutumata	1	1	
All				3223	16654	

4.1. Respondent profile

Sex and Age Groups

The population profile of each suku surveyed is presented in Table 2. On average, surveyed sukus consisted of approximately 211 households with a population 1,116 persons. Further breaking down the data, the populations were on average 50% men and 50% women. In all total households surveyed, the average household size is 5.2

Graph 3: Household with/without PLW



persons per household. This average household size is slightly lower than the overall census population national figure that stood at 5.7 individuals per household. Roughly two-thirds of the respondents were female. In Baucau and Viqueque, over half the respondents were over 35 years old.

Presence of pregnant and/or lactating women (PLW) in the households and extended family members

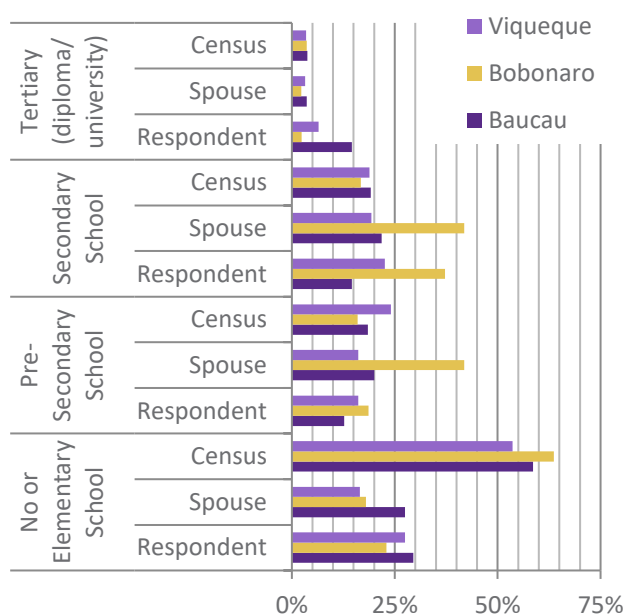
In Viqueque and Baucau, the presence of PLW in the households selected was 68% and 64% respectively. In Bobonaro, only 14% of households included in the survey included a PLW (Graph 3).

Across TOMAK's targeted areas, on average 59% of households surveyed reported living with relatives. Live-in relatives were mostly parents, brothers, sisters and in-laws. The highest percentage of respondents reporting living with relatives was found in Baucau (67%) followed by Bobonaro (58%). In Viqueque the reported prevalence was 45% (Table 3).

Table 3: Households with relative living with them

District	%
Baucau	67%
Bobonaro	58%
Viqueque	45%
All	59%

Graph 4: Educational level of respondents, respondent spouses, and relevant Census data



Preliminary findings from TOMAK's Gender Equality and Social Inclusion Analysis (GESIA) indicate that extended family members' play a significant role in household decision-making. The assessment also found a high prevalence of cross-generational cohabitation. This finding highlights the importance of targeting extended family members, including elders and mothers-in-law, in order to influence desired changes around feeding practices.

Educational Levels

Across all surveyed suku, 42% of the respondents reported having no education or an elementary level education only. Only 9% reported having a tertiary level qualification. 24% had secondary school education and 16% pre-secondary education.

45% of respondents' spouses, whether male or female, had elementary education or no formal education. Only 3% had a tertiary level qualification. 28% had secondary education and 17% had pre-secondary education, while 7% were in elementary school (see Graph 4 for results by municipality). In general, reported education levels for both respondents and spouses were higher than reported in the 2010 Census.

4.2. Housing

House ownership

85% of respondents across all three municipalities reported living in their own house (Table 4). However, there was significant variation between municipalities. 69% of respondents in Baucau reported living in their own house compared to 98% in Bobonaro. With the exception of Bobonaro, the percentage of households living in their own house was substantially lower than reported in the 2015 Census. Anecdotal data suggests that rent is not paid by other family members and owned houses are shared with other family members to live in.

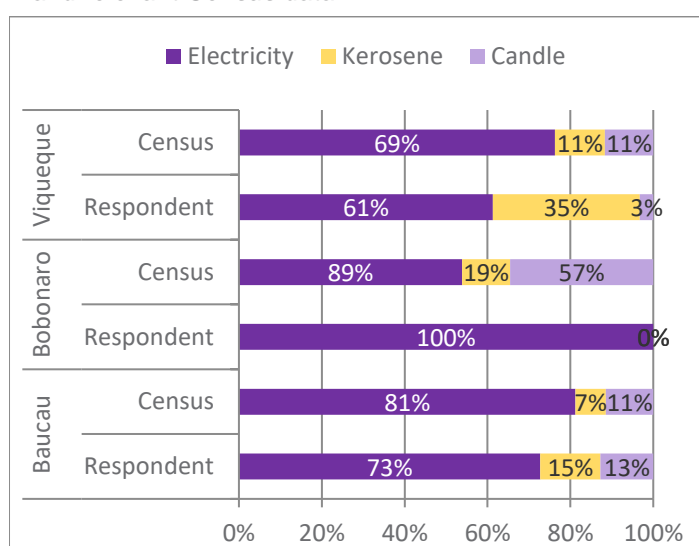
Table 4: Surveyed respondents house ownership status and relevant data from Census 2015

	Owned house		Family owned house	
	Resp.	Census	Resp.	Census
Baucau	69%	98%	31%	2%
Bobonaro	98%	99%	2%	1%
Viqueque	87%	97%	13%	3%
All	85%	98%	15%	2%

Main source of energy for lighting

Since 2015, the Government of Timor Leste (GoTL) has invested significantly in electrical grid infrastructure, with 75% of the population now having access to electricity. The majority of respondents across all selected suku reported using electricity as their main source of lighting. Bobonaro reported the highest electrification with 100% of respondents indicating they are using electricity as their main source of lighting. Baucau and Viqueque followed each reporting 73% and 61% respectively (Graph 5).

Graph 5: Main source of energy for lighting of respondents and relevant Census data



Kerosene was reported as the second most common source of lighting. 35% of respondents in Viqueque reporting using kerosene as their main source of lighting followed by 15% respondent households in Baucau.

Main source of energy for cooking

Globally, indoor air pollution resulting from cooking on open fires is a major source of illness for rural households especially for women and children. Analysis of 1998-9 data (from a national family health survey) from India found that prevalence of severe stunting in children was higher in households that use biofuels, and found that up to 37% of severe stunting among young children (aged 6-35 months) may be due to exposure to biofuel smoke².

Firewood was reported as the most common (82%) source of energy for cooking across all households surveyed (Table 5). However, this figure is lower than the 2015 Census data which indicated 92% of all households across the three target municipalities were using firewood. The data supports a conclusion that since electricity has become substantially more available in recent years, some households have started to use electricity for cooking. For example, in Baucau where the greatest increase in use of electricity for cooking was reported, the 2015 Census data indicated only 7% of households used electricity for cooking while this survey found that 20% of households reported using electricity for cooking as least some of their food.

² Vinod Mishra and Robert D Retherford, "Does biofuel smoke contribute to anaemia and stunting in early childhood?," Int. J. Epidemiol. (2007) 36 (1): 117-129. Accessed online 1/23/17 at <http://ije.oxfordjournals.org/content/36/1/117.full>

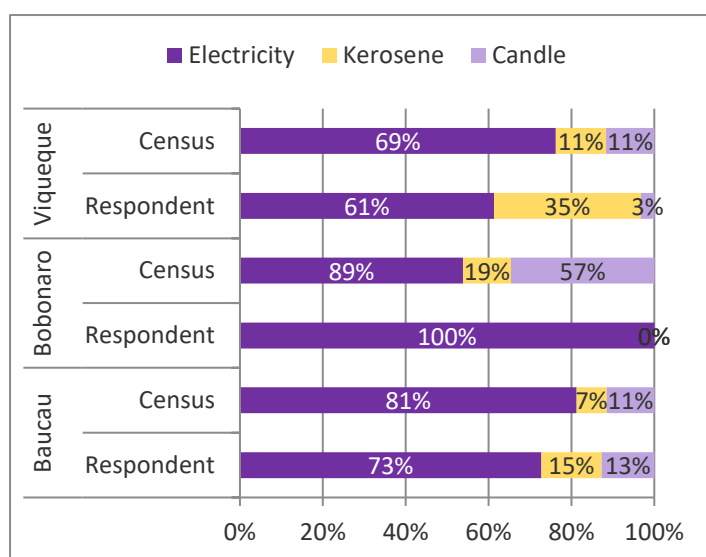
Table 5: Main source of energy for cooking of respondent and relevant 2015 Census data

	Electricity		Cooking Gas		Kerosene		Firewood	
	Resp.	Census	Resp.	Census	Resp.	Census	Resp.	Census
Baucau	23%	7%	4%	1%	0%	3%	78%	89%
Bobonaro	15%	4%	0%	1%	2%	1%	62%	93%
Viqueque	6%	3%	0%	1%	0%	1%	94%	95%
All	16%	5%	2%	1%	1%	2%	82%	92%

Main source of drinking water

77% of respondents reported accessing drinking water from a protected source³, while 23% of respondents reported using drinking water from non-protected sources (Graph 5). Using the 2015 Census as a base, the survey findings indicate improvements in terms of the percentage of households that are using protected sources – especially in Baucau and Bobonaro. However, this is not the case in Viqueque where households reporting using protected sources of water decreased from 87% (Census 2015 data) to 71% (from this survey).

Graph 5: Main source of drinking water of respondents and relevant Census data



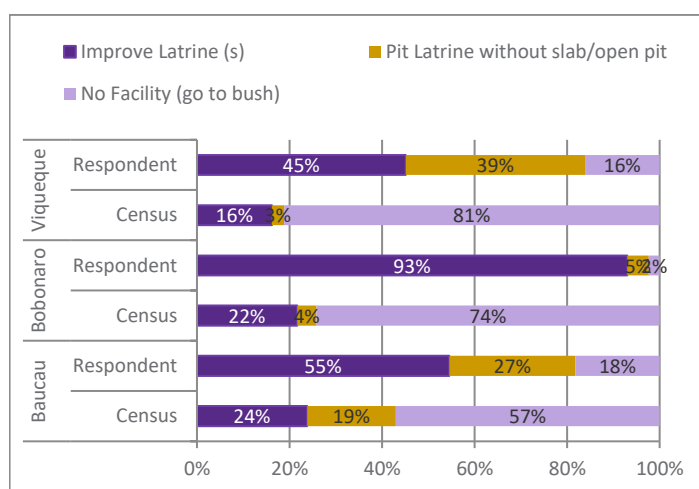
³ In this survey, protected drinking water sources were defined as water piped or pumped indoors, piped or pumped outdoors, public tap, tube well/borehole, protected well, protected spring, rainwater collection and bottle water. Unprotected drinking water sources were defined as unprotected well or spring, water vendors/tank, river, lake or stream and other.

Main source of human-waste disposal facility

An average of 64% of surveyed households across all three target municipalities reported using improved latrines (latrines with a slab and pit) for their human waste disposal. 24% reported using pit latrines without a slab while 12% reported using no latrine facility. Surveyed households in Bobonaro reported a much higher use of improved latrines (93%) compared to Baucau (55%) and Viqueque (45%) (Graph 6).

Across all three target municipalities, respondents reported significantly greater access to improved latrines compared to the 2015 Census. However, the percentage of respondents reporting using unimproved latrines and open defecating is still quite high, especially in Baucau (45%) and Viqueque 55%.

