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BASELINE ASSESMENT

MCGOVERN-DOLE

Food For Education Program in Timor-Leste

HATUTAN II

ON BEHALF OF:



PREPARED BY:



MAY 2023

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ACRONYMS

AES	Agricultural Extension Services
BCG	Bacille Calmette-Guérin (tuberculosis vaccine)
BL	baseline
BMI	Body Mass Index
CBA	curriculum-based assessment
DDS	dietary diversity score
DiD	difference in differences
EGRA	Early Grade Reading Assessment
EL	endline
FGD	focus group discussion
(S)GBV	(sexual and) gender-based violence
GoTL	Government of Timor-Leste
HATUTAN	<i>Hahán ne'ebé Atu fó Tulun ho Nutrisaun no Edukasaun</i> (Food to Support Nutrition and Education)
HoH	head of households
KII	key informant interview
LRP	locally and regionally procured
MEYS	Ministry of Education, Youth, and Sports
ML	midline
OPV	Oral Poliovirus Vaccine
PTA	Parent-Teacher Association
SFP	School Feeding Program
TVET	technical and vocational training and education
U.S.	United States
USDA	United States Department of Agriculture
VSLA	Village Savings and Loan Association
WASH	water, sanitation, and hygiene

EXECUTIVE SUMMARY

In this report, we present findings from the baseline assessment of the HATUTAN II (*Hahán ne'ebé Atu fó Tulun ho Nutrisaun no Edukasaun* or Food to Support Nutrition and Education) program. This program is a five year (2022 – 2027), US\$26.5 million initiative that will work in partnership with the Government of Timor-Leste and development stakeholders to address two strategic objectives: improved literacy of school-aged children and increased use of health, nutrition, and dietary practices. The program will operate in 378 schools and communities within four of Timor-Leste's most deprived municipalities, Ainaro, Ermera, Manatuto, and Oe-cusse, to support an estimated 171,232 target beneficiaries including school-aged children, teacher, school administrators, and community members. Key activities will include support for the government-run School Feeding Program (SFP) and trainings targeting teachers, school administrators, and community members.

METHODOLOGY

The baseline assessment was designed to establish baseline values for HATUTAN II's key indicators and inform the setup of benchmarks for measuring impact and establishing accountability and learning, validate assumptions made in program design, and identify areas for adaptation of program activities. Findings presented in this report will enable the use of a quasi-experimental, difference-in-differences analysis approach during subsequent HATUTAN II evaluations. This will allow future evaluators to better understand whether improvements are due to HATUTAN II program activities or are rather due to external factors affecting all schools in Timor-Leste.

Data collection occurred between February 6, 2023 and March 31, 2023. In total, data was collected from 107 intervention communities and 93 comparison communities. This included school surveys and classroom observations at target schools in all communities, 1,554 literacy assessments with grade 2 students in intervention schools, 1,125 literacy assessments with grade 2 students in comparison schools, 805 household surveys in intervention communities, and 577 household surveys in comparison areas.

One key challenge facing the baseline assessment was the timing of data collection. Students were assessed at the beginning of the school year; however, the standard definition for assessment requires assessments to be conducted with students at the end of grade 2. As such, results in this study may be biased downwards.

FINDINGS

Learning and Education

The baseline assessment finds that grade 2 students' literacy abilities are very weak and many students remain unable to read words. The average overall score on the literacy assessment was only 10.9% for intervention students, and only 18.2% of intervention students demonstrated the ability to read and understand the meaning of a grade-level passage. Scores were highest—though still low in absolute terms—for letter recognition, at 21.8% for intervention students. Furthermore, many grade 2 students have no literacy abilities, with 21.8% of intervention students scoring 0% overall on the literacy assessment.

We find moderate use of engaging teaching practices in most intervention municipalities, with relatively more frequent use of these practices in Ermera and less frequent use in Oe-cusse. However, across all municipalities, substantial potential remains to continue improving the use of engaging teaching practices, as well as reducing the use of traditional, unengaging teaching practices including copying from the board and repeating after the teacher. Furthermore, corporal punishment was still observed to be used

by some teachers in intervention schools and is likely underreported in our data due to social desirability bias.

Teacher attendance was reasonably high in most municipalities, at around 80% on average on the day of data collection and 75% on the day before data collection. However, teacher attendance was noticeably low in Oe-cusse, at only 65% on the day of data collection and 22% on the day before data collection.

In addition to quality of instruction, students' literacy abilities are also affected by their attentiveness and attendance at school. HATUTAN II intends to address these areas by supporting the SFP to reduce student hunger, among other activities.

We find relatively low student attentiveness as measured through classroom observations and working memory. However, a relatively high percentage of students—around 85% in intervention schools—stated that they had eaten something on the day of data collection, and most households did not report being acutely food insecure. While this suggests that the majority of students do eat on school days, subsequent analysis suggests that the quality of diets consumed by students may be very low, which may impact attentiveness.

Student attendance was lower in intervention schools than comparison schools. Attendance rates were noticeably low in Ainaro and Ermera, at 57% on average in both municipalities. Natural disaster was frequently cited as a reason for student absences, a factor outside the control of the HATUTAN II program. However, sickness, which may be affected by HATUTAN II activities targeting health, hygiene, and nutrition, was also cited as the reason for absence among 31% of caregivers.

In a positive finding, **dropout rates were very low**, at only 1.2% in intervention schools. Consistent with patterns in Timor-Leste, we find that boys drop out at somewhat higher rates than girls. We note, however, that given the timing of data collection near the beginning of the school year, this report likely underestimates actual dropout rates.

School Feeding Program

One of the primary aims of the HATUTAN II program is to assist the Government of Timor-Leste in the successful implementation of the school feeding program in all basic education and preschools throughout the school year. At baseline, we find **limited provision of school meals** due to delays in government provision of SFP funding. This suggests a need for continued advocacy with the Government of Timor-Leste to improve the consistency and reliability of funding.

Furthermore, **school meals have a relatively low level of dietary diversity.** Most schools serve carbohydrates, legumes and nuts, and dark green, leafy vegetables; meals lack fruits and other vegetables. Improving school meal dietary diversity through linkages with local farmers should be a continued priority during HATUTAN II; while most intervention schools reported buying produce from local farmers, these food supplies did not appear to make up a major portion of meals.

Note from the program: The delayed transfer of SFP funds to schools in 2023 made it impossible for schools to purchase produce from local farmers at the time of data collection.

The majority of schools have a PTA involved in overseeing the SFP. However, participation in PTAs and their levels of activity remain limited; in intervention areas, over half of PTAs had not met during the current school year. Given that PTAs address many areas of relevance to HATUTAN II, the program should continue to provide support for these bodies.

Health, Nutrition, and Agriculture

The quality of diets consumed by women of child-bearing age and children under the age of 2 years is low. Consumption of protein-rich diets is limited; individuals instead tend to rely on grains, roots, tubers, and dark leafy greens for calories and nutrition. Additionally, nutrition knowledge of caregivers is relatively low.

Over half of the grade 2 students have underweight BMIs, with an average BMI of just 13.9 kg/m² for intervention students. These findings emphasize that the weak dietary diversity and nutritional practices found above may have a tangible impact on students' health outcomes, and reiterate the importance of the SFP and other activities seeking to improve food consumption and dietary quality.

Handwashing practices were generally weak for both intervention and comparison groups; around 43% of intervention caregivers self-reported that they only occasionally wash their hands before preparing food. However, in contrast to findings for nutrition, **knowledge of handwashing and hygiene practices was high** for both intervention and comparison groups. This suggests that knowledge may not be the most salient barrier to improved health and hygiene practices, which may be more affected by cultural norms, perceived inconvenience, economic barriers, or other factors.

Note from the program: While this cannot be inferred from the existing data, younger women may be unable to apply their knowledge of nutrition and hygiene due to gender and power dynamics in households, particularly among patrilineal groups.

Regarding agricultural practices, we find that only around 15% of households in HATUTAN II intervention areas received trainings on permagardens, and around two-thirds of individuals who had received trainings were cultivating a permagarden. Common challenges included pests, natural disasters, and limited production.

Lastly, regarding participation in Village Savings and Loan Associations, we find that almost 63% of intervention households had savings compared to 52% of comparison households. Households commonly spent savings and loans on food and education.

Gender and Power

In line with broader patterns in Timor-Leste, we find that grade 2 girls generally have higher school achievements than boys, including higher literacy levels. However, adult women have limited decision-making power in households, and more so for younger women than older ones. Furthermore, women are often less involved in community organizations such as farmer's groups and receive fewer benefits from local services such as agricultural extension services. Thus, despite the great potential evidenced by young female students, gender norms seem to reduce the options available to girls as they transition into adulthood.

At baseline, **we find that many harmful gender norms persist, including those affecting the division of labor, household decision-making, and gender-based violence.** However, we also find that girls tend to outperform boys in early primary school, that parents are more likely to view girls as better at reading and math than boys, and that teachers are somewhat more likely to use harsh tones or corporal punishment with boys. These findings point towards a need to improve educational experiences for boys, but also for further interventions that sustain girls' successes at young ages through adulthood. Activities that challenge gender norms, in combination with interventions that help girls stay in school as they transition from childhood to adulthood, may help achieve this goal. However, it is important to note that gender norms tend to change slowly over time.

INTRODUCTION

The HATUTAN II program (*Hahán ne'ebé Atu fó Tulun ho Nutrisaun no Edukasaun* or Food to Support Nutrition and Education) is a five-year (2022 – 2027), US\$26.5 million initiative to build a partnership between schools and communities in order to improve literacy, learning, health, and nutrition for children and adults in Timor-Leste. The program seeks to expand the impact of the HATUTAN program (2018 – 2023), expanding successful interventions and incorporating new activities to maximize impact. To do so, the program will work in partnership with the Government of Timor-Leste and development stakeholders to address three strategic objectives: improved literacy of school-aged children; increased use of health, nutrition, and dietary practices; and improved effectiveness of food assistance through local and regional procurement.

To achieve these objectives, the program will support, among a variety of activities, the Government of Timor-Leste's school feeding program (SFP) to fully operate in all basic education and preschools throughout the school year. An effective and efficient SFP is a high priority for the Government of Timor-Leste and responds strategically to key interrelated development issues affecting rural populations in the country. Key program activities will include strengthening and supplementing the government-sponsored SFP, building school capacity through trainings for teachers and administrators and provision of resource materials, and supporting farmers to boost the production of local produce to increase yields and help create sustainable sources of nutritious food for local schools. In addition to activities related to literacy and SFPs, HATUTAN II will also seek to conduct trainings related to nutrition, health, and other topics, and to promote gender equality and the reduction of gender-based violence.

The HATUTAN II program is funded by the U.S. government through the Foreign Agricultural Service of the United States Department of Agriculture under the McGovern-Dole International Food for Education and Child Nutrition Program. The program will be implemented by a consortium led by CARE International with Mercy Corps. The lead Timorese government partner is the Ministry of Education, Youth, and Sports (MEYS), in collaboration with the Ministry of Health, Ministry of State Administration, and Ministry of Agriculture and Fisheries.

This report presents the baseline assessment of the HATUTAN II program. This assessment focuses on providing benchmarks for key outcomes and indicators which will be monitored over the following five years of program implementation. We provide benchmark values for both intervention and comparison schools in order to enable future evaluations to use a quasi-experimental difference-in-differences approach. In subsequent evaluations, this approach will allow for a better understanding of the direct impact of HATUTAN II on schools, students, households, and farmers.

TIMOR-LESTE OVERVIEW

Timor-Leste gained independence in 2002 following more than three centuries of colonial rule by Portugal and decades of conflict with Indonesia. The transition to independence was marked by widespread violence committed by militias supported by the Indonesian military, which killed around 1,300 Timorese, displaced around 500,000,¹ and destroyed approximately 70% of the country's infrastructure.² Timor-Leste has made considerable progress since independence, building stability and democratic institutions and rebuilding infrastructure. However, the country continues to face many challenges: Around 42% of Timor-Leste's

¹ "Timor-Leste: Background and U.S. Relations," *Congressional Research Service*, June 27, 2019, <https://fas.org/spp/crs/row/IF10320.pdf>.

² Nicole Stout, "Infrastructure in Timor-Leste Growing According to Strategic Plan," *The Borgen Project*, February 23, 2018, <https://borgenproject.org/infrastructure-in-timor-leste>.

population of 1.3 million live below the national poverty line,³ 75% are chronically or mildly food insecure,⁴ and around 30% of the adult population (ages 15 and above) are illiterate.⁵ Furthermore, while governance has improved substantially since independence and the country has held four free and fair elections, many government institutions still have low capacity, especially at the subnational level.

Education

The education system in Timor-Leste consists of four levels: preschool, basic education, secondary education, and higher education (university and polytechnic). “Basic education” includes primary and pre-secondary schooling, which is universal, free, and compulsory according to the National Education Strategic Plan. Basic education is divided into three cycles: grades 1-4, grades 5-6, and grades 7-9. The school system includes central basic schools, which usually provide education for all three cycles and manage clusters of filial schools, which usually provide first and second cycle classes. A minority of filial schools provide only first cycle classes. Filial schools are generally located in remote and rural areas.

Each cluster of central and filial schools is managed by a school administrator; a school council, consisting of representatives of schools, parents, and local authorities; and an academic council, consisting of teaching staff representatives of all schools. The school council is responsible for the achievement of educational targets and development of strategic education plans, and for encouraging the establishment of Parent-Teacher Associations (PTAs) in all schools. The academic council is responsible for strengthening curriculum delivery, providing pedagogical support and training, and improving teacher performance and professionalization.⁶

Education is a high priority for the Government of Timor-Leste; indeed, the 2002 Constitution of Timor-Leste established that the state “will do everything within its means to help education, health, and vocational training for youth” and states that “the state recognizes and guarantees the right to education for all citizens.”⁷ Current priorities include achievement of universal completion of basic education by 2030, elimination of illiteracy (particularly among youth ages 15-24), and achievement of gender parity in school teaching and administration. Pursuit of these priorities is guided by seven general goals: quality, equity, access, social and economic relevance, co-participation (in which families participate in education management and decision-making), social partnership, and flexibility.⁸

Along these lines, the government has pushed for universal enrollment in basic education and committed around 10% of the annual national budget to expenditure related to education.⁹ Government expenditure on education has included investment in infrastructure, which increased the number of preschools, primary schools, and secondary schools from 943 in 2002 to 1,715 in 2017;¹⁰ teacher training; curriculum design; and operational decentralization, in order to improve support for remote and rural areas. In accordance with this investment, participation in education has increased in recent years, with the number of out-of-school adolescents declining from more than 20,000 in 2010 to around 9,500 in 2019.¹¹

³ As of 2014; the poverty rate declined from 50% in 2007. “The World Bank in Timor-Leste,” *World Bank*, April 28, 2020, <https://www.worldbank.org/en/country/timor-leste/overview>.

⁴ “Timor Leste: Chronic Food Insecurity Situation 2018-2023,” *Integrated Food Security Phase Classification*, January 17, 2019, <https://www.ipcinfo.org/ipc-country-analysis/details-map/fi/c/1151924/?iso3=TLS>. See also “Timor Leste: IPC Acute Food Insecurity Analysis November 2022 – September 2023,” *Integrated Food Security Phase Classification*, February 14, 2023.

⁵ “Literacy rate, adult total (% of people ages 15 and above) – Timor-Leste,” *World Bank*, October 24, 2022, <https://data.worldbank.org/indicator/SE.ADT.LITR.ZS?locations=TL>.

⁶ Timor-Leste Ministry of Education, *National Education Strategic Plan 2011-2030* (Dili, Timor-Leste: Ministry of Education, 2011).

⁷ World Bank, *Timor-Leste Basic Education Strengthening and Transformation* (Washington, D.C.: World Bank, 2020).

⁸ Timor-Leste Ministry of Education, *National Education Strategic Plan*, 2011.

⁹ World Bank, *Timor-Leste Basic Education*, 2020.

¹⁰ “Número de escolas e de alunos em Timor-Leste quase duplicou nos últimos 15 anos – PM,” *Diário de Notícias*, May 15, 2017, <https://www.dn.pt/lusa/numero-de-escolas-e-de-alunos-em-timor-leste-quase-duplicou-nos-ultimos-15-anos---pm-8476453.html>.

¹¹ “Timor-Leste: Education and Literacy,” *UNESCO Institute for Statistics*, accessed February 23, 2020, <http://uis.unesco.org/en/country/tl>.

However, despite this focus on education and recent related improvements in enrollment and infrastructure, education outcomes remain relatively poor for most of the country. Student learning, as measured through standardized tests including the Early Grade Reading Assessment (EGRA), is low, an issue discussed more in the section *Literacy Outcomes*. Similarly, a curriculum-based assessment (CBA) conducted in 2017 showed that less than 50% of students in grades 1 and 2 achieved the competencies outlined in the curriculum, including competencies in both literacy and math.¹² In accordance with these poor educational outcomes, repetition and dropout rates are relatively high for students in primary school, especially at early grade levels.

Teacher training and the quality of instruction remain central issues for education outcomes in Timor-Leste. There are between 11,000 and 12,000 teachers working in the country; most of these teachers have university degrees or an equivalent qualification, but some have only secondary education.¹³ Teacher certifications range from full teacher training qualifications to emergency waivers qualifying an individual to serve as a teacher.¹⁴ As a result, some Timorese teachers have weak pedagogical skills and require further professional development, and teachers are often insufficiently prepared to teach in challenging contexts.

Further challenges come from the linguistic diversity of Timor-Leste: 32 languages were identified within the country in the 2015 census, and students whose mother tongue is not Tetum-Prasa—the language of instruction in the first four years of basic education, before instruction transitions to Portuguese in upper grades—are at a disadvantage. In general, teachers are often unprepared to facilitate the transition of non-Tetum speaking students to a classroom where Tetum is the language of instruction. Particularly in rural areas with low population densities and small school sizes, teachers may also be required to teach multigrade classes, presenting a further challenge.¹⁵

In addition to instruction challenges, many students face low levels of access to learning resources and insufficient infrastructure. While initiatives by the MEYS have substantially improved access to teaching and learning materials, including textbooks and workbooks in line with the current curriculum, there is evidence that available resources are often not used by students or teachers, either because of teachers' capacity to use the current curriculum or because it is believed that students will damage the materials. Furthermore, while many schools have libraries or book corners, these often lack age-appropriate reading materials, and many students lack time to access libraries, which may instead be predominantly used by teachers.¹⁶ In secondary school, average class sizes are also generally high.¹⁷

There are major disparities in education outcomes across rural and urban areas and different municipalities. Additionally, girls consistently outscore boys on standardized tests including the EGRA and CBAs for both math and language learning, and have lower dropout and repetition rates than boys.¹⁸

School Feeding Program

Starting in 2005, the government of Timor-Leste established a national school feeding program (SFP) for all basic education students to improve school attendance, address nutritional needs, improve student attention and performance, and boost the local economy through linkages between schools and farmers. The school feeding program was managed by World Food Program in six municipalities and by the

¹² World Bank, *Timor-Leste Basic Education*, 2020.

¹³ Within the data collected during classroom observations for the endline evaluation, 46.5% of teachers had only a secondary education, 38.3% had a teaching diploma, and the remaining 15.8% had a diploma from a teacher training institute or higher. These statistics, however, likely overestimate the prevalence of teachers with just a secondary education.

¹⁴ Tazeen Fasih, Stephen L. Walter, Karla J. Smith, Pedro Ximenes, and Adelaide Camões, *Using EGRA for an Early Evaluation of Two Innovations in Basic Education in Timor-Leste* (Washington, D.C.: World Bank, 2019).

¹⁵ World Bank, *Timor-Leste Basic Education*, 2020.

¹⁶ Ibid.

¹⁷ Timor-Leste Ministry of Education, "Statistical Data: Average Class Size," accessed February 23, 2020, <http://www.moe.gov.tl/pt/emis/dados-estatistico>.

¹⁸ Fasih et al., *Using EGRA for an Early Evaluation*, 2019.

government in seven municipalities until 2009, when the two programs were merged.¹⁹ The government has fully managed the program since 2011. In addition to government support, local programs rely on PTAs for regular monitoring and selection of cooks.

The SFP provided equipment as well as 25 cents per child per day (\$0.42 from 2023 onwards) in budgetary support for schools to buy local produce to supplement meals. The GoTL also provided rice to primary schools for meals until 2017. The Oe-cusse regional administration is piloting a modified SFP, providing \$0.50 per child per day and rice to schools and focusing on locally produced food. However, purchase of local produce is limited due to constraints including limited and seasonal local production, a lack of linkages with farmers, insufficient budget to purchase more expensive local products, and the greater convenience of buying pre-made food from nearby vendors – especially for schools without a kitchen. As a result, the food composition of school meals is frequently poor, with only 35% of basic education schools meeting a recommended composition of two vitamin-rich foods, one protein-rich item, and one carbohydrate as of 2019.²⁰

The SFP suffers from systematic challenges that limit the availability of funds and reduce the number of actual school feeding days. In 2017, school meals were only delivered on about one-third of school days; in 2018 delivery plummeted further, and in 2019, delivery improved, but was only funded for about 43% of total school days. In general, school feeding often does not occur during the first school trimester due to regular delays in approval of the annual national budget; this is particularly problematic as this trimester occurs during the most food-insecure time of the year. Indeed, as of February 2023, schools had yet to receive SFP funding from the government (although some schools in Manatuto used remaining funds from the 2022 fiscal year to initiate school feeding for a short period of time – around 10 days at most). School feeding is also often interrupted during the school year because of delays in the reporting system. Despite these challenges, the program receives widespread support from parents and students, and has had positive effects on absenteeism and student attention.²¹

Health, Nutrition, and Sanitation

Timor-Leste has made substantial progress towards improving health outcomes and building its healthcare system since independence, when over 75% of health facilities were damaged and many health professionals left the country. Life expectancy has increased by around 10 years, to 70.²² Infant mortality has declined from 60 deaths per 1,000 live births in 2003 to 30 deaths per 1,000 live births in 2016; under-five mortality similarly declined by 2016 to about half the 2003 rate, and maternal mortality declined by more than half over a similar time period, to 218 deaths per 100,000 live births. Nearly half of children aged 12-23 months have received all basic vaccinations,²³ and in 2018, Timor-Leste was declared free of measles. The country is also on track to eliminate malaria after aggressive use of indoor residual spraying and insecticide-treated mosquito nets for more than a decade.²⁴ These improvements have been underpinned by a steadily increasing number of doctors and other health care professionals in the country and by increasing government health expenditure as a percent of GDP.

However, coverage of essential health services is uneven, and health service utilization is low. Rural and poor households receive, on average, poorer quality healthcare than urban or wealthier households.²⁵

¹⁹ Stephen Lister, Jane Keylock, and Trish Silkin, *Timor Leste: An evaluation of WFP's portfolio (2008-2012)* (Rome: World Food Program, 2013).

²⁰ CARE and Julie Imron, *School Feeding Program Study Report: Timor-Leste* (Atlanta: CARE, 2019).

²¹ Ibid.

²² Sophie Cousins, "Health in Timor-Leste: 20 years of change," *The Lancet World Report* 394 (2019): 2217-8.

²³ General Directorate of Statistics, Ministry of Planning and Finance and Ministry of Health, *Timor-Leste Demographic and Health Survey 2016* (Dili, Timor-Leste: General Directorate of Statistics, Ministry of Planning and Finance and Ministry of Health, 2016).

²⁴ Cousins, "Health in Timor-Leste," 2019.

²⁵ World Bank, *Timor-Leste COVID-19 Emergency Support Project: Project Information Document* (Washington, D.C.: World Bank, 2020).

Additionally, Timor-Leste has one of the highest tuberculosis incidence rates in the world, and the incidence of non-communicable diseases has risen; these diseases now account for 62% of all deaths in the country.²⁶

Malnutrition also remains a severe problem in the country. The 2020 Timor-Leste Food and Nutrition Survey found that 47% of children under 5 were stunted, or too short for their age, an indication of chronic undernutrition; 8.6% of children under age 5 were wasted, or too thin for their height, an indication of acute malnutrition; and 32% of children under age 5 were underweight. The stunting rate has decreased slightly since 2016 (from 50% to 47%), and a similar pattern was observed in wasting (from 11% to 8.6%), while the proportion of underweight children went from 37.7% to 32%. While there is a positive trend, malnutrition remains a persistent problem. Malnutrition rates are also high among adults; adult malnutrition is particularly problematic when occurring among women, as children of malnourished women are more likely to also be malnourished. In 2020, the Food and Nutrition Survey found that 19% of women were underweight. As of 2016, 23% of women aged 15-49 were anemic.²⁷ High levels of food insecurity exacerbate this situation: 36% of the population of Timor-Leste is chronically food insecure and an additional 39% are mildly food insecure in part due to low levels of agricultural productivity and high rates of poverty that limit households' abilities to purchase high-quality food.²⁸

Low levels of access to improved sanitation and poor hygiene practices exacerbate health and nutrition challenges. Access to improved water sources and sanitation facilities remains limited, especially in rural areas. Handwashing practices are also generally weak; while these practices improved during COVID-19, they have since declined.²⁹ Access to safe drinking water and improved sanitation facilities, in addition to good hygiene practices, prevents diarrheal disease, a major cause of child mortality and malnutrition, as well as other diseases borne through contaminated water.

Gender and Power

Timor-Leste has, in general, high levels of gender inequality, with strong patriarchal cultural norms that enforce gender inequality. Cultural practices that perpetuate gender inequality include polygamy, the payment of bride prices, and customary rules regarding property rights, inheritance, and succession to traditional offices. Those practices vary between patrilineal and matrilineal groups, however. Although its prevalence has declined over time, early marriage is also a persistent issue; a relatively high proportion of women are married by age 20, while the average age of marriage for men is much higher.³⁰ As of 2016, 8.4% of the girls ages 15-19 had ever been married or in a union, and 5.2% have ever given birth.³¹

Gender norms mean that men are more likely to work outside of the home, and generally have higher incomes, more employment opportunities, and fewer barriers to paid work than women. Correspondingly, social norms dictate that women and girls are responsible for unpaid work in the house, for bearing and raising children, and for caring for the elderly, while men are responsible for providing financial support for the household through agricultural or paid work. As a result of these and other gender dynamics, on average, men have higher levels of literacy, education, and employment than women.³²

²⁶ Cousins, "Health in Timor-Leste," 2019.

²⁷ General Directorate of Statistics, Ministry of Planning and Finance and Ministry of Health, *Timor-Leste Demographic and Health Survey 2016*.

²⁸ Integrated Food Security Phase Classification (IPC), *Timor-Leste: Chronic Food Insecurity Situation 2018-2023* (Rome: IPC, 2018).

²⁹ General Directorate of Statistics, Ministry of Planning and Finance and Ministry of Health, *Timor-Leste Demographic and Health Survey 2016*.

³⁰ Asian Development Bank (ADB), Government of Timor-Leste, and UN Women, *Timor-Leste Country Gender Assessment* (Mandaluyong City, Philippines: ADB, 2014).

³¹ General Directorate of Statistics, Ministry of Planning and Finance and Ministry of Health, *Timor-Leste Demographic and Health Survey 2016*.

³² Athena Nguyen, Alison Darcy, and Louise Kelly, "CARE Rapid Gender Analysis: COVID-19 Timor-Leste," CARE, April 27, 2020.

Timor-Leste has successfully increased girls' enrollment in primary and secondary schools, with girls' enrollment rates now exceeding boys' at lower primary school levels. Girls' education outcomes far surpass those of boys, with higher transition rates into secondary school (67% compared to 63% of boys) and gross enrolment at secondary level (86% compared to 72% of boys).³³ However, girls may face gender-related barriers to education, such as sexual harassment, early pregnancies, and lack of adequate sanitation facilities.³⁴ Both girls and boys may also face violence at school and in the household. Women are also less likely to attend and complete tertiary studies and technical and vocational education and training (TVET) than men. Additionally, only around 37% of teachers are female³⁵ and relatively few women work in the Ministry of Education, particularly in decision-making positions, which poses a significant challenge to improving challenging gender dynamics within the education system.³⁶

Overall, women's participation in national government is relatively high: 38% of parliamentary seats are held by women, the highest rate in the Asia-Pacific region. However, local governance remains male-dominated, and only 5% of suco (village) chiefs are women. Women are also rarely involved in community decision-making, in part due to social norms in which women are expected to be subordinate to men and not express their opinions.³⁷

Furthermore, Timor-Leste has one of the highest rates of gender-based violence in the world. The 2016 Timor-Leste Demographic and Health Survey found that 33% of women ages 15-49 had experienced physical violence since the age of 15, 29% of women had experienced physical violence in the last year, and 5% of women had ever experienced sexual violence. The most common perpetrator of physical violence among women who were or had been married was their current husband; 40% of women who had ever been married had experienced spousal violence (physical, sexual, or emotional).³⁸ Women generally report reluctance going to the police for help due to fear of repercussions, low levels of trust in the police, pressure from family members, lack of confidence, self-blame, distance, and cost.³⁹

Children also face violence (physical and otherwise) both at home and at school. While little data exists on violence against children, a 2019 study found that 87% of children have experienced physical or emotional violence at home, and an estimated 75% of boys and 67% of girls had experienced physical punishment by a teacher.⁴⁰ A study on causes of school dropouts found that 35% of girls at risk of dropout in grades 4-6 feel unsafe traveling to and from school, and 26% do not feel safe at school.⁴¹ In 2011, the Ministry of Education implemented a zero-tolerance policy towards sexual violence, corporal punishment, and other forms of violence in schools. However, more effort is needed to successfully implement this policy across Timor-Leste.⁴²

Timor-Leste has several laws and policies enacted to penalize gender-based violence and violence against children and encourage reporting by survivors, including a law against domestic violence,⁴³ a child and family welfare system to protect children, and a National Commission on the Rights of the Child.⁴⁴ However, in many cases, community leaders and elders are responsible for dispensing justice rather than police or

³³ Ministry of Education, Youth, and Sports, 2019 EMIS

³⁴ Ibid.

³⁵ UNESCO Institute for Statistics. "Secondary education, teachers (% female) - Timor-Leste." Accessed October 24, 2022. See <https://data.worldbank.org/indicator/SE.SEC.TCHR.FE.ZS?locations=TL>.

³⁶ ADB, Government of Timor-Leste, and UN Women, *Timor-Leste Country Gender Assessment*, 2014.

³⁷ Nguyen, Darcy, and Kelly, "CARE Rapid Gender Analysis," 2020.

³⁸ Ibid.

³⁹ ADB, Government of Timor-Leste, and UN Women, *Timor-Leste Country Gender Assessment*, 2014.

⁴⁰ "Unseen, Unsafe; The Underinvestment in Ending Violence Against Children in the Pacific and Timor-Leste," *World Vision*, August 15, 2019, <https://www.wvi.org/newsroom/timor-leste/unseen-unsafe-underinvestment-ending-violence-against-children-pacific-and>.

⁴¹ USAID/Creative Associates International, *School Dropout Prevention Pilot Program – Situational Analysis/Timor-Leste*, pg. 24.

⁴² ADB, Government of Timor-Leste, and UN Women, *Timor-Leste Country Gender Assessment*, 2014.

⁴³ Ibid.

⁴⁴ Nguyen, Darcy, and Kelly, "CARE Rapid Gender Analysis," 2020.

the judicial system. This system is problematic in cases when customary justice does not provide sufficient safeguards for women's and children's rights.⁴⁵ More work remains to be done to harmonize the customary and formal justice systems to ensure that women's and children's rights are upheld, and to implement laws and policies currently in place.

Impact of COVID-19

The first case of COVID-19 in Timor-Leste was reported in March 21, 2020, following which the government declared a state of emergency and enacted public health measures, including restrictions on international travel, school closures, restrictions on gatherings and businesses, and hygiene measures, to reduce the spread of the virus. These measures helped reduce the health burden of COVID-19 on Timorese, with only 138 total deaths recorded.⁴⁶

However, public health measures, voluntary changes in behavior, and global economic shocks post-COVID had substantial impact on economic activity and food security. As of December 2022, Timor-Leste's gross domestic product (GDP) per capita (not including oil revenues) had not yet returned to pre-pandemic levels. The price of fuel and some imported commodities rose sharply in 2022, inflation reached 7.9 percent in August 2022, and food inflation rose by 8.3 percent.⁴⁷ The increase in fuel, food, and other commodity prices has negatively affected livelihoods, aggravated malnutrition, and had a direct impact on rural markets given the dependency on staples brought from the capital Dili (such as rice).

HATUTAN II PROGRAM OVERVIEW

The HATUTAN II program will operate within 378 schools and communities in the municipalities Ainaro, Ermera, Manatuto, and Oe-cusse to improve education, nutrition, health, hygiene/sanitation, economic empowerment, and gender equality. The program will focus its interventions in four key areas:

1. Increasing the capacity of government agencies, school administrations, and community-based organizations (such as PTAs, village savings and lending associations (VSLAs), etc.) to better manage, fund, and monitor a comprehensive school feeding program and support nutrition, health, and hygiene improvements in homes and schools.
2. Improving tools, techniques, and learning environments to increase literacy skills for pre-primary and primary school children.
3. Overcoming social norms to increase gender equality, reduce sexual and gender-based violence, ensure equal learning opportunities for girls, and improve nutrition and WASH practices through targeted social behavior change communications.
4. Increasing food production and income-generating activities through farmer trainings, establishing VSLAs, and enabling community development agents to profitably provide agriculture inputs and technical services.

The program's theory of change, included in Annex 1, argues that by providing schools meals, teacher training, and related support, school enrollment and literacy outcomes will improve. This effect will be amplified and sustained by improving children's health and learning capacity before they enter school by offering nutrition support programs for pregnant and nursing women, infants, and preschoolers and by addressing issues of gender dynamics and gender-based violence.

⁴⁵ ADB, Government of Timor-Leste, and UN Women, *Timor-Leste Country Gender Assessment*, 2014.

⁴⁶ World Health Organization, "Timor-Leste COVID-19 Homepage," accessed May 10, 2023, <https://covid19.who.int/region/searo/country/tl>. Note from the program: The actual morbidity related to COVID-19 may be underestimated due to families not reporting deaths occurring at home in rural areas.

⁴⁷ World Bank, *Improving the Quality of Public Spending is Critical to Accelerating and Sustaining Economic Development in Timor-Leste*, Dec. 2, 2022, <https://www.worldbank.org/en/news/press-release/2022/12/02/world-bank-improve-the-quality-of-public-spending-to-accelerate-development-in-timor-leste>.

The program's four target municipalities were selected due to having some of the worst malnutrition and transition rates to pre-secondary school in the country. Within these municipalities, the program will aim to reach an estimated 171,232 target beneficiaries, including 165,535 school-aged children (50% girls), 935 teachers, 417 school administrators, 1,890 parent-teacher associations, 55,178 parents, and 540 farmers. In total, HATUTAN II will operate in 378 schools, which includes every primary and preschool in the four target municipalities, with the exception of a small number that opted out of participation.

In addition to these localized activities, HATUTAN II will also have a national-level advocacy component to address barriers to SFP implementation and improved education outcomes. At this system level, the program will strengthen the SFP policy and its implementation, building decentralized capacity at municipal level to transfer SFP funds to schools as per national guidelines and in a timely manner, strengthening school accountability, and enhancing coordination for the implementation of the SFP and School Health Manual. By investing part of its resources on local procurement of commodities, HATUTAN II will contribute to the country's economy and strengthen the capacity of local producers to increase production and meet quality and delivery standards. The program will also support the national government to strengthen the local procurement of commodities by schools through contributions to revisions of the national School Feeding Manual, informed by program findings and experience with local procurement.

HATUTAN II will provide two packages of support in target areas: "partial package" and "full package." Partial package will include provision of commodities for school feeding (oil, rice, and beans) between January and March, copies of supplementary literacy materials (including magazines and books for early grade readers), and training for school administrators on SFP management, and encompasses all the pre-school and basic education schools in the four municipalities. Full package will be implemented in 219 schools and their surrounding communities, representing about half of the preschools and primary schools in the target municipalities. The support will include provision of commodities for school feeding (oil, rice, and beans) between January and March; provision of literacy materials (storybooks and educational magazines); coaching of school administrators⁴⁸ and teachers;⁴⁹ mobilization and training of PTAs; implementation of the school dialogue and improvement plan (Community Scorecard); support for extracurricular activities; and training of parents on VSLAs, agriculture, health, WASH, and gender. The 219 communities and schools were selected for the full support package based on location in rural and remote areas. Importantly, we note that the assessment covers only areas in which the full support package was provided.

METHODOLOGY

In this section, we discuss the research design and methodology for the HATUTAN II baseline assessment. We begin with a discussion of the assessment objectives, followed by the assessment design, data collection tools, sampling methodology and achieved sample, and limitations and assumptions. More detailed methodological analysis is included in Annex 3.

EVALUATION OBJECTIVES

The baseline assessment was designed to address the following objectives:

1. Establish baseline values for HATUTAN II's key indicators and inform the setup of benchmarks for measuring impact and establishing accountability and learning;

⁴⁸ On school management, improving school learning environments, providing support to teachers on literacy skills development, SFP delivery, improved health, hygiene, and gender practices.

⁴⁹ On classroom management and literacy skills development.

2. Validate the assumptions made in program design and conduct an updated context analysis;
3. Identify areas for adaptation in HATUTAN II's activities and modalities of implementation; and
4. Generate evidence to contribute to the program's learning agenda, the McGovern-Dole Program's global Learning Agenda, the Government of Timor-Leste's implementation of the national SFP, education sector planning, and public interventions on school health and hygiene

Overall, the baseline assessment seeks to enable future measurements of impact and learning on key program activities addressing literacy, the quality of instruction, student attentiveness and attendance, school feeding programs, nutrition and health knowledge and practices, economic empowerment, agricultural practices, and gender and power dynamics. The assessment further provides key recommendations for CARE, implementing partners, and Timorese government officials to adapt the HATUTAN II program.

EVALUATION DESIGN

Following the evaluation design for HATUTAN, the HATUTAN II evaluation plan intends to use a mixed-methods quasi-experimental design utilizing a difference-in-differences approach. This approach will compare the progress observed in primary schools supported by the HATUTAN II program—"intervention schools"—to progress observed in a comparison group of schools selected in similar, neighboring municipalities but unaffected by HATUTAN II programming.⁵⁰ By comparing progress in intervention and comparison schools, we will be better able to understand whether improvements are due to HATUTAN II program activities or are rather due to external factors affecting all schools in Timor-Leste, such as widespread government initiatives.

As this report presents baseline values, a difference-in-differences approach is not used (as there are no past data points from which to measure progress). Instead, we provide a snapshot of key indicator values and outcomes of interest at baseline, triangulating information from different data collection tools and using quantitative and qualitative methods to enhance the reliability and comprehensiveness of findings. We provide results for both intervention and comparison schools, including data on outcomes for grade 2 students, their households, and schools. We also make comparisons across key subgroups, such as location and gender, in order to better understand the differing needs of subgroups and make recommendations for HATUTAN II programming. Lastly, we conduct a predictive analysis for several outcomes in order to better understand the factors most strongly influencing outcomes of interest.

All methods are gender sensitive and socially inclusive. The fieldwork was conducted to ensure that women, men, girls, boys, and individuals from minority groups (such as persons with disabilities) were able to provide data in a safe and open environment; specific steps taken during fieldwork include conducting gender-specific focus group discussions with mothers and fathers and using appropriate approaches for the engagement and protection of child respondents. Our approach to the analysis similarly ensures that perspectives from all gender and minority groups are adequately represented; we use an analysis framework that allows for the assessment of differential impacts based on gender and additionally analyze the extent to which the program addresses gender-, disability-, and other subgroup-specific barriers and cultural constraints.

⁵⁰ To enhance the validity of this evaluation approach, comparison schools and communities were intentionally selected to match the socio-economic characteristics of intervention schools, particularly considering linguistic backgrounds, livelihoods, and geographies. Where possible, we avoided selecting comparison schools and communities that been impacted by project interventions similar to HATUTAN/HATUTAN II, as "contamination" with similar interventions would bias results. Overall, the selection of comparable schools and communities with, where possible, no similar interventions will allow for more confident attribution of any findings to the impact of the HATUTAN II program, rather than external factors. We do note, however, that there are relatively few municipalities that are highly comparable to the intervention municipality Oe-cusse.

DATA COLLECTION TOOLS

Tools were designed to replicate the HATUTAN surveys in order to allow for concurrent data collection for the HATUTAN endline and HATUTAN II baseline. Minor additions or removals of questions were made to ensure relevancy of the tools (by, for example, removing questions related to social distancing in schools) and in response to requests made by government partners, as well as to include anthropometric measurements and more detailed questions on economic empowerment and food consumption (in line with the new dietary diversity measurement being introduced in Timor-Leste). Additionally, minor modifications were made to the learning assessment, discussed more below.

The baseline assessment utilized the following tools:

- Quantitative tools
 - Learning assessment: Early Grade Reading Assessment (EGRA) and working memory test
 - Household survey
 - Farmers' group/VSLA survey
 - School survey
 - Classroom observation
- Qualitative tools
 - Focus group discussions (FGDs) with parents, teachers, and PTA members
 - Key informant interviews (KIIs) with government officials, school administrators, and health clinic representatives

Tools were translated into Tetum by Tetum-speaking CARE staff; additionally, the EGRA was originally developed in Tetum and back translated into English for quality control purposes. All translations were verified by an independent translator.

Full tools are included in Annex 5.

Learning Assessment

Learning assessments were used to measure grade 2 students' progress in acquiring foundational reading skills and to measure working memory. The learning assessment tool also included several questions related to food consumption, student attentiveness, and student height/weight.

The baseline assessment used an adapted version of the EGRA conducted during the HATUTAN midline and baseline evaluations. The EGRA included five subtasks: (1) letter recognition, (2) invented word reading (i.e., recognition of letter groups and corresponding sounds), (3) familiar word reading, (4) short story reading, and (5) reading comprehension (basic and advanced). Tasks on letter recognition, invented word reading, and familiar word reading generally had a progressive increase in difficulty of letters/words; subsequent sections also generally had a progressive increase in level of difficulty. As such, students who were unable to read letters were not asked to perform subsequent subtasks, and students who were unable to read words (invented and familiar) were not asked to read a short story or answer comprehension questions. The below table shows the number of items and administration methods for each subtask.

Table 1: EGRA sections and scoring

Subtask	Total Possible Score	Time Given	Notes
Letter recognition	100	60 seconds	Students who could not read letters did not proceed
Invented word reading	60	60 seconds	
Familiar word reading	60	60 seconds	Students who could not read any words (invented or familiar) did not proceed
Passage reading	61	60 seconds	
Reading comprehension	10	Untimed	Two groupings of five questions, related to two passages with increasing levels of complexity

Given the multilingual context of Timor-Leste, learning assessments were conducted in the language of instruction (Tetum-Prasa) but with instructions given in the student's local language where applicable. During the HATUTAN baseline, Tetum speakers were consulted to identify a list of words common to Timorese children regardless of their location of residence. This list of words was refined to exclude words with unfamiliar or difficult sounds or ambiguous meaning in other local languages, as identified by speakers of those languages. Enumerators were also instructed to accept any correct response to letter and word identification regardless of pronunciation, accent, or use of Portuguese/Tetum letter names, and were trained to recognize differences in pronunciation or recognition of letter names in order to ensure these instructions were applied during data collection. Lastly, to additionally enhance inclusivity, font size and type of the EGRA was selected to improve readability by students, considering the limited access to corrective lenses in Timor-Leste.

In addition to these five EGRA tasks, students were also administered a pictorial working memory test during the assessment to measure student attentiveness. For this test, students were presented with a set of 19 images of common objects/animals, shown and read the name of each image individually by the enumerator, and asked to remember the image for later. The child was then asked to recall as many images as possible without looking at the images.

As some students in the sample may have been repeating a grade, they may have been exposed to the EGRA and working memory test administered during the HATUTAN midline. As such, to minimize the risk of pre-exposure bias, the learning assessment and working memory tests were modified by, for example, rearranging the position of letters (e.g., b-c-a instead of a-b-c) or words.

The student assessment also included questions on food consumption at school and home, and anthropometric measurements (height and weight).

Household Survey

The household survey was conducted with families of grade 2 students assessed with the EGRA. The household survey largely replicated the HATUTAN midline survey and included the following topical areas:

- Socioeconomic background of household heads
- Participation in VSLAs and economic empowerment
- Support for education

- Perceptions of school conditions, management, and safety, including school feeding program
- Quality of schoolteachers and education
- Student attendance
- Student disability
- Housework responsibilities of children
- Nutrition, health, and sanitation knowledge and practices
- Dietary diversity
- Gender-related attitudes and practices, including participation in decision-making
- Perspectives on gender-based violence (only administered to caregivers if no other individuals were present)
- Use of agricultural practices
- Knowledge of and attitudes towards breastfeeding and child nutrition/health (for households with children under the age of 2 and babies under 6 months of age)

Within households, the head of household, grade 2 student's caregiver, and a mother of a child under the age of 2 were interviewed separately, as applicable.

Farmers' Group/VSLA Survey

A key component of HATUTAN II programming is to develop partnerships with farmers' groups to supply food to schools. As such, a subsample of household respondents participating in farmers' groups and VSLAs responded to an additional survey module assessing exposure to capacity building activities, use of savings and loans, income, perceived relevance of VSLA and farmers' group activities, farming practices, types of commodities produced, readiness for market engagement, and emerging linkages with buyers (including schools). Because relatively few respondents to the household survey were also engaged in farmers' groups or VSLAs, a booster sample of farmers outside of targeted households was also surveyed.

School Survey

School surveys were conducted with school directors/administrators in each sampled school. These surveys included school background, school feeding, teacher, and student attendance modules. The school background module collected information on school characteristics, head teacher practices and exposure to training, the availability and role of the PTA, book loaning, and safeguarding practices. The school feeding module included data on school infrastructure (kitchens, sanitation), implementation of the school feeding program, and procurement of locally produced items to complement school meals. The teacher module included data on the number and qualifications of teachers and teacher attendance. Lastly, the attendance module included data on enrolment, head counts of Grade 2 attendance, and recorded attendance rates.

Classroom Observation

Classroom observations were conducted in grade 2 Tetum language classes. Teachers were randomly selected from among all teachers teaching grade 2. The classroom observation tool considered the following:

- Time spent on task
- Student engagement in class
- Student use of reading materials
- Teacher use of child-centered techniques and reading practices
- Gendered behaviors in class
- Safeguarding and corporal punishment
- Use of formative assessments

Researchers conducting classroom observations were provided with a list of teaching practices related to the above thematic areas. The use (or absence) of teaching practices was then measured as either “observed” or “not observed.”

Focus Group Discussions

Focus group discussions were conducted with students’ parents (men and women separately) and teachers (mixed gender). FGDs with parents focused on understanding linkages between household characteristics and learning outcomes (including attendance and enrolment) and the activities conducted by the parent-teacher association (PTA). These FGDs help us understand changes (or lack thereof) over the program cycle in key areas including nutrition, food security, WASH, and education.

FGDs with teachers included content similar to that covered in parent FGDs, but emphasized school governance and other school-based factors affecting learning outcomes. FGDs with teachers also provided insight into program implementation, helping to identify successes and challenges that may inform future government or HATUTAN II programming.

Within each administrative post, FGDs were randomly assigned to schools so that multiple FGDs were not clustered in a single school. This design was intended to maximize representation of schools with varying characteristics and localities. Randomly assigning FGDs (rather than clustering all FGDs in a small number of schools) also controls for potential eligibility biases; for example, questions on PTA activities in the parents’ FGD are contingent on a school having a functioning PTA, which is itself indicative of school governance quality and a degree of parental support and engagement in education. If eligibility to be selected for those questions in qualitative interviews was limited to schools with functioning PTAs, all qualitative interviews could have been biased to represent the highest functioning school systems participating in the HATUTAN II program.

Key Informant Interviews

Key informant interviews included local government officials, school administrators, and health clinic representatives.⁵¹ These interviews included questions on perceived management responsibilities, previous training and perceptions about training, PTA engagement and perceptions of its value, student and teacher attendance, school governance issues, the relationship between schools and the implementing organization(s), and gender dynamics within school systems.

FIELDWORK

Fieldwork was managed by CARE with support for training and quality assurance provided by Consilient Research. In this section, we describe processes for enumerator selection, training, fieldwork, and data quality control.

Enumerator Selection and Training

Enumerators were pre-selected by CARE from a pool of applicants based on previous data collection experience and skills in relevant local languages; around 30% of selected enumerators had participated in previous HATUTAN evaluations. The pre-selected enumerators were assessed with a test, and those who passed the test were then interviewed, following which enumerators were selected to participate in training.

Enumerators were trained for seven days by a joint CARE and Consilient team. Training topics included an introduction to the program and the evaluation, child protection, prevention of sexual harassment and abuse, research ethics and informed consent, confidentiality and data security, use of electronic data

⁵¹ Health clinic representatives are not linked to a specific school area, but rather to a broader administrative post due to the limited number of facilities in rural areas.

collection forms, working with children, review of quantitative and qualitative tools, and data quality control practices. Training also included mock practice sessions for all quantitative tools and a field pilot of the learning assessment, school survey, and household survey tools.

Enumerators were regularly assessed during training, and only those enumerators who achieved minimum standards on assessments and demonstrated proficiency in tool administration during the field pilot were selected. The highest-performing enumerators, as measured through assessments and performance in the field pilot, were selected as team leaders and provided with brief additional training on qualitative tools and team management.

Fieldwork Overview and Quality Control

Data collection began on February 6, 2023 and ended on March 31, 2023. Teams were distributed to municipalities based on language skills and spent an average of two days at each school collecting data with students, teachers, school directors/administrators, and households. To guide the fieldwork, teams were provided with tracking tools, including individual and school tracking sheets containing the identifier and demographic information for target respondents.

During the first week of data collection, teams were accompanied by Consilient and CARE staff who monitored the progress of data collection and adherence to fieldwork procedures, including proper tool administration. This also allowed team leaders to quickly clarify any procedural questions.

At the end of each day of data collection, completed surveys were uploaded to the secure online data management platform Ona (where connectivity allowed). The submitted data was then downloaded regularly by the Consilient and CARE teams for quality control and data cleaning. A quality control tool was developed in Stata and used regularly to track the number of submitted surveys, calculate results by school and enumerator, and flag potential issues within the quantitative data. These potential issues included implausible EGRA results, possible cases of EGRA misadministration, outlying values, contradictory attendance and enrolment records, and illogical or incoherent text- or numeric-based responses, among others. All inconsistencies and mistakes were discussed with teams in the field and, if necessary, corrected in the data. To further ensure data quality, several quality checks were scripted into the tools to reduce data entry-related errors; these included measures such as age restrictions, constraints for numeric values, and calculations for learning assessment scores.

PROPOSED AND ACHIEVED SAMPLE

In this section, we describe the sample achieved for the baseline assessment for each tool described above. In preparation for the baseline assessment and inception of HATUTAN II programming, CARE developed a sampling strategy across HATUTAN II intervention municipalities (Ainaro, Ermera, Manatuto, and Oecusse) and comparison municipalities (Aileu, Baucau,⁵² Bobonaro, Covalima, and Manufahi). A sample of 90 intervention schools was drawn from a list of 219 school communities receiving a “full package” of HATUTAN II interventions; 90 comparison schools were also selected in comparable communities. School surveys and classroom observations were intended to be conducted in all 180 schools. From these 180 schools, the baseline assessment sought to sample 1,803 intervention students and 1,803 comparison students in grade 2 (i.e., around 20 students from each school).⁵³ The study additionally sought to survey 577 households from intervention areas and 577 households from comparison areas (i.e., around 6 to 7

⁵² Schools in Baucau were removed from the sample as they were deemed incomparable to intervention schools, as these schools had much higher learning assessment performance than other schools (intervention and comparison) in the sample. As such, they are not included in the analysis below.

⁵³ This sample size was calculated considering a 95% confidence level, 80% power, an effect size of 0.2, a design effect of 2, a 15% attrition rate and disaggregation by gender. The sample was calculated as $n = 2 * [(Z(1 - \alpha/2) + Z(1 - \beta)) / ES]^2$.

households from each school community).⁵⁴ Lastly, the baseline assessment sought to interview a total of 360 farmers' group representatives.

The table below shows the breakdown of samples for the school survey and classroom observation by intervention status and municipality. Among both intervention and comparison municipalities, substantially more schools were sampled than proposed; in total, 107 intervention schools and 93 comparison schools were sampled. Classroom observations were conducted in all comparison schools and 103 intervention schools; classes could not be observed in some intervention schools due to teacher absences.

Table 2: School survey and classroom observation sample

	School survey	Classroom observation	Proposed sample
Municipality (intervention)			
Ainaro	27	25	19
Ermera	41	39	38
Manatuto	19	19	13
Oe-cusse	20	20	20
Total (intervention)	107	103	90
Municipality (comparison)			
Aileu	22	22	-
Bobonaro	31	31	-
Covalima	19	19	-
Manufahi	21	21	-
Total (comparison)	93	93	90
Grand total	200	196	180

Table 3 shows the sample for learning assessments and household surveys. The sample of learning assessments conducted for the baseline fell below the target number, primarily due to the very small grade sizes and high levels of student absences within some sampled schools. The household survey sample, in contrast, substantially exceeded the target sample size.

⁵⁴ This sample size was calculated considering a 95% confidence level, 80% power, an effect size of 0.25, a design effect of 2, a 15% attrition rate and disaggregation by gender. The sample was calculated as $n = 2 * [(Z(1 - \alpha/2) + Z(1 - \beta)) / ES]^2$.

Table 3: Learning assessment and household survey sample

	Learning assessment	Proposed LA sample	% of proposed sample	Household survey	Proposed HH sample	% of proposed sample
Municipality (intervention)						
Ainaro	380	540	70.4%	203	-	-
Ermera	619	820	75.5%	316	-	-
Manatuto	279	380	73.4%	136	-	-
Oe-cusse	276	400	69.0%	150	-	-
Total (intervention)	1,554	1,803	86.2%	805	577	139.5%
Municipality (comparison)						
Aileu	226	440	51.4%	151	-	-
Bobonaro	401	620	64.7%	227	-	-
Covalima	230	420	54.8%	135	-	-
Manufahi	268	420	63.8%	147	-	-
Total (comparison)	1,125	1,803	62.4%	660	577	114.4%
Grand total	2,679	3,606	74.3%	1,465	1,154	126.9%

In addition, 210 farmers' group surveys were conducted in intervention municipalities: 98 in Ainaro, 66 in Ermera, and 46 in Manatuto. This booster sample supplemented sample size for questions regarding VSLA participation and agricultural practices also asked in the household survey.

Demographics of Achieved Sample

The below table shows the gender, age, and native languages of students by municipality and treatment group. Gender composition and average age⁵⁵ were similar across municipalities, with the exception of average age in Oe-cusse which was substantially higher than other municipalities. The percent of students speaking Tetum natively varied widely, from only 0.7% of students in Oe-cusse to 91.6% in Ainaro.

⁵⁵ Excluding students with reported ages under 5 years or who did not know their age, a total of 63 comparison students and 237 intervention students.

Table 4: Demographics of assessed students

	n	Male	Average age (years)	Native Tetum speaker
Municipality (intervention)				
Ainaro	380	54.2%	7.6	91.6%
Ermera	619	53.2%	7.7	75.1%
Manatuto	279	50.2%	7.7	31.5%
Oe-cusse	276	51.1%	8.4	0.7%
Average (intervention)	1,554	52.5%	7.7	58.1%
Municipality (comparison)				
Aileu	226	46.9%	7.6	53.1%
Bobonaro	401	48.4%	7.5	58.4%
Covalima	230	55.2%	7.5	40.0%
Manufahi	268	53.0%	7.3	67.9%
Average (comparison)	1,125	50.6%	7.4	55.8%
Average (all students)	2,679	51.7%	7.6	57.2%

Table 5 shows the prevalence of physical disabilities among students and Table 6 shows prevalence of cognitive disabilities and mental health challenges.⁵⁶ For physical and cognitive disabilities, a student is considered to have a disability if the caregiver stated that they have at least some difficulty with the task. For mental health, a student is considered to struggle with anxiety or depression if the caregiver reported they seem anxious or depressed once a month or more often. We note that prevalence of most physical and cognitive disabilities, as well as anxiety and depression, was higher in Oe-cusse than other intervention municipalities.

Table 5: Physical disabilities of assessed students

	n	Eyesight	Hearing	Walking/climbing
Municipality (intervention)				
Ainaro	203	1.5%	4.4%	0.5%
Ermera	316	1.0%	6.0%	1.3%
Manatuto	136	2.2%	2.9%	2.9%
Oe-cusse	149	2.0%	8.7%	3.4%
Average (intervention)	804	1.5%	5.6%	1.7%

⁵⁶ We note that the sample size within Table 6 is the same as for physical disabilities.

	n	Eyesight	Hearing	Walking/climbing
Municipality (comparison)				
Aileu	151	1.3%	4.0%	2.0%
Bobonaro	226	0.9%	1.8%	0.0%
Covalima	135	0.7%	6.7%	0.0%
Manufahi	147	0.0%	2.1%	1.4%
Average (comparison)	659	0.8%	3.3%	0.8%
Average (all students)	1,463	1.2%	4.6%	1.3%

Table 6: Cognitive disabilities and mental health of assessed students

	Memory or concentration	Self care	Communication	Making friends	Anxiety	Depression
Municipality (intervention)						
Ainaro	23.7%	29.6%	17.2%	2.0%	9.4%	2.5%
Ermera	32.2%	24.1%	20.0%	4.5%	17.4%	7.9%
Manatuto	28.7%	34.6%	17.7%	4.5%	15.4%	5.2%
Oe-cusse	72.1%	39.2%	35.8%	3.5%	20.1%	10.7%
Average (intervention)	36.8%	30.0%	21.8%	3.7%	15.6%	6.6%
Municipality (comparison)						
Aileu	38.0%	34.4%	27.2%	4.0%	23.8%	7.3%
Bobonaro	23.6%	19.1%	22.8%	4.5%	14.2%	11.5%
Covalima	19.3%	39.3%	9.6%	1.5%	8.2%	4.4%
Manufahi	18.6%	38.4%	19.2%	0.7%	8.8%	4.8%
Average (comparison)	24.9%	31.1%	20.3%	2.9%	14.0%	7.6%
Average (all students)	31.4%	30.5%	21.1%	3.3%	14.8%	7.0%

Table 7 and Table 8 show characteristics of assessed schools. Of note, no schools in Oe-cusse had a preschool, schools in Oe-cusse were more likely to have multigrade classes than in other intervention municipalities, and Oe-cusse had the lowest percentage of female teachers and years of administrator experience. Characteristics were fairly similar, however, across intervention and comparison groups.

Table 7: Characteristics of assessed schools

	n	Filial school	Has preschool	Has multigrade classes
Municipality (intervention)				
Ainaro	27	77.8%	55.6%	44.4%
Ermera	41	82.9%	29.3%	46.3%
Manatuto	19	94.7%	15.8%	47.4%
Oe-cusse	20	85.0%	0.0%	55.0%
Average (intervention)	107	84.1%	28.0%	47.7%
Municipality (comparison)				
Aileu	22	86.4%	31.8%	68.2%
Bobonaro	31	87.1%	25.8%	41.9%
Covalima	19	79.0%	15.8%	21.1%
Manufahi	21	81.0%	47.6%	61.9%
Average (comparison)	93	83.9%	30.1%	48.4%
Average (all schools)	200	84.0%	29.0%	48.0%

Table 8: Characteristics of teachers and directors at assessed schools

	Student-teacher ratio (average)	Permanent teachers (% of total teachers)	Female teachers (% of total teachers)	Administrator experience (average years)
Municipality (intervention)				
Ainaro	21.2	41.6%	47.5%	5.1
Ermera	21.2	33.0%	46.4%	5.1
Manatuto	23.7	46.9%	43.6%	9.9
Oe-cusse	27.6	38.2%	31.4%	3.1
Average (intervention)	22.9	38.6%	43.4%	5.6
Municipality (comparison)				
Aileu	25.7	61.8%	42.5%	9.7
Bobonaro	23.0	45.5%	38.0%	4.0
Covalima	17.6	50.0%	49.3%	7.1
Manufahi	17.0	50.9%	44.3%	11.6
Average (comparison)	21.2	51.5%	42.8%	7.5
Average (all schools)	22.1	44.6%	43.1%	6.5

Further information about the demographics of the achieved sample, including demographics of heads of household and caregivers and differences across intervention and comparison groups, is contained in Annex 3.

CHALLENGES AND LIMITATIONS

The study methodology is associated with a number of limitations described in this section.

Differences between intervention and comparison schools: While comparison schools were carefully selected to come from similar areas and levels of “remoteness” and to have a similar linguistic background as intervention schools, intervention and comparison schools are not perfectly balanced, a factor explored more in Annex 3. Given that we observe some demographic differences across comparison and intervention schools/groups, it is likely that these samples are also imbalanced in terms of other potentially important, but unobserved, factors that may bias analysis.

The main implication of this limitation is that we cannot be sure that observed differences across intervention and comparison groups are not partially a product of unobserved, systematic differences across these groups. While this does not strongly impact this baseline study, which focuses on providing a snapshot of indicator and outcome values at baseline, this limitation has implications for the HATUTAN II midline and endline studies, which will build upon this study. Future analysis should attempt to mitigate this problem by using statistical controls in regressions to adjust for the influence of observable factors which differ across intervention and comparison groups.

Comparability with Oe-cusse: Along these lines, it is important to note the unique status of Oe-cusse within Timor-Leste. This region⁵⁷ is an exclave surrounded by Indonesia. Most residents speak a language unique to this area rather than the language of instruction (Tetum). Oe-cusse also faces generally more severe food security challenges than other municipalities, and has generally lower education outcomes. As a result, although substantial efforts were made to select comparable municipalities, it is important to note that there are few areas in Timor-Leste that are truly comparable to this municipality.

Timing of data collection: Due to the school calendar in Timor-Leste and the program’s implementation timeline, students were assessed at the beginning of the school year. As such, assessed grade 2 students have skills comparable with students starting that grade; however, the standard definition for assessment requires assessments to be conducted with students at the end of grade 2. As such, results in this study may be biased downwards compared to the results of other learning assessments conducted using the “standard” process. We note that grade 3 students were not assessed as there was a high risk of biased results due to high dropout rates at the end of grade 2, generally among the lowest-performing students.

Inaccuracy of school record-keeping: Collecting student and teacher attendance data from school records is generally challenges, as records are often low quality and may be partially or entirely incomplete. This study triangulates attendance across multiple sources, including through headcounts of students and teachers, to provide a more holistic picture of attendance rates, rather than relying on school records.

Accessing schools and respondents: Families in Timor-Leste frequently travel for extended periods of time in order to attend traditional ceremonies, which makes it difficult to contact some respondents for household surveys or to administer the learning assessment. Additionally, fieldwork was conducted during the rainy season; as a result, some schools in remote areas were only accessible by foot or during specific times of day. This increased the time needed for data collection, and resulted in some remote schools only being visited at the end of data collection.

⁵⁷ Oe-cusse is officially called a region of Timor-Leste. However, for simplicity of language (so that we do not need to refer to three intervention municipalities and one intervention region), within tables and the text, we generally refer to it as a municipality.

Social desirability bias: Some respondents' answers, especially to questions that are potentially sensitive, may not be wholly accurate or truthful. In cases where respondents are asked to self-report on behaviors and practices, there is often a strong desire to respond in a socially desirable manner. For example, parents may recognize that it is socially desirable for children to spend only a limited amount of time on household tasks; as such, rates of child participation in household labor may be underreported. While the design of the tools and the interview process attempted to account for this by using clear language and creating a comfortable environment for respondents, response bias is unavoidable. In the report, we note instances where this may have occurred, and triangulate responses for validation wherever possible.

Errors or limitations in data: Wherever inconsistent patterns were observed or data was not properly recorded, the data was removed from the analysis. An example of this occurred with the student age variable, where some students' ages were unusually high or low. This reduces the sample size for some variables.

Floor and ceiling effects: Within the EGRA and its subtasks, there is a minimum and maximum possible score. If subtasks are too easy for students, most scores will tend to be clustered around the maximum possible score with little variation; similarly, if subtasks are too difficult for most students, scores will be clustered around 0% with little variation. We observe floor effects in several EGRA subtasks, discussed more in the section *Literacy Outcomes*. These effects dampen our ability to differentiate between intervention and comparison schools.

Generalizability of results: Sample sizes for several municipalities and languages are small. While we still include analysis of results disaggregated by these (and other) subgroups, results should be taken as indicative, not definitive, due to sample size limitations. Results cannot be generalized at national level, as they are representative only of program areas and comparison areas, primarily rural and remote.

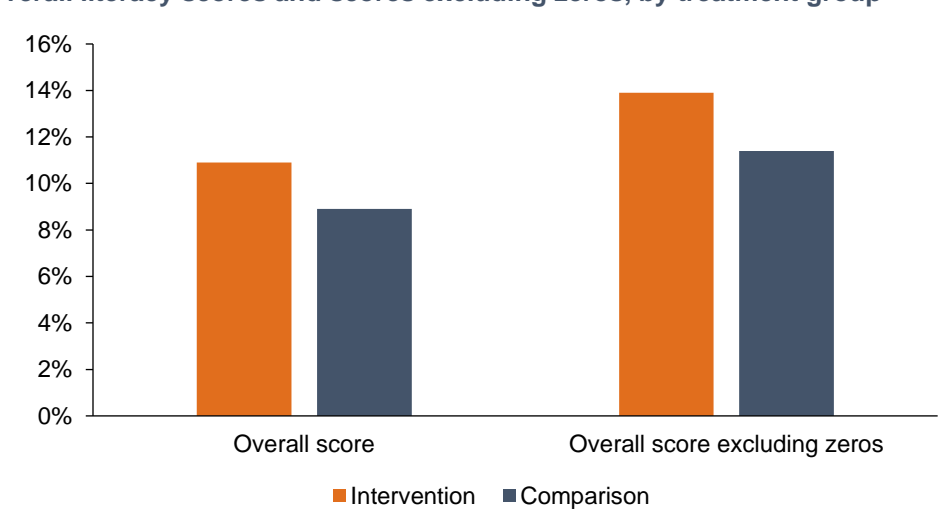
LITERACY OUTCOMES

In this section, we discuss literacy outcomes for grade 2 students assessed using EGRA. We first discuss overall literacy scores, then analyze results by each of the five subtasks—letter recognition, invented word reading, familiar word reading, passage reading, and reading comprehension. We also conduct a predictive analysis to better understand factors associated with improved literacy outcomes.

OVERALL LITERACY SCORES

We first analyze overall literacy scores, calculated as the simple average of scores on each of the five literacy subtasks. The below figure shows overall scores and scores excluding zeros by treatment group and municipality. We find slightly higher average overall scores for intervention students, 10.9%, than comparison students, 8.9%, though this difference was not significant. This pattern remains when excluding zero scorers.

Figure 1: Overall literacy scores and scores excluding zeros, by treatment group



Scores varied substantially by municipality, from a low of 1.8% in Oe-cusse to a high of 16.6% in Manatuto (both intervention municipalities; Manatuto was supported by HATUTAN I). Overall scores were significantly lower in Oe-cusse than in any other municipality; in light of this result, it is worth again emphasizing the unique characteristics of Oe-cusse, where the vast majority of students do not speak Tetum-Prasa (the language of instruction) and where food security and other relevant factors are generally far weaker than in the rest of Timor-Leste.

Table 9: Overall literacy scores by municipality and treatment group

	n	Overall score	Percent zero scores	Overall score excluding zeros
Municipality (intervention)				
Ainaro	380	15.3%	9.0%	16.8%
Ermera	619	9.7%	19.1%	12.0%
Manatuto	279	16.6%	11.8%	18.8%
Oe-cusse	276	1.8%	55.8%	4.1%
Total (intervention)	1,554	10.9%	21.8%	13.9%
Municipality (comparison)				
Aileu	226	6.1%	34.5%	9.3%
Bobonaro	401	7.1%	29.9%	10.1%
Covalima	230	11.0%	6.5%	11.7%
Manufahi	268	12.3%	11.2%	13.8%
Total (comparison)	1,125	8.9%	21.6%	11.4%

Looking at the percent of students scoring 0 overall on the EGRA, we find very similar rates between intervention and comparison students of 21.8% and 21.6% respectively. Oe-cusse again had significantly worse outcomes than other municipalities, with 55.8% of students in this municipality scoring 0 overall. The

lowest rates of zero scorers, however, were found in Covalima and Ainaro (the latter supported under HATUTAN I).

Lastly, we exclude students who scored 0% from the sample to analyze differences in overall scores among students with at least basic ability to recognize letters. We find that scores remained relatively low when excluding zeros, at 13.9% for intervention students and 11.4% for comparison students. Scores remained lowest in Oe-cusse and were highest in Manatuto.

We now disaggregate scores in Table 10 by gender, disability status, and whether students speak Tetum-Prasa natively. We first find that, in line with broader patterns of learning in Timor-Leste, female students performed significantly better on the EGRA than male students among both intervention and comparison groups. As such, it is important to note that in this context, greater program attention on female students may actually result in a widening of the gender learning gap among primary-aged students. As such, it may be advisable for HATUTAN II to explore ways to better support male, as well as female, students.

Secondly, we find that within intervention schools, students with physical disabilities (to eyesight, hearing, or walking), memory disabilities, and communication disabilities tended to have lower EGRA scores than students without disabilities. For students with physical disabilities, this difference was not significant. However, students with memory disabilities scored, on average, 5.0 percentage points lower on the EGRA than students without these disabilities, a significant difference, and students with communication disabilities scored, on average, 5.4 percentage points lower on the EGRA than students without these disabilities, a significant difference. These differences were only significant for intervention students; in comparison areas, we find no significant differences in EGRA results for students with disabilities.

Table 10: Overall literacy scores by gender, disability, and native language

	Intervention	Comparison
Gender		
Female	13.0% (n = 738)	10.3% (n = 556)
Male	9.0% (n = 816)	7.6% (n = 569)
Disability		
Physical disability (eyesight, hearing, or walking) ⁵⁸	9.7% (n = 65)	10.3% (n = 32)
Remembering or concentrating	7.6% (n = 294)	9.6% (n = 163)
Communicating	6.6% (n = 175)	9.2% (n = 133)
Native language		
Tetum-Prasa	12.5% (n = 903)	8.5% (n = 628)
Other language	8.6% (n = 651)	9.5% (n = 497)

⁵⁸ We aggregate physical disabilities because of low sample size; however, sample size remains low, with only 65 intervention students and 32 comparison students reported by caregivers to have difficulty with seeing, hearing, or walking.

Lastly, for intervention students, we find significantly lower overall literacy scores for students who do not speak Tetum-Prasa natively, with a gap of around 4.0 percentage points. However, we find no significant difference in scores for comparison students. For intervention students, this finding may rather be representing results in Oe-cusse; indeed, when this municipality is excluded, the difference in results by native language is no longer significant.

To better understand these dynamics, we now analyze results by EGRA subtask. We focus on results by municipality and treatment group, as results disaggregated by gender, disability, and native language are generally similar to those described above. However, we note if disaggregated results differ substantially from those in Table 10.

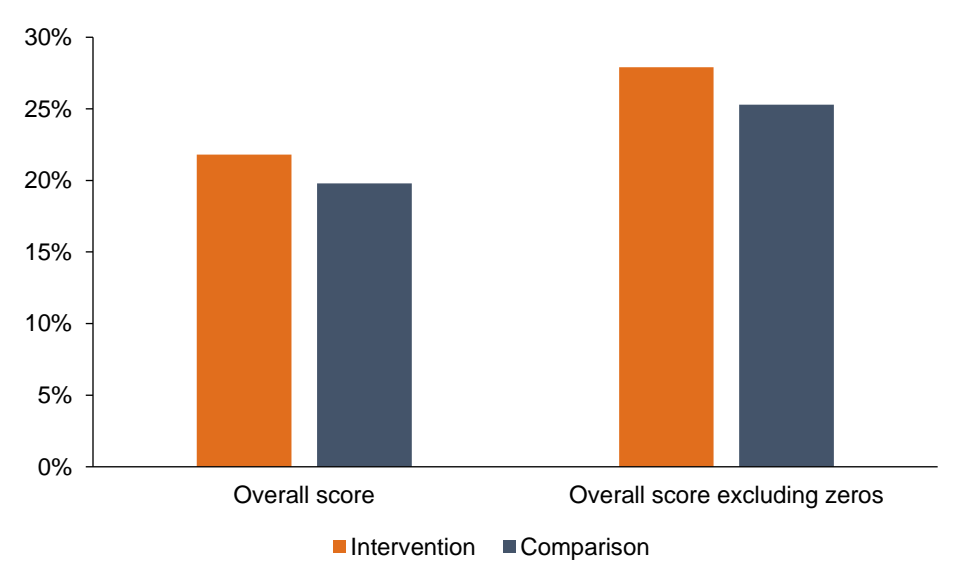
LITERACY SUBTASK SCORES

Letter Recognition

For the first EGRA subtask, students were given a paper with 100 letters and were asked to read those letters aloud in order. Students were given one point for each letter that was read correctly within 60 seconds.

Figure 2 shows overall letter recognition scores and scores excluding zeros by treatment group. We find slightly higher overall scores for intervention students, at 21.8%, than for comparison students, at 19.8%, though the difference is not significant. This pattern remains when excluding zero scorers.

Figure 2: Letter recognition scores and scores excluding zeros, by treatment group



The below table further shows average letter recognition scores by municipality and treatment group.⁵⁹ Oe-cusse had significantly lower letter recognition scores than all other municipalities, including when zero scorers were excluded. As with overall literacy scores, letter recognition scores were highest in Manatuto.

⁵⁹ The percent of zero scorers is equivalent to the percent of zero scorers for the EGRA overall, as students did not proceed with the EGRA if they could not read letters. As such, we do not analyze the percent of zero scorers in this section.

Table 11: Letter recognition scores by municipality and treatment group

	n	Letter recognition score	Percent zero scores	Overall score excluding zeros
Municipality (intervention)				
Ainaro	380	27.2%	9.0%	29.9%
Ermera	619	22.1%	19.1%	27.3%
Manatuto	279	28.5%	11.8%	32.3%
Oe-cusse	276	7.1%	55.8%	16.0%
Total (intervention)	1,554	21.8%	21.8%	27.9%
Municipality (comparison)				
Aileu	226	16.0%	34.5%	24.4%
Bobonaro	401	16.5%	29.9%	23.5%
Covalima	230	23.2%	6.5%	24.8%
Manufahi	268	25.2%	11.2%	28.3%
Total (comparison)	1,125	19.8%	21.6%	25.3%

Excluding students who scored 0% from the analysis, we find that average letter recognition scores increase by around 6 percentage points for both intervention and comparison groups, to 27.9% for intervention students and 25.3% for comparison students. It is worth noting that this still represents a low overall letter recognition score. However, our analysis suggests that this low score is due mostly to low levels of letter reading fluency, but that students generally know the names of letters well. Indeed, we find that on average, intervention students named only 13.5% of letters incorrectly. Furthermore, 36% of intervention students did not name any letters incorrectly. However, on average, intervention students only attempted to read 26 words before one minute had elapsed. These findings suggest it may be important to focus on letter reading fluency to improve students' letter recognition abilities.

Focusing on letter recognition is particularly important because letter recognition provides a foundation for more advanced literacy skills. In the qualitative data, for example, one mother stated that many students had difficulty reading because they had “not really pick[ed] up the alphabet/ABCs.”⁶⁰ However, other respondents also emphasized that while letter recognition provides a foundation for literacy, it does not necessarily translate into word recognition; for example, a mother in Ermera stated that “children can learn alphabets easily, but they often have difficulties forming sentences.”⁶¹ This statement will be further evidenced through the results for subsequent subtasks.