Graph 6: Human waste disposal facility of respondents and relevant Census data

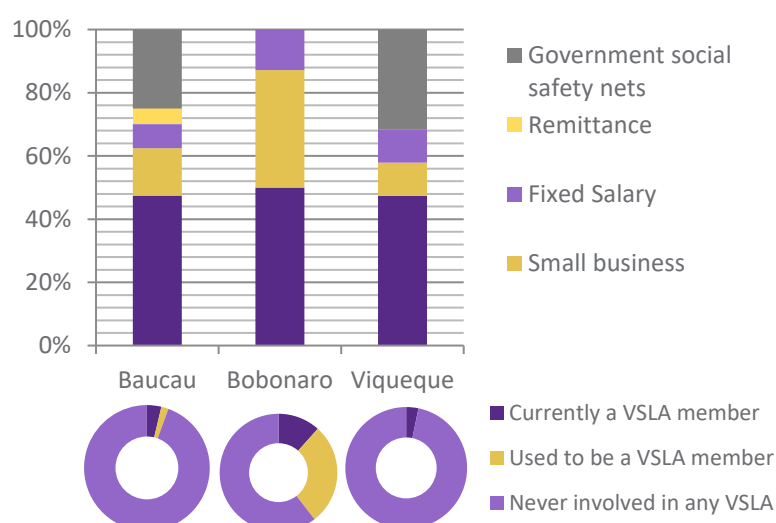


4.3. Income and expenditure

Main source of household income

The main source of income for all three municipalities was agriculture (inclusive of crops and livestock). Income from government social safety nets (including payments *Terceira Idade, bolsa da mae, and veteranus*) and small business activities (for example running a kiosk) were next. Graph 7 details the income sources of the respondent households. Around half of the respondents said that they had more than one source of income. The majority of respondents reported never being engaged in any savings and loans group or microcredit programs.

Graph 7: Main sources of income and involvement in VSLA



Allocated income for purchasing foods

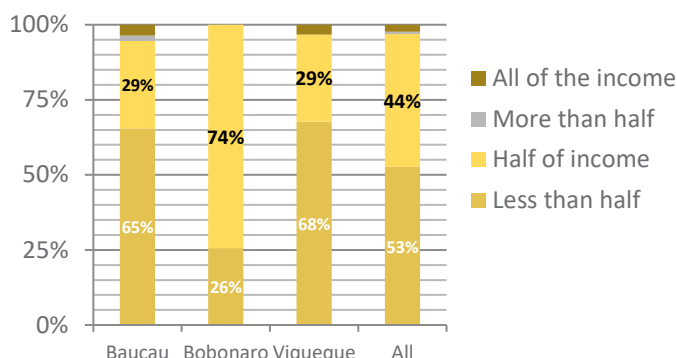
Graph 8 illustrates the percentage of respondents reporting the proportion of income used for purchasing foods. 44% of respondents reported using half of their income for food purchases. In Bobonaro, this figure jumped to 74% of respondents reporting spending half of their income on food.

Perceptions around income for food

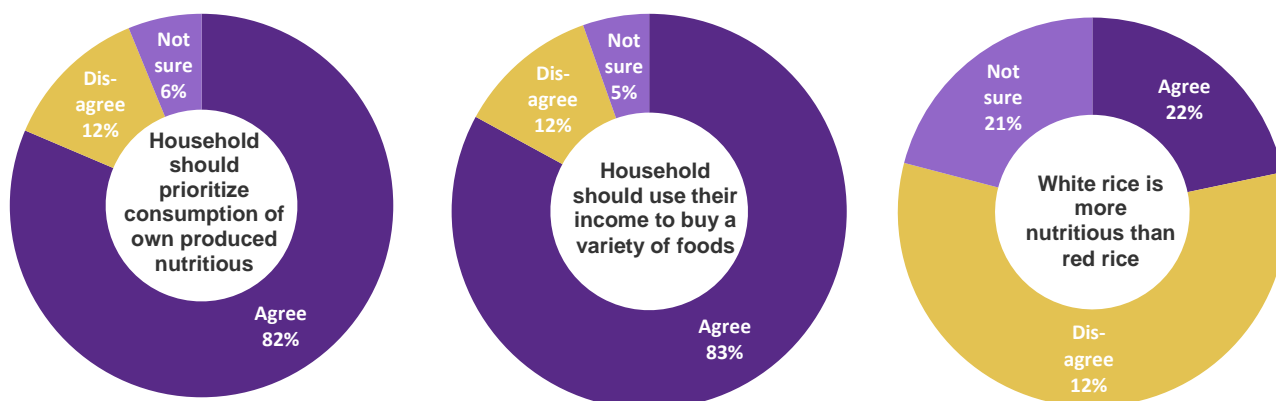
The survey asked respondents a number of generic and specific questions to check their understanding of different nutrition-related topics. Respondents were required to agree or disagree with each statement.

- Asked; 'Should households prioritise consumption of own-produced nutritious foods (vegetable, fish, and fruit) as opposed to selling these nutritious foods for income?' 82% of respondents agreed with this statement. This was interesting as a frequent concern raised by development practitioners, donors and others was that households consistently prioritise sale over consumption of healthy foods.
- Asked; 'Should households use their income to buy a variety of foods for household consumption?' consistent with the previous response, 83% of respondents agreed with this statement.

Graph 8: Allocated income for food purchases



Graph 9: Perceptions around income for foods



With rice being a major food expenditure item for rural households in Timor-Leste⁴, the survey also asked a random question to check respondents' knowledge on a specific nutrition-related question. Respondents were asked if they agreed with the statement 'white rice is more nutritious than red rice.' 57% of respondents disagreed with this statement, which is the correct response. A further 21% said that they were not sure.

⁴ Timor-Leste Household Income and Expenditure Survey (2011)

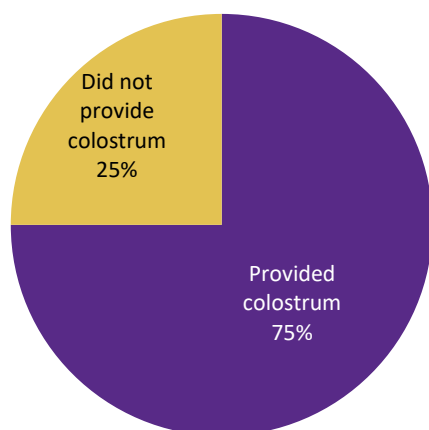
4.4. Perceptions and practice around MIYCF

Early initiation of breastfeeding

'Early initiation of breastfeeding' refers to the provision of mother's breast milk to infants within one hour of birth. It is also referred to as 'first milk' and ensures that the infant receives colostrum which is rich in nutrients and antibodies. Colostrum continues to be produced only through the early days of breastfeeding.

75% of respondents or their spouses reported early initiation of breastfeeding within an hour of birth (Graph 10). This is lower than the national figure of 93% (TLFNS, 2013). Based on these self-reports, there is a high likelihood that a significant percentage of new-born babies do not receive colostrum in TOMAK's target areas.

Graph 11: Proportion of respondents/respondent spouses provided early initiation of breastfeeding

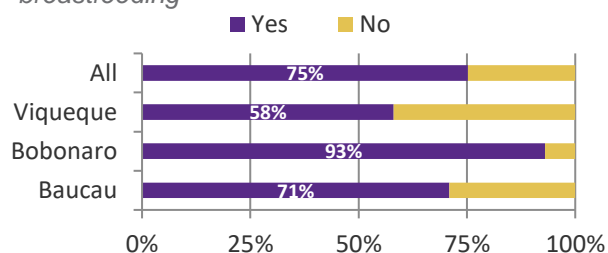


Infant and Young Child Feeding (IYCF)

The survey asked respondents to agree or disagree with statements to check their overall understanding of infant and young child feeding (IYCF) practices. The findings are represented below:

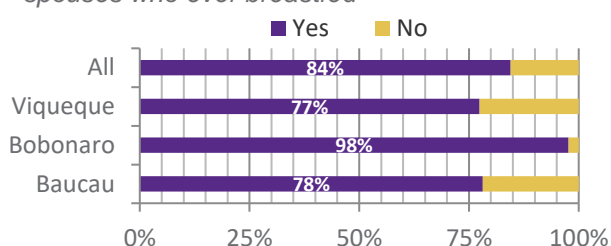
These responses indicate that some critical basic infant and young child feeding messages are poorly understood.

Graph 10: Proportion of respondents/respondent spouses who provided early initiation of breastfeeding

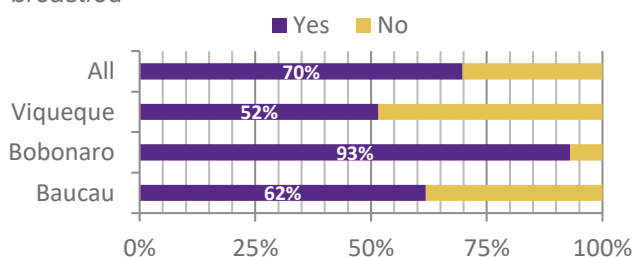


As represented in Graph 12, 84% of respondents across all surveyed suku reported that either the respondent or respondent's spouse had ever breastfed their infants.

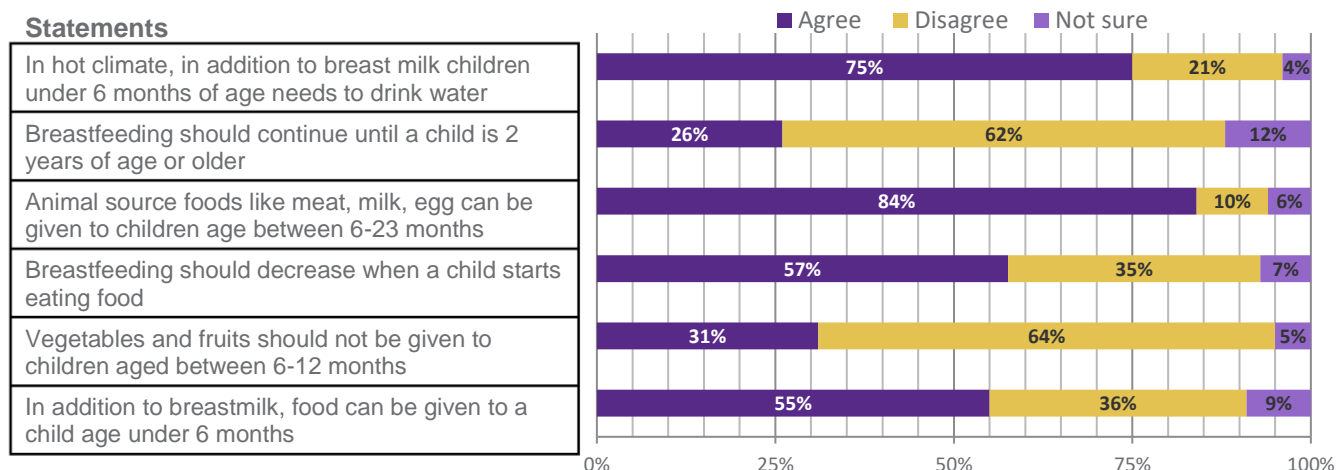
Graph 12: Proportion of respondents/respondent spouses who ever breastfed



Graph 13: Proportion of respondents/respondent spouses who ever both provided colostrum and breastfed



Graph 14: KAPs around IYCF practices



In contrast with the above results, it should be noted that:

- Supplementing breastmilk with food or water is rarely needed in children under 6 months. Exclusive breastfeeding during the first 6 months is best practice in almost all instances.
- Breastfeeding should not be reduced even when a child starts eating foods throughout their first 2 years.
- Babies can start to consume safely prepared fruits and vegetables after 6 months.

Additional qualitative questions further found that many parents have beliefs or misconceptions around the health benefit of vegetables and fruits for their young children, and think that the best supplemental food is plain rice porridge.

However, the survey results indicate that there is very good understanding around the importance of animal source foods. Children aged 6-23 months should be encouraged to eat such foods in addition to breast milk. The presence of this knowledge is important because earlier assessments, such as the CDNIP Baseline, and COMPAC-TL Baseline and Endline, found that intake of animal source foods is very low. This indicates that an increase in supply (access and/or availability) of animal source foods may well result in it being fed to young children. However, there may still be risks, as the COMPAC-TL Endline report identified the strong perception that raised animals, even eggs from raised poultry, were seen as assets rather than sources of food for family.

Table 6 illustrates the correlation between the education levels of respondents and responses to the IYCF questions. The results indicate that education level appears to have no impact on the knowledge of IYCF practices. One conclusion that can be drawn from this is that the formal educational system is not addressing the need for this type of critical information well.