Invented Word Reading

For the second EGRA subtask, students were asked to read invented words to assess their abilities to recognize and read the sounds made by letters and letter groupings (i.e., phonics). Students were given a paper with 60 invented words and were asked to read the words aloud in order; they were marked as reading a word correctly if their pronunciation of the word demonstrated recognition of the word, even if it was not pronounced “correctly,” to account for differing accents and pronunciations across native

⁶⁰ FGD with mothers, Manatuto, Int. 32

⁶¹ FGD with mothers, Ermera, Int. 28

languages. Students were not asked to attempt this task if they could not read any letters; as such, only 78% of students (878 comparison students and 1,202 intervention students) attempted this task at baseline, and the remaining 22% were given a score of 0.

The below figure shows average invented word reading scores and scores excluding zeros. Overall, scores were very low for this subtask, at an average of 4.1 words per minute for intervention students and 3.0 words per minute for comparison students. While scores excluding zeros were substantially higher, this in part reflects the very high percent of students who scored 0 on this subtask, discussed further below.

Figure 3: Invented word reading scores and scores excluding zeros, by treatment group

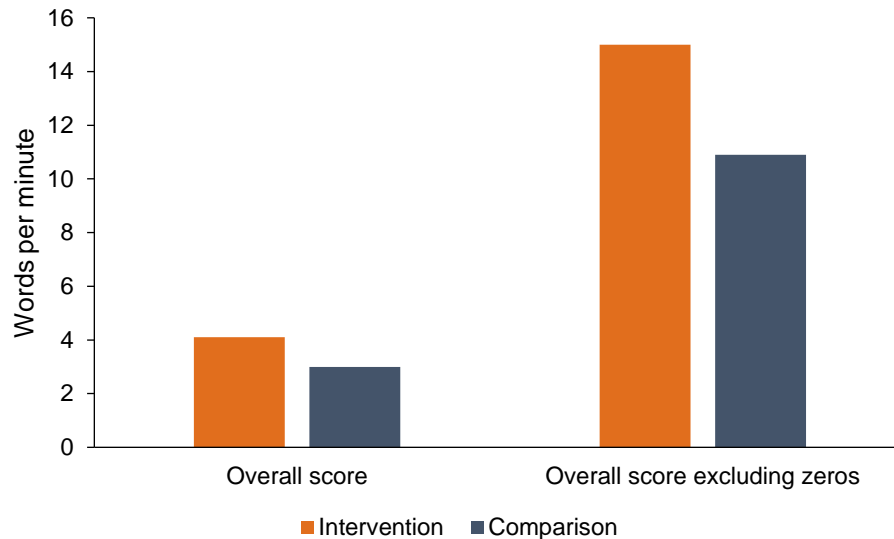


Table 12 shows overall scores, the percent of students scoring zero, and scores excluding zero by municipality and treatment group. We note first that less than 4% of students in Oe-cusse were able to read any invented words, and the average score for the sample of students who were able to attempt this task was only 7.3 words per minute. However, even outside of Oe-cusse, the percent of students scoring zero on this task was high, averaging 72.7% for intervention schools and 72.4% for comparison schools. This suggests that students may struggle with decoding words; it may be worthwhile to support initiatives seeking to strengthen this skill in HATUTAN II.

Table 12: Invented word reading scores by municipality and treatment group

	n	Invented word reading score	Percent zero scores	Overall score excluding zeros
Municipality (intervention)				
Ainaro	380	6.7	57.9%	15.9
Ermera	619	3.1	76.3%	13.1
Manatuto	279	6.5	61.3%	16.8
Oe-cusse	276	0.3	96.4%	7.3
Total (intervention)	1,554	4.1	72.7%	15.0

	n	Invented word reading score	Percent zero scores	Overall score excluding zeros
Municipality (comparison)				
Aileu	226	1.8	86.3%	12.9
Bobonaro	401	2.4	78.6%	11.2
Covalima	230	3.6	61.7%	9.4
Manufahi	268	4.4	60.8%	11.3
Total (comparison)	1,125	3.0	72.4%	10.9

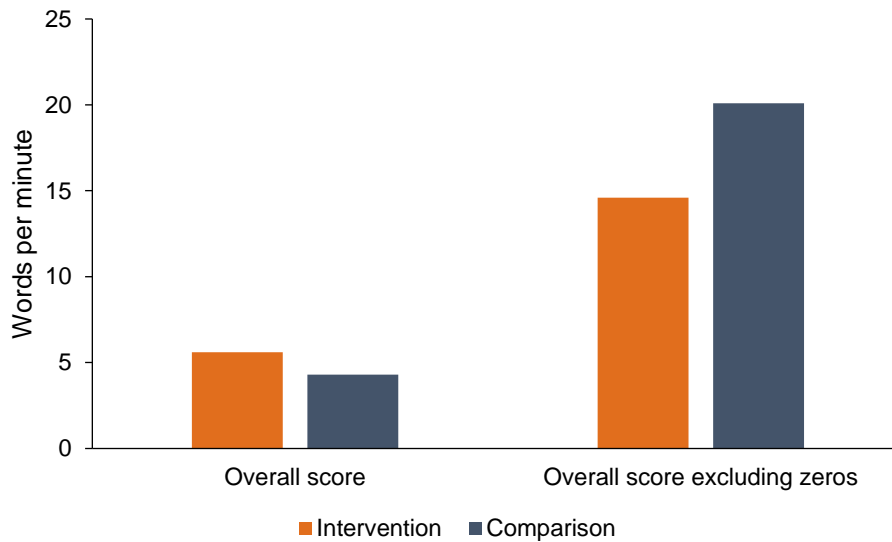
Among students reading more than 0 words per minute, as mentioned above, scores were substantially higher but still fell below average overall EGRA scores. Scores for intervention students who were able to recognize invented words (i.e., who read more than 0 words per minute) were significantly higher than scores for comparison students who were able to recognize invented words.

Familiar Word Reading

In the third subtask, students were asked to read familiar words (e.g., if the subtask were in English, words such as “cat” or “dog”). They were presented with a paper with 60 words and asked to read the words aloud in order until 60 seconds had elapsed. Their familiar word score is then calculated as the percent of words read correctly (accounting for pronunciation differences) within the 60 second time limit.

Figure 4 shows familiar word reading scores and scores excluding zeros. Average scores for all intervention and comparison students were higher than for invented word reading but substantially lower than for letter recognition. This shows both the increased difficulty of this subtask (as intended in the EGRA design) but also that many grade 2 students have not yet progressed to reading words, but are rather only able to recognize letters. Among intervention students who were able to read words, however, reading fluency was higher than among students who successfully attempted the letter recognition task, as evidenced by the relatively high average familiar word reading score of non-zero scorers, suggesting that intervention students who could read familiar words read, on average, around 20 words in one minute.

Figure 4: Familiar word reading scores and scores excluding zeros, by treatment group



The below table shows overall scores, the percent of students scoring zero, and scores excluding zero by municipality and treatment group. As with invented word reading, we note that scores in Oe-cusse were extremely low, and the vast majority of Oe-cusse students—96.7%—scored zero on this subtask.⁶² Ainaro and Manatuto, meanwhile, are notable as intervention municipalities which significantly outperformed results in most other intervention and comparison municipalities.

Table 13: Familiar word reading scores by municipality and treatment group

	n	Familiar word reading score	Percent zero scores	Overall score excluding zeros
Municipality (intervention)				
Ainaro	380	8.9	57.1%	20.6
Ermera	619	4.3	76.1%	18.1
Manatuto	279	9.1	60.2%	22.8
Oe-cusse	276	0.4	96.7%	12.0
Total (intervention)	1,554	5.6	72.3%	20.1
Municipality (comparison)				
Aileu	226	2.4	86.3%	17.6
Bobonaro	401	3.3	77.1%	14.3
Covalima	230	5.6	55.7%	12.5
Manufahi	268	6.5	59.7%	16.1
Total (comparison)	1,125	4.3	70.4%	14.6

⁶² This is a slight increase from the percent of students who were not able to read invented words; indeed, two students in Oe-cusse read invented words but not familiar words. This is a fairly unusual result; indeed, only three students in all other municipalities had the same results pattern. Furthermore, one of the students in Oe-cusse who read invented words did so with reasonably high levels of fluency, scoring 20% overall. For this student in particular, the zero score on familiar word reading may be as a result of assessment fatigue, rather than a genuine reflection of reading abilities.

There were no significant differences in the overall familiar word reading score or in the percent of zero scores across intervention and comparison groups. However, intervention students reading more than 0 words per minute had significantly higher average scores than comparison students.

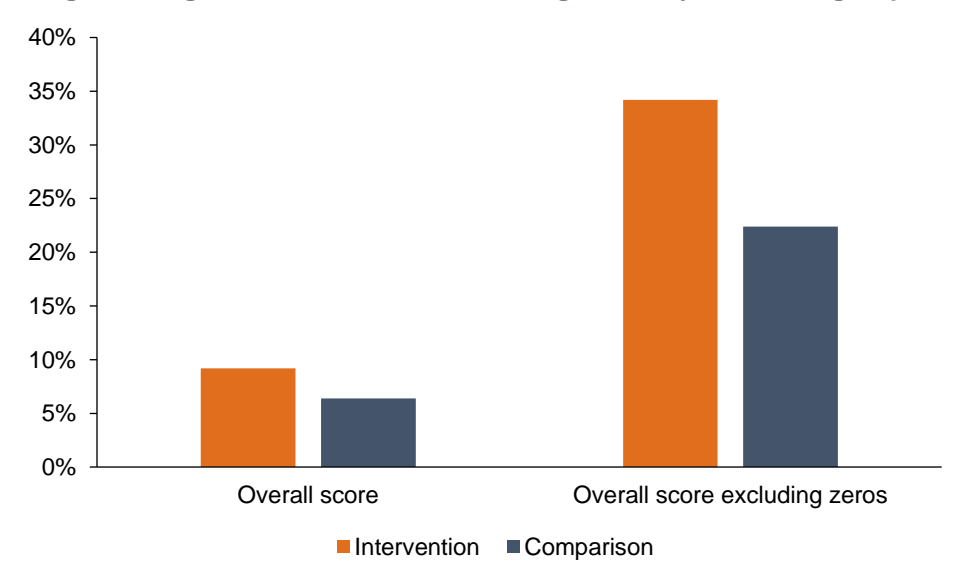
Passage Reading

The fourth subtask asked students to read a 61-word passage aloud; students were marked based on the number of words read correctly within 60 seconds. Only students who were able to read either invented or familiar words were asked to attempt this subtask. As such, only 35.4% of students at baseline (425 intervention students and 311 comparison students) attempted this subtask.

First, we note that among students who attempted this subtask, only 3.4% scored 0. In other words, most students who were able to read at least one invented or familiar word were also able to read words within the passage. While this is generally to be expected, in some cases, students who are able to read words in isolation become overwhelmed when presented with a passage; it is a good sign that this is occurring only infrequently.

Figure 5 shows intervention and comparison results for this subtask. We find that scores were generally very similar to those for familiar word reading, a sign again that ability to read familiar words is successfully translating into ability to read a passage. As with familiar word reading, however, overall scores were quite low, at only 9.2% for intervention students and 6.4% for comparison students. Results for students who were able to read the passage, however, were significantly higher, especially for intervention students who were able to read, on average, 21 words of the passage within 60 seconds.

Figure 5: Passage reading scores and scores excluding zeros, by treatment group



The table below provides further detail on scores by municipality and treatment group. As with familiar word reading, scores were lowest in Oe-cusse and highest in Ainaro and Manatuto, all intervention municipalities. Notably, nearly three-quarters of students across both treatment groups scored zero on this task, suggesting that the majority of grade 2 students currently do not have sufficient literacy skills to read a text.

Table 14: Passage reading scores by municipality and treatment group

	n	Familiar word reading score	Percent zero scores	Overall score excluding zeros
Municipality (intervention)				
Ainaro	380	13.1%	59.2%	32.1%
Ermera	619	7.5%	76.3%	21.4%
Manatuto	279	16.3%	60.2%	24.8%
Oe-cusse	276	0.4%	98.2%	5.5%
Total (intervention)	1,554	9.2%	73.1%	34.2%
Municipality (comparison)				
Aileu	226	3.9%	86.3%	28.6%
Bobonaro	401	5.0%	78.6%	15.7%
Covalima	230	7.9%	57.8%	15.2%
Manufahi	268	9.1%	60.5%	23.0%
Total (comparison)	1,125	6.4%	71.6%	22.4%

There was no significant difference in the percent of zero scorers across intervention and comparison groups. However, on average, intervention students scored significantly higher on this subtask than comparison students, as did intervention non-zero scorers.

Reading Comprehension

In the fifth EGRA subtask, students were asked to answer reading comprehension questions. The first set of five questions required literal understanding of the passage read in subtask 4; students were allowed to re-read this passage with no time limit before answering the questions. The second set of five questions required students to read a longer, more complex passage and to answer somewhat more complex, inferential questions. Neither of these tasks was timed.

Figure 6 shows overall reading comprehension scores and scores on the first five questions, which involved reading and interpreting a relatively simple, short text, and the second five questions, which required students to read and interpret a longer and more complex passage. Overall scores for both intervention and comparison students fell below 10%, implying that most students were unable to answer one question correctly. As expected, scores on the first set of questions were substantially higher than those for the second set of questions: For intervention students, the average comprehension score for the first set of questions was 10.4% (i.e., one question answered correctly) while the average comprehension score for the second set of questions was 4.4%.

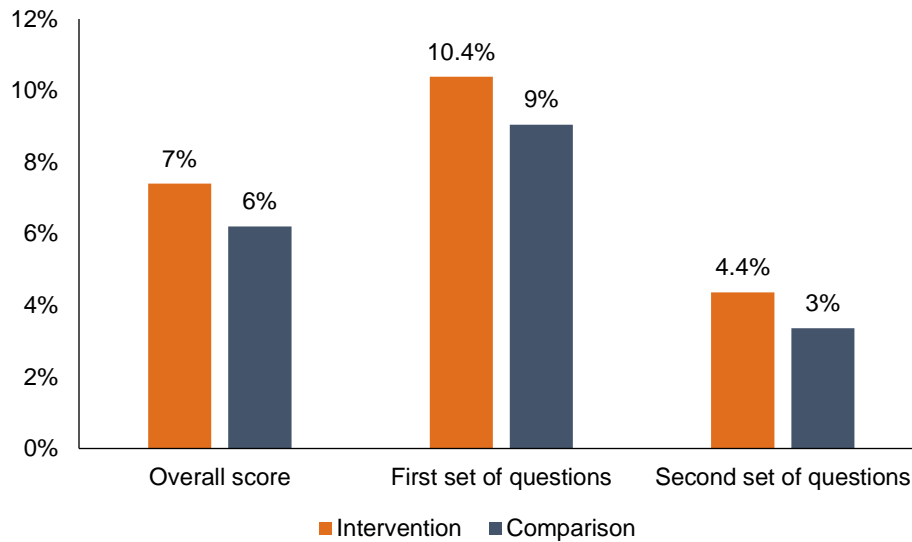
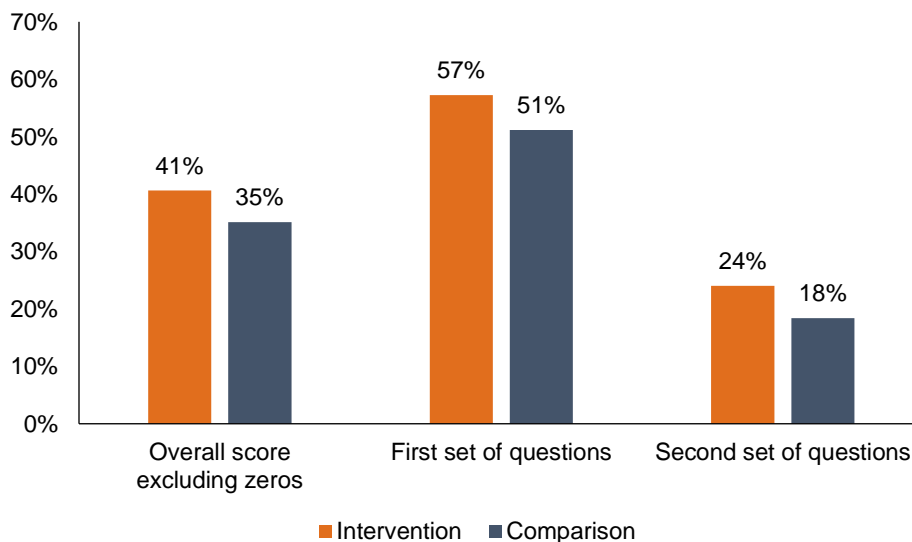
Figure 6: Reading comprehension scores, by treatment group

Figure 7 shows that reading comprehension scores were significantly higher when students with zero scores are excluded from the analysis, as expected. Among non-zero scorers, the average overall reading comprehension score was 41% for intervention students, representing around 4 questions answered correctly. For the first set of questions, both intervention and comparison non-zero scorers answered, on average, more than half of questions correctly. Scores remained substantially lower for the second set of questions, reflecting the increased difficulty of these questions and the relevant passage.

Figure 7: Reading comprehension scores excluding zeros, by treatment group

The table below further disaggregates by municipality; results follow patterns established for other subtasks and the EGRA overall. We note that in Oe-cusse, only two students received a score greater than zero for this subtask. We also note that there was no significant difference in overall scores or the percent of zero scorers across treatment groups, but that intervention students had a significantly higher average score than comparison students when excluding zero scores.

Table 15: Reading comprehension scores by municipality and treatment group

	n	Familiar word reading score	Percent zero scores	Overall score excluding zeros
Municipality (intervention)				
Ainaro	380	10.4%	77.1%	45.3%
Ermera	619	6.6%	84.0%	41.2%
Manatuto	279	12.0%	66.3%	35.5%
Oe-cusse	276	0.4%	99.3%	N/A ⁶³
Total (intervention)	1,554	7.4%	81.9%	40.6%
Municipality (comparison)				
Aileu	226	3.7%	89.4%	34.6%
Bobonaro	401	4.5%	87.5%	36.0%
Covalima	230	8.5%	73.0%	31.5%
Manufahi	268	9.0%	76.5%	38.1%
Total (comparison)	1,125	6.2%	82.3%	35.1%

Lastly, within the HATUTAN results framework, McGovern-Dole Standard Outcome #1, related to improved literacy of school-aged children, is measured through an indicator for the percent of students who, by the end of grade two, demonstrate that they can read and understand the meaning of a grade-level passage. Globally, this is generally measured as the percent of students who can respond to at least 80% of reading comprehension questions correctly. However, because many Timorese children are learning in a second language, students are considered to meet this standard if they answer at least one reading comprehension question correctly.

Among intervention students at baseline, 18.2% of students demonstrated that they could read and understand the meaning of a grade-level passage (McGovern-Dole Standard Outcome #1). Only 1.6% of intervention students were able to answer 80% of reading comprehension questions correctly. Among comparison students, 17.7% were able to answer at least one reading comprehension question correctly and 1.8% were able to answer 80% correctly.

PREDICTORS OF LITERACY

In this section, we test the relationship between student- and school-level characteristics and overall literacy scores. We first look at individual variables, such as attendance and age, and then analyze variables measured at the school level, such as student-teacher ratio.⁶⁴

Our predictive model includes eleven variables of interest: age, gender, working memory, caregiver education level, preschool attendance, school absences, whether the student reads at home, whether a toilet is available at home (a proxy for student health and hygiene), the caregiver's nutrition level (a proxy

⁶³ N = 2

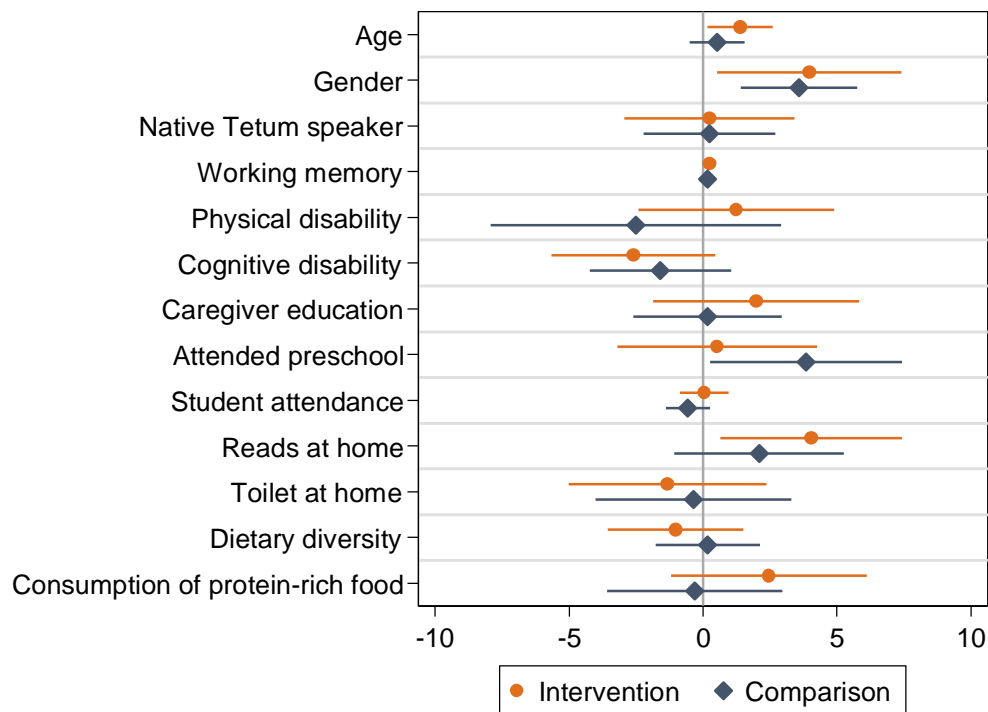
⁶⁴ We use hierarchical linear modeling (HLM) to determine the extent to which student-level and school-level characteristics determine variability in reading scores. HLM is a form of ordinary least squares regression that is used to analyze variance in outcome variables—in this case, literacy scores—when the predictor variables (our student- and school-level characteristics) are at varying hierarchical levels. In our case, because the literacy scores of students in a classroom vary according to their common teacher, classroom, and school, HLM is an appropriate approach.

for household nutrition status), whether the student speaks Tetum-Prasa natively, and whether the student has a physical or cognitive⁶⁵ disability. In our first model, we also control for factors which vary at the school level, but only report values at the individual level.⁶⁶

Figure 8 shows results for predictors of literacy at the individual level. Within this figure, the markers represent the effect size between the variable and outcome (e.g., all else held constant, among intervention students, as student age increases by one year, overall literacy scores increase by 1.4 percentage points). The bars represent the confidence interval. Bars which do not overlap with zero represent a significant effect.

We run two regressions, one for intervention students and one for comparison students. In both of these models, we find a positive and significant correlation between overall literacy scores and student gender (all else held constant, female students have significantly higher average literacy scores than male students) and working memory (students with higher working memory scores have significantly higher average literacy scores). Additionally, for intervention students, we find a significant and positive relationship between overall literacy scores and student age (older students have significantly higher average literacy scores) and whether the student reads at home (students who read at home have significantly higher average literacy scores). For comparison students, we also find a significant and positive relationship between whether the student attended preschool and their average literacy score.

Figure 8: Predictors of literacy, individual level



⁶⁵ Cognitive disabilities include difficulties with memory or concentration, communication, and self care.

⁶⁶ We use school fixed effects in the first model. These variables control for any variation which occurs at the school level and which does not change, or changes at a constant rate, over time. This model does not allow us to understand which specific school-level factors predict literacy; however, it is the most robust model available to understand individual-level predictors.

These results are, in general, unsurprising. First, we expect older students to have stronger literacy abilities due to maturation effects – i.e., because older students have had longer to learn. Qualitative interviews reiterated this dynamic, with some respondents stating that young students have more difficulty learning.⁶⁷ Additionally, 27.1% of all students were reported by caregivers to have repeated a grade, and students who repeated grades were significantly older than those who had not. As such, older students may have more familiarity with the material being taught if it is their second time learning it.

Second, in Timor-Leste, female students tend to outperform male students at low grade levels. Third, higher working memory scores imply greater student attentiveness and (tautologically) memory, two aspects correlated with learning.⁶⁸ Fourth, reading at home helps strengthen students' literacy abilities and, vice versa, students are only likely to read at home if they already have some literacy abilities; the two dynamics are thus closely related. Lastly, preschool attendance may strengthen student learning if it provides students with foundational skills needed to succeed in education.

It is notable, however, that we do not find a significant correlation between other variables of interest that we would expect to effect literacy, including students' native language, disability status, caregiver education, student attendance, and proxy measures for household hygiene and nutrition.

Regarding student native language, it is possible that, given low overall student literacy levels, there is insufficient variation in scores at the grade 2 level to capture the difficulties faced by non-native Tetum-Prasa speakers. It is also possible that the impact of student language on learning is captured within the control variables for individual schools, as many schools tend to include students from the same language group (whether Tetum or a minority language); for example, in Oe-cusse, almost all schools contained only minority language speakers. Indeed, we find a significant relationship between school and native language as well as between municipality and native language, suggesting that this may be the case.

Furthermore, qualitative interviews emphasized that student language has a substantial influence over literacy skills and learning. In Ainaro, for example, a mother stated the following:

It's hard because some of them are speaking Bunak. Wherever they go, when they try to read they always make mistakes, because on a daily basis they only speak Bunak. Were they to learn Tetum, wherever they go, they would read without any slip ups.

- FGD with mothers, Ainaro, Int. 25

Respondents from other municipalities, including Ermera and Oe-cusse, echoed this sentiment. In Oe-cusse, for example, a school administrator stated that grades one and two had particular difficulty learning in Portuguese and Tetum, and that teachers sometimes had to use their mother tongue to help students understand.⁶⁹

The result for physical disability is encouraging, as it suggests that students' physical disabilities—in eyesight, hearing, or walking—do not serve as a significant barrier to literacy learning in grade 2. We note, however, that the prevalence of physical disabilities was relatively small within our samples, at only 8.1% of intervention students and 4.9% of comparison students. Furthermore, the small prevalence of physical disabilities may reflect that only a small subset of physically disabled children—those who are most able-bodied or who have the most support from their household or community—are able to attend school, while others are entirely excluded. Overall, despite this promising finding, it remains highly important to ensure

⁶⁷ E.g., KII with administrator, Ainaro, Int. 1; KII with administrator, Manatuto, Int. 7

⁶⁸ We note that cognitive disabilities are also significantly correlated with lower working memory; the cognitive disability variable is not significant in the regression but this may be because of cross-correlation with working memory.

⁶⁹ KII with administrator, Oe-cusse, Int. 10

that students with disabilities are given proper accommodations within classes and are properly included in education.

While we cannot clearly explain the lack of significance of other variables, for access to a toilet and dietary diversity, it is possible that these variables may be captured to some extent through working memory, as we would expect children to be more attentive if healthy and not hungry. Indeed, we find a significant relationship between working memory scores and access to a toilet at home, suggesting that this may play some role in the above results. We also note that while no relationship was found between caregiver education and literacy abilities, a linkage between the two was noted in the qualitative interviews. Indeed, one father explained this dynamic in an FGD:

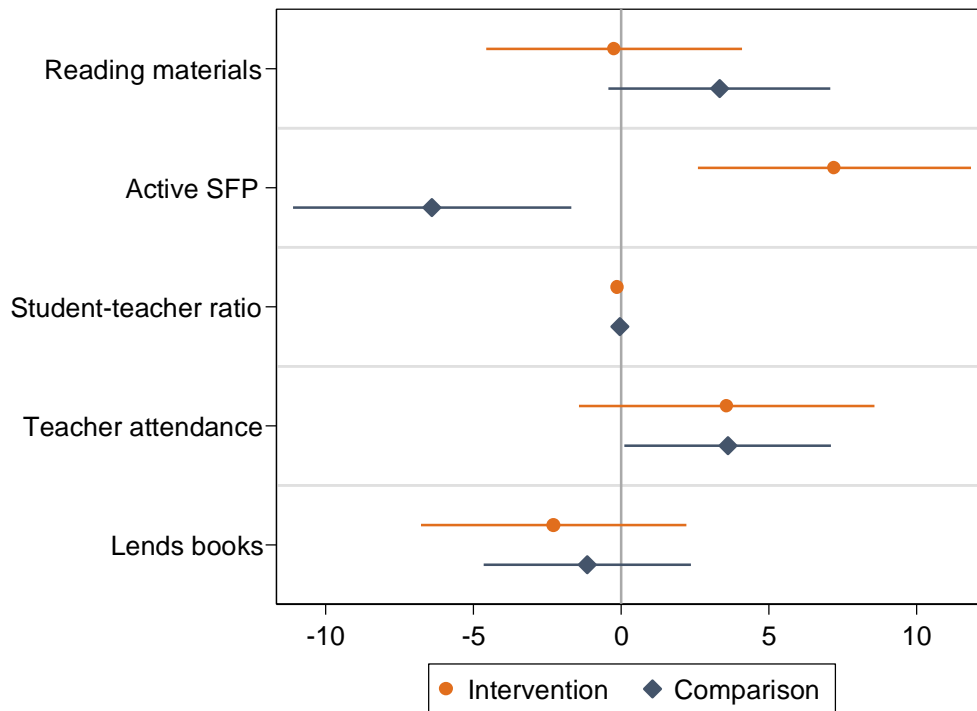
[The teachers] called us to school [and asked], “Why can’t your children read?” We responded to them, “Our children cannot read, that’s why we send them here to learn from you. As parents we cannot read either, so we cannot help them.”

- FGD with fathers, Manatuto, Int. 20

We now turn to predictors at the school level. We include five school-level variables: availability of reading materials, grade 2 student-teacher ratio, whether the school feeding program is active, grade 2 teacher attendance on the day of data collection, and whether the school lends books to students.⁷⁰ Figure 9 shows the regression results. We find that for intervention schools, literacy scores were positively and significantly correlated with whether the school had an active SFP. However, among comparison schools, surprisingly, literacy scores were *negatively* and significantly correlated with whether the school had an active SFP. Additionally, there is a very small but significant negative relationship between student-teacher ratio and overall literacy scores (i.e., students in smaller classes tended to have worse average literacy outcomes) in intervention schools, and a positive and significant relationship between teacher attendance and literacy outcomes in comparison schools. For the former of these findings, we hypothesize that the relationship between student-teacher ratio and literacy outcomes may serve as a proxy for school remoteness, as very remote schools tend to have fewer students and, often, worse learning outcomes.

⁷⁰ We do not include use of engaging teaching practices as this was measured during classroom observations, and may thus not be applicable to all students within the school.

Figure 9: Predictors of literacy, school level



Examining the relationship with SFP activity in more depth, we find that during data collection, most SFPs were not active due to government delays (discussed in more depth in the below section on school feeding programs). Active SFPs were only recorded in Ainaro, Bobonaro, and Manatuto; as such, this variable may serve more as a proxy for learning outcomes in those municipalities than as an indicator of the actual relationship between SFPs and learning. In other words, because few schools provided meals at baseline, these results should not be taken as a definitive measure of the relationship between school feeding and learning.

Overall, this predictive analysis suggests first that student-level demographic characteristics, such as age and gender, have an influence on literacy outcomes. This finding is unsurprising, but is also not addressable by the HATUTAN program (or any program). Of more relevance for the program is the finding that working memory scores were also significantly associated with higher literacy outcomes; as such, student attentiveness appears to have an important effect on learning, and may be influenced through HATUTAN interventions addressing household nutrition as well as school feeding – areas discussed further in subsequent report sections. Lastly, we find potential relationships between SFP activity, teacher attendance, and learning, although results are somewhat inconclusive. This finding suggests that **HATUTAN interventions targeting SFPs and teacher attendance may be particularly effective at improving literacy levels**, as posited in the Theory of Change.

QUALITY OF INSTRUCTION

To enhance students' literacy outcomes, it is critical to consider the quality of instruction. This comprises a range of factors such as teacher attendance, availability of school supplies, access to efficient and effective literacy instruction materials, and the presence of knowledgeable school administrators and teachers who utilize engaging and effective teaching practices. We conducted classroom observations of grade 2 Tetum language classes to assess the quality of instruction. Our data collectors documented if teachers employed engaging or ineffective teaching practices, and if there was any indication of gender bias in teaching practices. Furthermore, we collected data on teacher attendance, the availability of school supplies, and the backgrounds of teachers and school administrators to evaluate the overall quality of instruction.

TEACHING PRACTICES

To understand the variations in teaching practices, it is essential to distinguish between engaging, traditional, and negative teaching practices. Engaging teaching practices have been shown to increase student participation and learning outcomes. These practices include asking open-ended questions, reading to students, calling on inactive students to engage them, using games or exercises, asking students' opinions, having students participate in reading activities with others, having students read by themselves, having students work together in groups, using a reading corner for literacy activities, using the Lafaek magazine in literacy activities, encouraging students, and asking questions to students. Conversely, traditional teaching practices that have been excessively employed in schools throughout Timor-Leste involve having students predominantly copy from the board or repeat after the teacher. Negative teaching practices, including using a harsh tone with students or administering physical punishment, can result in negative emotional and psychological outcomes for students. It is critical for teachers to comprehend the impact of their teaching practices on student learning and to utilize engaging practices while avoiding ineffective and negative ones.

Engaging Teaching Practices

On average, teachers in intervention schools employed 4.4 engaging teaching practices, while their counterparts in comparison schools used 4.8 engaging teaching practices. The results presented in Table 16 indicate that, except for Oe-cusse, there were no significant differences in the mean number of engaging teaching practices across intervention municipalities in the intervention group. However, the distribution of such practices differs substantially. For instance, a large proportion (46.3%) of teachers in Ermera employed a high number (7-9) of engaging teaching practices, whereas the corresponding percentages in Ainaro, Manatuto, and Oe-cusse were 18.5%, 15.8%, and 0%, respectively. Therefore, it is worth noting that this may lead to future difficulties in evaluating the effectiveness of the intervention. For example, since Ermera has much higher levels of the outcome variable at baseline compared to Oe-cusse, it may be difficult to determine whether any changes observed in Ermera municipality are due to the intervention or to other factors that may be unique to that municipality. This can make it difficult to assess the overall impact of the intervention and to identify which aspects of the intervention were most effective.

Table 16: Use of engaging teaching practices in intervention municipalities (% of classrooms)

	Ainaro	Ermera	Manatuto	Oe-cusse
n	27	41	19	20
Average # practices	4.3	5.5	4.8	1.7
Low (0-3)	29.6%	24.4%	26.3%	80.0%
Moderate (4-6)	51.9%	29.3%	57.9%	20.0%
High (7-9)	18.5%	46.3%	15.8%	0.0%

Table 17 presents evidence of diversity in the types of engaging teaching practices employed by teachers in intervention municipalities. Specifically, the frequency of using games and group work is higher among teachers in Ermera and Manatuto as compared to Ainaro and Oe-cusse. In addition, teachers in Ermera tend to have a higher tendency to encourage individual reading and actively seek out student opinions compared to their peers in other municipalities. Nevertheless, teachers from all four municipalities show a similar trend of frequently using read-aloud methods, while the usage of reading corners is observed to be infrequent.

Table 17: Types of engaging teaching practices used in intervention municipalities (% of classrooms)

	Ainaro	Ermera	Manatuto	Oe-cusse
n	27	41	19	20
Students read with others	66.7%	68.3%	63.2%	20.0%
Students read alone	26.0%	63.4%	26.3%	0.0%
Teacher reads aloud	92.6%	85.4%	94.7%	40.0%
Uses reading corner	14.8%	14.6%	10.5%	0.0%
Uses games	37.0%	65.9%	68.4%	40.0%
Uses open-ended questions	77.8%	68.3%	47.4%	20.0%
Solicits opinion	40.7%	60.1%	42.1%	10.0%
Engages students	63.0%	73.2%	68.4%	30.0%
Uses group work	14.8%	51.2%	63.2%	5.0%

Teachers were also observed using the Lafaek magazine in literacy activities, another positive teaching practice that can help students improve their literacy skills. Based on the data, it was found that 12% of teachers in Ainaro, 8% of teachers in Ermera, no teachers in Manatuto, and 10% of teachers in Oe-cusse incorporated this practice. These findings suggest that there is some variation in the use of the Lafaek magazine among the municipalities, which could also have implications for the effectiveness of literacy interventions.

McGovern-Dole Custom Outcome #5 assesses the extent to which teachers implement enhanced learning practices in schools by exhibiting at least four engaging teaching practices during classroom observation.

The findings for Mc-Govern-Dole Custom Outcome #5 are fairly consistent across three municipalities, namely Ainaro (70.4%), Ermera (75.6%), and Manatuto (73.7%). However, the outcome for Oe-cusse is substantially lower, registering at 20%.

Data obtained from focus groups with teachers reveals that there is a strong awareness among them regarding the advantages of employing engaging teaching practices. The majority of teachers acknowledged the significance of incorporating songs, games, and activities to enhance student engagement. Moreover, they emphasized the usefulness of utilizing available resources such as books, local materials, and Lafaek magazines⁷¹. Additionally, some teachers and administrators highlighted the positive impact of group activities, particularly when pairing struggling students with more active peers:

Concerning children who are shy, quiet, and having difficulty learning, we usually place them in groups together with their peers. In the group, kids should learn together at home in order to help them recall the lessons. Before starting lessons the next day, we usually ask them about the homework assigned yesterday.

- FGD with teachers, Oe-cusse, Int. 45

If a child is quiet or shy when learning, we need to place him/her in a group where he/she can benefit, not because he/she doesn't know how to read and write. Instead, we should keep them in mixed groups.