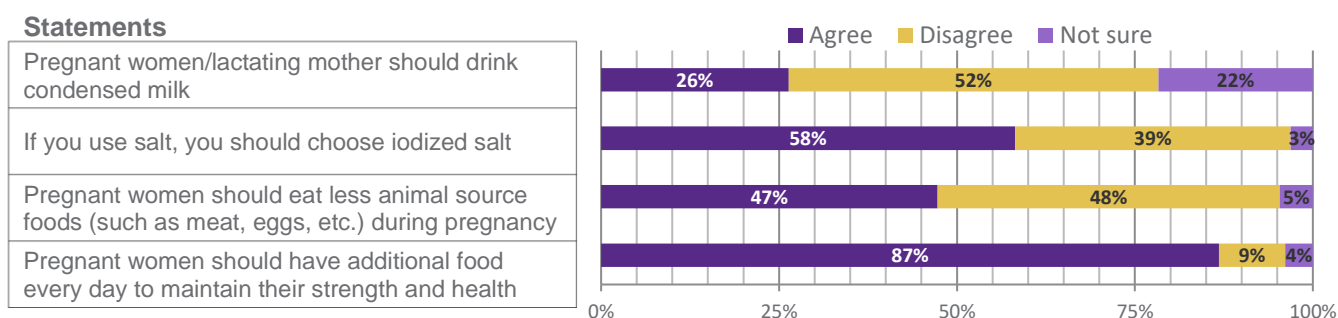
Maternal feeding

Similar to IYCF knowledge, attitudes and practices, several questions were asked to assess the respondents' KAPs around maternal feeding practices for women during pregnancy and lactation. Findings are presented in the Graphs 15-17 below:

Table 6: Correlation with formal educational

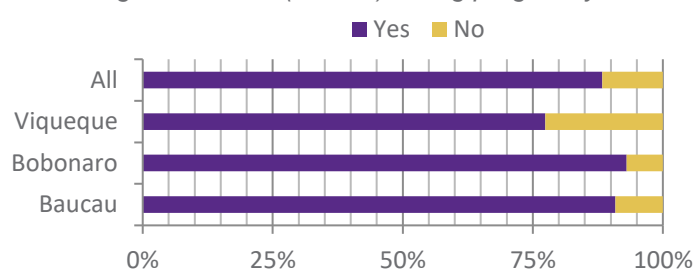
	Food can be given to a child age under 6 months	Animal source foods can be given to 6-23 months
Expected resp	DISAGREE	AGREE
No school	17%	39%
Elementary	38%	12%
Pre-secondary	40%	12%
Secondary	13%	28%
Tertiary	9%	9%

Graph 15: Perceptions around maternal feeding

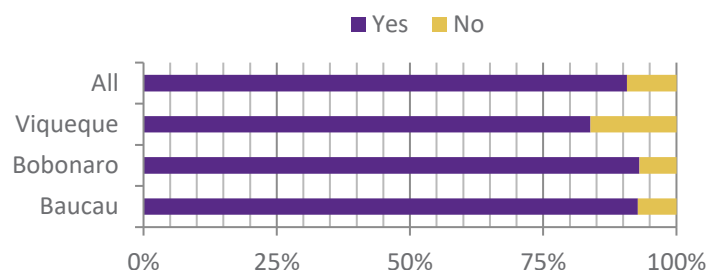


- There appears to be a good understanding amongst respondents (87%) regarding the importance of pregnant women eating additional food.
- Over 85% of respondents report women consume extra snacks during pregnancy.
- Over 90% of respondents report women consume a greater variety of food during pregnancy.
- However, almost half of respondents did not agree with the importance of animal source foods for pregnant women. The Food Consumption Assessment provides supporting information about the beliefs and conceptions around this.
- Just over half of respondents agreed with the importance of using iodized salt iodization. This is still a low percentage and is worthy of further attention.

Graph 16: Proportion of respondents/spouses consuming extra meals (snacks) during pregnancy



Graph 17: Proportion of respondents/spouses indicated consuming more variety of food during pregnancy

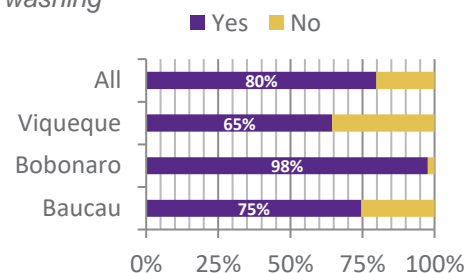


4.5. Handwashing at critical times

Handwashing practices

According to the TLFNS, stunting was significantly lower among children from households with a hand-washing facility than those without a hand-washing facility. According to this survey, 80% of respondents reported washing their hands with water and soap (Graph 18). This high percentage comes as a surprise as the TLFNS found that only 22.8% of households had an appropriate handwashing facility. This may indicate that handwashing practices are occurring at high rates, but while using potentially less/non-effective technologies.

Graph 18: Proportions of respondent households using soap during hand-washing



Handwashing at critical times

Only 11% of respondents reported washing hands during at least 4 different 'critical times'. 76% of respondents reported they hand-wash before eating meals. 38% of respondents reported that they hand-wash before eating a meal and after assisting small children with the toilet. Table 7 provides further details about hand-washing practices in survey locations.

Diarrhoea

Diarrhoea is a common infectious disease and is strongly linked to the nutritional status of children, because it rapidly evacuates foods before children's bodies are able to absorb critical nutrients.

The TLFNS found that 16.7% of children suffered from diarrhoea in the two weeks prior to the survey; and that only 6.7% of children received proper feeding and oral rehydration salts / zinc treatment during diarrhoea episodes.

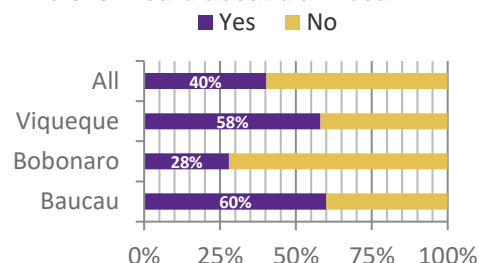
The TLFNS also found that stunting was significantly higher (55.6%) among children who had diarrhoea in the past two weeks, than those who had not had diarrhoea (50.8%). In addition, anaemia was also significantly higher among children 6-59 months old who had diarrhoea (66.2%) vs those who did not have diarrhoea (60.7%).

This survey found that respondents understanding of diarrhoea and its impact on nutrition is limited. Only 40% of all respondents reported having ever heard of diarrhoea, as illustrated in Graph 19. This varied substantially from only 28% of respondents in Bobonaro reporting having ever heard of diarrhoea, to 60% in Baucau.

Table 7: Proportions of respondents hand-washing during critical times

Combinations of responses		Baucau	Bobonaro	Viqueque	All
Before eating meal	1	27%	0%	19%	16%
	2	4%	0%	3%	2%
Before preparing meal	3	0%	0%	10%	2%
	4	5%	2%	3%	4%
After using the toilet	5	2%	0%	0%	1%
	1, 2	42%	19%	58%	38%
After assisting small children with toilet	1, 3	2%	7%	3%	4%
	1, 2, 3	7%	53%	3%	22%
	1, 2, 3, 4	0%	2%	0%	1%
	1, 2, 3, 5	11%	14%	0%	9%
	1, 2, 3, 4, 5	0%	2%	0%	1%
	Others (comeback from farm)				

Graph 19: Proportion of respondents who ever heard about diarrhoea



Hygiene

This survey further investigated respondents' abilities to identify a connection between likely sources of contamination that frequently results in diarrhoea. The survey found a greatly varied range of understandings, with a generally low understanding of sources of diarrhoea-related contamination. In general, the majority of respondents believe that contaminated water and dirty hands are the main causes of diarrhoea (Table 8 for more details).

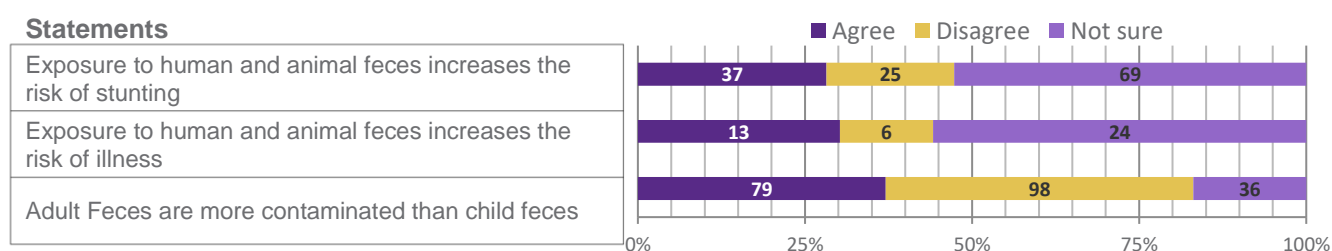
Linkages between stunting and faeces

The survey asked respondents about their understanding of the linkages between stunting and animal and human faeces. Less than 30% of respondents appear to understand the linkages between faeces and stunting.

Table 8: Proportion of respondents who heard about diarrhoea

Combinations of responses		Baucau	Bobonaro	Viqueque
1. Contaminated water	1	50%	21%	29%
	2	25%	0%	75%
2. Dirty hands	3	0%	0%	100%
3. Contaminated foods	4	67%	0%	33%
	1 2	42%	42%	15%
4. Others	1 3	39%	30%	30%
	1 2 3	33%	52%	14%
	1 2 4	0%	100%	0%
	1 3 4	67%	33%	0%
	1 2 3 4	50%	50%	0%
	1 2 3 4	50%	50%	0%
	All	43%	34%	23%

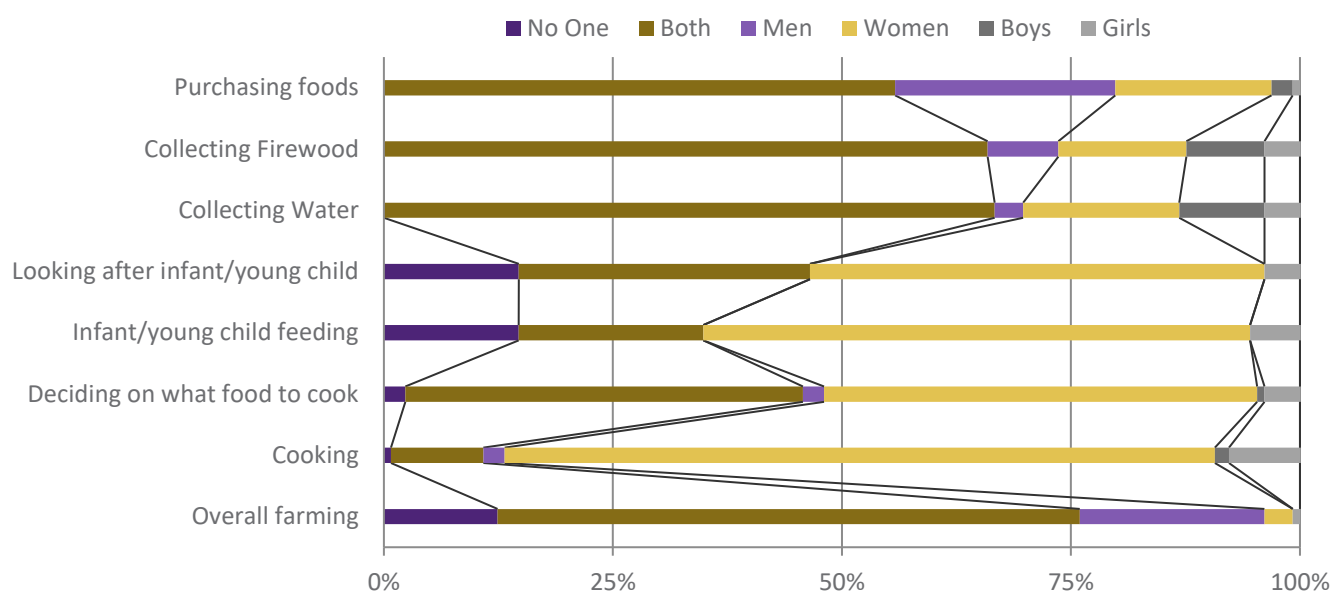
Graph 20: Perceptions around vulnerability of stunting or illness due to exposure to human/animal faeces



4.6. Gender

In addition to the three nutrition assessments carried out, TOMAK also conducted a separate Gender assessment using the Gender Equality and Social Inclusion Analysis (GESIA) framework. The aim of this assessment was to understand the social-cultural norms and contexts in which men and women live and make decisions in TOMAK's target areas. Specifically, the focus was on gender roles relating to household chores and activities relevant to agricultural and nutrition. An analysis between the findings of the GESIA assessment and all three nutrition assessments focused on better understanding of which foods are consumed by households and how gender biases impact household food consumption practices. This KAP survey included questions to compare if evidence on general gender dynamics from both the TOMAK GESIA assessment and other secondary data available are consistent. Key findings are summarized below:

Graph 21: Gender and Age associations to Roles around the household



- Farming: 64% of respondents reported farming as a role for both men and women. While only 20% reported as it as a men-only role, and only 3.1% reported it as only a women-only role.
- Cooking: 76% of respondents reported that cooking is mostly the responsibility of women, with girls and men also helping sometimes.
- Decisions around what to cook: 47% of respondents reported that the decisions about what to cook were made by women, with 43% of respondents reporting that the decision is made jointly by both men and women. The TOMAK GESIA assessment indicated that women require permission to cook more nutritious foods, such as animal source foods, even if they are available at the household.
- Infant and young child feeding (ICYF) practices: 60% of respondents reported that feeding of infants and young children is a women's responsibility. Men's role around IYCF is very limited according to respondents in this study.
- Infant and young child caring practices: similar to infant and young child feeding practices, 49% of respondents reported that looking after young children is the responsibility of women.
- Other roles: collecting water, firewood and purchasing food were reported as joint roles for both men and women.

5. Conclusions

- Almost half of households spend half their income to buy food. With an average of 44% of households reporting using half of their incomes to buy food, it appears that even though most rural households produce their own food, a large percentage of are not food self-sufficient. Follow-up questions found that over 80% of respondents reported prioritizing consuming food over selling it i.e it appears that households are likely not simply selling foods to buy other items or simply purchasing excess food.
- Basic nutrition knowledge is still lacking. Rice, one of the most commonly consumed foods, was used as a proxy test of respondents' nutrition knowledge. Only 57% of respondents were able to indicate that they know red rice is more nutritious than white rice, 21% were not sure while 22% were incorrect.
- Opportunities for cooking using electricity. While firewood remains the dominant fuel source for cooking, households are increasingly using electric stoves. This shift not only presents potential opportunities for reducing respiratory-related illnesses from cleaner kitchens, but it may also signal an opportunity to

positively change other cooking habits at the same time. This could include the preparation of more nutritious foods and preparing foods in ways that retains more of their nutrients during the cooking process.

- A significant percentage of new-born babies do not receive colostrum. 75% of respondents or their spouses reported early initiation of breastfeeding within one hour of birth – much lower than the 93% national figure (TLFNS, 2013). Based on these self-reports, there is a high likelihood that a significant percentage of new-born babies do not receive colostrum in target areas.
- Critical deficiencies remain in caregiver knowledge and/or beliefs around basic feeding practices of babies 0-24 months. Findings from this assessment support other studies that there remain many contrary beliefs about how long a baby should be breastfed for, and when supplemental foods should be added to babies' diets.
- Animal-source foods seen as assets, not essential foods. Although respondents indicated a strong demand for animal-source foods, especially for babies 6-24 months, evidence from other surveys indicates that animal source foods are considered primarily as assets for sale, gifts, etc and not own- consumption.
- Formal education may be failing to educate future parents about IYCF practices. Assessment results indicate that education level appears to have no impact on the knowledge of IYCF practices. One potential conclusion to draw is that the formal education system is not addressing the need for this type of critical information well.
- Handwashing strongly correlated to critical health outcomes. According to the TLFNS; stunting was significantly lower among children from households having a hand-washing facility compared to those without.
- Is handwashing being effectively undertaken in target areas? This assessment found that 80% of respondents reported washing hands with soap, but the TLFNS found only 22% of households had hand-washing facilities. It is possible that washing hands using improper technology (ie not having access to a hand-washing station) could be resulting in high rates of re-contamination during handwashing.
- Handwashing is not happening at critical times. Only 11% of respondents reported washing hands during at least 4 specified 'critical times'.
- Diarrhoea not well understood. Only 40% of all respondents reported having ever heard of diarrhoea. While many more respondents may know what diarrhoea is by other local names, respondents' low rates indicate a potentially important danger from this common and deadly healthy issue.
- Respondents not linking faeces with stunting. Less than 30% of respondents appear to understand the linkages between faeces and stunting.
- Woman require permission to cook to more nutritious foods. While the GESIA assessment found that women were responsible for cooking, it also indicated that women require permission to cook more nutritious food, such as animal-source foods. This was found to still be true even if such foods were available within the household.

6. Recommendations for TOMAK

Based on the conclusions from the secondary data analysis and this assessment, recommendations for TOMAK include:

1. **Prioritise activities that address household decision-making.** In particular, such activities should focus on (i) use of income to purchase nutritional food; (ii) use of available protein-rich resources, such as chickens, in meal preparation; (iii) use of income to invest in handwashing stations; and (iv) utilisation of knowledge from others around agriculture, nutrition, health and hygiene in making critical household decisions.
2. **Prioritise activities that support more intense production of foods, especially healthy foods.** With a majority of households spending half their income on food, this represents a significant burden on food-producing households. At the same time, women's time burdens are already extremely high from the many tasks they undertake including farming. Therefore, activities that increase food production through intensification, and where possible through close-to-home farming systems, should be prioritised. Both nutritious and high-value crops should be considered where possible.
3. **Consider activities that tap into high food purchasing rates.** With a majority of households spending high percentages of income on food, there are important opportunities for income-generating activities in local, micro-scale food production activities. Such activities should be calibrated to both current and anticipated demand characteristics (type of food, quantity, time, terms of trade, etc), as well as climate-smart (i.e. water and soil nutrient efficient).
4. **Engage in activities that increase household purchasing power.** With a majority of households forced to spend half their income on food, activities that enhance savings and lending capacities of households will likely have a significant impact on overall nutrition and food security. Activities that support savings and lending clubs should be closely linked to other household decision-making activities and agricultural intensification activities (ie keyhole gardening, integrated fish farming, etc).
5. **Capitalise on opportunities to layer critical nutrition and health related messaging.** Informal savings and lending clubs are known for being powerful vehicles to deliver other critical messages to targeted groups. Given this study's significant findings around gaps in ICYF practices, understanding relationships between faeces, handwashing and diarrhoea, etc, TOMAK should strategise how to leverage such clubs in the delivery of critical nutrition and health messaging.
6. **Expand gender empowerment to more than only talking to women.** As these studies have found, women make decisions in constant consultation with men, men with women, mothers with their children, mothers with extended family, and women with women. The empowerment of women and girls is therefore a process that TOMAK should take a holistic approach to.
7. **Formative research required.** Given the significant gaps in not just knowledge, but also attitudes and practices, concerning nutrition-smart agriculture, nutrition and health-related behaviours, TOMAK needs to develop a deeper understanding of the barriers and obstacles to addressing these gaps. Timor-Leste has seen a marked increase in agriculture, nutrition and health programs but household-level change in behaviours is lagging. If TOMAK wants its activities to result in lasting, transformative change, it needs to understand how to enable its investments to cut through an array of cultural, educational and other norms and practices that have so far inhibited change.
8. **Take advantage of kitchen technology change to promote food preparation change.** Changing food preparation habits is one of the hardest things to achieve. It is why food companies spend so much money on marketing. However, this assessment and the 2015 Census found that change is afoot in rural Timorese kitchens. With upwards of 20% of respondents reporting that they now use electrical cooking devices, such rapid and radical change presents an opportunity for TOMAK to introduce important new food preparation activities. Such activities should focus on: (i) how ingredients and foods are being prepared; and (ii) how foods are prepared so that fewer critical nutrients are lost during the food preparation process. Also, the technology shift can be utilized to (iii) drive home critical messages around illness associated with indoor air pollution resulting from using traditional stoves.

9. **Consider coordination with other, complementary initiatives – especially formal education systems.** While this assessment did not look directly at complementary programs like formal education programs, church programs etc. its' finding that formal education did not appear to have an impact on nutrition-related behaviours is alarming. TOMAK may have an opportunity to reach a wider range of its target population if it looks for ways to integrate and coordinate its NSA and SBCC programming through formal education channels.

Appendices

Appendix 1: Secondary Data Analysis

Since 2010, when the government signed the Comoro Declaration, government and development partners have increased their commitments to combat malnutrition and food insecurity in Timor-Leste. As a result, a number of surveys and studies were completed to better understand the scale and urgency of the issue. The following reports were reviewed for the secondary data analysis.

1. Timor-Leste Food and Nutrition Survey (TLFNS) (Ministry of Health, 2013)

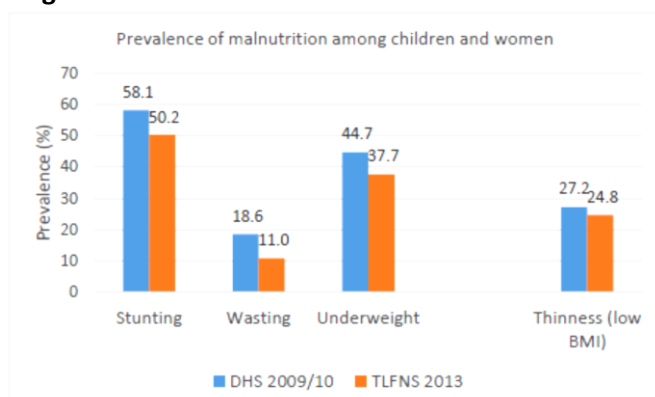
- The report provides the results of the first ever comprehensive food and nutrition survey in Timor-Leste. Most of the data collected was representative at the national and municipal levels. The report presents the “magnitude of the malnutrition situation” in Timor-Leste. Key findings from the TLFNS were:
- Timor-Leste is exposed to very high public health problems for chronic undernutrition (stunting) as well as from wasting and incidence of being underweight.
- Timor Leste has ‘severe’ public health problem of anaemia among children (prevalence of anaemia >40%) and of ‘moderate’ public health problem of anaemia among women (prevalence of anaemia 20% – 39.9%).

Survey data was collected on the following areas.

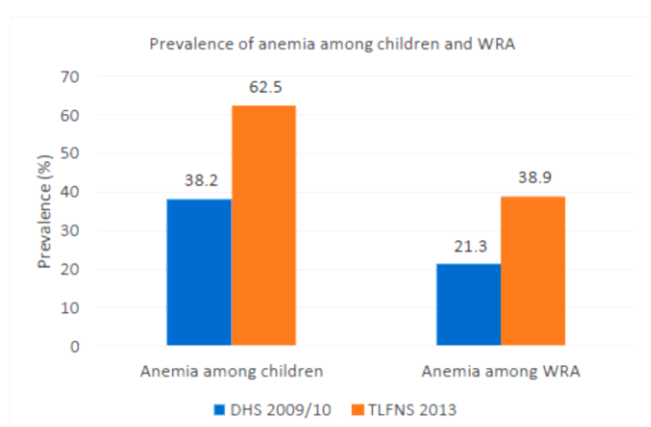
- (i) Prevalence of malnutrition including anaemia, among children (under 5 years of age) and their mothers (aged 14-60 years)
- (ii) Prevalence of iodine and vitamin A deficiency in women (aged 14-60 years)
- (iii) Prevalence of vitamin A and zinc deficiency in children (aged 6-59 months)
- (iv) Aflatoxin exposure in children under 5 years and their mothers
- (v) Prevalence of children who suffer from any illnesses (diarrhoea, fever, fever with cough, and ‘suspected pneumonia’ in the form of fever with cough and fast breathing),
- (vi) Infant and Young Child Feeding Practices (early initiation of breastfeeding/ colostrum, exclusive breastfeeding, and complementary feeding practices)
- (vii) Coverage of health and nutrition related services for children and mothers including basic immunization, deworming, vitamin A, supplementary feedings and other services.
- (viii) Health seeking behaviours including the percentage of caregivers who brought ill children to services including health and other facilities (hospital, community health centre, and traditional healer among others) and treatments provided for children with diarrhoea.
- (ix) Access to improved drinking water sources, access to improved latrines, and availability of handwashing facilities.
- (x) Household food security, including food consumption patterns and coping strategies, land and livestock ownership, livelihoods and asset ownership
- (xi) Determinants of nutritional status of children by associations of IYCF practice, disease status, caring practices, access to sanitation, health and nutrition service coverage, socioeconomic status to rates of stunting and anaemia in children under 5 years of age.