- KII with administrator, Manatuto, Int. 8

Some teachers have provided insight into the correlation between a child's behavior in school and the quality of their relationship with their parents at home:

We have identified children who are quiet and shy in the classroom, and the primary cause is their family background. Parents have authority over their children at home. Secondly, the child's position among siblings in the family, whether they are the second or third child, [plays a role]. We acknowledge that in our culture, parents have special affection towards the firstborn and the youngest child, more so than the other children. I am not aware of the customs in other areas, but this is the customary practice in my locality. Quiet and timid children tend to communicate less and have no close relationships with parents who rarely inquire if they have any problems. Parents use their authority to suppress the children, making it difficult for them to express their desires and thoughts. Consequently, these children carry this mindset from home to school. Therefore, in such situations, teachers should not act as dictators who solely give instructions, but rather serve as second parents to the children at school. The number of students in each classroom is small, allowing us to have control and engage in dialogue with them. We ask questions like, "What's going on? How are you doing? What do you do at home?" We have implemented various measures to encourage them to speak up. We have tried this approach, and its effect has been positive. Children who were previously quiet and shy started to express themselves and engage with their peers. When they sit alone, we approach them and ask, "Hey, why don't you join in and play?" By using this approach, children begin to form relationships with their peers and find it easier to speak up in the classroom. They are no longer silent and can interact with others.

- FGD with teachers, Oe-cusse, Int. 45

⁷¹ FGD with teachers, Ainaro, Int. 37; FGD with teachers, Ermera, Int. 40; FGD with teachers, Manatuto, Int. 44; FGD with teachers, Oe-cusse, Int. 47

Traditional Teaching Practices

In terms of traditional teaching practices, we find no significant difference between intervention and comparison municipalities, with both groups averaging 1.3-1.4 traditional practices. However, there are differences in the types of traditional practices used among intervention municipalities. Over 70% of teachers in Manatuto and Oe-cusse were observed having their students copy from the board and repeat after them, whereas only around 50% of teachers in Ermera were observed doing the same (Table 18).

Table 18: Types of traditional teaching practices used in intervention municipalities (% of classrooms)

	Ainaro	Ermera	Manatuto	Oe-cusse
N	27	41	19	20
Average # of practices	1.3	1.0	1.5	1.6
Students copy from the board	63.0%	51.2%	78.9%	75.0%
Students repeat the teacher	70.4%	51.2%	73.7%	80.0%

Although numerous teachers acknowledged the utilization of engaging teaching practices, they also frequently emphasized the significance of traditional approaches, particularly the necessity of repetition and memorization, alongside a strong emphasis on teaching the alphabet before progressing to syllables and words:

The good methods for children to read was to start with introducing the letters. Once the children have known the letters, the next step would be introducing the syllables. After syllables would be the words.

- FGD with teachers, Oe-cusse, Int. 47

For example, in grade two, before we resume our lesson, we must first remind them how to read. We cannot teach them to read right immediately, but we may teach them to spell letters like A, B, and C, and we must avoid overdoing it since it will be ineffective. To ensure that they comprehend, we must tell them the amount of the letters that make up a word, such as two letters, three letters, and four letters. Students will struggle to understand if we merely follow the materials in the textbook and simply read it.

- FGD with teachers, Manatuto, Int. 44

Several teachers and administrators also brought up the challenges that arise when instructing students in both the Tetum language and Portuguese:

The challenge we faced was the alphabet..., particularly with the first and second year students, we had two alphabets, Portuguese and Tetum alphabets. Portuguese alphabet has its own pronunciation, in which its words or letters were not the same as Tetum.

- FGD with teachers, Ermera, Int. 39

The difficulty is with Tetum language. The students' Portuguese is also hard. Sometimes we read too many letters that sound "K", and then sometimes the letter "C" is read like "K" so they struggle.

- KII with administrator, Oe-cusse, Int. 11

The most difficult aspect of teaching younger children to read, particularly those in grade one, is that they are accustomed to speaking Idate or their mother tongue at home, yet at school they are taught in two official languages, Portuguese and Tetum. They comprehend neither Portuguese nor Tetum, therefore we used their own tongue to explain the lessons and provide examples. This allows them to comprehend what they are being taught.

- FGD with teachers, Manatuto, Int. 43

Negative Teaching Practices

Teachers from both intervention and comparison municipalities tended to use negative teaching practices with similar frequency, averaging around 0.5 negative practices per classroom observation. However, the results reveal that teachers from intervention municipalities tend to use angry voice with their students slightly more than their counterparts in comparison municipalities, with a difference of 0.1 between the two groups. The results from Table 19 further indicate that a larger proportion of teachers in Ainaro and Oe-cusse use angry voice compared to those in Ermera and Manatuto. In contrast, teachers in Ermera use corporal punishment more frequently than those in Ainaro and Manatuto.

Table 19: Types of negative teaching practices used in intervention municipalities (% of classrooms)

	Ainaro	Ermera	Manatuto	Oe-cusse
n	27	41	19	20
Average # of practices	0.32	0.39	0.42	0.6
Teacher uses angry voice	48.1%	24.4%	31.6%	45.0%
Teacher uses corporal punishment	11.1%	14.6%	10.5%	15.0%

In the context of this study, social desirability bias may result in an underestimation of the incidence of disciplinary measures in classrooms. The survey of households found that 33% of respondents reported the use of corporal punishment by teachers, while only 13% of classrooms showed evidence of it. Additionally, 12% of respondents mentioned that teachers use chores as a means of discipline and an equivalent percentage of caregivers expressed concern about their children feeling scared to attend school.

According to Table 20, caregiver perceptions of the use of corporal punishment by teachers in intervention areas are much higher than the percentage of observed corporal punishment reported in the school survey. Notably, a significantly higher percentage of caregivers from Ermera (17%) compared to Ainaro (7%) and Manatuto (4%) reported that their children sometimes feel scared to attend school.

Table 20: Caregiver perceptions of negative teaching practices in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	203	316	136	149
Teacher uses angry voice	37.0%	31.6%	44.9%	44.3%
Teacher uses corporal punishment	26.6%	35.8%	41.2%	30.9%
Teacher assigns chores	9.9%	7.6%	16.2%	18.8%
Student is afraid to attend school	7.4%	17.1%	4.4%	14.1%

In qualitative interviews, school administrators and teachers expressed their awareness of the legal regulations prohibiting the use of corporal punishment in the classroom. Several teachers elaborated on the potential impact of corporal punishment and the use of harsh language on student motivation and participation, particularly among students facing academic challenges. In response, some teachers shared their strategies for classroom management, such as organizing students to reduce noise and disruptions, as well as incorporating games and songs to enhance student engagement during lessons:

We do not use ways like shouting, hitting, but we use other methods through methods that attract their attention, so that they can be calm and make good use of what we teach, through activities such as playing games or singing together.

- KII with administrator, Ainaro, Int. 1

Well, here are our challenges in the classroom. The first challenge is about controlling the students. The little children are too naughty, they don't listen to us, and this is the biggest challenge. With patience, we have tried to improve the attitudes of these little children using various strategies like singing and playing games with them. Another challenge is the fights among the children. Sometimes they pinch each other, and this happens every day. They are very young, so if we don't control our emotions, we easily get stressed. What we can do is be patient with the children. We have tried using different methods, but those methods don't really work for first and second-year students. Only a patient teacher can teach them. It works when the students reach the third year and above; that's when teachers start to enjoy using those methods. With patience, we continue teaching our children, regardless of these challenges. Pinching and anger towards each other are the biggest challenges we face in teaching the little children.

- FGD with teachers, Ermera, Int. 39

Teachers and administrators also highlighted the perceived difficulties associated with managing large class sizes, especially in the early grades, without resorting to violent methods. They consistently emphasized that the young age of students in the early grades presents a significant challenge in classroom management:

As for children in year 1 and year 3, it is very difficult because we, as teachers, face the challenge of shaping them. They come with blank minds, and it is our responsibility to fill them with knowledge. They arrive here without knowing the letters, the numbers, and it is through our teaching methods that we make our best efforts. Sometimes we teach with frustration, sometimes we become frustrated with them

because even the slightest touch can result in yelling. This has been our ongoing challenge year after year. Some teachers or members of the community may say that the teacher is responsible for first-year, second-year, and third-year students, but this is too burdensome for us. From year four onwards, students already know the letters, such as A and B. It is the years 1-3 that weigh heavily on us. We find it difficult and exhausting. Sometimes we encounter failures, like students in years 4 to 5 and above who truly don't know anything. This is what we have experienced.

- FGD with teachers, Ermera, Int. 40

Most of the time, we faced first to third-grade students who were still young and spent a lot of time just having fun. They would often get into fights with each other in the classroom. During our meetings, we discussed the importance of encouraging any misbehaving students so that they could adjust and learn from their well-behaved peers in the classroom. By doing this, they might follow their friends' example and start paying attention to the learning process in the classroom.

- FGD with teachers, Oe-cusse, Int. 46

Numerous parents have also raised apprehensions regarding the conduct of teachers towards children, including the use of corporal punishment and the expression of anger in the classroom:

They [children] are terrified because occasionally the teachers yell at them, get angry with them, or carry a stick, which makes the children fearful.

- FGD with fathers, Ermera, Int. 15

Children were afraid when they saw teachers holding a stick. They wondered, "If I read it wrong, will the teacher hit me?" The way children think differs from that of adults.

- FGD with mothers, Manatuto, Int. 32

The tone of the teacher's voice during the learning process had an impact on the students' behavior. The louder the tone, the more it influenced the child's behavior. Children were unaware that the teacher's voice was their natural voice. Some children would hang their heads in shame upon hearing the teacher's voice. This discouraged their mindset and hindered their ability to think. How can we address this issue in schools, particularly with teachers? What teaching methods should teachers use to educate children, similar to how parents do at home? If we draw a comparison, when parents excessively yell at children at home, it only leads to their ignorance. Consequently, parents might use inappropriate words such as "deaf" or "ignorant" to describe their children. However, the root cause of the problem lies in the excessive yelling.

- FGD with fathers, Oe-cusse, Int. 22

Gender-Specific Differences in Teaching Practices

We now examine whether there are gender differences in teaching practices and whether teachers treat male and female students differently. Table 21 presents the prevalence of various teaching practices in the comparison and intervention municipalities. It is noteworthy that female teachers in the intervention group implement slightly more engaging, traditional, and negative practices on average, while male teachers in the comparison areas use more engaging and traditional practices than their counterparts in the intervention areas. **Generally, male and female teachers exhibit similar frequencies of various practices, except for engaging practices in the intervention group, where female teachers use one more engaging practice on average than male teachers.**

Table 21: Prevalence of different teaching practices, intervention and comparison teachers

	Comparison		Intervention	
	Male teachers	Female teachers	Male teachers	Female teachers
n	41	52	47	56
Engaging practices	4.6	4.9	4.0	5.0
Traditional practices	1.5	1.3	1.3	1.4
Negative practices	0.4	0.5	0.4	0.6

To examine the prevalence of negative teaching behaviors across genders, we analyzed teacher behavior towards boys and girls separately. Our findings reveal that **teachers from intervention municipalities are more likely to use corporal punishment on boys than their counterparts from comparison areas, while the opposite is true for corporal punishment on girls.** However, the use of angry voice with students is almost similar in both intervention and comparison areas, with teachers from comparison areas using it slightly more with girls.

Finally, in order to explore the potential gender differences in teacher-student interactions, we analyzed whether male and female teachers treat their male and female students differently. As indicated in Table 22 **Error! Reference source not found.**, female teachers in comparison schools tend to encourage and ask questions to female students more than to male students, while female teachers in intervention schools ask questions to male students more. Additionally, female teachers in comparison schools use corporal punishment on girls more often than on boys, whereas the opposite is true for female teachers in intervention schools. As for male teachers, both male teachers from comparison and intervention schools tend to encourage boys more. However, male teachers from intervention schools tend to ask questions to female students more and use angry voice slightly more often with female students than with male students, while male teachers from comparison schools do not show such differences.

Table 22: Treatment of male and female students by gender and treatment group of teacher

	Comparison		Intervention	
	Female teachers	Male teachers	Female teachers	Male teachers
n	52	41	56	47
Encourages female students	53.8%	51.2%	50.0%	48.9%
Encourages male students	50.0%	56.1%	42.3%	51.1%
Asks questions to female students	63.5%	70.7%	57.1%	53.2%
Asks questions to male students	55.8%	70.7%	66.1%	46.8%
Uses angry voice with girls	32.7%	24.4%	28.6%	21.3%
Uses angry voice with boys	36.5%	24.4%	39.3%	19.1%
Uses corporal punishment on girls	15.4%	4.9%	5.4%	4.3%
Uses corporal punishment on boys	11.5%	4.9%	16.1%	10.6%

Teachers noted that there are two distinct groups of students who frequently exhibit limited participation in class: girls, often described as "too shy," and students who struggle with reading and may be hesitant to ask questions due to fear. To actively involve these students, teachers employ various strategies such as implementing engaging activities like songs and games to enhance self-confidence, encouraging group work, posing questions directly to them, acknowledging and commending their contributions, and investigating the underlying causes of their disengagement from classroom activities, such as instances of bullying. Notably, teachers' perceptions of student participation are influenced by traditional gender norms, portraying girls as "attentive" and boys as "naughty":

I think there is a difference between girls and boys in their knowledge. I see that girls get the highest marks. We see, we make a comparison, according to our observations, we see that girls are more active and smarter, boys are less so.

- KII with administrator, Manatuto, Int. 8

There are differences between teaching girls and teaching boys. Girls remain quiet, pay attention, and listen when we teach, but boys have problems listening to what the teacher is saying.

- FGD with teachers, Ainaro, 37

In grade two, there is a difference between boys and girls in that one or two females stand out more than the others, and they have a better understanding compared to boys. Boys tend to spend most of their time playing, so when we assign them homework, they tend to study less than girls. This is because they allocate less time to studying and more time to playing, whereas girls dedicate more time to studying, resulting in a better understanding of the lessons than boys.

- FGD with teachers, Manatuto, Int. 44

However, certain teachers also acknowledged the unequal distribution of boys and girls in classrooms, highlighting the disparity in access to education between the two genders. They recognized that girls face barriers that limit their educational opportunities compared to boys:

There is a difference between them due to the higher number of boys than girls in this region. Additionally, I forgot to mention that parents often cite a proverb, stating, "Sending a girl to school is like sending someone else's wife to school, as her education will benefit her future husband and his family." Therefore, I believe there is a distinction between boys and girls because boys demonstrate a stronger desire to attend school, while girls face limited access to education due to the mindset I just mentioned.

- FGD with teachers, Oe-cusse, Int. 45

TEACHER SKILLS AND KNOWLEDGE

In Timor-Leste, where difficult learning environments are common, the quality of instruction is heavily influenced by the educational and skill levels of teachers. Hence, it is of utmost importance to ensure that teachers are given ample opportunities to engage in educational courses and literacy training programs that prioritize practical and experiential learning. These initiatives should incorporate mentoring components and be conducted within the school setting itself. By doing so, we can accelerate the transition process and enhance the competencies and knowledge of teachers, ultimately improving the learning outcomes of students.

Analysis of the school survey data shows that the percentage of teachers who reported attending literacy education training is higher in comparison areas (36%) than in intervention municipalities (34%). The percentage of male and female teachers who had completed a bacharelato or teacher training college program is also higher in the comparison group (76% versus 71% for male teachers, and 69% versus 60% for female teachers). These findings suggest that **there may be differences in the types of educational opportunities available to teachers in different municipalities**. Understanding these differences can help inform efforts to improve teacher education and training in Timor-Leste.

The baseline data indicates that there are significant differences in teacher education and literacy training attendance across the schools in intervention municipalities (Table 23). For example, Manatuto has the highest percentage of teachers who attend literacy training, but it also has the lowest percentage of male and female teachers who have completed a bacharelato or teacher training college program. It is possible that the literacy training in Manatuto is not just a general program, but rather the INFORDEPE-UNTL course that targets contract teachers without a bachelor's degree, serving as an equivalency program. On the other hand, Oe-cusse has one of the lowest attendance rates in terms of literacy training, but it has the highest percentage of male and female teachers with completed bacharelato or teacher training college program degrees. The potential reason for this discrepancy could be due to the fact that the program mostly targeted the areas that are difficult to access in Oe-cusse, while literacy programs generally concentrate on other municipalities.

Table 23: Teacher training and education in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
Attended literacy training	39.2% (n = 14)	28.9% (n = 30)	44.4% (n = 16)	29.1% (n = 16)
Completed bacharelato or teacher training college (male)	79.3% (n = 27)	67.2% (n = 41)	55.2% (n = 19)	81.0% (n = 20)
Completed bacharelato or teacher training college (female)	60.8% (n = 26)	56.9% (n = 41)	52.6% (n = 18)	76.7% (n = 17)

In the qualitative data, teacher absences were frequently attributed to attending trainings. However, it was also acknowledged that these trainings offered valuable opportunities for teachers to gain knowledge and experience:

Well, we have changed our teaching methods in the classroom. We have gained a wealth of experience and knowledge from various training sessions. We have implemented these techniques in our school. We have gradually transitioned from the old teaching methods to the new ones.

- FGD with teachers, Oe-cusse, Int. 47

In my opinion, the teacher needs to have enough experience to be able to teach a class. The experience can come from the trainings they have attended. The trainings were organised by partner organizations and Ministry of Education. With the training, they could teach the children well. It is basically the Ministry responsibility to determine what qualification is required for teaching, whether it is at diploma or bachelor level. But again, personally, I believe that the experiences gained from attending various trainings organized by partner organizations are adequate for teaching children at this school.

- KII with administrator, Ermera, Int. 4

We have attended a number of trainings and have learned new methods, which we have applied in our teaching.

- FGD with teachers, Ainaro, Int. 37

TEACHER ATTENDANCE

In order to improve the quality of education, it is essential that teachers attend classes consistently and frequently. This is important because it ensures that children receive an adequate amount of instruction, and teachers who attend classes regularly may have a better understanding of the requirements and potential of their students. As a result, they can adapt their teaching methods to improve learning outcomes. The school survey collected data on teacher attendance, including the count of permanent, contract, and volunteer teachers at each school, as well as the number of teachers present during the visit and on the previous day.

The data collected during the baseline survey indicated that, **on average, 82% of teachers were present on the day of data collection in comparison schools, while only 75% were present in intervention schools. Additionally, 62% of teachers in comparison schools had attended on the previous day based on school records, while only 50% had attended in intervention schools.** The reason for the

greater number of teachers present on the day data was collected could be attributed to school administrators pushing teachers to attend. The teachers who reside close to the school would have noticed the presence of the vehicle and been prompted to attend. The program has been conducting student and teacher headcounts consistently for the past 3.5 years, and in some instances, reported absenteeism to local authorities. Additionally, in remote areas, the enumerators would have arrived the previous day and stayed overnight, and the schools were already aware that headcounts were carried out each time the enumerators came due to the program's monitoring processes. The survey also recorded headcounts for grade 2 teachers, and the results showed that, on average, 83% of grade 2 teachers were present on the day of data collection in both comparison and intervention schools.

When comparing different intervention municipalities, there were notable differences in teacher attendance rates. First, teacher attendance on the day of the survey was significantly greater than on the day before the survey in all intervention municipalities. Second, Oe-cusse differed from other intervention municipalities, with a much higher difference between teacher attendance on the day of the survey and on the day before the survey. The average difference between teacher attendance on these two days in other intervention municipalities was 20%; the same difference in Oe-cusse was 42%. **This finding suggests that teacher attendance may be a challenge in some intervention municipalities and highlights the need for targeted interventions to improve attendance rates.**

Table 24: Teacher attendance in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	27	41	19	20
Teacher attendance: day of survey	79.2%	72.2%	84.6%	64.6%
Teacher attendance: day before survey	54.9%	50.4%	71.0%	22.4%

Upon further analysis, we find that the contrast in teacher attendance rates between intervention and comparison schools can be linked to teacher trainings and teachers taking leaves. More intervention schools reported grade 1 or grade 2 teachers attending trainings or being on leave. Additionally, when examining different intervention municipalities, it was found that a substantial proportion of schools in Ainaro (about 30%) and Ermera (approximately 24%) reported teacher absences due to leave on the day of data collection, as indicated in Table 25.

Table 25: Reasons for teacher absence in intervention and comparison municipalities (% of schools)

	Teachers on leave	Teachers attending training
Municipality (intervention)		
Ainaro	29.6%	0.0%
Ermera	24.4%	9.8%
Manatuto	10.5%	10.5%
Oe-cusse	15.0%	5.0%
Average (intervention)	21.5%	6.5%

	Teachers on leave	Teachers attending training
Municipality (comparison)		
Aileu	9.1%	0.0%
Bobonaro	12.9%	0.0%
Covalima	21.1%	5.3%
Manufahi	14.3%	0.0%
Average (comparison)	14.0%	1.1%

The McGovern-Dole Custom Outcome #6 for teacher attendance reveals that only about 12% of intervention schools achieved the outcome of having at least 80% of teachers present on both the day of data collection and the prior day at the baseline, while the outcome for comparison schools was 26%. Additional analysis indicates that Manatuto is the only intervention municipality that performed better than the average for the intervention municipalities in terms of the McGovern-Dole Custom Outcome #6. Although the average outcome for the intervention municipalities was 12%, Manatuto achieved a result of 21%.

Qualitative data indicates that teacher attendance is significantly influenced by trainings:

It is clear that the impact [of trainings] is there, but we also cannot avoid this kind of situation, because last year there were a lot of training programs from INFORDEPE.

And like it or not they [teachers] have to attend the trainings. And of course our students will get the impact, but the teachers will find ways to keep teaching their students so they can get something.

- KII with administrator, Ainaro, Int. 1

Yes, last year many teachers attended graduate training program from INFORDEPE and UNTL, therefore the teachers were only teaching on Monday to Wednesday. As the training location is far from school location, the coordinator permitted the teachers to travel from Thursday to be able to attend the training on Friday and Saturday. We admit that there were no classes for the first year to second year [students] during our training days. In [school name], there is parallel class from [central school name] for three classes, seventh- and eight-year classes, so the responsible teachers tried to look after our classes during our absence. We did not abandon the class for our private business, but it was for the school and organised by INFORDEPE.

- KII with administrator, Ermera, Int. 4

It affected [our children] because they did not have teachers to teach them. Their teachers were away for training. We felt sorry for our children.

- FGD with fathers, Manatuto, Int. 20

According to the respondents, PTAs in certain locations are said to be actively monitoring cases of teacher absenteeism:

The PTA has done several things at this school, within a week the PTA holds a meeting with the teachers, they control the presence of the teachers to find out where the teachers are, if the teachers are not present at school, where do they go? What purpose did he go for? Then they also control the school area, control and assist

school guards, also control the attendance of students, they [PTA] always do these things.

- KII with administrator, Oe-cusse, Int. 9

Several respondents also acknowledged the negative impact of teacher trainings on education, as teachers are unable to be present in the classroom during these sessions. Consequently, they have devised strategies to address this issue:

When [teachers] receive a letter instructing them to attend training, I as a coordinator, will replace them in their classes from Grade 1 to Grade 6 and from Cycle 1 to Cycle 2, but only in general subjects.

- KII with administrator, Ermera, Int. 3

Regarding teachers attending training, absences, and leave, we have makeup classes every Saturday that teachers have to do. Last year teachers [names], four of them attended the courses on Monday and Tuesday, they teach normal classes on Wednesday, Thursday, and Friday, and on Saturday they should re-cover their absences including their sick leaves.

- KII with administrator, Manatuto, Int. 7

Here, when our teachers go to attend trainings, it doesn't cause us problems, because they have to go to the trainings, for instance, the science trainings and others. When their classes are empty, we fill in.

- KII with administrator, Oe-cusse, Int. 11

Nonetheless, when students become aware that certain teachers will be absent due to trainings, they also tend to skip their classes:

...most of us went to the training. Therefore, there were no classes on Friday and Saturday. The impact was that children were not coming to class as there was no teacher. Some children came to class. However, they did not focus on studying as the classroom teacher was not available but was attending training. Again, most of us went to the training, so the children did not really come to class.

- KII with administrator, Ermera, Int. 4

They mostly go for training, so children spend more time playing. Once they come back to teach, most children do not really engage in learning other than playing. Children even prefer to stay at home playing rather than going to school.

- FGD with mothers, Ermera, Int. 28

For instance, what do children do if there is no teacher? Children do not have to go [to school] then. Parents will inform their children that teachers are on leave for training so there is no class.

- FGD with mothers, Oe-cusse, Int. 36

LITERACY INSTRUCTION MATERIALS

Access to adequate literacy instruction materials is a crucial factor in ensuring the quality of education as it allows teachers to access resources that can enhance classroom activities and improve students' learning. In order to evaluate this, the school survey examined whether grade 2 classrooms had appropriate reading materials and a reading corner suitable for second-grade students. We find that only 23% of grade 2 classrooms in comparison areas had a reading corner, while 38% had suitable reading materials. In contrast, 51% of grade 2 classrooms in intervention areas had a reading corner and suitable reading materials. Moreover, **the percentage of grade 2 classrooms in comparison areas with both a reading corner and reading materials was only 19%, while the corresponding outcome for intervention schools was 44%.**

Apart from Oe-cusse, access to literacy instruction materials in intervention municipalities was found to be fairly consistent, with the highest percentage of schools having reading corners and suitable reading materials located in the municipality of Manatuto. However, in terms of schools having both reading corners and reading materials, the municipality with the highest percentage was Ainaro, as shown in Table 26. A noteworthy point is that Ainaro, Manatuto, and Ermera were all municipalities that participated in HATUTAN I. Therefore, it is not surprising that the quantity of reading corners and materials is significantly higher in these municipalities compared to Oe-cusse.

Table 26: Access to reading corner and reading materials in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	27	41	19	20
Reading corner	63.0%	61.0%	63.2%	0.0%
Reading materials	66.7%	56.1%	68.4%	0.0%
Reading corner and materials	63.0%	51.2%	47.4%	0.0%

In accordance with McGovern-Dole Custom Outcome #7, the percentage of schools with age-appropriate reading materials in classrooms was measured. The findings revealed that the outcome for intervention schools was 51%, while comparison schools had an outcome of 38%.

Within the household survey, we surveyed caregivers to explore their perceptions of their children's access to reading materials at school. **The results showed that 73% of caregivers in comparison areas reported that their children had enough books at school, while the number for intervention group is 78%.** However, it should be noted that only a small percentage of caregivers identified "no reading materials at school" as a challenge affecting their child's ability to learn to read. This indicates that many caregivers may not be fully aware of the number of literacy materials available at their children's schools, or they may not perceive the inadequacy of literacy materials at school as a problem.

Regarding the availability of reading materials in households, the data shows that 60% of households in intervention municipalities and 45% of households in comparison municipalities have children's books or magazines at home. Notably, Manatuto stands out with 71% of households having such reading materials available. Furthermore, the survey reveals that a high percentage of households in both intervention (95%) and comparison (93%) municipalities report their children receiving Lafaek magazine, as indicated in Table 22.

Table 27: Availability of reading materials at home in intervention and comparison municipalities

	Availability of books at home	Child receives Lafaek magazine
Municipality (intervention)		
Ainaro	55.0%	95.5%
Ermera	53.6%	95.8%
Manatuto	71.3%	94.8%
Oe-cusse	66.2%	94.6%
Average (intervention)	59.5%	95.4%
Municipality (comparison)		
Aileu	46.5%	90.7%
Bobonaro	39.1%	91.1%
Covalima	36.4%	93.2%
Manufahi	71.3%	98.0%
Average (comparison)	45.4%	93.0%

Additionally, the study collected data on schools' practice of lending story books to students to take home. At baseline, 75% of schools in the intervention municipalities were lending books to students, while the corresponding figure for schools in the comparison group was only 53%. Table 28 displays that Oe-cusse is the sole intervention municipality where the proportion of schools that permit students to borrow books for home use is below 50%. The most common reasons cited by schools for not lending books were concerns about students being careless or losing the books, and insufficient availability of books. Similarly, the household survey found that 75% of caregivers in the intervention group and 55% of caregivers in the comparison group reported that their child's school was lending books to students. Again, the most common reasons cited by caregivers for not lending books were concerns about students being careless or losing the books, and insufficient availability of books.

Table 28: Percentage of schools allowing students to borrow books for home use in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	26	41	19	20
School lends books	80.8%	78.0%	89.5%	45.0%

Teachers and coordinators identified the limited accessibility of reading materials as a notable concern. Interestingly, the utilization of reading corners was not brought up during the qualitative interviews. Instead, teachers consistently referred to Lafaek magazine as the teaching resource that facilitates reading activities within the school:

We used the contents of the magazine distributed by HATUTAN in the school. We used it to teach the children. We have to use the magazine because it helps us to ||

teach and the children can also read it. We do this because there are no textbooks for the Grade 4.

- FGD with teachers, Ainaro, Int. 37

The question concerns the usage of the Lafaek ba Manorin magazine in teaching students, so I answer yes. I am very thankful because I observed that all disciplines and knowledge helped us a lot. As a teacher for Grades 1, 2 and 3, I noted that the magazine starts with the alphabet and how to write the alphabet in lowercase and uppercase. Then how to read the Portuguese and Tetum alphabets. The magazine also talks about the numbers mentioned. So, we found this easy to apply in teaching children in Grades 1, 2 and 3, and it helped us a lot because the magazine contents did not deviate from the lesson plans set out by the Ministry of Education. Therefore, it is easy for us to teach the students, not only in terms of the alphabet but also pictures that the children quickly grasp the meaning of the words and make it easier for them to learn.

- FGD with teachers, Oe-cusse, Int. 45

Since the Lafaek magazine comes during free time, for example on Saturdays, after the Saturday activities, all students can see and read the magazine. So when it comes to concentrating on making lesson plans or reading thick curriculum books, the magazine is an aid so that we can see the contents such as social science and math. The readers can see that sometimes the content is not in line with the curriculum, but the explanations in the Lafaek magazine are more in-depth, and this is good because we can compare it with the big curriculum book.

- KII with administrator, Ermera, Int. 3

It is relevant since Lafaek has lesson plans that are comparable to ours. Lafaek may be used as a substitute source of information when we can't locate the books we need in the library because its contents are fairly thorough, including social science and history... Lafaek is also employed in the classroom. In the absence of textbooks, we utilize Lafaek for studying.

- FGD with teachers, Manatuto, Int. 44

Regarding book lending, several participants expressed reservations about lending books to students. This hesitation stemmed from either a shortage of available books or concerns over students failing to return the borrowed books, often returning them in damaged or torn condition:

They simply look at the pictures and then tear them [books] apart, and sometimes they don't even take [books] home because they get torn apart on the way home.

- FGD with teachers, Ainaro, Int. 37

The books we share with students are sometimes lost or torn.

- KII with administrator, Manatuto, Int. 7

The Lafaek magazine was the only book I lent. When the Lafaek magazine arrives, we quickly distribute it to the children, who take the books home. As for the textbooks, we are concerned that the children have not improved their behavior yet, as my colleague mentioned earlier. For instance, the students in grades one and two were given Lafaek magazines to take home, and when we asked them about the book the next day, they said, "Mine is torn apart." That's why we don't lend out additional

books. We only distribute them in class, and we make sure everything is in order before leaving.

- FGD with teachers, Oe-cusse, Int. 45

To address this issue, we occasionally inquire about their books, and they respond, "Teacher, mine is completely torn." Then I ask, "Can you bring back a small piece of it here?" They check but don't find anything. Should we ask them to pay? But what can they give? Now they suggest compensating with money, but where do we search for it? Only the producer can do that. We can't go looking for it. For us, in a situation like this, we simply let it go and make a note in our observations to indicate it's lost.

- FGD with teachers, Ermera, Int. 40

PREDICTORS OF ENGAGING TEACHING PRACTICES

We utilize a linear regression model to examine the factors that predict the use of engaging teaching practices. The dependent variable is the number of engaging teaching practices observed during classroom observations, with a maximum score of nine. The independent variables include teacher gender, education level, experience, class size, availability of reading materials, presence of electricity, presence of a PTA, and coaching provided by the director. The results of the regression analysis for baseline data are presented in Table 29.

We find that at baseline, teacher gender was a significant predictor of engaging teaching practices. Holding all else constant, female teachers were found to use 0.8 more engaging teaching practices than male teachers, on average. We find no other significant predictors of the use of engaging teaching practices.

Table 29: Predictors of engaging teaching practices

	Coefficient	Standard Error	P-value
n	196		
Gender	0.80	0.31	0.04*
Education	0.02	0.25	0.94
Experience	0.06	0.04	0.12
Class size	0.01	0.01	0.38
Electricity	-0.21	0.53	0.70
Reading materials	1.33	0.57	0.05
PTA	-0.51	0.56	0.39
Coaching	-0.16	0.51	0.76

Note from the program: While female teachers are more likely to be using engaging teaching practices, they are also disproportionately more likely to use physical and verbal violence in class, as noted in Table 22 above.

STUDENT ATTENTIVENESS

This section analyzes student attentiveness, highlighted in the log frame as a factor that may influence student literacy. We begin by analyzing self-reported and observed student attentiveness. We then analyze working memory as a proxy measure for attentiveness, followed by a brief discussion of student hunger and its impact on attentiveness. Lastly, we conduct a predictive analysis to better understand factors which influence student attentiveness.

ATTENTIVENESS

We first utilize two indicators to measure attentiveness: a self-reported measure, where students were asked if they felt they were able to pay attention in class, and observed student attentiveness, where enumerators observed ten students during classroom observations and reported how many are paying attention. The former of these measures is likely to over-report attentiveness, as it is subject to social desirability bias. In contrast, while the second measure is not prone to this type of bias, it represents only a snapshot of student attentiveness in one class and at one point in time. It may therefore also be reflective of engaging teaching practices or other dynamics, rather than solely a measure of attentiveness. Regardless, the two measures, combined with working memory (discussed below), provide validating information to triangulate findings.

The below table shows results for these two measures by municipality and treatment group. For self-reported student attentiveness, as expected, we find very high values, with 91.8% of intervention students and 91.9% of comparison students stating that they could pay attention in class. There were no significant differences across intervention and comparison groups, although results did vary by municipality; specifically, Oe-cusse and Manatuto had the lowest self-reported attentiveness rates, at 85.5% and 87.5% respectively, while comparison municipality Manufahi had the highest rate, 97.0%. We find no significant differences between female and male students' self-reported attention in class.

Table 30: Self-reported and observed student attentiveness, by municipality and treatment group

	Self-reported attentiveness	Observed attentiveness
Municipality (intervention)		
Ainaro	92.6%	6.1
Ermera	96.1%	5.5
Manatuto	87.5%	5.7
Oe-cusse	85.5%	4.6
Average (intervention)	91.8%	5.5
Municipality (comparison)		
Aileu	87.6%	5.7
Bobonaro	92.4%	4.4
Covalima	89.5%	5.1
Manufahi	97.0%	4.8
Average (comparison)	91.9%	4.9

Looking at observed student attentiveness, we first note that this measurement fell substantially below self-reported attentiveness, as expected due to social desirability bias. We also find a greater (though not significant) difference in results between intervention and comparison schools, with an average of 5.5 students observed paying attention in intervention schools and only 4.9 in comparison schools. While sample size for individual municipalities is low, we also note that the lowest attentiveness rates were observed in Bobonaro and Oe-cusse, while the highest was observed in Ainaro – one of few municipalities where schools reported serving school meals.

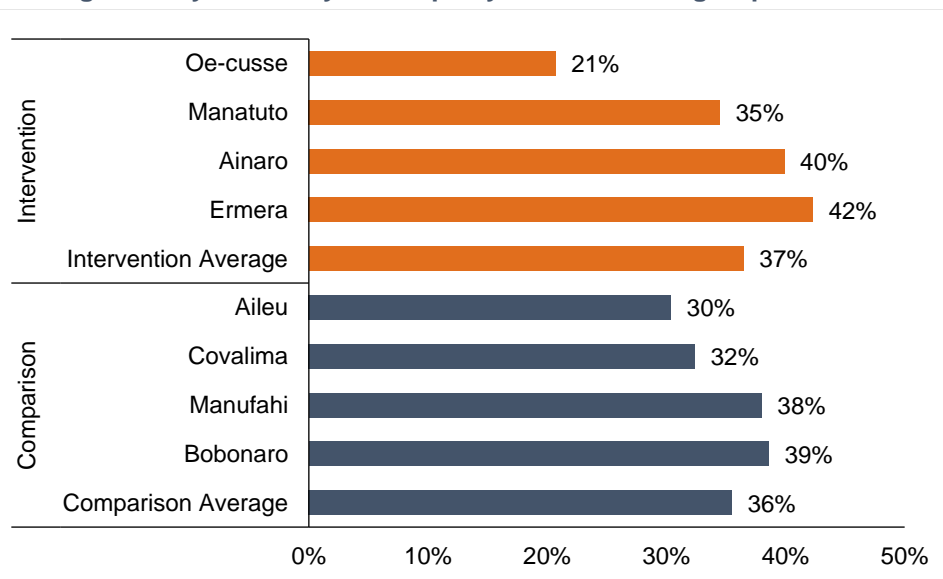
Given the large gap between these findings—with very high self-reported attentiveness rates and much more modest observed rates—we now analyze working memory to validate results.

WORKING MEMORY

Working memory was assessed using a pictorial test; students were shown and read the names of 19 images, and shortly thereafter were asked to name as many images as they could remember without looking at the pictures. Scores were then calculated as a percentage out of 100. Working memory score is used as a proxy measure as it is thought to depend on student attentiveness and is a more objective and direct measure than observed or self-reported attentiveness. However, we note that working memory may also be influenced by non-attentiveness-related factors, such as short-term memory. As such, this measure, as with those above, should not be taken as a definitive indicator of attentiveness.

Figure 10 shows average working memory scores by municipality and treatment group. First, we find that working memory scores align more closely with observed attentiveness, rather than self-reported attentiveness, suggesting this first measurement may provide a more accurate picture of attentiveness. Second, we find very similar average working memory scores by treatment group, at 36.5% for intervention students and 35.5% for comparison students.