Summary of the report is as follows:

Magnitude of Nutrition Situation



Timor-Leste is exposed to very high public health problems for chronic undernutrition (stunting) and high public health problem for wasting and underweight.



Timor Leste has 'severe' public health problem of anemia among children (prevalence of anemia >40%) and of 'moderate' public health problem of anemia among women (prevalence of anemia 20% – 39.9%).

Immediate Causes

• Diseases

- The prevalence of children who suffered from any illnesses in the previous two weeks was relatively high (47.7%) and the prevalence of diarrhea, fever, fever with cough, and 'suspected pneumonia' (fever with cough and fast breathing) were 16.7%, 32.6%, 36.6%, and 9.3% respectively. The prevalence of fever was higher compared to the 2009/2010 TLDHS (26.4%)

• Infant and Young Child Feeding Practices

- Early initiation of breastfeeding within one hour of birth was 93.4%
- Exclusive breastfeeding among infants 0-5 months was 65.6%
- Both are higher than those of the TLDHS (81.7% and 51.5% respectively).
- Complementary feeding:
 - o Children 6-23 months who met the minimum meal frequency was 79.2%
 - o Children 6-23 months who met the minimum dietary diversity were only 27.5%,
 - o Children 6-23 months who met the minimum acceptable diet was only 17.6%
 - o The adherence to the IYCF practices was 28.2%

- The proportion of children adhering to the minimum acceptable diet and IYCF practices was lower compared to the TLDHS figure (30.2% and 36.1%)
- Among children 24-59 months, the prevalence of meeting adequate meal frequency and meeting adequate dietary diversity was 50.6% and 40.6% respectively, while the prevalence of meeting adequate diet was 25.1%.

Underlying Causes

- **Coverage of health and nutrition services**
 - 86.5% of children 12-23 received complete basic immunization
 - 85.2% of children was brought to public health services during illness
 - 38.8% of children received deworming
 - 53.2% of children received vitamin A capsule
 - 71.9% children 6-23 months old received MNP in Aileu
 -
 - Overall, the coverage of immunization, vitamin A capsule, deworming were higher compared to the 2009/2010 TLDHS (52.6%, 50.7%, 35.4%, and 34.7% respectively).
 - 87.2% of mothers received ANC during last pregnancy
 - 81.6% of mothers received ANC ≥ 4 times during last pregnancy
 - 19.3% of mothers received deworming during last pregnancy
 - 31.7% of mothers took ≥ 90 tablets IFA during last pregnancy
 - Overall, the coverage of ANC, ANC ≥ 4 times, IFA and deworming tablet consumed during pregnancy were higher than the 2009/2010 TLDHS
 -
 - 45.4% of mothers received Timor Vita during last pregnancy
 - 34.2% of children received Timor-Vita
- **Health seeking behaviour**
 - 43.3% of caregivers brought ill children to community health center, 40% to hospitals, 1.9% to private health facility, 4.4% to traditional healer/self-medication
 - 10.5% of caregivers 'Do Nothing' when their children ill
 - Among children who got diarrhea in the previous two weeks:
 - 63% received ORS
 - 57.5% received medication
 - 33.3% received zinc tablets
 - 29.9% received ORS and zinc together
 - 23.8% of children received proper feeding during diarrhea
 - Only 6.7% of children received proper feeding and ORS and zinc during diarrhea.
- **Sanitation**
 - 64.5% of HH had access to improved drinking water source
 - 50.6% of HH had access to improved sanitation/latrine
 - 22.8% of HH had appropriate handwashing facility
 -
- **Household Food Security**
 - 61.3% of HH had acceptable situation for HH food security, while 10.9% of HH had poor food security situation
 - HH Food Source
 - Staple foods such as rice, corn, and tubers (potato, yam, cassava, and sweet potato), vegetables, and fruits were the type of foods that were mainly obtained from HH own production.
 - Pulses, meat, fish, dairy product, sugar, oil/fat, and condiments were the type of foods that were mainly obtained from purchase/barter.
 - Small proportion food items were borrowed or provided as gift to households
 - HH Food Consumption
 - Most of food items on the staple food group such as corn, rice, roots/tubers; green leafy vegetables and other type of vegetables; sugar; oil/fat; and condiments were consumed 5-7 days/week.

- Bread/biscuit and noodle; orange vegetables; fruits; meat and fish; milk and dairy produce were consumed less frequently for 0-4 days/week
- Land ownership, livestock, and livelihood
 - 76.4% of HH own land and 48.3% of them was land/field away from home, 17.7% of them was home garden, and 34% was both field away from home and home garden.
 - 86.3% of HH had livestock with 87.8% of them raised pigs, 87.4% of them raised poultry
 - 84.2% of HH had production and sale of agricultural crops as the main source of livelihood, followed by livestock rearing and selling as the second source of their livelihood at 79.7%.
 - Only 30.4% of HH engaged in livelihood with stable income such as salaried work, skilled workers and commercial traders was only small. Hence majority of households were considered as having unstable income.

Basic Causes

- **Household Socio-economic Situation**
 - 84.1% respondents own their house
 - House condition:
 - Wall: majority was brick (54.6%) and wood/bamboo/galvanized steel (33.7%)
 - Floor: majority was dirt/earth (58.5%) and brick/ceramic 38.5)
 - Roof: majority was galvanized steel (79.1%) and leaves/bamboo (14.4%)
 - 69.2% of HH has access to electricity
 - 81.3% of HH use wood/charcoal/hay for cooking and 16.8% use electricity
 - Wealth Index:
 - Dili has the highest index (65.6% of HH in the highest/richest quintile)
 - Oecussi has the lowest index (49.5% of HH in the lowest/poorest quintile)
 - 70.1% of HH has family member smoke cigarette
- **Decision making at the HH:**
 - Mother and father were jointly making decision for:
 - Child health (57.5%)
 - Medical treatment when the child is ill (54.1%)
 - ANC (49.3%)
 - Place for giving birth (61.2%)
 - Household purchase-related (big purchase 50.7%)
 - Mother was decision maker for:
 - Food-to be cooked daily (78.8%)
 - Types of foods to be given to young child (77.3%)
- **Household Vulnerability to shock**
 - Main HH coping strategy on the difficulty of obtaining food in the past month was either:
 - Spending savings (31.6%),
 - Borrowing money from a formal lender (33.1%),
 - Sending an adult household member sought for a job somewhere else (33.5%),
 - Selling productive assets or means of transport (19.2%)
 - Coping strategy among household having difficulties obtaining food in the past 7 days,
 - Borrowing food or relying help from other (62.5%)
 - Consuming less preferred food (41.2%)
 - Eating less frequent (59.9%)
 - Reducing portion of food (38.6%)
 - Reducing amount of food consumed by adult to be given to children (28.9%)
 - Sending household member to eat elsewhere (11.8%)
 - Spending day without eating (6.3%)
 - HH food security as defined by Reduced Coping Strategy Index (RCSI) ranged from 1 to 7, where:
 - Baucau is the most vulnerable with RCSI 7
 - Bobonaro is the least vulnerable with RCSI 2.6
 - Main assistance received by HH in the past 6 month was supplementary food for children 6-23mo (22.8%) and Supplementary food for pregnant/lactating women (17.5%). Small proportion of HH (<10%) received either agriculture assistance (6.5%), food aid (6.8%), conditional cash transfer (7.9%), education assistant (7.4%), and other (2.1%)

Determinants of Nutritional Status of Children

- **Stunting**
- Stunting and IYCF practice
 - Stunting was significantly lower among:
 - Children 6-23 mo consumed fortified foods in their complementary food (37.7%) than who did not consume (46.1%)
 - Children 6-23 mo consumed adequate meal frequency (43.3%) than who did not have adequate meal frequency (53.8%)
 - Children 6-23 mo currently breastfed (33.4%) than who did not breastfed (52.1%)
 - Children 0-23 mo received breastmilk immediately after birth (35.6%) than who initiated breastfeed within/after 24 hr of birth (44.1%)
 - Children 0-23 mo received appropriate IYCF practice (27.8%) than who did not practice appropriate IYCF (41.8%)
 - Children 24-59 mo consumed meat (60.9%) vs did not consumed (67.7%), egg (62.9%) vs. did not consume egg (66.4%), milk (55.2%) vs did not consume milk (66.6%), fortified foods (59.7%) vs did not consume fortified food (67.6%)
 - Children 24-59 mo consumed adequate diet diversity (64.1%) than who did not have adequate diet diversity (66.6%)
 - All under-five (0-59mo) with good dietary practices (exclusive breastfeeding among 0-5mo, meeting minimum acceptable diet for children 6-23mo, and had adequate diet for children 24-59mo.
 - Stunting was not associated with:
 - minimum acceptable diet among children 6-23 months old
 - meal frequency among children 24-59 months old
- Stunting and diseases
 - Stunting was significantly higher among:
 - Children who were sick in the past two weeks (53%) than who were not (50.4%)
 - Children who were having diarrhea in the past two weeks (55.6%) than who were not having diarrhea (50.8%)
 - Children who had fever in the past two weeks (53.3%) than who did not (50.7%)
 - Children who had fever with cough in the past two weeks (53%) than who did not (50.8%)
 - Children who were suspected with pneumonia (55.9%) than who were not (not sick, 50.8%; fever only, 52.2%)
- Stunting was negatively associated with land and livestock ownership. Stunting was significantly higher among children:
 - from HH owned land (53.1%) than those from HH did not own land (42.3%)
 - from HH owned livestock (45.6%) than those from HH did not own livestock (52.1%)
- Stunting was significantly higher among children from HH experienced with shock in the past 12 months (53.9%) than those from HH did not experience with shock in the past 12 months (50.8%)
- Stunting was not associated with Reduced Coping Strategy Index, which means that stunting was not determined by whether the house experienced with lack of food or not in the past 12 months

Anemia among children

- Anemia among children and IYCF practice
 - Anemia was significantly lower among:
 - Children 6-23 months old practiced appropriate IYCF (75.7%) than those did not practice appropriate IYCF (78.8%)
- Anemia among children and diseases
 - Anemia was significantly higher among children 6-59 months old
 - who were sick (62.6%) vs those who were not sick (60.6%)
 - who had diarrhea (66.2%) vs those who did not have diarrhea (60.7%)
 - who had fever (63.4%) vs those who did not have fever (60.7%)
- Anemia among children and Caring Capacity

- Anemia was significantly higher lower among children whose mothers were malnourished (66.4%) than those whose mothers were normal (61.9%)
- Anemia was negatively associated with:
 - Maternal education. Anemia was higher among children whose mothers had higher educational level
 - Maternal literacy. Anemia was higher among children whose mothers were literate
- Anemia among children and Nutrition and Health Services
 - Anemia was significantly lower among children:
 - 6-59 months who consumed Timor Vita (59.9%) than those who did not consume Timor Vita (64.4%)
 - 6-59 months who took deworming (59.4%) than those who did not take deworming (63%)
 - 12-23 months who received any immunization (64.8%) than those who did not receive any immunization (75.3%)
 - 6-23 months who consumed micronutrient powder (MNP) (59.1%) than those who did not consume MNP (76.5%) (data from Aileu only)
- Anemia was also lower (but not significant) among children 6-59 months from HH in the mother support group areas (76.6%) than those from HH not in the MSG areas
- Anemia among children and Basic Determinants
 - Anemia was significantly lower among children 6-59 months:
 - from HH with main activities in agriculture (59.6%)
 - from HH owned agriculture land (60.7%)
 - from HH had cash crop farming (58.3%)
 - from HH had poultry rearing (60.9%)
 - from HH owned the house (60.9%)
 - from HH with electricity (59.5%)
 - from HH received agriculture assistance (57.3%)
 - from HH received CCT (58.1%)
 - from HH joint farming group (59.7%)
- Anemia among children 6-59months was negatively associated with:
 - Wealth quintile: the better the HH quintile, the higher anemia (highest quintile, 63.1% - lowest quintile, 58.8%)
 - HH experience shock in the past 12 months: anemia was lower among HH experienced shock in the past 12 months (58.5%)

Determinants of IYCF practice among children 0-23 months

Exclusive Breastfeeding among infants 0-6 months

- **Exclusive breastfeeding and maternal factors**
 - Exclusive breastfeeding was significantly higher among
 - Infants whose mothers had younger age (<20yr=74.7%; 20-35yr=66.8%; >35yr=54.5%)
 - Infants whose mothers were normal (Thin mother=58.3%; overweight=57.3%; normal mother=68.7%)
- **Exclusive breastfeeding and child factors**
 - Exclusive breastfeeding was significantly lower among
 - Infants suffered from diarrhea (54.5%)
 - Infants suffered from any diseases (57.7%)
 - Acute malnourished (wasted) infants (54.3%)

Exclusive breastfeeding and health practices

- Exclusive breastfeeding was significantly higher among
 - Infants whose mothers received ANC (66.6%)
 - Infants whose mothers received ANC from midwife (72.1%)
 - Infants whose mothers received counseling during ANC (68.3%)
- Exclusive breastfeeding was significantly lower among infants received ANC from other health personnel (Doctor/Obstetrician/Nurse)

- **Exclusive breastfeeding and household factors**
- Exclusive breastfeeding was significantly lower among
 - Infants whose mothers had heavy workload, indicating by burden to collect water (54.3%)

Appropriate Complementary Feeding practices (Minimum Acceptable Diet) among children 6-23 months

- **Complementary feeding practice and maternal factors**
- Minimum acceptable diet was significantly higher among:
 - Children whose older mothers (>35yr=16.8%; 20-35yr=17.1%, <20yr=12%)
 - Children whose mothers had high school or higher education (20.7%)
- **Complementary feeding practice and child factors**
- Minimum acceptable diet was significantly lower among children infants suffered from any disease (15.8%)
- Minimum acceptable diet was not associated with diarrhea nor wasting
- **Complementary feeding practice and health practice**
- Minimum acceptable diet was **significantly higher** among children whose mothers received counseling during ANC (21.9%)
- **Complementary feeding practice and household factors**
- Minimum acceptable diet was associated with:
 - Decision maker for food at HH level. HH with mothers as decision maker for food to be given to children had children with better minimum acceptable diet (18.3%)
 - HH food consumption score (FCS): HH with acceptable FCS had the highest minimum acceptable diet compared (20.5%) to those from HH with poor (8.5%) or borderline (4.2%) FCS

Determinants of Maternal Thinness

- **Maternal thinness and Socio-demographic characteristics**
- Maternal thinness was significantly higher among:
 - mothers of older age (<20yr=40.6%; 20-35yr=26%; >35yr=26.3%)
 - married/single women (26.4%) than those were divorced/widowed (36.6%)
 - mothers whose birth spacing of youngest children of 24months (29.2)
- **Maternal thinness and nutrition and health services**
- Maternal thinness was significantly lower among;
 - mothers received ANC (25.9%) than those who did not receive ANC (30.6%)
 - mothers received ANC more than 4 times ANC (25%)
 - mothers who did not receive Timor Vita during last pregnancy (23.6%)
 - mothers living in the MSG suku (25.6%)
- **Maternal thinness and household characteristics**
- Maternal thinness was lower with higher Food Consumption Score (acceptable FCS=26%; borderline FCS=27.1%; poor FCS=28.5%)
- Maternal thinness was significantly lower among mothers from HH consumed:
 - drequent egg (5-7times=24.6%, 3-4times=25.8%; 1-2times=26%; never=28.3%)
- Maternal thinness was significantly lower among mothers belong to the HH:
 - with livelihood source from salaried work (20.4%)
- Maternal thinness was significantly higher among mothers from HH
 - owned land (27.5%)
 - with livelihood source from agriculture (28.2%)
 - with livestock production (27.9%)
- Maternal thinness was significantly lower among mothers from the HH with better housing condition:
 - improved drinking water (25.8%) vs unimproved water (27.8%)
 - improved latrine (23.5%) vs unimproved latrine (29.1%)
 - better flooring (brick/ceramic/tile) (22.4%) vs bamboo/wood (28.6%)
 - better wall (brick/brick with bamboo) (22.6%) vs wood/bamboo (28.8%)
 - with electricity (17.6%) vs without electricity (27.5%)

- Maternal thinness was significantly lower with higher wealth quintile (highest=17.2%, fourth=25.5%, middle=26.9%, second=29.1%, lowest=33.7%)
- **Maternal thinness and decision maker at HH**
 - Maternal thinness was significantly lower among mother:
 - from HH where mother and/or her husband was the decision maker on the issues related to place for ANC, child health care, large HH purchase and type of foods to be purchased compared to if other family members were decision makers:
 - ANC (mother=27.6%; husband=28.3%; mother and husband=25%, others=32.1%)
 - Child health care (mother=28.1%; husband=25.1%; mother and husband=25.8%, others=34.4%)
 - Large HH purchase (mother=27.2%; husband=28%; mother and husband=25.2%, others=36.9%)
 - Maternal thinness was significantly lower among mothers who joined the religious activity (25.4%) than those who did not joint religious activity (28.5%)
- **Determinants of Maternal Anemia**
 - Maternal anemia was not associated with any socio-demographic characteristics
 - Maternal anemia was significantly lower among:
 - mothers with birth spacing ≥ 24 months (35.7%) than those with birth spacing <24months (37.9%)
 - mothers with low burden/workload (36.3%) than those with high burden/workload (40.7%)
- **Maternal anemia and nutrition and health services**
 - Maternal anemia was **significantly lower** among mothers who:
 - received ANC during last pregnancy (36.2%)
 - had ANC ≥ 4 times during last pregnancy (35.1%)
 - received deworming during last pregnancy (33.6%)
 - who received IFA during last pregnancy (35.7%)
 - Maternal anemia was lower among mothers from ODF suku (30.6%)
 - Maternal anemia was lower among mothers from MSG suku (35.5%)
- **Maternal anemia and household characteristics**
 - Maternal anemia was negatively associated with some of household characteristics. Maternal anemia was significantly higher among:
 - mothers from HH with higher FCS (acceptable FCS=38%; borderline FCS=34.7%; poor FCS=35.2%)
 - mothers HH consumed more frequent bread/biscuit/cake (5-7times=39.5%; 3-4times=36.9%; 1-2times=35%; never=36%)
 - mothers from HH with better SES (access to improved drinking water source, access to improved latrine; with connection with electricity
 - Maternal anemia was significantly lower among mothers from HH experienced shock in the past 12 months (31.6%)
 - Maternal anemia was significantly lower among mothers from HH received various assistance and involved in social activities:
 - received food aid (30.7%) vs not receive food aid (37.2%)
 - received agriculture assistance (32.5%) vs not receive agriculture assistance (37.1%)
 - received CCT (31.3%) vs not receive CCT (37.2%)
 - Joined farming group (35.3%) vs not joined farming group (37.2%)
 - Joined religious activities (35.9%) vs not joined religious activity (38.6%)
 - Participated in SISCa activities (35.7%) vs not participated in SISCa (38.3%)

2. Combatting Malnutrition and Poverty through Inland Aquaculture in Timor-Leste (COMPAC-TL) Program - Baseline and Endline Surveys (Mercy Corps, Hivos, WorldFish, 2013 and 2016)

- The COMPAC-TL Baseline and Endline surveys were collected program-specific household-level data including (i) Household Dietary Diversity Score (HDDS), Women Dietary Diversity Score (WDDS), and Minimum Acceptable Diet (MAD) (ii) increased income based on diversified livelihood options, (iii) levels of production of inland fish, (iv) levels of production of nutritious crops including vegetables, (v) awareness of

the value and importance of nutritious foods, (vi) intake of fish and other nutritious crops among women of reproductive age and children under five years, and (vii) households links to market.

- The reports also collected information on the level of development of the inland fish farming sub-sector across the project's target areas including fish production practices and production volumes and sales. This may be relevant to TOMAK's NSA supply-side activities.
- In addition to fish, the COMPAC-TL program promotes the production and consumption of other nutritious foods like vegetables and chickens as part of various integrated fish farming (IFF) systems. The reports provide information about household consumption patterns fish and other nutritious products (i.e. vegetables, fruits, meats). The Baseline and Endline also compared fish and nutritious foods consumption by different member groups within household.
- Household income and expenditure and gender dynamics around income and expenditure were included in both reports.
- Lastly, the reports indicate the level of food security and coping mechanisms to food insecurity faced by the program's target households.

3. "Malnutrition in Timor-Leste: A review of the burden, drivers, and potential response," The World Bank, 2016

- The report sums up its gap analysis and donor mapping report as part of the World Bank Group's (WBGs) technical assistance to the Government of Timor-Leste. It also provides an overview of the country's "nutrition system". The report comprises of information on severity of malnutrition in Timor-Leste and country-specific key determinants.
- The report provides reviews on capacity, as well as institutional and implementation arrangements to address malnutrition. With regards to current nutrition-specific and nutrition-sensitive programs in Timor-Leste: the report maps the coverage of various donor and government programs, and documents gaps in the scope, coverage and financing of these programs.
- Finally the report provides recommendations to the Government of Timor-Leste (RDTL) and the development partner community to scale-up programs and interventions and strengthen the overall response to malnutrition in the country.

4. Catholic Relief Services (CRS), Community Driven Nutrition Improvement Program (CDNIP) Baseline Report, 2015

- This assessment was conducted across Baucau and Viqueque, of households within and across the TOMAK target areas.
- The main purpose of the assessment was to collect baseline data of the project against its indicators. The following information was collected: (i) proportion of children under 6-months of age who are exclusively breastfed; (ii) proportion of children 6 – 23 months of age who receive a minimum acceptable diet (apart from breast milk); (iii) proportion of children 0 – 23 months of age with diarrhea who are provided continued feeding along with oral rehydration solution and/or increased fluids; (iv) proportion of mothers of children 0 – 23 months of age who consumed iron-rich foods.
- The survey baseline report provides information about household-level knowledge of targeted nutrition-specific behaviours, including behaviours related to dynamics of pregnancy and child health-related decision making; and barriers to and facilitating factors in the adoption of target nutritional practices.
- Lastly, the report informs household agricultural practices and market access, including information on the proportion of households that are currently producing nutritious staple and minor crops or are engaged in homestead gardening or in homestead fish production.

5. Other relevant reports, including:

- CARE International Knowledge, Attitude, Practice (KAP) Survey
- World Vision Baseline Survey Report
- Health Alliance International CSP Survey

Appendix 2: Survey Questionnaire

TOMAK: Knowledge, Attitude and Practices Survey

Section 1: General information

1.1	Enumerator code	1. MC-1 2. MC-2 3. MC-3	4. MC-4 5. MC-5 6. MC-6	7. MC-7 8. MC-8 9. MC-9
1.2	Interview date		
1.3	GPS Point of the household		
1.4	Municipality		
1.5	Administrative Post		
1.6	Suku		
1.7	Aldeia		

Section 2: Respondent Consent

(Note for enumerator: please read this very loudly and if the respondent agrees to participate please ask him/her to sign below consent)

Good morning/afternoon/evening. My name is _____. I am here on behalf of Mercy corps / TOMAK Program. I am here to understand people's food consumption practice and people's understanding on nutrition to design TOMAK interventions. If you agree to take part, I will ask you to participate in this study.