Figure 10: Working memory scores by municipality and treatment group



This similarity, however, belies substantial differences by municipality. We find a significantly lower average working memory score in Oe-cusse, 20.7%, than in other municipalities. This is not driven by a large percentage of students scoring 0%, which would imply lack of participation in the exercise⁷²—indeed, only 5.8% of students in Oe-cusse scored 0%, slightly but not significantly higher than the percentage of students

⁷² As we do not expect students to be unable to recall *any* of the 19 images they were shown less than a minute prior.

in other municipalities scoring 0%. Instead, Oe-cusse’s average working memory score is due to a high percentage of students (71.8%) who could remember only 5 or fewer images. In other words, these results suggest that **student attentiveness, as measured by working memory, is likely significantly lower in Oe-cusse than other municipalities.**

As working memory score may be influenced by other factors discussed above, to check the robustness of the above results, we include several control variables in our analysis, including students’ overall EGRA scores,⁷³ gender, age, whether the caregiver reported that the student has difficulty with memory, and caregiver consumption of protein-rich foods.⁷⁴ When these control variables are included, we still find no significant differences between average working memory in intervention and comparison municipalities and significantly lower scores in Oe-cusse.

Lastly, the percent of students with a working memory score above 50% was identified as a key indicator to track for program performance. The below table shows achievement of this standard by municipality, treatment group, and student gender. We find higher, though not significantly so, achievement of this standard among intervention students than comparison students, and no significant differences by gender. Oe-cusse again underperforms other municipalities, with only 4.7% of students achieving this standard.

Table 31: Percent of students with working memory score above 50%

Municipality (intervention)	Working memory above 50%
Ainaro	27.6%
Ermera	35.7%
Manatuto	17.9%
Oe-cusse	4.7%
Average (intervention)	25.0%
Municipality (comparison)	
Aileu	13.3%
Bobonaro	26.7%
Covalima	13.0%
Manufahi	20.5%
Average (comparison)	19.7%
Student gender	
Female	22.0%
Male	23.6%

⁷³ We note the relationship between working memory and EGRA scores may operate in both directions. In other words, low EGRA scores may be related, in part, to intelligence, which may also affect working memory. However, students’ ability to remember—and thus perform well on the working memory test—may also affect their performance in school. Regardless of this directional issue, including EGRA scores in some regression specifications allows us to control, at least in part, for inherent student capacity factors unrelated to attentiveness that may still affect working memory.

⁷⁴ We note that this may, at least in part, also be a measure of student attentiveness. However, it may also capture student disabilities which affect memory and concentration, such as Attention Deficit Disorder or other related disabilities, and is thus useful to include in some regression specifications.

Qualitative interviews provide further information to triangulate the above findings. In interviews, many respondents emphasized that attentiveness was a challenge. For example, an administrator in Oe-cusse stated that “the most difficult problem is teaching children who are not paying attention... Nothing will make sense to these children.”⁷⁵ Respondents identified a variety of reasons for this challenge. In Ermera, a father stated that large class sizes were detrimental to attentiveness, especially for students who had difficulty concentrating:

Sometimes in the classroom there are so many students, not in accordance with the [recommended] standard... Therefore, disorganization occurs. So, their attention to the teacher isn't quite there... [students] who are listless sometimes can't cope.

- FGD with fathers, Ermera, Int. 16

Another respondent stated that distractions like music or activities in communities neighboring schools could reduce student attentiveness.⁷⁶

Teachers described a variety of practices used to improve student attentiveness during class, as discussed more in the above section *Quality of Instruction*. Positive practices included entertaining or amusing students, encouraging students to follow the example of their attentive peers, playing games, and moving around the classroom.⁷⁷ However, teachers also described the use of negative and abusive behaviors, including hitting children or yelling at them. In some cases, teachers also did not seem to understand why these behaviors were negative. A teacher in Ainaro, for example, stated that prohibition of corporal punishment was detrimental: “Because hitting, pinching ears, and punishing are prohibited, children can do whatever they want. We make them pay attention by shouting without touching them.”⁷⁸ As discussed above, this emphasizes that teachers may believe that corporal punishment and other negative behaviors have a positive effect on attentiveness, which may drive continued use of these behaviors.

STUDENT HUNGER

We now examine student hunger, a factor expected to affect student attentiveness and of direct relevance to HATUTAN II program activities. Indeed, in an interview, a school administrator stated that during the previous year he saw that “school meals can improve the children’s ability, intellect, and attention to the lessons they are given.”⁷⁹ We note that detailed analysis of foods eaten by students is included in the section *Health and Nutrition*. In this section, we only analyze the percent of students who reported eating on the day of the EGRA and the percent of households that report food scarcity.

The below table shows results for these two indicators of student hunger. We find that a high percentage of students—around 85% in intervention schools—stated that they had eaten something that day (McGovern-Dole Custom Outcome #13). The frequency with which students reported having eaten was slightly, but not significantly, higher for intervention schools than comparison schools, and was highest in the intervention municipalities Ainaro and Ermera. Additionally, we find no significant or substantial differences by gender in the frequency with which students reported eating; in other words, male and female students reported having eaten on the day of the EGRA at very similar rates.

To further understand the potential impact of HATUTAN II on student hunger, we test whether there was a link between whether a student ate on the day of the EGRA and whether the school was providing meals. We find a positive relationship between school meals and whether the student had eaten the day of the

⁷⁵ KII with administrator, Oe-cusse, Int. 10

⁷⁶ FGD with fathers, Oe-cusse, Int. 23

⁷⁷ E.g., FGD with teachers, Ainaro, Int. 37; FGD with teachers, Ermera, Int. 39

⁷⁸ FGD with teachers, Ainaro, Int. 37

⁷⁹ KII with administrator, Ermera, Int. 3

EGRA—students in school meals were 4.7 percentage points more likely to report having eaten—but this relationship is not significant. This may be due to a low prevalence of school feeding at baseline, discussed more in the section *School Feeding Program*.

Table 32: Student hunger by municipality and treatment group

	Ate on day of EGRA	Household went without food
Municipality (intervention)		
Ainaro	86.8%	14.0%
Ermera	86.9%	11.6%
Manatuto	81.7%	9.9%
Oe-cusse	81.2%	18.1%
Average (intervention)	84.9%	12.9%
Municipality (comparison)		
Aileu	81.0%	9.3%
Bobonaro	81.8%	10.2%
Covalima	78.3%	16.3%
Manufahi	82.1%	6.8%
Average (comparison)	81.0%	10.5%

Looking now at household-level indicators of student hunger, within the household survey, respondents were asked whether there was a time during the past 30 days when they or others in their household had gone without food. Overall, the majority of households reported that they had not gone without food during the past 30 days. However, we find that household food insecurity was higher, though not significantly so, among intervention households. This was driven by relatively high levels of food insecurity in Oe-cusse, where 18% of households reported that they had gone without food during the past 30 days.

Overall, these results suggest that student hunger may have an impact on attentiveness, but that the majority of students eat on school days and do not come from acutely food insecure households. We note, however, that this analysis does not include the quality of the diet eaten by students; even if students eat during school days, if the food eaten is very low quality (or not very caloric), students may rapidly feel hungry again afterwards. This dynamic is explored more in *Health and Nutrition*.

PREDICTORS OF STUDENT ATTENTIVENESS

This section analyzes the relationship between various student-, household-, and school-level characteristics and student attentiveness. As the above analysis suggests that self-reported attentiveness is overestimated due to social desirability bias, we focus on predictors of working memory. We also utilize observed attentiveness in order to better understand predictors at the school level. Our analysis focuses mainly on the links between student hunger, teaching quality, and attentiveness as main areas of interest for HATUTAN.

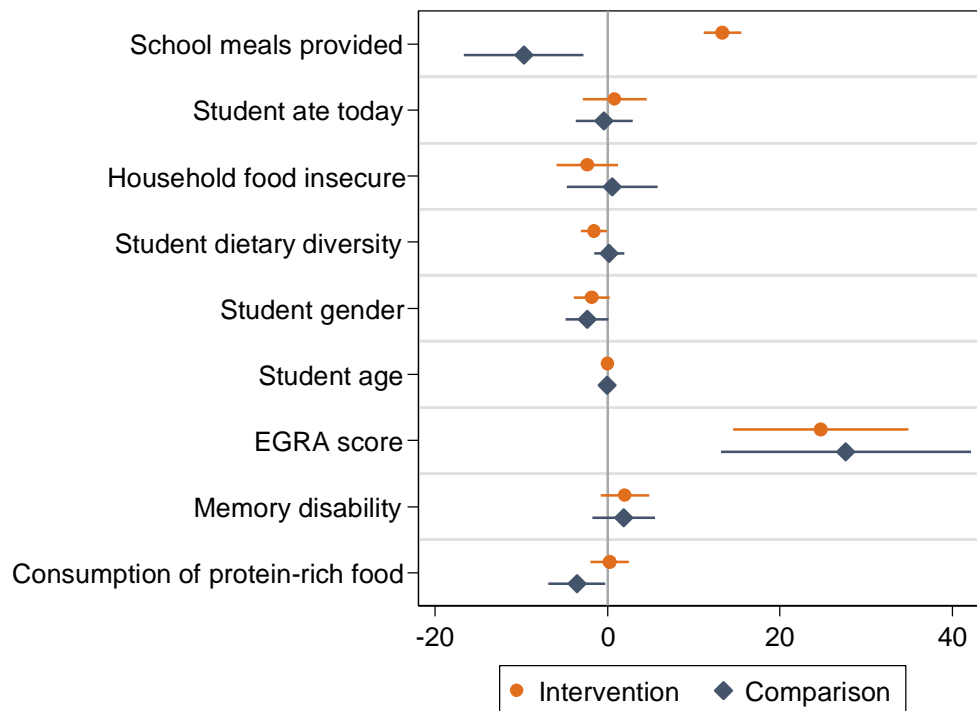
Predictors of Working Memory

In the above analysis, we hypothesized that working memory may be affected by student intelligence as measured by overall EGRA scores, gender, age, and whether the caregiver reported that the student has

difficulty with memory. As such, we include these four predictors in our analysis. We also include indicators of student hunger, including whether the school served meals the day of the EGRA, whether the student had eaten on the day of the EGRA, whether the student's household experiences food insecurity, and the quality of the student's diet.⁸⁰ We also include school fixed effects to control for variables which vary at the school level.

Figure 11 shows predictors of working memory. Among intervention students, we find a significant and positive correlation between whether the school provided meals and working memory; students' working memory scores were 13.3 percentage points higher in intervention schools that provided meals, all else held constant. However, for comparison schools, the relationship becomes negative and remains significant. We can only speculate about the reason for this; however, we note that school meals were only provided in 11 schools in Ainaro, five schools in Manatuto, and one school in Bobonaro. As such, the result for comparison areas should not be taken as definitive given low sample size, and the overall relationship may be related more to the finding that working memory scores were higher in intervention municipalities than in comparison municipalities.

Figure 11: Predictors of working memory



One other indicator of student hunger has a surprising relationship with attentiveness: We find that for comparison areas, caregiver consumption of protein-rich foods has a significant and negative correlation with student attentiveness. The reason for this is unclear, as we would expect that consumption of protein-rich foods would correlate with higher dietary quality and thus potentially better student attentiveness. It may be that our measurement of caregiver consumption of protein-rich foods does not extend to students; in other words, protein-rich foods may only be consumed by adults in a household, and not given to children.

⁸⁰ i.e., student dietary diversity score, discussed more in *Health and Nutrition*. This variable is only included in the endline-specific analysis as data on students' diets was collected for the first time at endline.

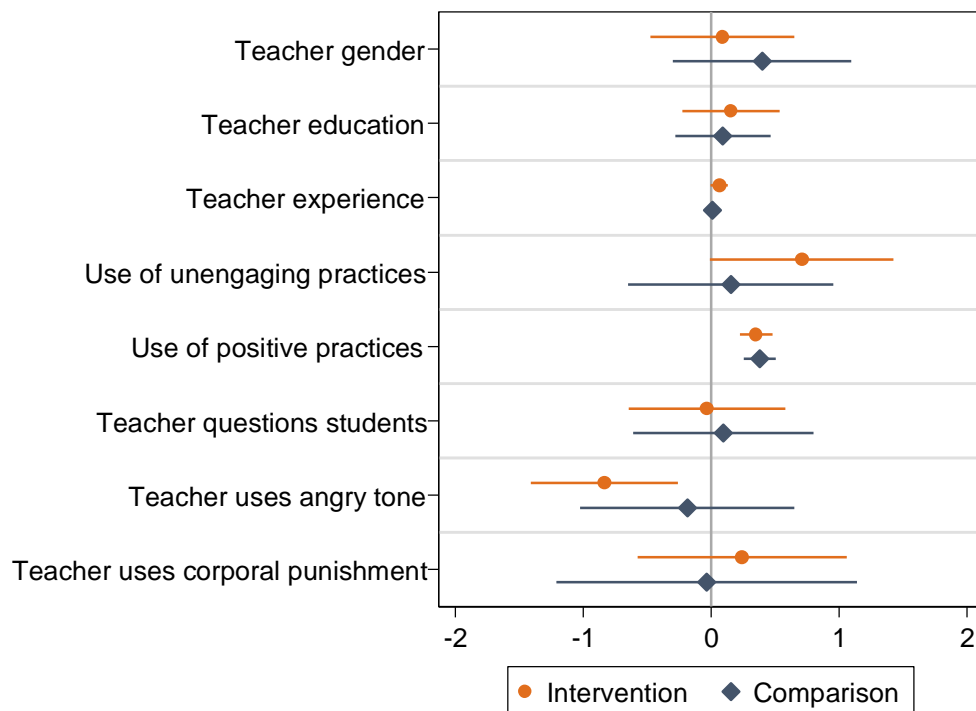
Additionally, we find a strong and significant positive relationship between EGRA scores and working memory. This result is unsurprising; we would expect students with better memory and better attentiveness to, on average, have better learning outcomes.

Predictors of Observed Attentiveness

We now turn to classroom-level predictors of observed attentiveness. Figure 12 shows results of the analysis including eight predictive variables: teacher gender, education, and experience; the use of unengaging teaching practices, including copying from the board and repeating after the teacher; the number of positive teaching practices used;⁸¹ whether the teacher asked questions to students; whether the teacher used an angry tone with students; and whether the teacher used corporal punishment.

We find only two significant predictors.⁸² First, the number of positive practices used is significantly correlated with higher student attentiveness. This finding reiterates the importance of the quality of instruction, discussed in the previous section.

Figure 12: Predictors of observed attentiveness



Second, in intervention schools, we find a significant and negative relationship between teachers' use of an angry tone towards students and observed attentiveness: Use of an angry tone was associated with an 8.4 percentage point decrease in the number of students observed paying attention, all else held constant. While teachers may perceive the use of angry tones as necessary to ensure that students are listening in class, it appears the opposite may actually be the case, with harsh tones serving to disengage students from class. Informing teachers of this relationship may help discourage the use of this negative practice,

⁸¹ Including group or solo reading activities, the teacher reading aloud, the teaching using the reading corner or Lafaek magazine, the teacher using participatory games or exercises, the teacher asking open questions or for students' opinion, the teacher engaging students who are not participating, and group work.

⁸² In intervention areas, the use of unengaging teaching practices had a p-value slightly above 0.05, and was thus not significant.

which may not only decrease attentiveness but may also harm students' mental wellbeing and feeling of safety in schools.

STUDENT ATTENDANCE

In this section we analyze student attendance. Headline indicators of student attendance, including attendance rates, dropout rates, and reasons for missing school, will be analyzed initially. This will be followed by a focus on health-related absences, as this is a McGovern Dole custom indicator. Finally, factors that may affect attendance are analyzed, from both individual and school perspectives.

Student attendance is highlighted in the results framework as a factor that may affect literacy scores. The program is expected to influence student attendance in a number of ways. Improved management of the school feeding program and consequent improved school feeding could act as a pull factor for students attending the school and also lower dropout rates. The norm change aspects of HATUTAN II, especially those targeting gender inequality and other harmful practices, could also result in a better environment for students and therefore higher attendance.

STUDENT ATTENDANCE

The overall attendance rate for grade 2 is reported in the table below. Attendance rate is calculated as the total number of students observed in a class divided by the total number of students recorded as being enrolled. This analysis excluded classes that recorded a higher number of students attending class than were enrolled in those classes.⁸³ As shown in this table, **average attendance rates for intervention schools are significantly lower than average attendance rates for comparison schools.**

Table 33: Attendance rates

Grade 2	Intervention	Comparison	Diff.	P-value
n	86	78		
Attendance rate	62%	72%	10	0.01*

In order to gain a more in-depth perspective about attendance rates, we disaggregate attendance by gender. In intervention schools, girls have a slightly higher average attendance rate than boys (63% and 62%, respectively), that, when compared, did not reveal a statistically significant difference. In comparison schools, girls have an average attendance rate of 72%, while boys have an attendance rate of 70%, with the difference not being statistically significant. In other words, **there is no evidence for a gender group being more absent than the other in both intervention and comparison schools.**

To further investigate possible geographical trends, we disaggregate attendance rates by municipality. We report the findings in the table below. In comparison areas, average attendance scores range from 66% to 81%, with Covalima registering the highest rates and Bobonaro the lowest. In intervention municipalities, instead, the range goes between 57% to 70%, with Oe-cusse and Manatuto registering the highest rates and Ainaro and Emera the lowest. Those findings show that there are no major outliers in the distribution of average attendance rates, although rates were somewhat lower in Ainaro and Emera.

⁸³ Difference is tested using a Student's *t*-test

Table 34: Attendance rates by municipality

Intervention	
Ainaro	57%
Ermera	57%
Manatuto	68%
Oe-cusse	70%
Comparison	
Aileu	68%
Bobonaro	66%
Covalima	81%
Manufahi	74%

The McGovern-Dole standard outcome #2 assesses the percentage of schools that had an average attendance rate of at least 80%. About 45% of comparison schools achieved this outcome, against only 27% of intervention schools.

To validate information on student absence from headcounts, caregivers were asked to report the number of school days missed by their grade 2 child the previous week. The below table shows the average number of days missed in each municipality. We find high levels of average student absence as reported by caregivers: In intervention areas, students missed on average more than one day of school per week, while in comparison areas, students missed on average around one day of school per week. This ranged from a low of 0.5 days of school missed on average in Covalima to a high of 1.7 in Ermera. Given a school week of five days, this means that on average—assuming results apply to the entirety of the school year—students miss around 20% of their education.

Table 35: Average number of absences the previous week, by municipality

	n	Average days missed
Intervention		
Ainaro	203	1.0
Ermera	314	1.7
Manatuto	135	0.8
Oe-cusse	148	1.0
Average (intervention students)	800	1.2
Comparison		
Aileu	150	1.2
Bobonaro	225	1.0
Covalima	134	0.5
Manufahi	147	0.8
Average (comparison students)	656	0.9

Caregivers reported the main reasons for their children missing school the previous week. Reported reasons for missing school are presented in the table below. **In intervention schools, the main cause for absence was natural disaster, closely followed by sickness.** Similarly, the most prevalent reported cause for absence in comparison schools was sickness, followed by natural disaster and unwillingness to go to school.

Comparing the two treatment groups, we see that the percentages of caregivers reporting that their children were sick are not dissimilar, although lower for intervention schools. The difference is more noticeable when looking at the “natural disaster” answer: 36% of intervention caregivers reported that their children could not go to school due to extreme weather conditions, against 19% of the comparison households. Many treatment schools are in more remote areas where students must cross rivers or walk across washed-out roads to reach schools. The increased occurrence of heavy rains and floods in the country might be a key factor to explain the difference between treatment groups.

Table 36: Reasons for missing school

	Intervention	Comparison
n	390	267
Sick	30.5%	34.5%
Natural disaster	36.4%	19.5%
Did not want to go to school	9.7%	14.6%
Funeral, marriage, traditional ritual	4.4%	5.2%
Teacher did not attend	2.8%	4.5%
Other	12.6%	18.4%

Further disaggregating by municipality in the below table, Ermera (intervention municipality) seems to be the municipality most hit by the consequences of extreme weather conditions, with 58% of caregivers reporting that their children could not go to school because of heavy rains. **Manatuto appears to have a worrying trend of children’s illness**, with 55% of parents reporting that their children missed school the previous week due to them being sick; further investigation revealed that there had been an outbreak of conjunctivitis during data collection. Illness is the main reported reason for absence also in Ainaro, at 42%. Although the main reason for absence in intervention municipalities remains natural disasters, those trends of illnesses in Manatuto and Ainaro should not be overlooked. Sickness could also be the result of damage to vital infrastructures due to storms and floods, which in turn might make life conditions more precarious and unhygienic (as seems may particularly be the case in Ainaro). Nevertheless, we find that the rates of children’s illness might be a key hindrance to the successful development of the program.

Table 37: Reasons for missing school, by municipality

	Ainaro	Ermera	Manatuto	Oe-cusse
n	84	189	58	59
Sick	41.7%	19.1%	55.2%	27.1%
Natural disaster	13.1%	58.2%	12.1%	23.7%
Did not want to go to school	8.3%	7.9%	12.1%	15.3%
Funeral, marriage, traditional ritual	10.7%	2.1%	6.9%	0.0%
Teacher did not attend	2.4%	1.1%	1.7%	10.2%
Other	23.8%	11.6%	12.1%	23.7%

In comparison municipalities, we observe that Bobonaro has the highest rates of caregivers giving “natural disaster” as a reason for their children absence (41.9%), while for the other comparison municipalities the rate does not exceed 10%. In Covalima, 57.5% of caregivers reported sickness as the reason for absence, being the comparison municipality with the highest prevalence of children’s sickness.

The qualitative data provides further insight into reasons for student absence. In interviews, administrators, teachers, and parents frequently stated that children might not attend school due to inclement weather, especially during the rainy season when roads washed out and rivers flooded;⁸⁴ due to a lack of student desire to attend school and insufficient parental encouragement or oversight to ensure attendance;⁸⁵ and due to illness.⁸⁶ Another frequently cited reason was cultural ceremonies and celebrations; a teacher in Ainaro, for example, stated that “parents often take their children with them when they attend cultural events and ceremonies, which prevents their children from attending school.”⁸⁷

Regarding parental oversight, many respondents emphasized that parents’ effective communication with schools and teachers was also vital to ensure student attendance, whether informally or through PTAs. A teacher in Ainaro, for example, stated that:

When a teacher does not tell parents about the condition of their students and vice versa, both parties will not know the condition of their students, because parents are at home and a teacher is at school every day.

- FGD with teachers, Ainaro, Int. 38

Other respondents stated that ensuring student attendance was the responsibility of the PTA,⁸⁸ although respondents—especially those in Oe-cusse—had mixed views on the efficacy of PTAs in carrying out this role.⁸⁹ Additionally, teachers were perceived by many to have an important role in ensuring student attendance and tracking down absent students. The following quote from a teacher in Oe-cusse provides an example of the important role played by both PTAs and teachers in ensuring student attendance:

⁸⁴ E.g., KII with administrator, Manatuto, Int. 7; KII with administrator, Oe-cusse, Int. 10; FGD with fathers, Ermera, Int. 16; FGD with fathers, Manatuto, Int. 17; FGD with mothers, Oe-cusse, Int. 35

⁸⁵ E.g., KII with administrator, Ainaro, Int. 1; KII with administrator, Ermera, Int. 3; FGD with fathers, Ermera, Int. 15; FGD with mothers, Manatuto, Int. 32; FGD with mothers, Oe-cusse, Int. 33

⁸⁶ E.g., FGD with fathers, Ainaro, Int. 13; FGD with fathers, Manatuto, Int. 20; FGD with fathers, Oe-cusse, Int. 24

⁸⁷ FGD with teachers, Ainaro, Int. 37. This sentiment was echoed in interviews including FGD with teachers, Ermera, Int. 39; FGD with teachers, Manatuto, Int. 43; and FGD with teachers, Oe-cusse, Int. 46.

⁸⁸ E.g., KII with administrator, Oe-cusse, Int. 11; FGD with fathers, Ermera, Int. 15

⁸⁹ FGD with mothers, Oe-cusse, Int. 34; FGD with teachers, Oe-cusse, Int. 45

In responding to why the children did not come school, we called PTA and asked their support to visit the children at their homes. In their visit, we needed them to make sure the real situation of children. Children sometimes informed the school that they were sick. Children did not come to school because they might feel uncomfortable with the condition of learning under the trees and sitting on the floor. Finding out the real condition of children was the key.

- FGD with teachers, Oe-cusse, Int.47

Outside of these dynamics influencing attendance, several other factors were mentioned less frequently by interviewees. These included distance, lack of transportation,⁹⁰ lack of school resources (including classrooms or chairs),⁹¹ and work or housework responsibilities. A school administrator in Ainaro and teacher in Ermera gave pertinent examples of the latter factor: The administrator stated that “most of the parents here are farmers, [and] most of them go to the rice field and usually bring their children to the field to help them harvest,”⁹² while the teacher stated that “when parents are busy with their work, they automatically give jobs to older brothers or sisters to take care of their younger siblings.”⁹³

Of particular relevance for HATUTAN, several respondents also mentioned that school meals acted as a key pull factor for students to attend school. For example, a teacher in Manatuto stated that, “When school meals are provided, practically all students attend; however, when they are discontinued, a portion of them no longer attend or are regularly absent.”⁹⁴ Similarly, a father in Ermera stated that, “Sometimes [the children’s] objective is to come depending on the availability of food or school feeding program.”⁹⁵ These sentiments were echoed by respondents in Ainaro.

Lastly, within Oe-cusse, parents frequently mentioned that students skipped school when teachers were absent. One father in Oe-cusse, for example, stated that, “The children frequently miss school because their teachers are missing, and they complain, ‘I want to go to school, but my teacher is absent.’ As a result, some students skip school the next day.”⁹⁶ This finding reiterates the importance of teacher attendance for student attendance and learning, and suggests that impact may be relatively more acute—or more widely known by parents—in Oe-cusse.

DROPOUT RATES

Next, we analyze dropout rates for grade 2 students. This is first calculated as the number of dropouts (as recorded by the school) since the beginning of the school year divided by the number of students enrolled in each grade 2 class. As presented in the table below, **intervention schools registered a lower average dropout rate than comparison schools**, although the difference is not statistically significant. Additionally, data collection occurred at the beginning of the school year, meaning that our data is not representative of the whole school year, as more students are likely to drop out as the school year progresses.

⁹⁰ KII with administrator, Ermera, Int. 3; KII with administrator, Mantuto, Int. 7

⁹¹ FGD with fathers, Oe-cusse, Int. 23

⁹² KII with administrator, Ainaro, Int. 1

⁹³ FGD with teachers, Ermera, Int. 39

⁹⁴ FGD with teachers, Manatuto, Int. 44

⁹⁵ FGD with fathers, Ermera, Int. 16

⁹⁶ FGD with fathers, Oe-cusse, Int. 23

Table 38: Dropout rates

Grade 2	Intervention	Comparison	Diff.	P-value
n	104	92		
Dropout rate	1.2%	1.6%	0.4	0.61
% of students with history of dropout	11.2%	9.3%	-1.9	0.27

Second, we also calculate dropout rates as reported by caregivers, who were asked if their grade 2 child had ever dropped out of school and later re-enrolled since beginning school; this value is reported in the second column of Table 38. We find a substantially higher percentage of students with a history of dropping out than dropout rates as recorded in school records, emphasizing that our estimates of school dropout rates may be undercounted due to the timing of data collection. Students were slightly more likely to have had a history of dropout in intervention schools than comparison schools.

Further disaggregating by gender and treatment groups, we notice that in comparison schools, average dropout rate for girls is 1.4%, while for boys it is slightly higher, at 1.9%. In intervention schools, the rate is at 0.8% for girls and 1.6% for boys. **Across treatment groups there seems to be a trend for boys, who, on average, drop out more than girls.**⁹⁷ This finding is consistent with broader patterns in Timor-Leste, where at young ages, boys tend to have worse education outcomes than their girl peers, including higher dropout rates.⁹⁸

As previously done for the attendance rates, we also disaggregate results by municipality. This is done to individuate geographical patterns that might help explain the findings, and possibly, to improve the program with context-specific recommendations.

Table 39: Dropout rates by municipality

	Dropout rate	Students with history of dropout
Intervention		
Ainaro	1.8%	7.4%
Ermera	1.9%	9.2%
Manatuto	0.4%	12.5%
Oe-cusse	0.0%	19.5%
Comparison		
Aileu	1.3%	8.6%
Bobonaro	1.5%	12.4%
Covalima	0.4%	9.6%
Manufahi	3.1%	4.8%

⁹⁷ Differences in means were tested using two different *t*-tests: an independent sample *t*-test, comparing dropout rates for the same gender across treatment; and a paired *t*-test, to compare dropout rates across gender for both treatment and comparison groups.

⁹⁸ Additionally, we tested differences between dropout rates of intervention girls versus intervention boys. We did not find any statistically significant difference.

In intervention areas, the **highest average dropout rate is in Ermera at 1.9%, followed by Ainaro at 1.8%, while Oe-cusse registers the lowest rate**, with virtually no children dropping out since the beginning of the school year. In contrast, dropout rates as reported by caregivers are highest in Oe-cusse, at 19.5%, followed by Manatuto, at 12.5%. This may suggest that school record-keeping may be weaker in these municipalities, thus leading to undercounted school dropout rates; alternatively, students in these municipalities may tend to begin the school year and drop out later on.

Although overall low (given the aforementioned caveat of data collection timing), dropout rates in intervention areas are not negligible, and it is vital to understand the cultural, social, and economic factors that might bring parents to make their children drop out, with **particular attention to Ainaro and Ermera, which also register the lowest attendance rates among intervention municipalities**. Within Ermera, we note that the quantitative and qualitative data both suggest that inclement weather has had an impact on attendance and dropouts; in an FGD, one father emphasized the impact of rains on school attendance:

[Students don't come to school] because the rainy conditions don't let them... because the necessities that students need to use to attend school aren't there, such as umbrellas, such things as to cover their heads... As well, some are across on the other side of the river. The bridge, the water moves across and the water current is strong... this is the reason they're scared of the river and the rains.

- FGD with fathers, Ermera, Int. 16

For comparison areas, the municipality with the highest average dropout rate is Manufahi, at 3.1%, while Covalima registers the lowest average rate, 0.4%. Manufahi seems to be somewhat of an outlier among comparison municipalities, registering high rates of dropout. As with intervention schools, however, the pattern found in caregiver-reported dropout differs, with the highest rates in Bobonaro followed by Covalima.

Within qualitative interviews, the most commonly cited reason for dropouts was economic challenges, especially in Oe-cusse.⁹⁹ A mother in Oe-cusse gave the following pertinent example of why students may drop out, especially in higher grades:

Children at grade 1 to 4 will be committed to study but children, especially girls at grade 6, may think "why study hard, why not leave school and marry a man". These girls will not continue their further study but marry a man. They often do not listen to parents. It applies to boys at grade 6 as well; they also mention that "what is the point of studying if you will not have a job after completing your study, I will rather work as bus driver assistant, sell biscuits, or do something else."

- FGD with mothers, Oe-cusse, Int. 36

Although not a common refrain, it is also worth noting that a father in Oe-cusse stated that some parents could decide to withdraw their child from school if the child was not performing well. Specifically, he said that "if there was no change happening to our children after learning interventions from teachers, and the students were getting older, we can drop him/her out of school."¹⁰⁰

REPETITION RATES

In addition to questions about student absences, caregivers were also asked whether their grade 2 child had ever repeated a grade. The below table shows results by municipality and for all intervention and

⁹⁹ FGD with fathers, Ermera, Int. 16; FGD with teachers, Manatuto, Int. 44; FGD with mothers, Oe-cusse, Int. 34

¹⁰⁰ FGD with father, Oe-cusse, Int. 22

comparison students. Repetition rates are high for both intervention and comparison groups, and are substantially higher for intervention students, at 31.1%, than for comparison students, at 22.3%.

Table 40: Repetition rates, by municipality

	n	Repetition rate
Intervention		
Ainaro	203	19.7%
Ermera	316	29.8%
Manatuto	136	32.4%
Oe-cusse	149	48.3%
Average (intervention students)	804	31.1%
Comparison		
Aileu	151	24.5%
Bobonaro	226	27.9%
Covalima	135	23.7%
Manufahi	147	10.2%
Average (comparison students)	659	22.3%

Looking at results by municipality, Oe-cusse stands out with nearly half of students having repeated a grade. In part, this may be a reflection of the region's 0% dropout rate, with students choosing to repeat rather than drop out; however, this statistic also reflects a very low level of learning for many students. Outside of Oe-cusse, the next highest repetition rate was found in Manatuto, at 32.4%, followed by Emera, at 29.8%.

HEALTH-RELATED ABSENCES

Of particular interest are health-related absences, which are a key sub-factor in student attendance overall. Parents and caregivers were asked in the household survey to report how many days the student had missed due to illness the previous week. Findings are reported in the table below. The majority of caregivers reported that no days were missed because of sickness in both treatment groups, although the rate is slightly higher among comparison caregivers. Overall, there does not seem to be a difference in days missed across treatment groups, nor a specific trend of number of days missed. **As expected, we found the highest rates of children who missed 3 days or more in Ainaro and Manatuto—7.9% and 7.4% respectively—consistent with the high reported rates of sickness discussed in the section above.** In contrast, in Oe-cusse, only 3.3% of students missed 3 or more days of school and 82.6% missed no days, and in Ermera, 4.7% missed 3 or more days of school and 81.0% missed no days.

Table 41: Days missed because of illness

	Intervention	Comparison
n	802	659
None	77.4%	80.3%
1 to 2 days	17.1%	14.1%
3 to 5 days	4.2%	4.7%
6 or more days	1.3%	0.9%

In the table below, we further present average days missed in a week due to illness, disaggregated by treatment and gender.¹⁰¹ We do not find any significant difference for any of these comparisons. **In other words, there are no differences in average days missed weekly because of illness between comparison and intervention children.** The same can be said across gender, with no significant differences between comparison and intervention girls, nor boys.

Table 42. Average days missed weekly because of illness

	Comparison	Intervention	Diff	p
Days missed	0.4	0.5	0.1	0.41
Days missed – female	0.4	0.5	0.1	0.08
Days missed – male	0.5	0.5	-0.04	0.59

McGovern-Dole Custom Outcome #16 aims to reduce the number of days absent from school due to illness. Since baseline data will not show a reduction, this indicator will only report the average days missed weekly due to illness, which for this baseline stands at 0.5. The midline and final evaluation will be able to report a change in attendance using the same indicator.

OTHER FACTORS AFFECTING ATTENDANCE

This section analyzes other factors that may affect school attendance, including factors related to school access and whether a student enjoys school or not. Caregivers were asked whether it was safe for their grade 2 child to walk to school and whether their child avoids or is afraid of school.

Findings are presented in the table below, disaggregated by gender. The majority of caregivers for both comparison and intervention groups (87.9% for comparison and 85.8% for intervention) reported that their children feel safe in their walk to school. Girls appear to feel as safe as boys in both comparison and intervention groups, even more than boys among intervention children.

Concerning feelings of avoidance towards school, in both comparison and intervention groups, girls seem to avoid less school than their boy peers. We tested differences between boys and girls within their treatment group, and we found statistically significant results in both analyses. In other words, girls tend to avoid school less than their boy peers, in both comparison and intervention groups, as reported by their caregivers. It might be important to keep investigating this trend. As highlighted in other sections of

¹⁰¹ We tested average differences with an independent samples t-test

this report, corporal punishment seems to be used more on boys, which in turn could make them more avoidant and unwilling to go to school than girls. We did not find any significant difference between comparison boys and intervention boys in school avoidance, nor between girls. In other words, the difference seems to be strictly between genders, rather than between treatment groups.

Next, caregivers were asked about whether their children are afraid to go to school. Intervention girls' and comparison boys' caregivers reported the highest rate of their children being afraid to go to school, but we did not find a statistically significant difference either when comparing comparison versus intervention, or comparing girls versus boys. Overall, the majority of caregivers reported that their children are not scared of going to school, although we must note that the rates for both intervention and comparison groups are above 10%, which is not negligible for a strong feeling such as fear.

Table 43: Overview of factors affecting attendance

	Intervention	Comparison
Male		
n	434	320
Safe to walk to school	83.4%	89.1%
Avoids school	37.6%	35.6%
Afraid of school	10.8%	14.4%
More than 30-minute walk to school	33.7%	31.8%
Female		
n	370	339
Safe to walk to school	88.7%	86.7%
Avoids school	28.9%	25.1%
Afraid of school	13.2%	10.6%
More than 30-minute walk to school	36.1%	29.8%

In FGDs, two parents in Oe-cusse described that children may be afraid of or reluctant to attend school due to abuse by teachers. One father, for example, stated that, "If the teacher teaches by just shouting at him, [the child] will soon start to withdraw. The teacher only hit [my child] once and he doesn't want to go to school anymore."¹⁰² This example reiterates the important of quality of teaching and reduction in the use of negative teaching practices.

Finally, caregivers were asked how much time it takes for their children to go to school; we report percentages of children who take more than 30 minutes. It is unlikely that these factors are affected in any substantial way by the program, but it is important to understand their effect as they may impact attendance rates. Intervention children seem to take more time than comparison children to go to school, although the difference is not significant. Also, the comparisons between the same gender across treatment were not significant.

The importance of these factors is explored below, by testing whether the mean number of days missed by the student was different when grouped by each variable. All findings are statistically significant. **On**

¹⁰² FGD with fathers, Oe-cusse, Int. 21. Similar sentiment echoed in FGD with mothers, Oe-cusse, Int. 34.

average, children who feel safe going to school, who do not have feelings of avoidance towards school, and whose path towards school is not too long, miss significantly less days of school than their counterparts. Particularly worthy of notice are the differences relating to the emotional states of the children (fear and avoidance). These findings seem to suggest that the emotional well-being of children is a key factor in their attendance, even more than logistical issues. This could be of great interest for the program, which could focus on considering and implementing emotional-related intervention to improve the children's attitudes towards school.