You have been selected randomly and your identity and responses will be kept confidential, which means we will remove anything that could identify you as taking part in this study, such as names or villages if desired. Your answers to my questions will be combined with answers from many other people, so that no one will know that the answers you give me today belong to you.

You can decide not to answer any question that you do not want to, you can stop the interview at any time without explanation, or you can request that your answers are removed from the research at any time.

The interview will take about 60 minutes.

Can we have your consent? YES/NO *(Note for enumerator: if NO, please discontinue and move to next respondent)*

If agree, please sign here: _____

1.8	SCREENING QUESTION: Do you have children under-5 years of age?	YES – Continue NO - Stop
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Section 3: Background Information

3.1	How old are you now?	<input type="checkbox"/> _____ years	<input type="checkbox"/> Don't know/not sure
3.2	Are you/your spouse currently pregnant /lactating?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.3	How many people reside/live in this house?		
3.4	Who usually lives in this house with you? <i>(Note for enumerator: tick all that apply)</i>	<input type="checkbox"/> Father <input type="checkbox"/> Mother <input type="checkbox"/> Wife <input type="checkbox"/> Husband <input type="checkbox"/> Children <input type="checkbox"/> Sister(s) <input type="checkbox"/> Brother(s)	<input type="checkbox"/> Father in law <input type="checkbox"/> Mother in law <input type="checkbox"/> Sister in law <input type="checkbox"/> Brother in law <input type="checkbox"/> Other relatives <input type="checkbox"/> Non-other relatives
3.5	What is your highest educational level? <i>(Select one answer only)</i>	<input type="checkbox"/> No school <input type="checkbox"/> Elementary <input type="checkbox"/> Pre-secondary school (SMP)	<input type="checkbox"/> Secondary school (SMA) <input type="checkbox"/> Tertiary (diploma/university)
3.6	Did your spouse ever attend school? <i>(Select one answer only)</i>	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.7	Education level of your spouse? <i>(Select one answer only)</i>	<input type="checkbox"/> No school <input type="checkbox"/> Elementary <input type="checkbox"/> Pre-secondary school (SMP)	<input type="checkbox"/> Secondary school (SMA) <input type="checkbox"/> Tertiary (diploma/university)

Section 4: Housing Details (please observ/discuss and record)

4.1	Who owns the house that you use now?	<input type="checkbox"/> Our-own/my family <input type="checkbox"/> Community/suku owned <input type="checkbox"/> Government owned	<input type="checkbox"/> Church property <input type="checkbox"/> Other, please specify:
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4.2	(Please select one from the following options)	_____	
	Main sources of energy for lighting (Tick all that apply)	<input type="checkbox"/> Electricity <input type="checkbox"/> Kerosene <input type="checkbox"/> Candle <input type="checkbox"/> Firewood	<input type="checkbox"/> Candle nut/berry tree <input type="checkbox"/> Solar <input type="checkbox"/> Diesel generator <input type="checkbox"/> Others, specify: _____ _____
	Main sources of energy for cooking (Tick all that apply)	<input type="checkbox"/> Electricity <input type="checkbox"/> Cooking gas <input type="checkbox"/> Firewood (three stones stove)	<input type="checkbox"/> Improved cook stove <input type="checkbox"/> Others, specify: _____ _____
	Main source of drinking water (Tick all that apply)	<input type="checkbox"/> Protected sources(s) > (Pipe or pump indoors/outdoors, public tap, tube well/borehole, protected well or protected spring, rainwater collection, bottle water)	<input type="checkbox"/> Non Protected source(s) > (Not protected well or spring, water vendors/tank, river, lake or stream, etc.)
	Type of human waste disposal used (Tick all that apply)	<input type="checkbox"/> Improved latrine(s) <input type="checkbox"/> Latrine without slab/open pit	<input type="checkbox"/> No facility (go to bush)

Section 5: Perception and Practice Around IYCF

5.1	Ever you or your spouse ever breastfed?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
5.2	Did you or your spouse feed your youngest child with colostrum? (Note for enumerator: ask the name of the youngest child and use his/her name to continue ask question)	<input type="checkbox"/> YES	<input type="checkbox"/> NO
5.3	How long you had/would be breastfed your youngest child?? (Note for enumerator: ask the name of the youngest child and use his/her	<input type="checkbox"/> Several hour ago <input type="checkbox"/> Several day ago <input type="checkbox"/> Several week ago	<input type="checkbox"/> Several months ago <input type="checkbox"/> Several year ago >

	<i>name to continue ask question)</i>		
	<p align="center">STATEMENT</p> <p>I would like to read you some statements about child feeding practices, for each one can you tell me if you agree/disagree/not sure with the statement.</p> <p>➤ <i>(Note for enumerator: If no response or if you see confusion to the question - thick "NOT SURE/DON'T KNOW")</i></p>		
	5.4.1	In addition to breastmilk, food can be given to a child age under 6 months	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE <input type="checkbox"/> NOT SURE/DON'T KNOW
	5.4.2	Vegetables and fruits should not be given to children age between 6-12 months	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE <input type="checkbox"/> NOT SURE/DON'T KNOW
	5.4.3	Breastfeeding should decrease when a child starts eating food	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE <input type="checkbox"/> NOT SURE/DON'T KNOW
	5.4.4	Animal source foods like meats, milk, egg can be given to children age between 6-23 months	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE <input type="checkbox"/> NOT SURE/DON'T KNOW
	5.4.5	Breast feeding should continue until a child is 2 years of age or older	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE <input type="checkbox"/> NOT SURE/DON'T KNOW
	5.4.6	In hot climate, in addition to breast milk children under 6 months of age needs to drink water	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE <input type="checkbox"/> NOT SURE/DON'T KNOW

Section 6: Perception Around Maternal Feeding

	<p align="center">STATEMENT</p> <p>I would like to read you some statements about child feeding practices, for each one can you tell me if you agree/disagree/not sure with the statement.</p> <p>➤ <i>(Note for enumerator: If no response or if you see confusion to the question - thick "NOT SURE/DON'T KNOW")</i></p>		
	6.1	Pregnant woman should have additional food every day to maintain	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE <input type="checkbox"/> NOT SURE/DON'T

	their strength and health		KNOW
6.2	Pregnant women should eat less animal source foods (such as meat, milk, eggs, etc) during pregnancy	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE	<input type="checkbox"/> NOT SURE/DON'T KNOW
6.3	If use salt, you should choose iodized salt	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE	<input type="checkbox"/> NOT SURE/DON'T KNOW
6.4	Pregnant women/lactating mother should drink condensed milk (i.e. susu enak) <i>(Note for enumerator: Susu enak is not recommended)</i>	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE	<input type="checkbox"/> NOT SURE/DON'T KNOW
6.5	During your/your spouse last/current pregnancy, did pregnant mother consume extra food?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
6.6	During your/your spouse last/current pregnancy, did pregnant mother consume more variety of food?	<input type="checkbox"/> YES	<input type="checkbox"/> NO

Section 7: Perception Source of Income and Expenditure

7.1	What were main source(s) of cash earning in your household in 2015? <i>(Tick all that apply)</i>	<input type="checkbox"/> Agriculture/crop/livestock sale <input type="checkbox"/> Small-business <input type="checkbox"/> Fixed salary (cash for work/daily wages/salary)	<input type="checkbox"/> Remittance <input type="checkbox"/> Pension/subsidy
7.2	How much of your income is allocated to purchasing foods? <i>(Select one answer only)</i>	<input type="checkbox"/> Less than half <input type="checkbox"/> Half of income	<input type="checkbox"/> More than half <input type="checkbox"/> All of the income
7.3	Are you ever involved in any saving and loan activities? <i>(Select one answer only)</i>	<input type="checkbox"/> Yes, I am currently a member <input type="checkbox"/> Yes, I used to be a member	<input type="checkbox"/> No involved at all >
STATEMENT I would like to read you some statements about child feeding practices, for each one can you			

	tell me if you agree/disagree/not sure with the statement. > (Note for enumerator: If no response or if you see confusion to the question - tick "NOT SURE/DON'T KNOW")	
7.4.1	Household should prioritize consumption of own produced nutritious foods (veg, fish, fruit) than selling for income	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE <input type="checkbox"/> NOT SURE/DON'T KNOW
7.4.2	White rice is more nutritious than red rice	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE <input type="checkbox"/> NOT SURE/DON'T KNOW
7.4.3	Households should use their income to buy a variety of foods for household consumption	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE <input type="checkbox"/> NOT SURE/DON'T KNOW

Section 8: Gender roles

8.1	In your household who is responsible to carry out the following tasks; (Note to enumerator: Q91.1-Q91.10 is select one answer only)	
8.1.1	Farming;	<input type="checkbox"/> No one <input type="checkbox"/> Both (women & men) <input type="checkbox"/> Men <input type="checkbox"/> Women <input type="checkbox"/> Boys <input type="checkbox"/> Girls
8.1.2	Cooking;	<input type="checkbox"/> No one <input type="checkbox"/> Both (women & men) <input type="checkbox"/> Men <input type="checkbox"/> Women <input type="checkbox"/> Boys <input type="checkbox"/> Girls
8.1.3	Who decides on what food to cook?	<input type="checkbox"/> No one <input type="checkbox"/> Both (women & men) <input type="checkbox"/> Men <input type="checkbox"/> Women <input type="checkbox"/> Boys <input type="checkbox"/> Girls
8.1.4	Infant/young child feeding;	<input type="checkbox"/> No one <input type="checkbox"/> Both (women & men) <input type="checkbox"/> Men <input type="checkbox"/> Women <input type="checkbox"/> Boys <input type="checkbox"/> Girls
8.1.5	Looking after infant/young child;	<input type="checkbox"/> No one <input type="checkbox"/> Both (women & men) <input type="checkbox"/> Men <input type="checkbox"/> Women <input type="checkbox"/> Boys <input type="checkbox"/> Girls

8.1.6	Collecting water;	<input type="checkbox"/> No one <input type="checkbox"/> Both (women & men) <input type="checkbox"/> Men	<input type="checkbox"/> Women <input type="checkbox"/> Boys <input type="checkbox"/> Girls
8.1.7	Collecting firewood;	<input type="checkbox"/> No one <input type="checkbox"/> Both (women & men) <input type="checkbox"/> Men	<input type="checkbox"/> Women <input type="checkbox"/> Boys <input type="checkbox"/> Girls
8.1.8	Purchasing foods;	<input type="checkbox"/> No one <input type="checkbox"/> Both (women & men) <input type="checkbox"/> Men	<input type="checkbox"/> Women <input type="checkbox"/> Boys <input type="checkbox"/> Girls
8.1.9	Selling household products (e.g. tais, vegetables, livestock, snack, etc)	<input type="checkbox"/> No one <input type="checkbox"/> Both (women & men) <input type="checkbox"/> Men	<input type="checkbox"/> Women <input type="checkbox"/> Boys <input type="checkbox"/> Girls
8.1.10	Attending health services	<input type="checkbox"/> No one <input type="checkbox"/> Both (women & men) <input type="checkbox"/> Men	<input type="checkbox"/> Women <input type="checkbox"/> Boys <input type="checkbox"/> Girls

Section 9: Perception of handwashing and diarrhea

9.1	Do you normally use soap when washing your hands? <i>(Note for enumerator: If answer is NO please skip to 9.2)</i>	<input type="checkbox"/> YES >	<input type="checkbox"/> NO >
9.1.1	When do you usually wash your hands with soap? <i>(Select one answer only)</i>	<input type="checkbox"/> Before eating meal <input type="checkbox"/> Before preparing meal <input type="checkbox"/> After using the toilet	<input type="checkbox"/> After assisting small children with toilet <input type="checkbox"/> Other, please specify_____
9.2	Have you ever heard about diarrhoea? <i>(Note for enumerator: If answer is NO</i>	<input type="checkbox"/> YES	<input type="checkbox"/> NO >

9.2.1	please skip to 9.3)			
	In your opinion what are the reasons of diarrhoea? (Tick all that apply)	<input type="checkbox"/> Dirty hands <input type="checkbox"/> Contaminated water	<input type="checkbox"/> Contaminated food <input type="checkbox"/> Other, please specify_____	
	STATEMENT I would like to read you some statements about child feeding practices, for each one can you tell me if you agree/disagree/not sure with the statement. > (Note for enumerator: If no response or if you see confusion to the question - tick "NOT SURE/DON'T KNOW")			
	9.3.1	Adult feces are more contaminated than child feces	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE	<input type="checkbox"/> NOT SURE/DON'T KNOW
	9.3.2	Exposure to human and animal feces increases the risk of illness	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE	<input type="checkbox"/> NOT SURE/DON'T KNOW
9.3.3	Exposure to human and animal feces increases the risk of stunting	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE	<input type="checkbox"/> NOT SURE/DON'T KNOW	
	>			

Thank you for participating in this Survey!