Table 44: Impact of factors on school days missed by students

	Mean (answering yes)	Mean (answering no)	Diff.	P-value
Safe to walk to school	1.1	1.4	0.3	0.03*
Avoids school	1.6	0.9	0.7	<0.001*
Afraid of school	1.8	1.1	0.7	<0.001*
More than 30-minute walk to school	1.4	1.1	0.3	<0.001*

PREDICTORS OF STUDENT ATTENDANCE

In this section, we test the relationship between various student- and school- level characteristics and attendance rates. We first look at individual-level variables, such as age and language,¹⁰³ and then analyze variables that are measured at the school level, such as class size. The outcome variable is the number of absences the previous week, as reported by the primary caregiver at the household survey.

Table 45: Individual-level predictors of student absence

	Coefficient	P-value
Student age	0.1	0.54
Student language	0.4	0.31
Difficulty with self-care	0.06	0.80
Cognitive disability	-0.7	0.12
Student is an orphan	-0.007	0.99
HoH education	0.4	0.55
Experiences depression	-0.4	0.35
Experiences anxiety	0.3	0.66
Within 30-minute walk	-0.8	0.34
Spent at least half a day on chores	-0.09	0.81

The table above shows the coefficient and p-value for each variable in the individual-level model. No predictors are significant. Average days missed vary across ages with no clear trend, although those who

¹⁰³ Individual level characteristics controlled for are: age, language, difficulty with self-care, mental disability, if the child is an orphan, level of education of the head of the household (HoH), experience of feeling of anxiety and depression, if the child takes more than 30 minutes to go to school.

miss the most days are younger children (5 years, with average of 1.6 days missed weekly) and 10-year-old children (average of 1.6 days missed weekly). Children whose caregivers are not educated miss on average 0.4 days more per week than children with educated ones, all else held constant. Having educated caregivers might mean that the income of the household is medium-high, which in turn might mean that children live in areas with better access to school, might have the possibility of taking transportation when needed. It may also mean that their caregivers put more importance on school, insisting that their children go to school more regularly than those who do not have educated caregivers. Overall, however, these results suggest that variability of attendance at baseline is not satisfactorily explained by individual factors.

Secondly, we analyze the school-level model.¹⁰⁴ The table below shows the coefficient and p-value for each variable controlled for. Only one variable—whether school meals were provided on the day of data collection—was significant.

Table 46: School-level predictors of student absence

	Coefficient	P-value
Student-teacher ratio	-0.0	0.96
Reading materials available	0.5	0.16
School meals provided	-1.1	0.01*
Treatment group	0.6	0.15
Toilets available at school	0.1	0.53

In schools where meals are not provided every day, students miss on average 1.1 days weekly more than students where there are meals every day. This is an important finding that echoes the importance of appropriate nutrition for children in a country where many households suffer from acute food insecurity.¹⁰⁵ Additionally, this is a direct target for HATUTAN II, so the research team will closely analyze changes and differences in the midline and endline reports.

SCHOOL MANAGEMENT

Effective management of schools is crucial to promote quality education and enhance student outcomes. While teacher quality is an indispensable element of education, school administrators also have a significant role in fostering a learning-friendly environment. Experienced and knowledgeable school administrators can provide essential training to teachers and ensure that classroom practices are effective, which ultimately leads to improved quality of instruction. Additionally, an active and effective PTA can be vital to strengthen school outcomes, including learning, school infrastructure, and the SFP. As such, in this section, we focus on the importance of school management, including administrators and PTAs, and explore its impact on student learning and teacher effectiveness.

QUALITY OF SCHOOL MANAGEMENT

We examined the educational qualifications and experience levels of school administrators and teachers in comparison and intervention municipalities. Our analysis revealed that school administrators in comparison municipalities had, on average, 7.5 years of experience as a school administrator, which was slightly higher

¹⁰⁴ School-level characteristics controlled for: student-teacher ratio, reading materials available, everyday provision of meals for students and treatment.

¹⁰⁵ IPC, "Timor-Leste: Acute Food Insecurity Snapshot" (November 2022). Accessed April 20, 2023.

than those in intervention municipalities who had around 6 years of experience. In the intervention municipalities, the average years of experience as school administrators varied across different locations. School administrators in Ainaro and Ermera had an average of 5 years of experience, while those in Manatuto had an average of 10 years of experience and administrators in Oe-cusse had a relatively lower average of 3 years of experience. These findings highlight the need to consider educational qualifications and experience levels when designing interventions to improve education outcomes.

In addition to reporting on school administrators' experience and education, the school survey also included data on whether administrators provided coaching to teachers. The findings reveal that the vast majority of administrators provided coaching to their teachers, with only approximately 7% of administrators in intervention schools and 9% of administrators in comparison schools reporting never providing coaching. Interestingly, more administrators in the intervention schools provide weekly coaching than those in comparison areas, while monthly coaching was mostly provided by administrators in comparison schools (see Table 47¹⁰⁶). The observed differences in the frequency of weekly meetings among intervention and comparison schools can be attributed to the influence of the Teacher Working Group intervention. It is possible that administrators in intervention schools prioritize more frequent weekly meetings as part of the intervention's implementation. On the other hand, comparison schools tend to follow the model established by the MEYS, which typically involves calling teachers together for the Teacher Working Group once a month or only once per school period, which occurs three times in a year.

Table 47: Provision of coaching by school administrators

	Intervention	Comparison
n	103	93
Weekly coaching	45.6%	41.9%
Monthly coaching	18.4%	24.7%
Coaching every trimester	21.2%	21.5%
Never provided coaching	6.8%	8.6%

The provision of coaching also varied by municipality, with 10% of administrators from Ermera reporting never providing coaching, while all administrators from surveyed schools in Manatuto provided coaching, with more than half providing coaching on a weekly basis (see Table 48¹⁰⁷). These results suggest that coaching is a widespread practice among school administrators, with some variation by treatment group and municipality.

Table 48: Provision of coaching by school directors in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	25	39	19	20
Weekly coaching	52.0%	43.6%	52.6%	35.0%
Monthly coaching	12.0%	18.0%	10.5%	35.0%
Coaching every trimester	28.0%	25.6%	36.8%	20.0%
Never provided coaching	8.0%	10.3%	0.0%	5.0%

¹⁰⁶ Percentages may not sum to 100 due to a "don't know" option excluded from the table.

¹⁰⁷ Percentages may not sum to 100 due to a "don't know" option excluded from the table.

In the qualitative data, there was a notable absence of explicit mentions of school administrators providing training to teachers. Instead, many administrators discussed the process of assigning teachers to specific classes based on their expertise and experience in teaching various subjects and age groups. Teachers frequently acknowledged the significant role played by administrators/coordinators in discouraging negative teaching practices and promoting the adoption of non-violent methods in the classroom. Administrators were described as offering support and guidance to teachers in implementing engaging teaching practices:

The coordinator is always present to support and assist us. If children are not sitting quietly, the coordinator will admonish them. However, the children cling to their so-called freedom. Even though the coordinator has warned them to sit quietly in class and listen to the teacher, they continue to come and go. This problem arises due to freedom; we do not beat children as it is a crime. Consequently, they are free to come and go as they please. But the coordinator is always there for us.

- FGD with teachers, Ainaro, Int. 37

Yes, our school coordinator does not act like a notorious guy or an unapproachable boss but acts like our buddy, so we can communicate the issues or obstacles we experience in the classroom in each lesson or with each child. Teachers usually address these concerns during the lesson breaks, and the coordinator always proposes solutions, emphasizing that teachers should have a big heart and continue to educate them. We should not be disheartened when facing these challenges and should not resort to unfriendly ways such as hitting and yelling. There are different ways of tackling these challenges. So, the five of us always work together to support children and improve ourselves to confront these challenges. Therefore, the difficulties experienced by a teacher are not solved alone but constantly in partnership with other colleagues who share our workload.

- FGD with teachers, Oe-cusse, Int. 45

Well, in the Teachers' Working Group, teachers take the initiative to share or present the difficulties they encounter while teaching in their class or grade so that coordinators, deputy coordinators, and teachers can help solve them and provide support materials. Support and instructional materials are critical as they influence our teaching and learning. Therefore, our involvement in the Teachers' Working Group allows us to discuss the difficulties we have encountered in our work, develop plans, and then have a teacher present it to the forum. The other teachers will observe the presentation and take notes. If any challenges or failures arise, the teachers will address them after the presentation. The dialogue is not intended to embarrass each other but rather to support one another. Teachers can provide feedback on our instruction, highlighting both positive and negative aspects that require improvement.

- FGD with teachers, Manatuto, Int. 44

PARENT-TEACHER ASSOCIATIONS

At baseline, the majority of schools surveyed reported having a PTA, with 85% of schools in comparison municipalities and all schools in intervention municipalities having one. On average, intervention schools had five PTA members, while comparison schools had four. In intervention schools, a quarter of PTAs comprise only one or two members, while more than half of comparison schools have PTAs with the same size. However, during the data collection, most schools from both intervention (54%) and comparison (71%) municipalities reported that their PTA did not conduct any meetings during this school year (see Table 49).

Despite this, the Involvement of PTAs was found to be significantly higher in intervention municipalities compared to comparison municipalities at baseline.

Table 49: Frequency of PTA meetings, intervention and comparison municipalities

	Intervention	Comparison
n	101	76
Last week	5.9	3.9
Last month	21.8	15.8
More than a month	18.8	9.2
Did not meet this year ¹⁰⁸	53.5	71.1

The below table shows that among intervention municipalities, Ainaro and Oe-cusse had the highest percentage of schools (64% and 75%, respectively) reporting no meetings by their PTA during the current school year. Conversely, Ermera and Manatuto had comparatively lower percentages, with 40.5% and 42.1% of schools, respectively, reporting no PTA meetings.

Table 50: Frequency of PTA meetings in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	25	37	19	20
Last week	8.0%	8.1%	0.0%	5.0%
Last month	28.0%	16.2%	36.8%	10.0%
More than a month	0.0%	35.1%	21.1%	10.0%
Did not meet this year ¹⁰⁹	64.0%	40.5%	42.1%	75.0%

The primary areas of focus for PTAs in both intervention and comparison areas were enhancing school infrastructure, supervising the school feeding program, and ensuring the safety and security of students, as outlined in Table 51 and further disaggregated by municipality in Table 52. However, it is worth noting that only 36% of intervention schools and 29% of comparison schools reported that their PTAs monitor student dropout rates; in part, this may be because schools are reluctant to share this information and PTA members rarely ask for the information to be shared. Furthermore, intervention schools demonstrated a moderate level of engagement in school budget management and enhancing learning quality. While their involvement in these areas was less compared to other PTA actions, it surpassed the level of engagement observed in PTAs from comparison schools.

¹⁰⁸ Note from the program: The survey was conducted in February – March, and the school year started at the end of January.

¹⁰⁹ Note from the program: The survey was conducted in February – March, and the school year started at the end of January.

Table 51: PTA involvement, intervention and comparison municipalities

	Intervention	Comparison
n	103	79
School budget management	25.2%	15.2%
Learning quality	46.6%	29.1%
Improve school infrastructure	86.4%	63.3%
Oversee SFP	84.5%	67.1%
Monitor safety and security	61.2%	46.8%
Monitor student attendance	51.5%	40.5%
Monitor teacher attendance	57.3%	38.0%
Monitor dropout	35.9%	29.1%
Does not do anything	3.9%	17.7%

Table 52: PTA involvement in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	25	39	19	20
School budget management	12.0%	25.6%	26.3%	40.0%
Learning quality	6.0%	43.6%	57.9%	25.0%
Improve school infrastructure	88.0%	84.6%	89.5%	85.0%
Oversee SFP	79.9%	84.6%	94.7%	80.0%
Monitor safety and security	64.0%	48.7%	84.2%	60.0%
Monitor student attendance	52.0%	53.8%	47.4%	50.0%
Monitor teacher attendance	52.0%	59.0%	57.9%	60.0%
Monitor dropout	36.0%	30.8%	31.6%	50.0%
Does not do anything	4.0%	5.1%	0.0%	5.0%

In the household survey, a higher proportion of caregivers in intervention areas (42%) compared to comparison areas (21%) reported that PTAs were active or somewhat active. A sizeable proportion of caregivers in both intervention and comparison areas were uncertain about the PTA's level of activity (57% and 45%, respectively), while 21% and 13% reported that PTAs were inactive or did not exist. Overall participation in PTAs remained low, indicating limited involvement and potential impact on school activities. Along these lines, only 28% of intervention households and 18% of comparison households reported having a member who participated in the PTA. Similar to the school survey, the household survey revealed that a majority of intervention municipalities (55%) and comparison municipalities (68%) did not conduct any PTA meetings during the current school year.

Overall, these results present a mixed picture of PTA activity. While PTAs appear to be widespread, many seem inactive. Furthermore, many caregivers surveyed were not members of PTAs. However, PTAs focus on many areas of interest to HATUTAN, suggesting that they are a highly relevant body for program activities.

Qualitative data revealed differing degrees of coordination between the PTAs and parents within the schools:

The biggest challenge is, firstly, the existence of barriers between teachers and the PTA due to misunderstandings. However, we are actively seeking a solution to the problem that has arisen so that we can work together again.

- KII with administrator, Oe-cusse, Int. 9

Yes, the PTA on our side works very well. We always cooperate and communicate with each other, especially when there are issues at school concerning students, parents, teachers, or school feeding. We maintain open communication with each other in such situations.

- KII with administrator, Ainaro, Int. 1

Several respondents also noted that members of the PTA work on a voluntary basis and do not receive any form of compensation, which could potentially have increased their incentives:

Since the PTA works voluntarily, when there is an activity, we encounter a significant challenge. We rely on their support, and they willingly participate. However, we often face difficulties as they frequently raise their own issues during regular activities, which can make us feel discouraged.

- KII with administrator, Manatuto, Int. 8

In my opinion, the PTA should also receive a modest salary to incentivize their diligent work. This salary can be provided for a period of five years, after which a new election can be held to appoint a replacement. Even if the PTA member becomes tired, he will have the assurance of a small reward; if it is in vain, he will not survive and will soon resign. This is one of the weaknesses of this school.

- FGD with fathers, Oe-cusse, Int. 21

However, despite the various challenges mentioned, the majority of respondents emphasized the crucial role of PTAs in monitoring student and teacher attendance, improving school infrastructure, and supporting the school feeding program:

Last year, the PTA initiated the initial repairs to the school kitchen, the cooking area for meals, and various other essential tasks, including outdoor activities. As mentioned before, the PTA's involvement has primarily been focused on outdoor activities, such as planting and school gardening, where they have taken on significant responsibilities.

- KII with administrator, Manatuto, Int. 8

The PTA has undertaken various responsibilities at this school. On a weekly basis, they conduct meetings with the teachers to monitor their presence and determine their whereabouts if they are not present at school. They also oversee the school premises, assist the school guards, and monitor student attendance. The PTA consistently carries out these tasks. In cases where students are absent for more than two or three

days, they coordinate with me to conduct interviews with the parents and ascertain the reason for the child's absence. That is the role of the PTA.

- KII with administrator, Oe-cusse, Int. 9

In my opinion, the PTA has provided significant assistance to this school through their collaboration in building the fence with the parents and contributing to the construction of the current house. They raised funds independently to purchase zinc and palm sticks. Therefore, the PTA's contribution to this school is of utmost importance.

- FGD with teachers, Ainaro, Int. 38

Several respondents observed that men tend to participate more actively in PTA meetings and other activities than women.¹¹⁰ However, the lack of incentives continues to pose a challenge for the effective and sustained functioning of PTAs.

SCHOOL FEEDING PROGRAM

One of the primary objectives of the HATUTAN II program is to aid the Government of Timor-Leste in effectively implementing the school feeding program (SFP) in all basic education and preschools throughout the school year. The program will focus on 378 schools. It will also assist Timorese farmers by purchasing their produce for the SFP, which aims to enhance local production and establish a sustainable source of nutritious food for local schools.

IMPLEMENTATION AND MANAGEMENT OF THE SFP

Improving the implementation and management of the school feeding program is a key goal of the program. The school survey collected crucial information regarding meal provision, leadership responsible for SFP implementation in each school, and menu food items, while the household survey provided additional data on meal characteristics, such as quantity, taste, and hygienic preparation.

First, the availability of a school feeding program on the day of the survey was assessed, and the results revealed that the majority of schools did not have any feeding program on that particular day. **Only a small fraction of schools, comprising 1% of comparison schools and 15% of intervention schools, had meals prepared on the day of the survey.** The household survey supported these results, and respondents from the intervention group reported a higher prevalence of feeding programs in schools compared to the comparison group. Across intervention municipalities, 41% of schools in Ainaro and 26% of schools in Manatuto had meals prepared for students on the day of survey, while no meals were served in schools in Ermera and Oe-cusse.

Note from the program: It is important to highlight that this was the situation during the first trimester (period) of the school year; since then, funds have been distributed to the SFP Management Teams. Nonetheless, the results show that the SFP was not active at the beginning of the school year in the majority of the schools.

Additionally, at baseline, only a small proportion of comparison schools (3%) and a relatively larger percentage of intervention schools (17%) reported having a program that supports school meals. The majority of schools (71% comparison, 88% intervention) reported that the school directors or coordinators

¹¹⁰ KII with administrator, Ainaro, Int. 1; KII with administrator, Manatuto, Int. 8; FGD with mothers, Oe-cusse, Int. 34

were responsible for overseeing the feeding program, while the PTA was responsible for overseeing the program in 43% of intervention schools and only 19% of comparison schools.

The involvement of PTAs in overseeing the SFP varied among the intervention municipalities, with Ermera and Oe-cusse having more participation compared to Ainaro and Manatuto (see Table 53). Most schools that responded with "other" at baseline indicated that a service provider was responsible for the feeding program.

Table 53: School feeding program responsibility in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	27	41	19	20
Director or coordinator	81.5%	97.6%	89.5%	75.0%
Deputy director	18.5%	4.9%	0.0%	20.0%
PTA	37.0%	51.2%	26.3%	50.0%
Teachers	33.3%	24.4%	36.8%	60.0%
Other	40.7%	26.8%	15.8%	55.0%

According to the school survey, a large percentage of schools reported having a menu, indicating a certain level of preparedness and organization, with 90% of comparison schools and 94% of intervention schools having a menu. Examining further the foods served to children, at baseline, most intervention schools offered grains, roots, and tubers (88%); legumes and nuts (75%); fish powder (56%); and dark green vegetables like spinach, lettuce, and mustard greens (19%). However, there was a noticeable absence of fruit and meat (other than seafood) in the school meals, as indicated in Table 54. Furthermore, few schools that provided meals to students included eggs in their school lunches.

Table 54: Food items on the school feeding menu in intervention municipalities serving meals

	Ainaro	Manatuto
n	11	5
Grains, roots, and tubers	100.0%	60.0%
Legumes and nuts	100.0%	20.0%
Eggs	0.0%	20.0%
Meat and meat products	72.7%	20.0%
Vitamin A-rich dark leafy greens	0.0%	60.0%
Other vitamin A-rich vegetables and fruits	27.3%	40.0%
Other fruits and vegetables	0.0%	20.0%
Other ¹¹¹	0.0%	20.0%

¹¹¹ Including sweetened condensed milk and dairy products.

Note from the program: In 2023, HATUTAN II piloted the provision of locally and regionally procured (LRP) commodities to schools, namely rice, beans, and either peanuts or fish powder, with parents often contributing leafy greens and other vegetables. Due to the limited availability of LRP commodities meeting quality standards, the program was unable to provide them to all schools from the beginning of the school year.

Based on the findings, schools in the intervention group had menus with a maximum of five out of nine food groups. For intervention schools that offered meals to students at baseline, the average dietary diversity score was 2.9. However, it is noteworthy that three schools in Ainaro had meals with a dietary diversity score of 4 and one school in Manatuto had meals with a dietary diversity score of 5 (see Table 55).

Table 55: School menu dietary diversity score in intervention municipalities serving meals

	Ainaro	Manatuto
n	11	5
1	0.0%	0.0%
2	27.3%	80.0%
3	45.5%	0.0%
4	27.3%	0.0%
5	0.0%	20.0%

The household survey, which gathered information on the availability, quantity, preparation, and taste of meals provided to children in schools, indicated that a majority of parents in the intervention group either fully or partially agreed that food was available every day (88%), the quantity was adequate (88%), the meals were prepared hygienically (90%), and that they tasted good (85%).

Based on the qualitative data collected, it was found that school coordinators and directors are primarily responsible for overseeing the school feeding program, with support from teachers and the PTA. When asked about the most difficult aspects of implementing the food program, many respondents cited challenges related to accessing clean water¹¹², insufficient produce from farmers¹¹³, poor infrastructure¹¹⁴ and limited funds¹¹⁵.

Qualitative data also indicated that PTAs have a crucial role in monitoring the SFP. They actively oversee various aspects such as the proper serving of meals, kitchen and utensil cleanliness, identification of missing items or food shortages, and assessment of budget requirements. Notably, one school administrator emphasized the involvement of not just the PTA but the entire community in the school feeding program:

What we have done in school feeding program, is that we have involved the community in it. We divided the task of preparing food for students to each neighbourhood. This school has four neighbourhoods. One neighbourhood is in

¹¹² KII with school coordinator, Ainaro, Int. 2

¹¹³ KII with school coordinator, Oe-cusse, Int. 11; KII with school coordinator, Oe-cusse, Int. 12

¹¹⁴ KII with school coordinator, Manatuto, Int. 8

¹¹⁵ KII with school coordinator, Ainaro, Int. 2

charge of preparing food for students for one week in rotation. The mothers from each neighbourhood, who prepare food for the school feeding program.

- KII with administrator, Oe-cusse, Int. 12

Parents engaged in discussions about the food quality, drawing from their observations and feedback received from their children. Several recurring concerns raised by parents included the limited variety of meals, with beans being a common option, as well as the perceived low quality of the food, necessitating parents to supplement meals with additional vegetables. Steps are being taken to enhance dietary diversity within schools, and the mobilization of government funds could support schools in procuring a wider range of locally available, nutritious foods:

When our children came home, we asked them, "Did you eat good food? Good rice? Good meal? Good side dishes?" and they responded that they did not eat today. They had meals sometimes only. School feeding provides good meals and good side dishes, but they only had them when there was a meal. That's what happened here, based on our observation and what we understood from our children.

- FGD with fathers, Manatuto, Int. 17

There's a problem [with the SFP] because sometimes there isn't enough money to buy vegetables. The problem, for example, is you go to someone and ask (the cost) and you realize the price is too high, you then decide to take your own money and top up.

- FGD with mothers, Oe-cusse, Int. 34

According to me, the children say they eat well. They say, "The food is tasty, but they serve very little."

- FGD with mothers, Ainaro, Int. 25

A father from Manatuto expressed his concerns regarding the purchase of frozen food¹¹⁶ for students, highlighting the discrepancy between this practice and the recommendations provided by state officials:

Some state officials advised us that, to protect our children, we should avoid having the frozen food. That was the message from the [government], "If you want to buy side dishes for children, buy them from the local side dishes like dry meat and local chicken, don't buy the frozen ones, because they have negative effect to the health of our children." The school followed only at the beginning but after that they started to buy the frozen food to feed our children.

- FGD with fathers, Manatuto, Int. 20

FOOD PREPARATION AND STORAGE

In ensuring that children remain healthy and are able to attend school regularly, the hygienic preparation of food served in schools is crucial. Based on the household survey, **most parents perceived that meals for their children were prepared in a hygienic manner.**

The school survey showed that a majority of schools that had their own kitchen (62% comparison, 90% intervention) also maintained cleanliness using detergent (83% comparison, 78% intervention). Access to clean water for meal preparation was also reported by most schools, both in the comparison and intervention groups (see Table 56). Nonetheless, the results also indicate that there is a considerable

¹¹⁶ Note from the project: This qualitative quote is likely to refer to the consumption of imported frozen chicken products.

difference in the availability of clean water between intervention municipalities. Specifically, the percentage of schools with access to clean water in Ainaro is significantly lower than in most other intervention municipalities, at only 64%.

Table 56: Availability of clean water for meal preparation in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	25	40	16	15
Yes	64.0%	85.0%	87.5%	80.0%

Furthermore, it is concerning that all schools with a kitchen relied on wood stoves, and the presence of scales in the kitchen was low for both comparison and intervention schools. These results highlight the need for interventions to improve kitchen infrastructure and promote the use of more efficient and cleaner cooking methods in schools.

Note from the program: While the program agrees that the use of wood stoves has a high environmental impact, it is necessary to note that gas and electric stoves are usually not found in rural areas of Timor-Leste and typically very expensive in cities. The cost of cooking gas and electricity is staggering high and beyond the financial ability of schools to purchase. In the early stages of the SFP, the World Food Program provided gas stoves to schools, which were quickly abandoned due to the costs involved and challenges with maintenance. To mitigate the environmental impact of wood stoves, the first phase of HATUTAN worked with local producers of fuel-efficient cook stoves to disseminate information about this innovative equipment to school communities and awarded efficient cook stoves to high performing schools.

The frequency of detergent use for cleaning kitchens in schools seems to vary between different intervention municipalities. While at least half of the schools in Manatuto and Oe-cusse use detergent for cleaning their kitchens on a daily basis, less than a quarter of schools in Ainaro and Ermera report doing so. Moreover, a substantial proportion of schools in Ainaro and Ermera report never using detergent to clean their kitchens (see Table 57). These findings suggest that there may be a need for targeted interventions to improve hygiene and cleaning practices in schools, particularly in areas where the use of detergent is infrequent.

Table 57: Frequency of detergent use in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	22	30	12	15
No	22.7%	30.0%	8.3%	13.3%
Sometimes	63.6%	46.7%	41.7%	33.3%
Every day	13.6%	23.3%	50.0%	53.3%

The data from Table 58 also reveals that there is room for improvement in the sanitation of school storage areas. While a higher percentage of intervention schools (38%) reported clean storage areas compared to comparison schools (27%), a substantial number of schools still reported that their storage space was not clean. Ainaro stands out as the municipality with the highest percentage of schools reporting unclean storage spaces, whereas Ermera has the highest percentage of schools reporting clean storage spaces.

Improving the cleanliness of school storage areas could contribute to better food safety and hygiene for students, which is crucial for their health and wellbeing.

Table 58: Availability of clean storage in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	16	33	13	15
No	12.5%	6.1%	0.0%	6.6%
Somewhat	37.5%	27.3%	38.5%	26.7%
Mainly	12.5%	24.2%	38.5%	26.7%
Yes	37.5%	42.4%	23.0%	40.0%

Regarding kitchen equipment, Table 59 shows that at the baseline, the intervention municipalities had a higher percentage of schools with all observed facilities except for kitchen plates/cutlery compared to the comparison group. The percentage of intervention schools with kitchen and handwashing stations was significantly higher than that of the comparison schools.

Table 59: Availability of school facilities, intervention and comparison schools

	Intervention	Comparison
Canteen	15.9% (n = 107)	10.8% (n = 93)
Kitchen	89.7% (n = 107)	62.4% (n = 93)
Plates/cutlery	82.2% (n = 107)	88.2% (n = 93)
Handwashing station	22.9% (n = 96)	10.3% (n = 58)
Food storage	80.2% (n = 96)	75.6% (n = 58)

The availability of school facilities varies greatly among the intervention municipalities. In Ermera, Manatuto, and Oe-cusse, more than 80% of schools have food storage, while in Ainaro, only 64% of schools have this facility. Regarding plates/cutlery, all intervention municipalities have a high percentage of schools with this facility, except for Manatuto, where only around 68% of schools have plates/cutlery available. Interestingly, Ainaro has a significantly higher percentage of schools with canteens compared to Ermera, with almost 45% of schools having this facility, while in Ermera, the percentage is only 2.4% (see below table). These findings suggest that there may be a need for targeted interventions to improve the availability of certain school facilities in certain areas.

Table 60: Availability of school facilities in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
Canteen	44.4% (n = 27)	2.4% (n = 41)	10.5% (n = 19)	10.0% (n = 20)
Kitchen	92.6% (n = 27)	97.6% (n = 41)	84.2% (n = 19)	75.0% (n = 20)
Plates/cutlery	81.5% (n = 27)	80.5% (n = 41)	68.4% (n = 19)	100.0% (n = 20)
Handwashing station	24.0% (n = 25)	25.0% (n = 40)	25.0% (n = 16)	13.3% (n = 15)
<i>(% of schools serving meals with handwashing station)</i>	54.5%	0.0%	40.0%	0.0%
Food storage	64.0% (n = 25)	82.5% (n = 40)	81.3% (n = 16)	100.0% (n = 15)

In terms of the characteristics of storage spaces at baseline, the majority of schools had cement floors (91% comparison, 83% intervention) and brick walls (50% comparison, 66% intervention). All schools had an aluminium roof. However, a small proportion of intervention schools (14%) and comparison schools (7%) reported having storage spaces with leaking roofs. Most schools reported having adequate ventilation in their storage spaces, with 73% of comparison schools and 75% of intervention schools indicating this. The use of shelves and pallets for raising food off the ground was more common in intervention schools, while the proportion of storage spaces without any method for raising food off the ground was higher in comparison schools (see Table 61).

Table 61: Storage practices , intervention and comparison schools

	Intervention	Comparison
n	77	44
Shelves	14.3%	4.5%
Pallets	79.2%	70.5%
None	10.4%	20.5%
Other	18.2%	11.4%

In the intervention schools, pallets are more commonly used to raise food off the ground compared to shelves. However, there is a high percentage of schools in Oe-cusse that do not use any method to raise food off the ground (see Table 62). This finding suggests that there may be a need to improve food storage practices in certain schools in Oe-cusse.

Table 62: Storage practices in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	16	33	13	15
Shelves	6.3%	9.1%	7.7%	40.0%
Pallets	93.8%	84.8%	69.2%	60.0%
None	12.5%	3.0%	7.7%	26.7%
Other	0.0%	9.1%	30.8%	46.7%

Based on feedback from school administrators and parents, the school feeding program encounters challenges related to insufficient facilities, materials, and cooks. Specifically, respondents identified outdated kitchen facilities and inadequate storage space as significant barriers to effectively implementing the program. Furthermore, the absence of certain kitchen materials and plates were also raised as areas of concern:

Lack of plates and spoons. Water was another challenge. We can prepare the school feeding, but if we don't have water, the supplier cannot cook the food for children.

- FGD with mothers, Manatuto, Int. 32

We are planning to repair the kitchen house because when the cook cooks, the smoke doesn't come out. Recently we opened the floor to let the wind in, but we haven't done that for the smoke outlet. Even now we can't do it because we don't have any nets.

- FGD with fathers, Ainaro, Int. 14

For instance, this school does not have places to store kitchen materials, plates, etc. So, they have meeting with parents, and they start building places to store plates and forks in the kitchen.

- FGD with mothers, Ermera, Int. 28

Note from the program: From 2023 onwards, the service providers of school meals must purchase kitchen materials, plates, and cutlery out of the administrative fund portion for the SFP.

Moreover, based on the responses of certain parents, it is common for students to be asked to bring vegetables or make contributions to support the school feeding program. Parents expressed their readiness to contribute in order to ensure that their children receive well-rounded meals rather than relying solely on rice and beans. This willingness to contribute is particularly evident when schools inform them about budget limitations and the restricted range of food choices:

For example, if the school did not have vegetables, they asked us to contribute [vegetables] like cassava leaves, chokos, pumpkins, etc. We contributed based on what we have.

- FGD with fathers, Manatuto, Int. 17

Yes, we contribute, we give vegetables to those who prepare food for today, tomorrow is another group's task and [they] bring vegetables in another form, like cassava leaves or something else.

- FGD with mothers, Oe-cusse, Int. 35

It was hard to get good vegetables in the rainy season, because we lived near the river side. We could not cross the river. Community who grew watercress, casava leaves, etc. they contributed. Those who grew nothing, they contributed nothing.

- FGD with fathers, Ainaro, Int. 13

Finally, as reported by numerous parents, the primary challenges linked to the school feeding program revolve around adverse weather conditions and the remote locations of the schools. These factors pose significant obstacles in terms of transportation and accessibility, making it more difficult to ensure timely and consistent delivery of meals:

That's the concern of parents. The government did send those food [items] to school, but our road was still in bad condition, so the car could not transport the food items across the river.

- FGD with fathers, Ainaro, Int. 13

It is difficult to properly implement the school feeding program because we have problems with accessing the menu due to the poor condition of the roads. This condition of the roads is due to climate change.

- KII with administrator, Manatuto, Int. 8

PURCHASE OF LOCAL FOODS

To promote sustainable food sources for the SFP, schools were encouraged to purchase produce locally. At baseline, the majority of schools reported purchasing food locally, with intervention schools in Manatuto and Oe-cusse having a 100% purchase rate, while Ermera and Ainaro had purchase rates of 90% and 74%, respectively. Among both comparison and intervention schools, insufficient budget and inadequate farmer's produce were cited as primary reasons for not purchasing local produce. Notably, schools in Ainaro reported budget constraints as the primary reason for not purchasing local produce, while schools in Ermera cited insufficient produce and uncertain availability due to production drops at certain times. It should be noted, however, that local purchases depend on timely transfers of the SFP budget to the school/ cooks. As a result of the delays in funding transfers in 2023, which only occurred at the end of the data collection period, most schools were not purchasing produce for meals (note the proportion of schools serving meals, reported above).

Among schools that reported purchasing local produce, the types of produce purchased appeared consistent. Dark green vegetables (82%), starchy foods (e.g., potato, taro, yellow sweet potato, and cassava) (64%), and vitamin A-rich foods (e.g., pumpkin, carrot, and purple sweet potato) (44%) were the main food items bought during baseline by intervention schools. Dark green vegetables (76%), starchy foods (63%) and legumes (44%) were the main food items bought during baseline by comparison schools. However, these purchases did not match the composition of meals served to students, which were mostly carbohydrates, legumes, nuts, and seafood. This suggests that food supplies purchased from local farmers may not make up a major portion of school meals. Additionally, the low consumption of fruits may also be attributed to the limited number of schools that purchased fruits from local farmers.

For rice and maize, the inability to purchase local produce can be attributed to insufficient funds, which was caused by the schools' limited access to SFP funding from the Government of Timor-Leste. It is also

substantially less costly to purchase subsidized imported rice than local rice; as such, schools typically purchase imported rice in bulk from stores.¹¹⁷ The low purchase of protein sources, such as meat, eggs, and seafood, suggests a potential area for improvement in promoting a diverse and balanced diet. Nonetheless, the relatively high purchase of certain vegetables and starchy foods suggests that these types of produce are both available and desirable for school cooks (see Table 63).

Table 63: Local produce schools bought from farmers in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
n	20	37	19	20
Rice, maize, bread and foods prepared with rice, maize and wheat	0.0%	21.6%	31.6%	25.0%
Pumpkin, carrot, purple sweet potato	45.0%	56.8%	47.4%	15.0%
Potato, taro, yellow sweet potato, cassava, sago	55.0%	51.4%	63.2%	95.0%
Dark green vegetables (e.g., spinach, lettuce, pumpkin leaves, cassava leaves)	85.0%	91.9%	100.0%	45.0%
Other vegetables (e.g., cucumber, tomato, cabbage, eggplant)	0.0%	10.8%	10.5%	5.0%
Yellow fruits (e.g., mango, papaya, honeydew melon, passionfruit)	10.0%	8.1%	15.8%	5.0%
Other fruits (e.g., watermelon, tamarind, jackfruit)	0.0%	0.0%	0.0%	0.0%
Meat (beef, pork, sheep/goat meat, chicken, duck)	20.0%	0.0%	26.3%	5.0%
Seafood (e.g., fresh or dry fish, shrimp)	5.0%	0.0%	0.0%	5.0%
Legumes, beans, and nuts (e.g., beans, peas, soybeans or peanuts)	25.0%	37.8%	15.8%	70.0%
Coconut oil	0.0%	0.0%	0.0%	0.0%
Condiments	0.0%	0.0%	0.0%	5.0%
Tofu or tempe	0.0%	0.0%	10.5%	0.0%
Eggs	10.0%	0.0%	21.1%	0.0%
Don't know	0.0%	2.7%	0.0%	0.0%

¹¹⁷ As per the HATUTAN II market survey, the average cost of 1kg of local rice was US\$1.63 in September 2022, compared to US\$0.73 for imported rice.

During the implementation of the school feeding program and when there is a budget allocated, schools strive to procure a variety of vegetables from local farmers, as highlighted by the majority of school coordinators interviewed. Nonetheless, several respondents pointed out that they face challenges in acquiring the desired produce due to inadequate supply from local farmers:

There are many difficulties, such as during the month of October when it becomes challenging to purchase local produce. Unlike places like Dili or other municipalities, where there is an abundance of produce, our region has dry lands, and we have to buy whatever is available.

- KII with administrator, Oe-cusse, Int. 11

The only problem is the readiness or continuous supply of local products. We need to order them in advance before buying. This also means that they cannot provide the same product continuously. As a result, we need to buy from other farmers in other communities. The school snack is every day, so we require more stock to buy.

- KII with administrator, Ermera, Int. 4

The problem we face is that some farmers grow cassava while others don't, and some grow bananas while others don't. Consequently, we cannot buy everything in one place. If everything were available in our sub-village, we would buy everything here. However, there are certain foods that are not available, so we have to purchase them from the market or other locations.

- KII with administrator, Oe-cusse, Int. 9

For the school feeding program, the usual items procured by schools include a range of vegetables such as cassava leaves and pumpkins, as well as fruits and meat such as chicken and beef:

When the school snack program begins, the school purchases local products such as vegetables from the farmer closest to the community.

- KII with administrator, Ermera, Int. 4

Yes, when the school feeding program was implemented, an agreement was made between the farmers and the chefs that whenever funds were available, the school would purchase vegetables or fruits from the farmers.

- KII with administrator, Ainaro, Int. 1

It was a weekly purchase where we bought not only vegetables and fruits, but also meats like beef and pork. We purchased those meats in bulk from the local [farmers], not by the kilogram as in the market.

- KII with administrator, Ainaro, Int. 2

They [school suppliers] did buy vegetables from the farmers. They are in charge of spending the money we gave them on the vegetables for the meals.

- KII with administrator, Oe-cusse, Int. 10

However, an administrator from Oe-cusse highlighted that purchasing produce from local farmers can sometimes present challenges due to price fluctuations. The varying prices of agricultural products can pose difficulties for the school in terms of budgeting and ensuring a consistent supply of fresh produce for the feeding program:

The problem or impact we encounter is that when we buy food from them [farmers], the price can fluctuate and vary. Sellers who understand the purpose of the vegetable purchase will lower the price, while those who do not will raise it.

- KII with administrator, Oe-cusse, Int. 10

COMMUNITY CONTRIBUTION TO SCHOOL FEEDING PROGRAM

As part of the government SFP up through December 2022, children in basic education were intended to receive a daily allowance of 42 cents. In Oe-cusse, schools receive 50 cents/ child per day and rice. The responsibility of selecting and monitoring cooks who prepare the rice¹¹⁸ and purchase other local produce required for meal preparation involved the PTA. January 2023 the SFP changed to having school feeding management teams responsible for purchasing and serving the meals using 42 cents per meal per child of which 35 cents is for food and seven cents for administration including payment of cooks, firewood, transportation, and cooking equipment. Data collection was done at a transition point when the new policy was just starting implementation. (Bobonaro; Manufahi in March with others starting after the data collection period in April or May). PTAs now have a reduced role to only monitoring the nutritional quality of the meal, if it is composed of the three food groups as per MOH guidance. This section examines the role of schools and households in the SFP, with a focus on the involvement of PTAs in implementation.

At baseline, the majority of schools had a PTA overseeing the school feeding program (67% comparison, 85% intervention) according to the school survey. Moreover, the household survey indicated that most caregivers believed the PTA in their children's school was engaged in activities to improve school feeding (57% comparison, 79% intervention).

Examining PTA involvement by intervention municipality, Oe-cusse had the highest percentage of caregivers who believed that PTAs in their children's school were engaged in improving school feeding (91%). However, Oe-cusse had the smallest percentage of schools reporting that the PTA oversees school feeding (80%). On the other hand, in Manatuto, only 74% of caregivers believed that the PTA improved school feeding, but nearly 95% of schools reported that the PTA oversaw school feeding (see Table 64). The results suggest that the low engagement of caregivers in PTA activities may account for these differences. A low percentage of caregivers in Ainaro (30%), Ermera (29%), Manatuto (30%), and Oe-cusse (17%) reported household participation in the school's PTA.

Table 64: PTA involvement in school feeding in intervention municipalities

	Ainaro	Ermera	Manatuto	Oe-cusse
PTA oversees school feeding	81.5% (n = 27)	85.4% (n = 41)	94.7% (n = 19)	80.0% (n = 20)
PTA improves school feeding	72.2% (n = 72)	82.9% (n = 129)	74.2% (n = 66)	90.9% (n = 33)

The findings suggest that there is a need for greater involvement of caregivers in PTAs to ensure effective implementation of the SFP. This could be achieved through awareness-raising campaigns and incentivizing caregiver participation in PTAs. Additionally, PTAs should be encouraged to prioritize the procurement of

¹¹⁸ Rice ration was last delivered nationally in 2017.

local produce and ensure that school feeding programs are managed efficiently to provide nutritious meals to children. Further research is needed to better understand the reasons behind the low engagement of caregivers in PTAs and to identify effective strategies for increasing their participation in these activities.

The school administrators acknowledged the vital role of PTAs in monitoring the school feeding program. They emphasized that PTAs actively participate in ensuring the program's success by overseeing various aspects such as the availability of an ample supply of produce, adherence to hygienic food preparation practices, and proper serving of meals:

They observed, assisted, and supported the school feeding program to ensure its successful continuation, and they did so.

- KII with administrator, Ainaro, Int. 2

They monitored and observed the implementation of the nutrition menu to ensure its proper usage. When it comes to school meals, the PTA always takes the initiative to verify whether the menu is being followed or not.

- KII with administrator, Manatuto, Int. 8

They had the food because the Parent and Teacher Association collaborated with the supplier. They allocated funds to purchase vegetables such as cassava leaves, eggs from shops, and chicken. We witnessed their efforts in buying and cooking these ingredients for our children.

- FGD with fathers, Manatuto, Int. 17

There is no difficulty. The PTA's responsibility is to monitor the school feeding program.

- FGD with mothers, Ermera, Int. 27

Nevertheless, as previously mentioned, the scarcity of adequate funding and the challenges associated with facility maintenance continue to pose significant obstacles in certain schools:

With regards to the school feeding program, I would like to mention that when the funds arrive, it's not much... However, when the financial situation is clear, it is still not sufficient to buy food for all the children. Nonetheless, it is enough to ensure that the children have something to eat. Additionally, we need to ensure an adequate supply of vegetables. When the student population is at least 300, it becomes feasible, but if the number is smaller, we have to carefully measure their daily food consumption.

- KII with administrator, Oe-cusse, Int. 11

Parents plan to cultivate veggies, so the school does not have to buy them elsewhere. Concerning the fence, our children and their parents built one around the school last year, but animals demolished it.

- FGD with mothers, Ermera, Int. 27

The most difficult aspect was management. For example, if the supplier managed the money well, the school feeding program went well. However, if the money was not managed properly, problems could occur in the middle of the process. Nonetheless, the school continued to provide support to ensure that the school feeding program was managed according to the government's expectations.

- KII with administrator, Ainaro, Int. 2

HEALTH AND NUTRITION

A key focus of HATUTAN II is improving nutrition and water, sanitation, and hygiene (WASH) knowledge and practices. Additionally, one of the McGovern-Dole strategic objectives is to increase the use of positive health, nutrition, and dietary practices. These practices are tied to broader program outcomes: The results framework posits that healthy practices decrease health-related absences in school, which improves students' school attendance and contributes to improved literacy.

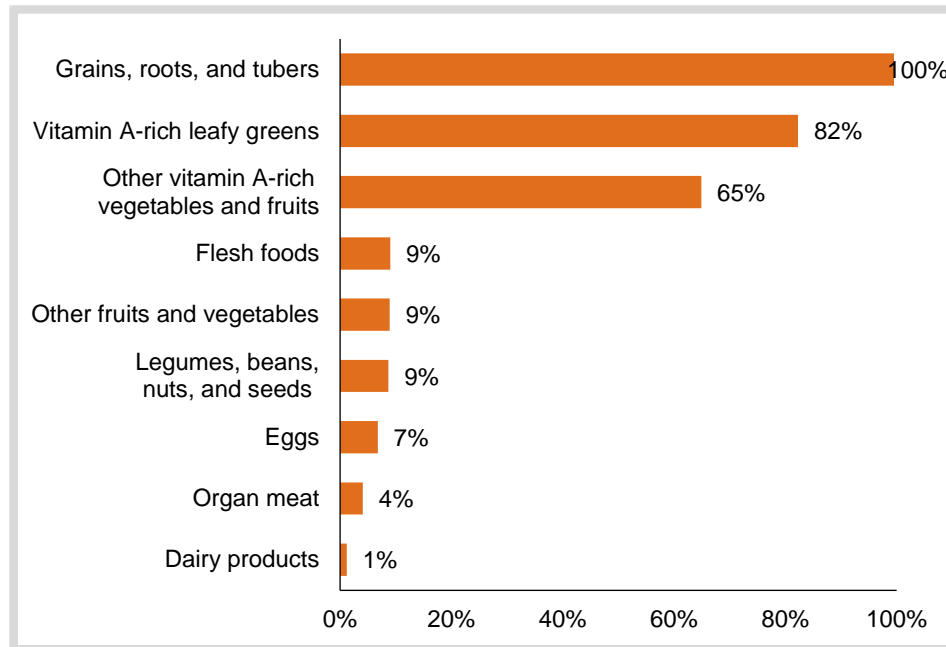
This section focuses first on nutrition and health practices. To better understand drivers of adoption of good health and nutrition practices, we analyze knowledge of nutrition, health, and hygiene (including safe food preparation and storage methods); access to clean water and sanitation; and access to preventative health interventions. To better understand the impact of nutrition practices, we also analyze the Body Mass Index (BMI) of students. Lastly, we conduct a predictive analysis of the impact of household- and community-level factors on health and nutrition knowledge and practices.

NUTRITION PRACTICES

In this section, we analyze the food consumption of caregivers, children under two, and students. Within the household survey and farmer's group survey, caregivers reported on the types of food they consumed during the previous day. Mothers of children under the age of 2 also reported on foods consumed by this child during the previous day. Additionally, caregivers were asked about foods eaten by their grade 2 child (i.e., the child assessed with the EGRA) during the previous day, and immediately before the EGRA, students were also asked about foods they had eaten at school the previous day. This provides a full snapshot of items eaten by students the previous day, including both items eaten at school and at home. Food items were categorized into groups; the full list of food items by groups is included in Annex 4.

We first discuss food consumption of female caregivers of child-bearing age (15 to 49); we focus on these caregivers as the nutrition of women of child-bearing age plays a fundamental role in their baby's development and nutrition. The below figure shows consumption of food groups for intervention caregivers at baseline. We find that almost all caregivers consumed grains, roots, and tubers; 82% consumed Vitamin A-rich leafy greens; and 65% consumed other Vitamin A-rich vegetables and fruits. However, consumption of food groups drops off sharply after this, with only 9% of caregivers consuming flesh foods, the next highest category. This result is noteworthy as it implies very low consumption of protein-rich foods, including meat, animal products, nuts, beans, and legumes. In other words, the data suggests that **most households live on a carbohydrate-based diet with little access to protein sources**. This is consistent with the findings of the 2020 Timor-Leste Food and Nutrition Survey, which also found that diets in Timor-Leste were dominated by carbohydrates and green leafy vegetables.¹¹⁹

¹¹⁹ Timor-Leste Food and Nutrition Survey 2020, Government of Timor-Leste. See <https://www.unicef.org/timorleste/press-releases/timor-leste-food-and-nutrition-survey-2020-preliminary-results-steady-progress-made>.

Figure 13: Consumption by food group, female caregivers of child-bearing age (15 to 49)

Looking at the food groups eaten by children under the age of 2, we similarly find that diets are dominated by grains, roots, and tubers, which were eaten by 86% of intervention children and 95% of comparison children. The second most frequently consumed food group was vitamin A-rich vegetables and fruits (including leafy greens); however, this food group was still only consumed by 34% of intervention children and 32% of comparison children. Breastmilk provides a supplement to this diet for 35% of intervention children and 27% of comparison children. Overall, to an even greater extent than caregivers, this analysis suggests that **children’s diets are dominated by carbohydrates, especially grains, roots, and tubers, with few protein sources.**

In FGDs, mothers and fathers generally demonstrated knowledge of the value of protein-rich foods. A father in Manatuto, for example, stated that, “Here, when we talk about nutritious food, we refer to fish, meat, tofu, and tempeh.”¹²⁰ Similar sentiments were expressed by parents in Ermera, Ainaro, and Oe-cusse.¹²¹ These foods—and a quality diet more generally—were considered particularly important for children’s health:

We thought tempeh and tofu could make [children] healthy... Eating tofu and tempeh can provide good nutrition for the brain.

- FGD with mothers, Ermera, Int. 27

However, a common refrain was that economic challenges limit the quality of diets consumed by caregivers and children. This challenge was summarized in the following quotes from fathers in Ermera and Oe-cusse, and echoed by parents in other municipalities:¹²²

We can’t give nutritious food to our children as farmers since it costs money.

- FGD with fathers, Ermera, Int. 15

¹²⁰ FGD with fathers, Manatuto, Int. 20

¹²¹ See FGD with fathers, Ainaro, Int. 14; FGD with mothers, Ermera, Int. 26; FGD with mothers, Oe-cusse, Int. 36

¹²² E.g., see also FGD with fathers, Manatuto, Int. 19; FGD with mothers, Ainaro, Int. 25

The financial ability of the parents determines whether or not their children will be healthy. If there is money, it is possible to organize how they can be healthy; without money, it is very difficult to make children healthy since they require money to purchase vegetables and other essentials.

- FGD with fathers, Oe-cusse, Int. 23

Several parents also mentioned that limited availability of nutritious foods, including protein-rich foods, posed a challenge to dietary quality. In Ermera, for example, a mother stated that tofu and tempeh were not available in the village market; instead, families had to travel to the municipal capital to purchase these foods.¹²³ Similarly, when asked whether households in his community provide nutritious foods for their children, a father in Ainaro stated the following:

It depends on the season and the capacity of the community. We are far away from the market. We had tofu, tempeh, and eggs on a few occasions only... We also buy fish from fishermen and vegetables from the market, when we have money.

- FGD with fathers, Ainaro, Int. 13

Lastly, it is worth noting that in Ainaro and Ermera in particular, parents stated that some healthy foods were considered taboo for young children, pregnant women, or lactating mothers. These foods include fish, considered dangerous for children due to the risk of swallowing bones;¹²⁴ fruits such as watermelon,¹²⁵ mangoes, and lemons¹²⁶ for pregnant women in Ermera; and moringa for pregnant or lactating women in Ermera.¹²⁷ In one FGD in Oe-cusse, fathers also stated that fish were a sacred food.¹²⁸ Strong understanding of food taboos is important for nutrition programming in order to ensure that communities are not insensitively pressed to eat forbidden foods.

Note from the program: Conversely, it is necessary to sensitize households on the risks of some food taboos which may put children at risk, including non-consumption of colostrum among some groups, or the safe ways of consuming nutritious food (such as fish for children). This approach is in line with the GOTL's activities.

To better understand nutrition practices and quality of nutrition, we calculate dietary diversity scores (DDS) for women and children. These dietary diversity scores reflect the diversity of diet based on the number of food groups consumed (up to nine for women of childbearing age and seven for children).

Average DDS scores for women and children by municipality are shown in Table 65. **We find very low DDS for both women and children, with little difference between intervention and comparison groups.** For women, the average DDS was 2.9 in intervention municipalities, with the highest scores in Ermera and Manatuto, and 2.7 in comparison municipalities. In other words, caregivers tend to consume, on average, around three foods groups. This limited dietary diversity may indicate weak nutrition practices, which may be a result of the “hungry season” in Timor-Leste limiting food consumption, financial challenges which limit food purchases, limited knowledge of good nutrition practices, cultural attitudes towards food, market availability for fruits and vegetables, or other dynamics.

¹²³ FGD with mothers, Ermera, Int. 26

¹²⁴ FGD with fathers, Ainaro, Int. 13; FGD with mothers, Ainaro, Int. 25; FGD with fathers, Ermera, Int. 16

¹²⁵ FGD with mothers, Ermera, Int. 28

¹²⁶ FGD with fathers, Ermera, Int. 16

¹²⁷ FGD with fathers, Ermera, Int. 14; FGD with mothers, Ermera, Int. 27

¹²⁸ FGD with fathers, Oe-cusse, Int. 22

Table 65: Dietary diversity scores by municipality

	Average score – women	Average score – children ¹²⁹
Municipality (intervention)		
Ainaro	2.6	1.7
Ermera	3.0	1.7
Manatuto	3.0	2.0
Oe-cusse	2.7	1.7
Average (intervention)	2.9	1.7
Municipality (comparison)		
Aileu	2.9	1.8
Bobonaro	2.4	1.6
Covalima	2.8	1.5
Manufahi	2.7	1.9
Average (comparison)	2.7	1.7

For children, DDS were even lower than for women, at an average of 1.7 across both intervention and comparison groups. Children's DDS were highest in the intervention municipality Manatuto. As with caregivers, these findings suggests very weak dietary diversity for children, which may have negative implications for health.

DDS are calculated to determine if children meet the minimum acceptable diet (MAD) for children ages 6 to 23 months, which requires that children have consumed at least four of the seven food groups during the previous day. At baseline, attainment of a MAD was extremely low, at only 2.0% in intervention municipalities and 0.8% in comparison municipalities.

Given this extremely low attainment rate, strengthening children's (and women's) dietary diversity is an important area for HATUTAN II interventions, as child nutrition has long-ranging effects on health, success in education, and other factors which allow children to succeed in their future. We note that the HATUTAN endline evaluation found a decline in children's DDS over the implementation period; we therefore recommend revising program activities conducted under HATUTAN during the planning phase for HATUTAN II in order to better address this vital component of nutrition.

Looking now at nutrition practices for babies (under the age of 6 months), we analyze the prevalence of exclusive breastfeeding as well as the use of formula milk. At baseline, we find that 66.9% of the 121 recorded babies under the age of 6 months were exclusively breastfed. This includes 66.2% of babies in intervention areas and 68.2% of babies in comparison areas.

In both comparison and intervention areas, breastfeeding was also occasionally replaced or supplemented by formula milk: 5% of babies in intervention areas and 18.2% of babies in comparison areas were recorded as consuming formula. This means that the majority of babies consumed either breastmilk or formula milk. However, we note that four babies, two in intervention areas and two in comparison areas, were reported to consume neither breastmilk nor formula milk. Furthermore, 10% of babies—9 babies in intervention areas

¹²⁹ Note that sample size per municipality is low; results should thus only be taken as indicative.

and 2 babies in comparison areas—were reported to consume other foods in addition to breastmilk. Given the potential negative implications of these nutrition practices on babies' health, it is important to continue emphasizing the importance of exclusive breastfeeding (or formula provision) during HATUTAN II.

Lastly, we analyze foods consumed by students. We note that **70.7% of students reported that they did not eat anything at school the previous day** (66.0% of intervention students and 77.1% of comparison students); these students' (non-) responses are not included in the below table. In other words, this table includes student-reported data only for the 29% of students who said that they ate at school the prior day.

This table first shows that, as with caregivers and children under two, students' food consumption within the household (i.e., as reported by caregivers) was dominated by grains, roots, and tubers and vitamin A-rich leafy greens. Consumption of protein sources was relatively uncommon, with less than 20% of students in intervention areas consuming legumes or nuts and only 10% consuming meats. Caregivers were also asked about processed and sugary foods and drinks consumed by their grade 2 child; consumption of these foods and drinks was extremely widespread, with nearly 100% of all caregivers stating that their grade 2 child had consumed such food/drink the previous day. Additionally, we note that consumption of dairy was driven by consumption of powdered milk products, rather than dairy products such as milk or cheese.

Looking at the foods students self-reported consuming during school the prior day, we again see that students most frequently reported consumption of grains, roots, and tubers. However, notably, around one-third of intervention students reported consuming legumes and nuts—driven by students in Manatuto and Ainaro, where school meals include peanuts—and one-quarter reported consuming meat. This level of consumption was significantly higher in intervention areas than comparison areas, reflecting the provision of meals through HATUTAN II's locally procured commodities (rice, beans, peanuts, fish powder). Additionally, we note that processed and sugary foods were, on average, the second most frequently reported food consumed by students at school, reflecting the consumption of popular snacks (instant noodles eaten dry as a snack; biscuits/candy/donuts; and sugary drinks).

Table 66: Foods consumed by students

Food group	Caregiver-reported		Student-reported	
	Intervention	Comparison	Intervention	Comparison
n	802	659	515	254
Grains, roots, and tubers	99.6%	99.4%	71.5%	66.1%
Vitamin A-rich leafy greens	75.7%	75.0%	13.2%	13.4%
Other vitamin A-rich vegetables and fruits	4.6%	2.9%	2.1%	1.2%
Other fruits and vegetables	10.7%	8.4%	7.2%	3.2%
Legumes and nuts	18.6%	13.3%	30.7%	1.6%
Eggs	4.1%	3.0%	3.9%	2.4%
Flesh foods and organ meats	9.9%	9.9%	23.5%	8.7%
Dairy products	7.4%	7.1%	0.2%	1.2%
Processed or sugary foods	99.7%	100.0%	32.6%	39.4%

Overall, these findings suggest a **limited dietary quality for grade 2 students**. Diets are predominantly composed of carbohydrates, including processed and sugary foods with limited nutritional value that may

contribute to health issues such as diabetes. Consumption of protein sources and vitamin-rich foods, outside of dark leafy greens, is limited. Furthermore, many students do not eat at all during school hours, further limiting caloric consumption and, potentially, consumption of nutrient-rich foods.

BODY MASS INDEX

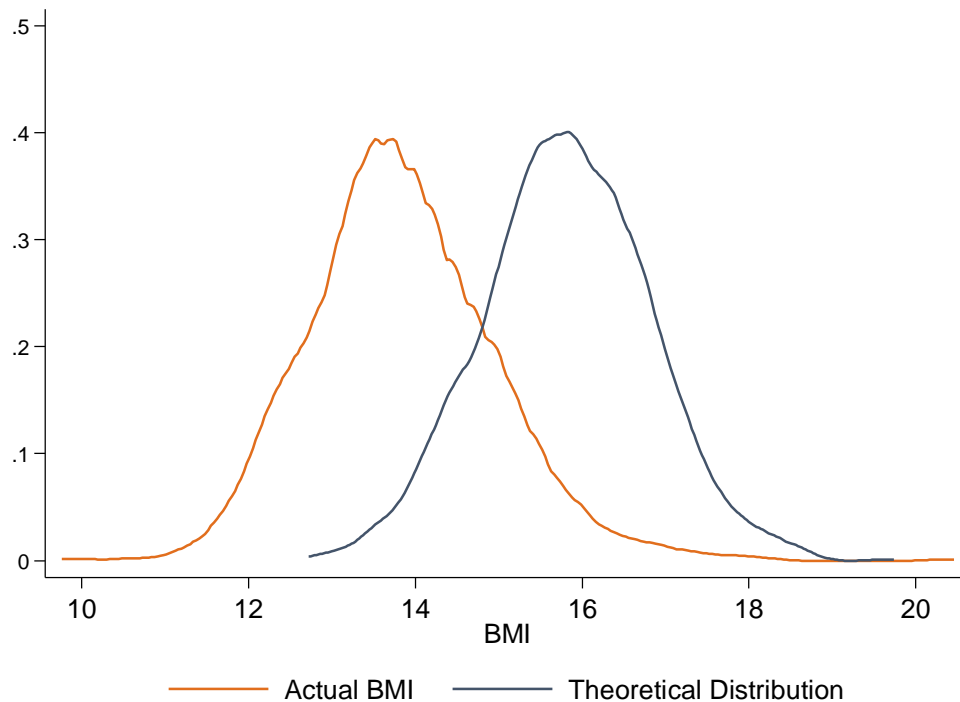
To further explore the implications of low dietary quality on children's health, following administration of the EGRA, grade 2 students' height and weight¹³⁰ was recorded. From these measurements, we calculate students' Body Mass Index (BMI) as weight in kilograms divided by height in meters squared. At an aggregate level, BMI provides a useful method to screen for weight categories that may lead to health problems, including both underweight and overweight. We utilize the United States Center for Disease Control categories for BMI, where a BMI below the 5th percentile by age is underweight, between the 5th and 84th percentile is healthy weight, between the 85th and 94th percentile is overweight, and above the 95th percentile is obese. For a male child aged 8, this means that a BMI below 13.8 is underweight, between 13.8 and 18.0 is healthy weight, and above 18.0 is overweight or obese.¹³¹

We find extremely high underweight prevalence among grade 2 students. The average BMI was only 13.8 kg/m² for intervention students and 13.6 kg/m² for comparison students. Fifty-five percent of comparison students and 53.2% of intervention students had underweight BMIs, 44.4% of comparison students and 46.6% of intervention students had normal BMIs, and 0.4% of comparison student and 0.3% of intervention students had overweight BMIs. Average BMI was extremely similar across male and female students. Among intervention municipalities, average BMI was lowest in Oe-cusse, at 13.5 kg/m².

The below figure demonstrates the massive extent to which these measured BMIs deviate from a theoretical "ideal" distribution which centers upon the middle of the normal range for the distribution of student ages in the baseline sample, a BMI of 15.8 kg/m². There is relatively little overlap between the actual and theoretical BMI distributions; in other words, the majority of intervention students have BMIs under that which would be desirable for health outcomes.

¹³⁰ Due to limitations of the scales used, weight was only measured to the nearest kilogram. As such, our measures of BMI are not completely accurate; however, this is unlikely to substantially bias findings.

¹³¹ See https://www.cdc.gov/growthcharts/html_charts/bmiagerev.htm for further BMI cutoffs by age and gender.

Figure 14: Actual and theoretical BMI distributions, intervention students

These findings emphasize that the weak dietary diversity and nutritional practices found above may have a tangible impact on students' health outcomes, as measured at an aggregate level through BMI. Increasing the prevalence of SFPs, as well as (ideally high quality) calories provided in school meals, may be a vital intervention to improve student health.

KNOWLEDGE OF NUTRITION

Knowledge of nutrition may be one factor contributing to nutrition practices, alongside economic constraints, cultural attitudes, and other factors. Within the household survey, caregivers were asked to provide examples of important maternal childcare practices to gauge their nutritional knowledge.¹³² Eleven nutrition-related practices¹³³ were included in the tool; enumerators marked practices if mentioned by caregivers.

The table below shows that **nutrition knowledge was relatively low at baseline**, with caregivers identifying around three out of 11 practices, on average, in intervention areas and 2.8 in comparison areas. Looking at the specific types of nutrition practices identified, we find that intervention caregivers were most likely to identify feeding children a variety of nutritious foods (53.6%), exclusively breastfeeding for 6 months (43.4%), breastfeeding frequently (38.8%), initiating breastfeeding within one hour of childbirth (38.5%), and introducing safe foods to children at 6 months of age (34.5%) as healthy nutrition practices. In contrast, caregivers infrequently identified feeding babies expressed breastmilk if unable to suckle (3.5%) and continuing to breastfeed when ill (7.0%) as healthy practices. There were no significant differences in

¹³² Caregivers were not prompted with behaviors and asked if they were important nutrition practices; they were rather asked to name practices without any prompting.

¹³³ Feeding children a variety of nutritious foods, exclusively breastfeeding for 6 months, initiating breastfeeding within one hour of childbirth, breastfeeding frequently, introducing safe foods to children at 6 months of age, feeding children iron-rich foods, continuing breastfeeding for one to two years, feeding children frequently, ensuring that pregnant and lactating women eat sufficient food, breastfeeding when ill, and providing expressed breastmilk if babies are unable to suckle.

identification of specific practices, or in overall nutrition knowledge, across intervention and comparison groups.

Table 67: Identification of healthy nutrition practices

	Intervention	Comparison	Diff.	P-value
n	802	659	-	-
Average number of nutrition practices identified	3.0	2.8	0.2	0.63
Use a variety of nutritious, locally available foods for children	53.6%	58.7%	-5.1	0.27
Exclusively breastfed for 6 months	43.4%	41.4%	2.0	0.77
Breastfeed frequently on demand	38.8%	32.5%	6.3	0.36
Initiate breastfeeding within one hour of delivery	38.5%	33.8%	4.7	0.50
Introduce safe and appropriate foods at 6 months on	34.5%	35.5%	-1.0	0.86
Feed children foods rich in iron	28.1%	28.8%	-0.7	0.87
Continue breastfeeding for 1 or 2 years	25.4%	19.7%	5.7	0.32
Feed child frequently	15.3%	15.5%	-0.2	0.98
Provide pregnant/lactating women with appropriate care and encourage to eat adequate food	10.9%	7.6%	3.3	0.19
Continue or increase breastfeeding when mother or child is sick	7.0%	5.2%	1.8	0.42
If infant is unable to suckle, provide expressed breastmilk	3.5%	2.4%	1.1	0.64

While not a main topic of discussion in qualitative interviews, within FGDs, parents mentioned several hygienic nutrition practices. In Ainaro, Ermera, and Oe-cusse, for example, parents stated that it was important to prepare food hygienically and ensure food was clean when cooking.¹³⁴ In Manatuto, a mother stated that, “Whatever food we have prepared on the table must be covered... because the flies may land on food anytime.”¹³⁵ Lastly, in Oe-cusse, a mother stated the following:

Feeding the baby before six months old is not good. Babies should be provided with nutritious food only when they are six months old.

- FGD with mothers, Oe-cusse, Int. 36

McGovern-Dole Custom Outcome #23 on nutrition knowledge asks that mothers identify at least three important nutrition or dietary recommendations. At baseline, 50.6% of intervention caregivers met this standard. Rates at which this standard was achieved varied by municipality, from a high of 61.7% in

¹³⁴ FGD with mothers, Ainaro, Int. 25; FGD with fathers, Ermera, Int. 16; FGD with fathers, Oe-cusse, Int. 23

¹³⁵ FGD with mothers, Manatuto, Int. 32

Manatuto to a low of 34.2% in Oe-cusse; achievement of this outcome in Oe-cusse was significantly lower than in all other municipalities, suggesting a need to focus on strengthening nutrition knowledge in this location.

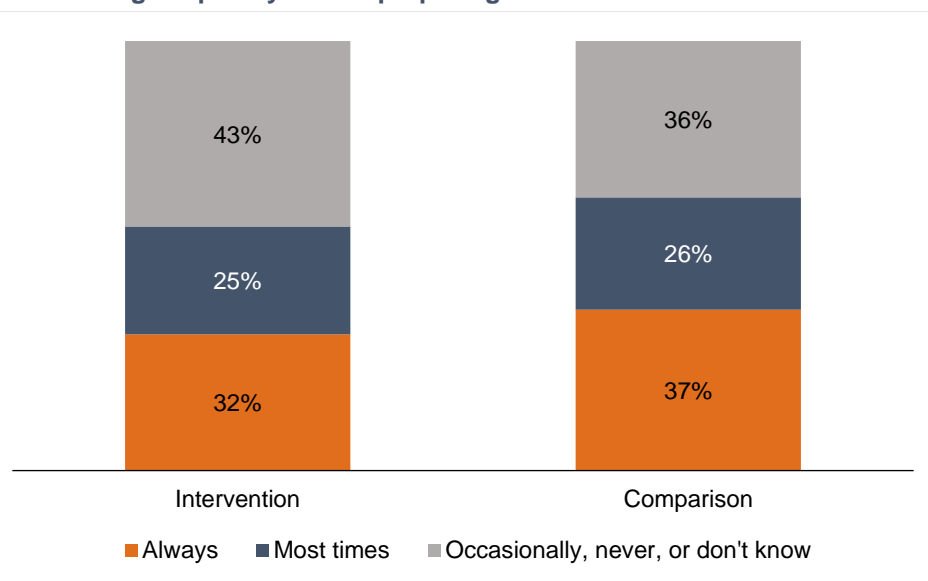
Overall, this section suggests that **while caregivers do have some knowledge of healthy nutrition practices, more work is needed to expand knowledge.** Furthermore, we emphasize that knowledge does not necessarily translate into practice; substantial barriers to healthy nutrition practices may remain even for caregivers with high levels of nutrition knowledge, including economic circumstances, cultural barriers, or factors such as preference for processed or sugary foods. Holistic interventions which target not just knowledge but also this wide range of factors may be needed to instill lasting change in nutrition.

HEALTH PRACTICES

We now discuss health practices, focusing on two practices: handwashing and vaccinating children. Figure 15 shows the frequency with which caregivers reported washing their hands before preparing food always, most times, or occasionally or less. We note that due to social desirability bias, it is likely that these numbers may be somewhat inflated, as caregivers are likely to report that they wash their hands more frequently than they actually do because they know it is a desirable practice. However, this bias should affect both intervention and comparison areas equally.

We find that only around one-third of caregivers reported that they always wash their hands before preparing food, and around one-quarter reported that they wash their hands before preparing food most of the time; there were no significant differences between results in intervention and comparison areas. In other words, around **43% of intervention caregivers self-reported that they only occasionally wash their hands before preparing food.** This is a clear sign of a need to strengthen hygienic practices among caregivers.

Figure 15: Handwashing frequency before preparing food



Notably, **reported handwashing practices were significantly worse in Oe-cusse than all other municipalities.** In Oe-cusse, 82.6% of caregivers reported that they occasionally or never wash their hands before preparing food. In contrast, in Manatuto, the next worst-performing municipality, only 43.4% of caregivers reported this. The differences are also likely to reflect the influence from HATUTAN I's intervention in Ainaro, Ermera, and Manatuto. It may therefore be helpful to target Oe-cusse with HATUTAN II activities seeking to strengthen health practices.

Caregivers were also asked to list all of the times the previous day when they had washed their hands. The table below shows that caregivers most frequently reported washing their hands before eating and before cooking. In contrast, caregivers infrequently reported handwashing after changing a diaper,¹³⁶ before feeding a child, and after defecation. There were no significant differences across intervention and comparison municipalities.

Table 68: Situations when caregivers washed hands

	Intervention	Comparison	Diff.	P-value
n	1,012	659	-	-
Before eating	68.0%	68.1%	-0.1	0.96
Before cooking	55.4%	60.2%	-4.8	0.28
After working in farm or with livestock	45.5%	37.0%	8.5	0.26
After defecation	28.7%	29.6%	-0.9	0.76
Before feeding child	26.4%	24.1%	2.3	0.59
After changing diaper	10.4%	12.6%	-2.2	0.35

The infrequency with which caregivers reported washing their hands before feeding a child is notable, as this is a highly important health practice: Feeding a child with unwashed hands may introduce bacteria and diseases to the child. As such, it may be useful to emphasize the importance of this practice to caregivers, especially those with young children who are particularly vulnerable to diarrheal diseases that can be introduced through unsanitary feeding practices.

The qualitative data sheds further light on handwashing practices. Parents generally understood the importance of handwashing. However, mothers and fathers across all municipalities expressed that they did not have sufficient money to purchase soap, and as a result, they frequently washed their hands with only water.¹³⁷ In addition to this barrier, parents in Ainaro and Oe-cusse also stated that limited access to water reduced the frequency of handwashing.¹³⁸

Other than economic constraints, several parents stated that there was a need to better reinforce the habit of handwashing; for example, fathers in a focus group in Ainaro stated the following:

[Father 1:] It's not difficult [to wash hands with soap], but people don't want to do it.

[Father 2:] It's difficult because people are not in the habit.

- FGD with fathers, Ainaro, Int. 14

A mother in Ainaro similarly stated that “failing to wash hands is usually the norm.”¹³⁹ These sentiments emphasize the importance of behavior change communication that instills handwashing as a regular habit, as well as the need to strengthen households' economic status to improve the use of soap in handwashing.

¹³⁶ When we restrict this to caregivers with a child under the age of 2 years (i.e., caregivers who would likely have needed to change a diaper), we still find low reported rates of handwashing, at 25% for comparison caregivers and 18% for intervention caregivers.

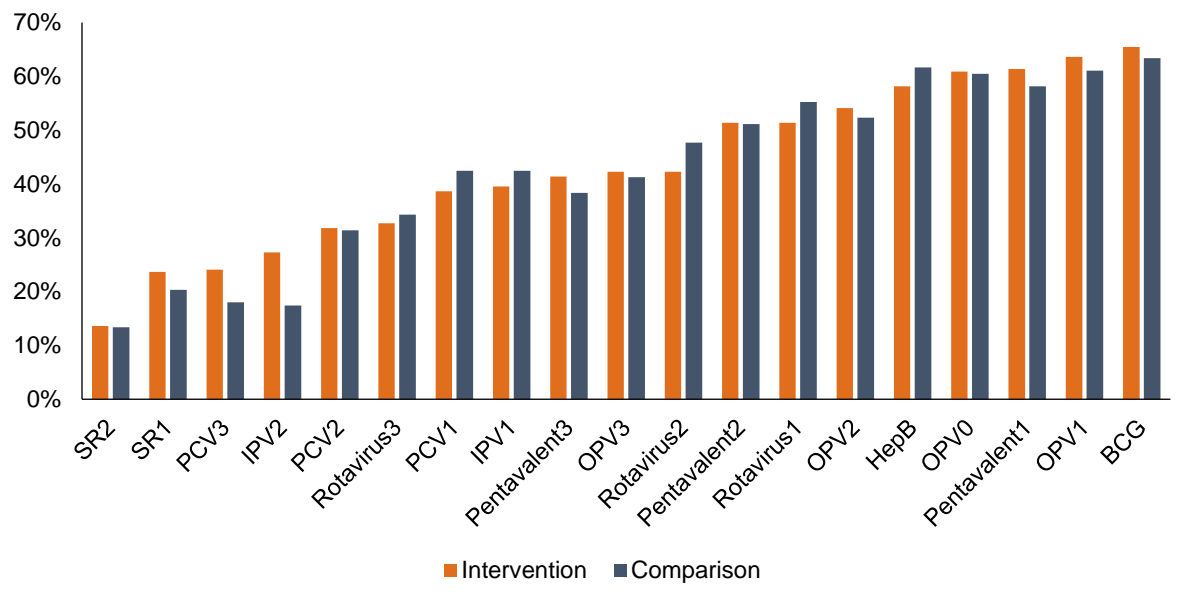
¹³⁷ E.g., FGD with fathers, Ainaro, Int. 13; FGD with fathers, Ermera, Int. 16; FGD with fathers, Manatuto, Int. 19; FGD with mothers, Manatuto, Int. 32; FGD with mothers, Oe-cusse, Int. 33

¹³⁸ FGD with fathers, Ainaro, Int. 14; FGD with fathers, Oe-cusse, Int. 23

¹³⁹ FGD with mothers, Ainaro, Int. 25

Lastly, mothers with children under the age of 2 were asked to show the vaccination record for their child. Figure 16 shows the prevalence of a variety of vaccinations. The most frequent vaccination was Bacille Calmette-Guérin (BCG) (tuberculosis) vaccine, which had been administered to 65% of intervention children and 63% of comparison children. Oral poliovirus vaccine (OPV) was also common among both intervention and comparison children, although only 42% of intervention children had received a full course of four oral poliovirus vaccines.