Appendix 3: TOMAK KAP Survey Data Tables

Profile of surveyed communities

Municipality	Post Administrative	Suku	Aldeia	Population by aldeias	Male	Female	HH	HH Size
Bobonaro	Balibo	Batugade	Batugade	771	421	350	139	5.55
			Nu-badak	665	357	308	107	6.21
			Lotan	548	272	276	111	4.94
	Cailaco	Purugua	Heda	447	225	222	77	5.81
			Lesu-pu	483	241	242	95	5.08
	Maliana	Raifun	Raifun Villa	2220	1,125	1,095	317	7.00
		Ritabou	Maganuto	337	172	165	59	5.71
			Ritabou	157	77	80	21	7.48
			Maahui	266	138	128	47	5.66
Baucau	Baucau Vila	Buibau	Buibau	1000	517	483	180	5.56
			Loidua	1252	641	611	221	5.67
		Gariuai	Gariuai	558	302	256	105	5.31
			Uaturau	487	213	274	92	5.29
			Maukale	614	308	306	116	5.29
		Samalari	Ossuluga	593	294	299	120	4.94
			Sorulai	571	301	270	119	4.80
			Samalari	381	202	179	73	5.22
	Quelicaí	Laisorulai-Kraik	Ulusoru	171	85	86	53	3.23
			Daraoma	236	113	123	61	3.87
			Lego	121	60	61	27	4.48
		Laisorulai-Leten	Batikasa	333	162	171	87	3.83
			Uataliu	77	36	41	24	3.21
		Lelalai	Dauaduka	256	127	129	71	3.61
			Dessa	307	155	152	83	3.70

			Ossoliro	196	96	100	12	16.33
		Maluro	Samafano	159	79	80	50	3.18
Viqueque	Ossu	Ossurua	Raimuti	167	88	79	36	4.64
			Uaibobo	95	50	45	21	4.52
			Umabere	190	101	89	35	5.43
		Ossu-Leten	Baka-isi	380	188	192	71	5.35
			Belas	529	238	291	106	4.99
			Cai-uai-hoo	386	191	195	76	5.08
		Uabubo	Laritame	467	231	236	90	5.19
		Uagia	Dolibati	128	56	72	30	4.27
			Manulari	187	87	100	41	4.56
			Uatumanutuku	435	202	233	86	5.06
			Luhabere	232	112	120	52	4.46
			Dasarai	149	79	70	23	6.48
			Uaitutumata	184	78	106	34	5.41
			Grand Total	16735	8,420	8,315	3,168	

Respondent by Age and Sex

	District		
	Baucau (N=55)	Bobonaro (N=43)	Viqueque (N=31)
Female age 15-20	0%	7%	3%
Male age 15-20	0%	0%	0%
Female age 21-25	5%	9%	10%
Male age 21-25	4%	0%	3%
Female age 26-30	9%	16%	13%
Male age 26-30	4%	7%	0%
Female age 31-35	13%	21%	3%
Male age 31-35	0%	7%	0%

Female age 35+	36%	12%	42%
Male age 35+	29%	21%	26%

Respondent households with pregnant and/or lactating women, by district

	No	Yes	All
Baucau (N=55)	27%	16%	43%
Bobonaro (N=43)	5%	29%	33%
Viqueque (N=31)	16%	8%	24%
All	48%	52%	100%

Respondents based on his/her educational level, by district

District	No School	Elementary School	Pre-Secondary School	Secondary School	Tertiary (diploma/university)	All
Baucau (N=55)	23.26%	1.55%	5.43%	6.20%	6.20%	42.64%
Bobonaro (N=43)	5.43%	8.53%	6.20%	12.40%	0.78%	33.33%
Viqueque (N=31)	13.18%	0.00%	3.88%	5.43%	1.55%	24.03%
All	41.86%	10.08%	15.50%	24.03%	8.53%	100.00%

Respondents' spouse based on his/her educational level, by district

District	No School	Elementary School	Pre-Secondary School	Secondary School	Tertiary (diploma/university)	All
Baucau (N=55)	22.48%	0.78%	8.53%	9.30%	1.55%	42.64%
Bobonaro (N=43)	7.75%	6.20%	4.65%	13.95%	0.78%	33.33%
Viqueque (N=31)	14.73%	0.00%	3.88%	4.65%	0.78%	24.03%
All	44.96%	6.98%	17.05%	27.91%	3.10%	100.00%

House ownership status of repodents, by district

District	Individual Owned	Family Owned	All
Baucau (N=55)	29.46%	13.18%	42.64%
Bobonaro (N=43)	32.56%	0.78%	33.33%
Viqueque (N=31)	20.93%	3.10%	24.03%
All	82.95%	17.05%	100.00%

Respondents based source of main energy for lighting, by district

	Electricity	Kerosene	Candle	All
Baucau (N=55)	73%	15%	13%	100%
Bobonaro (N=43)	100%	0%	0%	100%
Viqueque (N=31)	61%	35%	3%	100%
All	78%	17%	5%	100%

Respondents based source of main energy for cooking, by district

	Electricity	Cooking Gas	Kerosene	Fire Wood	All
Baucau (N=55)	18%	4%	0%	78%	100%
Bobonaro (N=43)	19%	0%	2%	79%	100%
Viqueque (N=31)	6%	0%	0%	94%	100%
All	16%	2%	1%	82%	100%

Respondents based on main source of water, by district

	Protected sources	Non protected source	All
Baucau (N=55)	65%	35%	100%
Bobonaro (N=43)	95%	5%	100%
Viqueque (N=31)	71%	29%	100%

All	77%	23%	100%
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Repondents based on main of disposal facility, by district

	Improve Latrine (s)	Pit Latrine without slab/open pit	No Facility (go to bush)	All
Baucau (N=55)	55%	27%	18%	100%
Bobonaro (N=43)	93%	5%	2%	100%
Viqueque (N=31)	45%	39%	16%	100%
All	64%	24%	12%	100%

Repondents or respondent spouses who ever provided breastfeeding, by district

	Yes	No	All
Baucau (N=55)	78%	22%	100%
Bobonaro (N=43)	98%	2%	100%
Viqueque (N=31)	77%	23%	100%
All	84%	16%	100%

Repondents or respondent spouses who fed their youngest with colostrums, by district

	Yes	No	All
Baucau (N=55)	71%	29%	100%
Bobonaro (N=43)	93%	7%	100%
Viqueque (N=31)	58%	42%	100%
All	75%	25%	100%

Last time the respondents or respondents spouse provided breastmilk to their child, by district

	Several hour ago	Several day ago	Several week Ago	Several month ago	Several year ago	All
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Baucau (N=55)	24%	2%	0%	27%	47%	100%
Bobonaro (N=43)	81%	2%	2%	2%	12%	100%
Viqueque (N=31)	19%	0%	0%	29%	52%	100%
All	42%	2%	1%	19%	36%	100%

Proportion of respondents who agree, disagree or not so sure with the IYCF statements asked, by district

	Q6.4.1 In addition to breastmilk, food can be given to a child age under 6 months	Q6.4.2 Vegetables and fruits should not be given to children age between 6-12 months	Q6.4.3 Breastfeeding should decrease when a child starts eating food	Q6.4.4 Animal source foods like meat, milk, egg can be given to children age between 6-23 months	Q6.4.5 Breast feeding should continue until a child is 2 years of age or older	Q6.4.6 In hot climate, in addition to breastmilk children under 6 month of age needs to drink water
Baucau (N=55)	42.64%	42.64%	42.64%	42.64%	42.64%	42.64%
TRUE	31.78%	31.78%	31.78%	31.78%	31.78%	31.78%
FALSE	6.98%	6.98%	6.98%	6.98%	6.98%	6.98%
NOT SURE	3.88%	3.88%	3.88%	3.88%	3.88%	3.88%
Bobonaro (N=43)	33.33%	33.33%	33.33%	33.33%	33.33%	33.33%
TRUE	22.48%	22.48%	22.48%	22.48%	22.48%	22.48%
FALSE	10.85%	10.85%	10.85%	10.85%	10.85%	10.85%
Viqueque (N=31)	24.03%	24.03%	24.03%	24.03%	24.03%	24.03%
TRUE	20.93%	20.93%	20.93%	20.93%	20.93%	20.93%
FALSE	3.10%	3.10%	3.10%	3.10%	3.10%	3.10%
All	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Proportion of respondents who agree, disagree or not so sure with the maternal feeding statements asked, by district

	Q7.2 Pregnant women should have additional food every day to maintain their strength and health	Q7.3 Pregnant women should eat less animal source foods (such as meat, eggs, etc) during pregnancy	Q7.4 If you use salt, you should chose iodized salt	Q7.5 Pregnant women/lactating mother should drink condensed milk (i.e. susu enak)
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Baucau (N=55)	42.64%	42.64%	42.64%	42.64%
TRUE	37.21%	37.21%	37.21%	37.21%
FALSE	4.65%	4.65%	4.65%	4.65%
NOT SURE	0.78%	0.78%	0.78%	0.78%
Bobonaro (N=43)	33.33%	33.33%	33.33%	33.33%
TRUE	30.23%	30.23%	30.23%	30.23%
FALSE	0.78%	0.78%	0.78%	0.78%
NOT SURE	2.33%	2.33%	2.33%	2.33%
Viqueque (N=31)	24.03%	24.03%	24.03%	24.03%
TRUE	19.38%	19.38%	19.38%	19.38%
FALSE	3.88%	3.88%	3.88%	3.88%
NOT SURE	0.78%	0.78%	0.78%	0.78%
All	100.00%	100.00%	100.00%	100.00%

Respondents or respondent spouses who consumed extra meal/snacking during current/last pregnancy, by district

	Yes	No	All
Baucau (N=55)	91%	9%	100%
Bobonaro (N=43)	93%	7%	100%
Viqueque (N=31)	77%	23%	100%
All	88%	12%	100%

Respondents or respondent spouses who consumed more variety of foods during current/last pregnancy, by district

	No	Yes	All
Baucau (N=55)	7%	93%	100%
Bobonaro (N=43)	7%	93%	100%

Viqueque (N=31)	16%	84%	100%
All	10%	90%	100%

Respondents based on main source(s) of income

	Income Source(s)	Percentage
1. Agriculture/crop/livestock sale 2. Small business 3. Fixed Salary 4. Remittance 5. Government social safety nets	1	31.78%
	1 2	25.58%
	1 2 3	0.78%
	1 2 5	0.78%
	1 3	7.75%
	1 4	0.78%
	1 5	6.20%
	2	3.10%
	2 3	2.33%
	2 5	2.33%
	3	2.33%
	3 4 5	0.78%
	3 5	1.55%
	4	0.78%
	4 5	0.78%
	5	12.40%
	All	100.00%

Proportion of respondents' income that is used for meeting household food needs

	Less than half	Half of income	More than half	All of the income	All
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Baucau (N=55)	65%	29%	2%	4%	100%
Bobonaro (N=43)	26%	74%	0%	0%	100%
Viqueque (N=31)	68%	29%	0%	3%	100%
All	53%	44%	1%	2%	100%

Proportion of respondents who ever involved in VSLA

	Currently a VSLA member	Used to be a VSLA member	Never involved in any VSLA	All
Baucau (N=55)	4%	2%	94%	100%
Bobonaro (N=43)	12%	28%	60%	100%
Viqueque (N=31)	3%	0%	97%	100%
All	6%	10%	84%	100%