Figure 16: Child vaccination prevalence



On average, intervention children had received 8.2 vaccinations and comparison children had received 8.1. This falls below the approximately 25 vaccinations recommended by the United States Center for Disease Control for children under the age of 2; however, it also suggests that **most mothers are actively vaccinating their children**. From this analysis, two recommendations emerge. First, we recommend improving accessibility to vaccinations, as many mothers appear to view vaccinating children as a desirable practice but may only do so if vaccinations are convenient and (or low cost).available within a reasonable distance from the home (particularly if traveling on foot). Second, around 25% of children had no vaccinations. This may occur if mothers are either ignorant of the benefits of vaccinations, misinformed about their risks, or have very limited access to vaccinations. As such, it may be useful to conduct further research to determine why some Timorese children do not receive any vaccinations, and then address these barriers.

Lastly, although sample size was low, we note that children in Oe-cusse had, on average, received substantially fewer vaccines than children in other municipalities, at only 5.5 vaccines. However, a similar percent of children—27%—in Oe-cusse had not received any vaccinations. This suggests that mothers' desire to vaccinate their children is similar in Oe-cusse as in other municipalities, but that access to vaccinations is limited, potentially reflecting long distances to health posts and the mountainous terrain, which isolates many locations during the rainy season. Expanding access to vaccinations may therefore be an important initiative to strengthen child health in this municipality.

KNOWLEDGE OF HEALTH AND HYGIENE

Knowledge of good health and hygiene behaviors is one of six factors that are posited to contribute to increased use of health, nutrition, and dietary practices in the HATUTAN II results framework. To measure

knowledge of health and hygiene, in the household survey, caregivers were read lists and shown images of healthy and unhealthy hygiene practices and were asked to correctly identify healthy practices.

During fieldwork, some caregivers were observed to state that every practice (including irrelevant practices, such as playing soccer) was hygienic due to survey fatigue, as this group of questions came near the end of the survey. As such, we exclude caregivers who responded positively to every hygiene question from the sample. This excludes 162 caregivers.

We first create and analyze handwashing and hygiene scores. The handwashing score is based on caregivers' correct responses to eight questions asking them to identify situations before or after which they should wash their hands.¹⁴⁰ The hygiene score is based on caregivers' correct responses to 13 questions asking them to identify hygienic behaviors.¹⁴¹

Table 69 shows handwashing and hygiene scores by municipality and treatment group. We find that overall, **knowledge of handwashing and hygiene was high**, with scores around 97% for handwashing and 93% for hygiene. Scores had little variance across intervention and comparison municipalities. This likely reflects a ceiling effect, as 84% of caregivers scored 100% on handwashing knowledge and 37% of caregivers scored 100% on hygiene knowledge.

Table 69: Handwashing and hygiene scores by municipality and treatment group

	Handwashing Score	Hygiene Score
Municipality (intervention)		
Ainaro	97.0%	93.3%
Ermera	96.9%	92.0%
Manatuto	95.5%	94.5%
Oe-cusse	99.1%	92.7%
Average (intervention)	97.0%	93.0%
Municipality (comparison)		
Aileu	94.5%	93.1%
Bobonaro	97.3%	88.3%
Covalima	98.4%	95.5%
Manufahi	98.4%	95.2%
Average (comparison)	97.1%	92.4%

Looking at specific hygienic practices, the figure below shows that for handwashing, the percent of intervention caregivers answering questions correctly was uniformly high. Correct response rates were

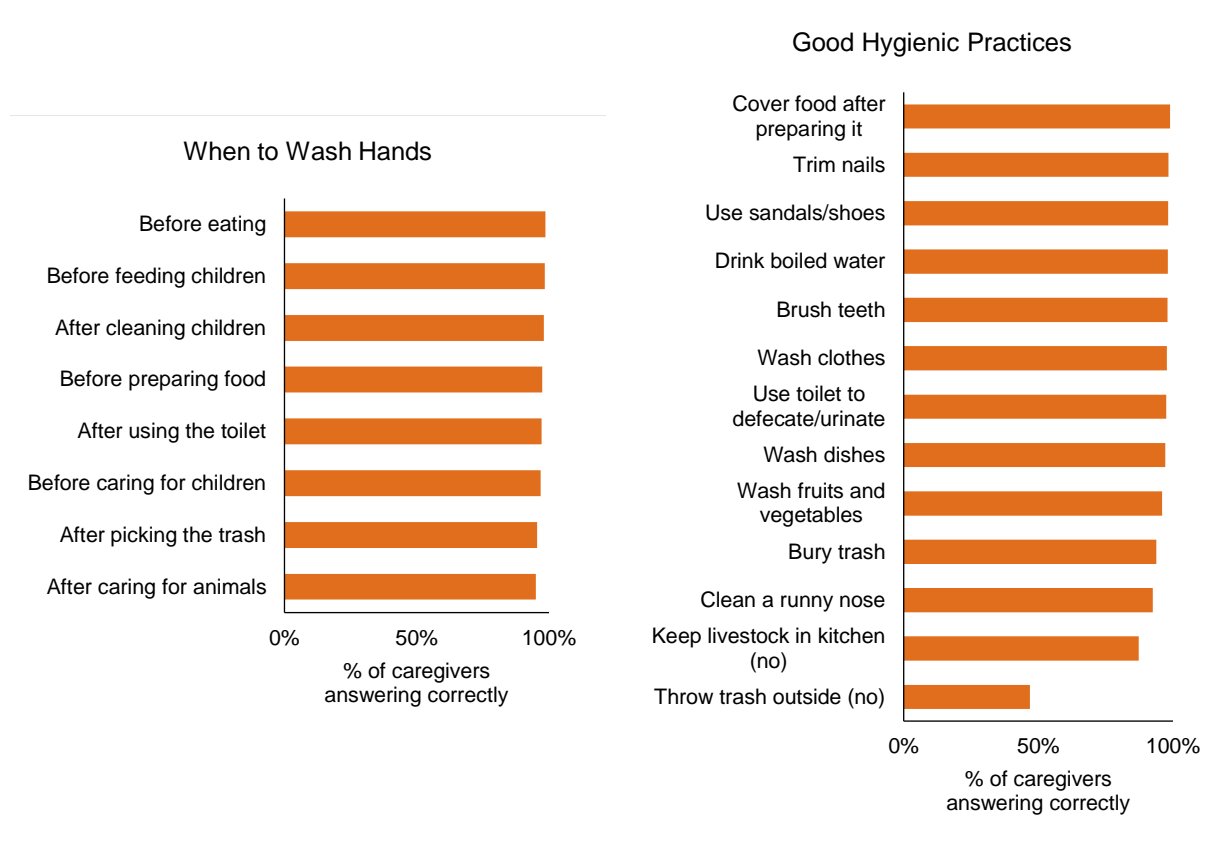
¹⁴⁰ Before caring for children, before eating, before feeding children, before preparing food, after caring for animals, after using the toilet, after picking the trash, and after cleaning children. Several "neutral" questions were also included that are not incorporated into the overall score; these include after reading books, after using the phone, and before work. If a caregiver answered "don't know," that was considered an incorrect answer.

¹⁴¹ Drinking boiled water, brushing teeth, burying trash, covering food after preparing it, (not) keeping livestock in the kitchen, trimming nails, cleaning a runny nose, using sandals/shoes, using the toilet to defecate/urinate, (not) throwing trash outside, washing clothes, washing dishes, and washing fruits and vegetables. Several "neutral" questions were also included that are not incorporated into the overall score; these include writing, playing, and playing soccer.

similarly high for most hygienic practices, with the exception of throwing trash outside, which only 47% of intervention caregivers stated was not hygienic.

While qualitative interviews focused mainly on handwashing, analyzed in the above section, several parents also mentioned other hygienic practices. A mother in Manatuto, for example, stated that, “We need to put rubbish in a rubbish bin. Do not litter. This practice is good for our health.”¹⁴² Mothers in Ainaro also mentioned that it was important to use the toilet to defecate or urinate.¹⁴³

Figure 17: Handwashing and hygiene knowledge, intervention caregivers



Overall, these results suggest either that knowledge is not a major barrier to healthy hygiene practices or that the hygiene assessment was too easy for caregivers. We note, for example, that over 98% of caregivers stated that handwashing should occur before feeding children and after cleaning children. However, in the section above, we find that only 24.1% of intervention caregivers stated that they had washed their hands before feeding children the previous day, and only 12.6% stated that they had washed their hands after changing a diaper. This suggests that **while knowledge of handwashing practices is strong, actual behaviors remain weak**. As a result, it may be more effective to pivot future programming away from a focus on knowledge and towards improving the effectiveness of behavior change interventions. The following quote from an FGD in Manatuto provides support for this recommendation:

In this community, we have heard a lot about washing hands, and just recently from CARE. With this, in rural areas like this, we are aware that before having our meal we

¹⁴² FGD with mothers, Manatuto, Int. 32

¹⁴³ FGD with mothers, Ainaro, Int. 25

must wash our hands, but in reality, sometimes we forgot. When we are too hungry, we eat directly and we tend to forget washing our hands.

- FGD with fathers, Manatuto, Int. 20

Lastly, McGovern-Dole Custom Outcome #21 asks that caregivers identify at least 17 out of 19 healthy hygiene and handwashing practices. At baseline, 92.4% of intervention caregivers and 90.8% of comparison caregivers met this standard. Among intervention municipalities, rates of achievement were 89.2% in Manatuto, 89.6% in Ermera, 95.2% in Ainaro, and 98.5% in Oe-cusse. This fairly high rate of achievement again suggests that knowledge may not be a key barrier to improved hygienic practices or that the assessment is too easy for respondents.

ACCESS TO CLEAN WATER AND SANITATION

In addition to health knowledge, the results framework identifies access to clean water and sanitation as a factor contributing to health, nutrition, and dietary practices. The HATUTAN II program will seek to increase access to clean water and sanitation, including access to an improved water source and improved sanitation facilities. In this section, we thus analyze access to water and sanitation sources at the household and school levels.

Households

At the household level, we first examine access to clean drinking water, followed by access to a toilet and handwashing station. Table 70 shows that access to an improved water source¹⁴⁴ was high in both intervention and comparison municipalities. On average, over 90% of caregivers in both treatment groups had access to an improved water source; while access was somewhat lower than average in Ainaro and Oe-cusse, at 84.4% and 86.6% respectively, the vast majority of caregivers still obtained water from an improved source in these two municipalities.

Table 70: Access to improved water source

	Access to improved water source	Drinking water available all year
Municipality (intervention)		
Ainaro	84.4%	56.2%
Ermera	95.3%	47.9%
Manatuto	92.9%	31.9%
Oe-cusse	86.6%	59.1%
Average (intervention)	90.3%	49.1%
Municipality (comparison)		
Aileu	92.7%	38.4%
Bobonaro	96.0%	54.7%
Covalima	86.7%	72.6%
Manufahi	89.8%	65.1%
Average (comparison)	92.0%	56.9%

¹⁴⁴ Piped water, public tap, borehole, protected dug well, rainwater harvesting, or trucked water.

Although most households have access to an improved water source, reliable access to water all year round remains a challenge. Less than half of intervention households and 56.9% of comparison households stated that drinking water was available all year. Within intervention areas, access was particularly low in Manatuto, where only 31.9% of caregivers stated that drinking water was available all year. These findings suggest that more work is needed to improve the consistency of access to clean water.

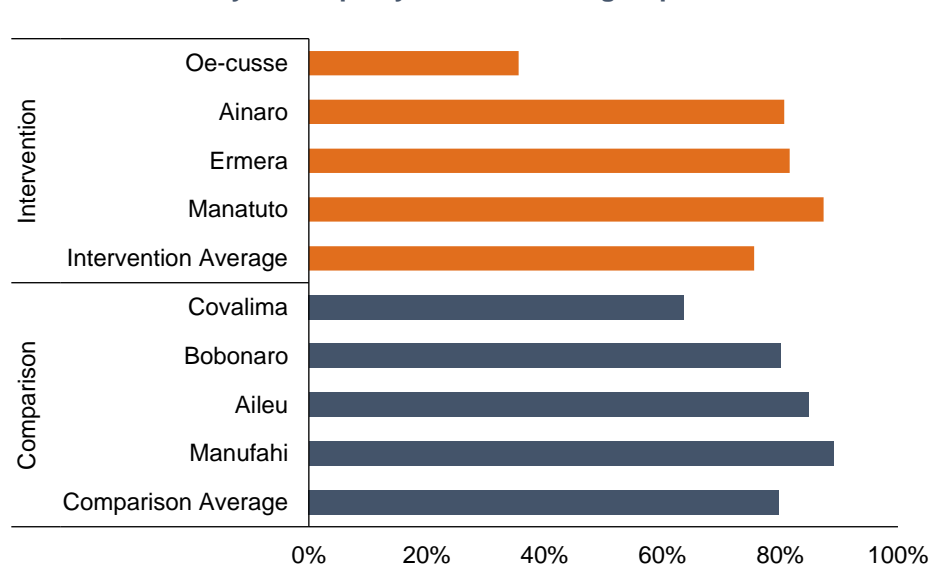
Looking now at toilet access, Figure 18 shows access by municipality and treatment group. We find that 75.6% of intervention households and 79.8% of comparison households had access to some type of toilet (including a flush toilet or pit latrine). These percentages were dragged down by one municipality in each group: Oe-cusse, where only 35.6% of households had access to a toilet, and Covalima, where only 63.7% of households had access to a toilet. Toilet access in Oe-cusse was significantly lower than in any other intervention or comparison municipality, suggesting a particular need to focus on improving access in this area. FGDs suggest that at least some parents in Oe-cusse, however, may be aware of the value of toilets and taking steps to build them as economic conditions allow:

Some of us have started building non-permanent toilets. We did that based on our capability. We did not have enough money to buy toilet building materials.

- FGD with fathers, Oe-cusse, Int. 22

We also note that the most common toilet type across all rounds was pit latrines with slabs and that 14% of intervention households and 20% of comparison households used an uncovered pit latrine. Use of “improved” toilet types, including improved pit latrines, composting latrines, and flush toilets, was relatively low; these three toilet types comprised only 19.1% of toilets used by intervention households. While access to toilets is relatively high, there is thus further room to improve the quality of toilets used. In particular, **it may be helpful to target reduction in the use of uncovered pit latrines**; these latrines can result in the spread of faecal-borne diseases, such as cholera and diarrheal diseases, if flies are able to enter the latrine or if latrines overflow due to flooding during the rainy season.

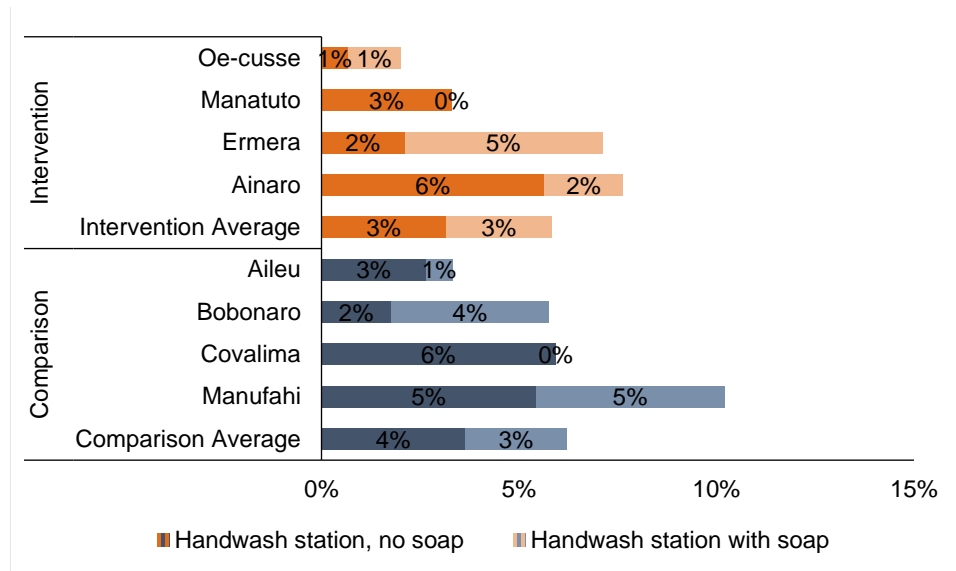
Figure 18: Access to a toilet by municipality and treatment group



Lastly, we analyze households' access to handwashing stations and soap. Access to handwashing stations was very low at baseline, as shown in the below figure; only 5.8% of intervention households and 6.2% of comparison households had a handwashing station. Furthermore, in households with a handwashing

station, enumerators were also asked to observe whether there was soap at the station.¹⁴⁵ On average, less than half of handwashing stations were observed to have soap, suggesting that they are not actively or effectively used.

Figure 19: Availability of handwashing stations and stations with soap



These results suggest that handwashing may not be a frequent behavior, and that the prevalence of handwashing found in *Health Practices* may possibly be over-reported (although it is possible that caregivers wash their hands without using a dedicated handwashing station). It also suggests that knowledge of handwashing practices is not effectively translating into action. It may be more effective for HATUTAN II to adapt a behavior change approach that focuses on barriers to handwashing outside of knowledge.

Schools

We now look at toilet and handwashing station availability in schools.¹⁴⁶ The below table shows the availability of toilets and toilets for girls within schools. We find that 80.4% of intervention schools and 67.7% of comparison schools had at least one toilet available, and that on average, intervention schools had two toilets available while comparison schools had less than two. Toilet availability was lowest in Bobonaro (51.6% of schools had at least one toilet, and schools had on average only around one toilet) and Oe-cusse (55.0% of schools had at least one toilet, and schools had on average only around one toilet).

It is also important that schools have toilets available specifically for girls, as many girls may feel uncomfortable using toilets also used by boys or may face harassment to do so. At baseline, in both intervention and comparison schools, we find less than one toilet available for girls on average. Indeed, 57.9% of intervention schools and 66.7% of comparison schools had no functional toilets available for female students. Overall, this suggests that more efforts are needed to improve toilet availability, especially for female students, within schools.

¹⁴⁵ Rather than ask, as answers would be highly vulnerable to social desirability bias.

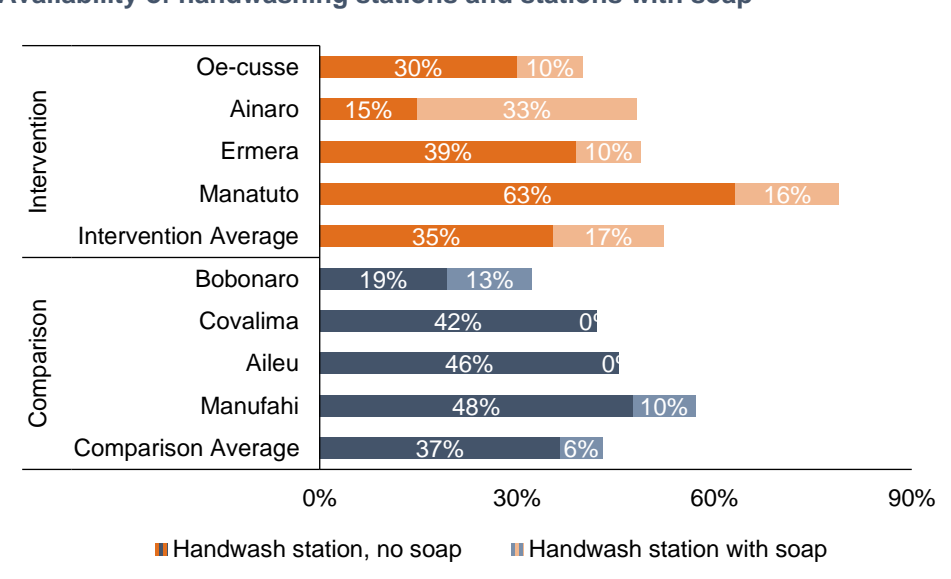
¹⁴⁶ Access to clean water and kitchen handwashing stations are discussed in the *School Feeding Program* section.

Table 71: Availability of toilets in schools

	At least one school toilet	Average number of school toilets	Average number of toilets for girls
Municipality (intervention)			
Ainara	77.8%	1.6	0.4
Ermera	87.8%	2.2	0.8
Manatuto	94.7%	2.9	1.5
Oe-cusse	55.0%	1.2	0.3
Average (intervention)	80.4%	2.0	0.7
Municipality (comparison)			
Aileu	77.3%	1.6	0.7
Bobonaro	51.6%	1.1	0.4
Covalima	63.2%	2.2	0.3
Manufahi	85.7%	1.9	0.8
Average (comparison)	67.7%	1.6	0.5

Looking now at handwashing stations in schools, the below figure shows availability of handwashing stations and stations with soap. On average, 52.3% of intervention schools and 43.0% of comparison schools had at least one handwashing station available for students. Only around one-third of those intervention schools and 15% of those comparison schools, however, had soap available for at least half of handwashing stations. Manatuto stands out as a positive outlier, with 79% of schools having handwashing stations (although only three of those schools also had soap widely available). However, availability of handwashing stations was relatively low across all other municipalities.

Figure 20: Availability of handwashing stations and stations with soap



In qualitative interviews, school administrators were asked about students' handwashing practices at school and challenges facing handwashing. Several administrators stated that student habits were the primary challenge; for example, in Manatuto, one administrator stated the following:

The biggest difficulty [to handwashing] is that the students do not want to. There was water, a water tap, and soap, but the students did not want to wash their hands. When the teacher told the students to wash their hands before eating, to wash their hands before entering the classroom, the students did not want to wash their hands.

- KII with administrator, Manatuto, Int. 8

However, an administrator in Ainaro stated that access to water was also a challenge to handwashing:

Here, we faced difficulty in accessing the clean water. It was difficult when we didn't have the water. If we had water like other schools, I think there would be no problem.

- KII with administrator, Ainaro, Int. 2

Additionally, in Ermera and Manatuto, purchasing soap was described as a challenge. An administrator in Ermera, for example, stated, "Even now there is no soap. Which teacher or school coordinator would spend their money to buy soap?"¹⁴⁷

Note from the program: The schools' concessional budget can be used to purchase hygiene supplies, including soap.

Overall, these results suggest that access to sanitation infrastructure within schools warrants further improvement. Availability of school toilets is particularly important as it may be linked to factors such as student attendance, as students may not want to attend school if they will not be able to relieve themselves and will thus feel uncomfortable throughout the day. Access to handwashing stations, meanwhile, will take on even greater importance as the prevalence of school feeding programs increases, as it is especially important for students to wash their hands prior to eating.

ACCESS TO HEALTHCARE

Within the household survey, caregivers were asked about their ability to access healthcare and use of savings and loans for healthcare. The table below shows the frequency with which caregivers stated that they could afford healthcare costs all or most of the time or that there were no costs, as well as the frequency with which heads of household (HoHs) stated that they used savings or loans to pay for healthcare.¹⁴⁸

We find that caregivers generally reported high levels of healthcare affordability. This was driven by a large percentage of caregivers who stated that there was no need to pay for healthcare; at baseline, this option was selected by 68.8% of intervention caregivers and 65.3% of comparison caregivers. As medical care is free in Timor-Leste, the rate at which this option was selected is unsurprising; caregivers who did express challenges affording healthcare may visit private clinics or may be including costs such as transportation in their calculations.

¹⁴⁷ KII with administrator, Ermera, Int. 3; see also KII with administrator, Manatuto, Int. 7

¹⁴⁸ Other dimensions of savings and loans use are included in the section *Economic Empowerment*.

Table 72: Affordability of healthcare

	Healthcare is always or mostly affordable	Household used savings for healthcare	Household used loans for healthcare
Municipality (intervention)			
Ainaro	84.1%	14.4%	3.9%
Ermera	75.3%	7.3%	1.9%
Manatuto	67.6%	5.2%	2.9%
Oe-cusse	83.9%	1.2%	0.0%
Average (intervention)	77.8%	8.0%	2.4%
	Healthcare is always or mostly affordable	Household used savings for healthcare	Household used loans for healthcare
Municipality (comparison)			
Aileu	70.9%	8.8%	0.0%
Bobonaro	69.0%	13.7%	9.1%
Covalima	73.3%	0.0%	0.0%
Manufahi	82.3%	9.3%	0.0%
Average (comparison)	73.3%	9.0%	2.4%

As a validating measure, we find that use of savings and loans for healthcare was low and similar across intervention and comparison areas: Only 8% of intervention and 9% of comparison HoHs reported using savings for healthcare, and only 2.4% of both intervention and comparison HoHs reported using a loan for healthcare. While there was a significant difference in prevalence of savings use across some municipalities, with, for example, a significantly higher rate in Ainaro than Oe-cusse, overall rates of savings and loans use did not exceed 15% in any municipality. This may reflect both affordability of healthcare as well as low healthcare seeking behavior.

We note, however, that affordability is likely not the only barrier to healthcare access; in Timor-Leste, the distance of health facilities from remote areas, access to transportation, and road accessibility all may significantly affect healthcare accessibility, and were not measured in HATUTAN evaluations. Furthermore, limited use of savings and loans for healthcare may not fully reflect need to spend money on healthcare, but may rather be due to low prioritization of healthcare in HoH spending. As such, the above analysis likely does not fully represent healthcare accessibility. This possibility is explored more in the section *Economic Empowerment*.

PREDICTORS OF HEALTH AND NUTRITION

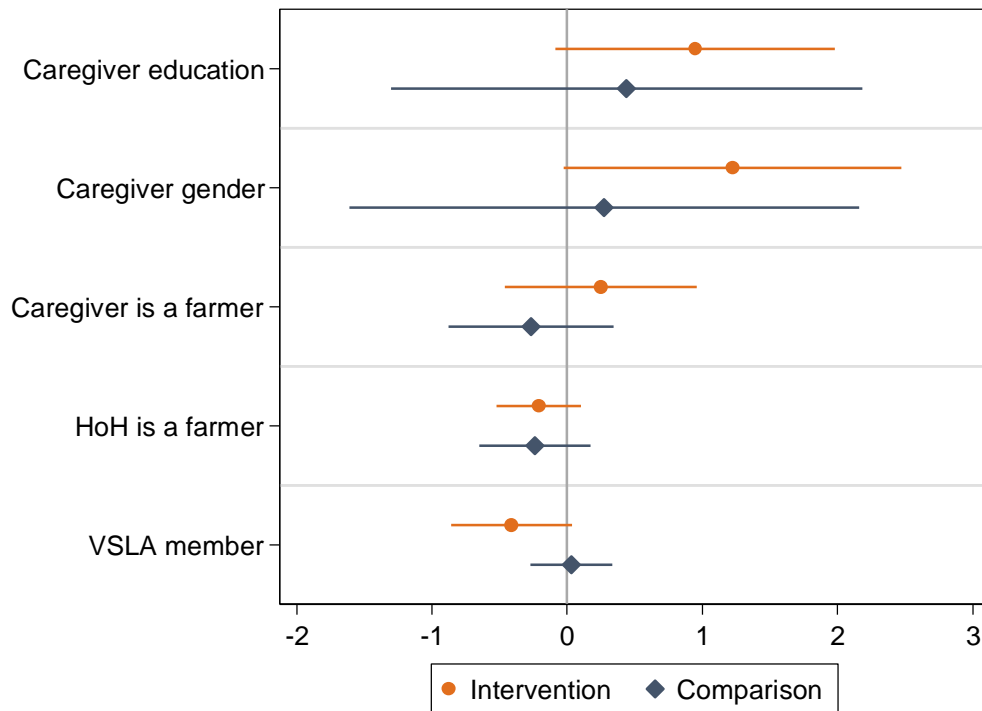
This section analyzes the relationship between various household characteristics and caregivers' nutrition knowledge, dietary diversity, and health knowledge. Within each predictive model, we include variables for caregiver education and gender. We also include additional variables for factors that may affect—or be affected by—each outcome of interest, discussed more below.

Predictors of Nutrition Knowledge

To better understand dynamics around nutrition knowledge, in addition to caregiver education and gender, we include variables to control for whether the caregiver or HoH is a farmer and whether the household participates in a VSLA (as health and nutrition information was disseminated to caregivers through VSLAs). We also include municipality fixed effects to control for variables (such as treatment status) that vary at the municipality level. We hypothesize that farmers may have relatively more knowledge of nutrition due to their knowledge of agriculture. We also hypothesize that households who participate in VSLAs may be more exposed to HATUTAN trainings and also have more savings; as a result, they may have more nutrition knowledge as wealthier households are likely to have more ability to make nutritional choices, and thus more need for knowledge of good nutrition practices.

Figure 21 shows results for predictors of nutrition knowledge. We find no significant predictors among intervention or comparison households. The largest effect size is found among intervention households for caregiver gender, with female caregivers scoring, on average, 2.7 points higher on the nutrition knowledge assessment than male caregivers, all else held constant. This result is unsurprising, as women are generally more likely to be involved in cooking meals for the household, and are thus more likely to have nutrition knowledge than men due to their higher levels of daily involvement in making food-related decisions.

Figure 21: Predictors of nutrition knowledge



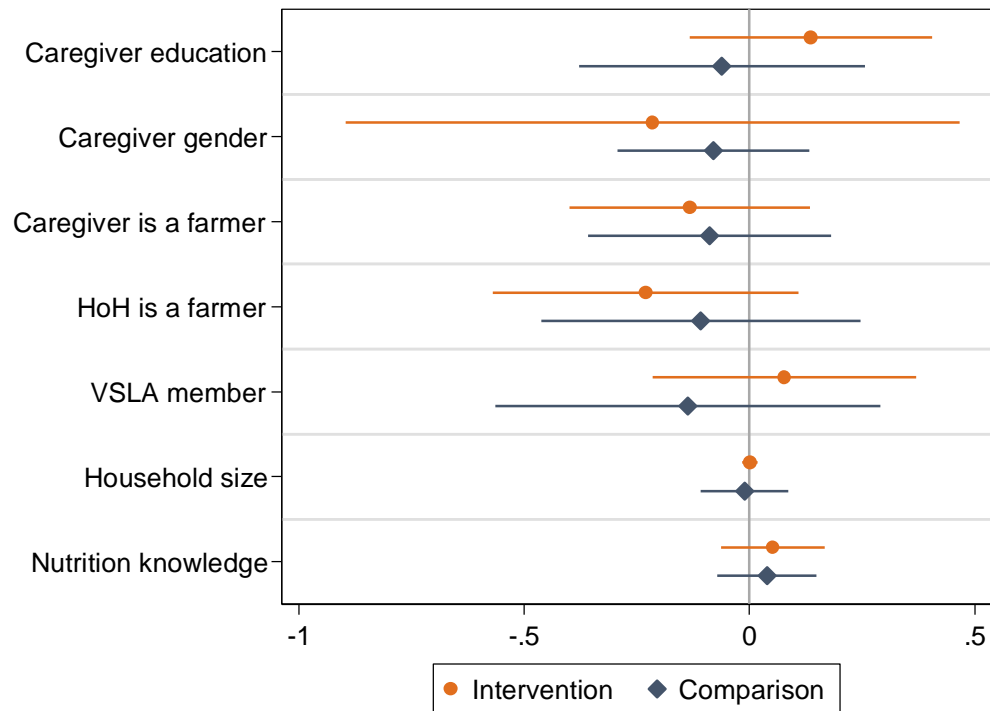
Predictors of Dietary Diversity

Looking now at caregiver dietary diversity, we include all variables in the above regression (including municipality fixed effects) and hypothesize similar relationships. We also include variables controlling for the number of household members and nutrition knowledge. For household members, we hypothesize that larger households will have lower dietary diversity due to the need to feed more people, and thus the need

to purchase mainly low-cost foods. For nutrition knowledge, we hypothesize that greater knowledge will correlate with higher dietary diversity due to the increased importance placed on achieving a nutritional diet.

In contrast to our hypotheses, we find no significant relationships between any included variables and caregiver dietary diversity.

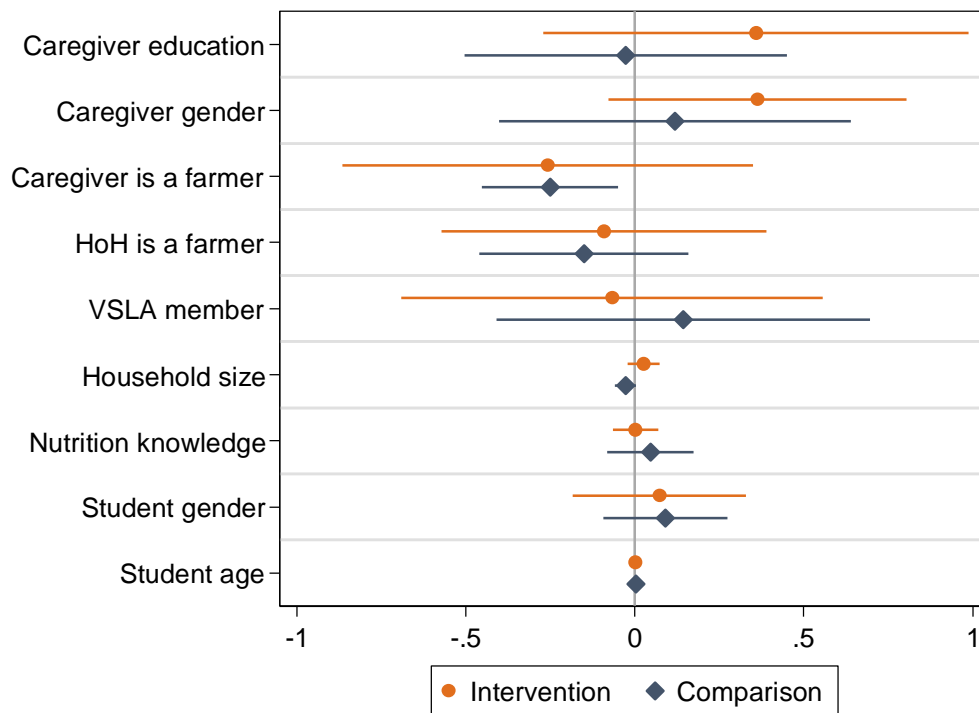
Figure 22: Predictors of caregiver dietary diversity



To supplement this analysis, we also analyze predictors of student dietary diversity. We create a student dietary diversity score based on both caregiver- and student-reported food consumption, excluding processed and sugary foods from the total score. In our regression, we then include the above variables as well as variables for student gender and age.

The below figure shows that for comparison households, we find a significant and negative relationship between whether the caregiver is a farmer and student dietary diversity. This relationship is somewhat surprising, but may in part be a reflection of the relationship between household economic status and dietary diversity, as we also find a significant relationship between whether the caregiver is a farmer and whether the household has savings.

Figure 23: Predictors of student dietary diversity

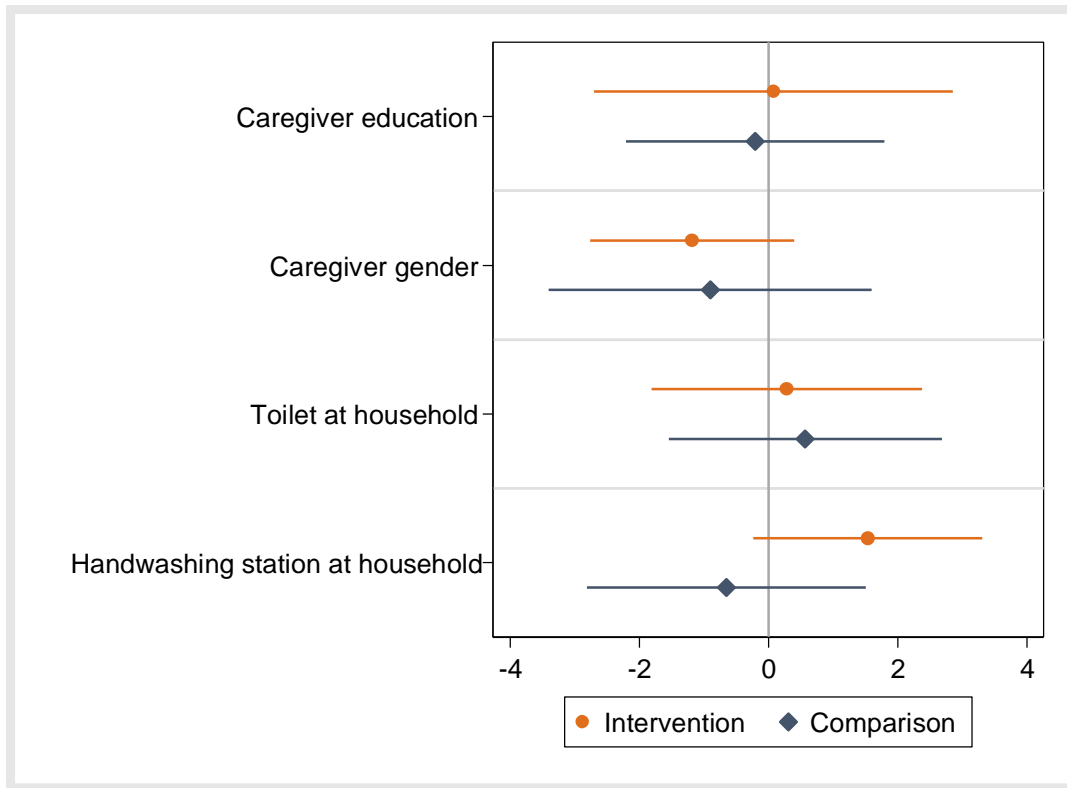


Predictors of Health Knowledge

Lastly, we examine predictors of health knowledge, combining calculated handwashing and hygiene scores into one overall health knowledge score. In addition to caregiver education and gender, we include variables for whether the household has savings, whether there is a toilet available at the house, and whether there is a handwashing station available at the house. For these latter two variables, the relationship may operate in reverse; in other words, if we find a significant relationship between toilet availability and health knowledge, it may actually be the case that higher levels of health knowledge predict toilet access, as caregivers with more health knowledge may place greater priority on having a toilet at home.

The figure below shows that for both intervention and comparison groups, we find no significant predictors of health knowledge. We note, however, that this may be due to the fact that there is relatively little variance in health knowledge scores, with 83% of caregivers across all rounds scoring 90% or above. As such, the (lack of) statistically significant relationships found in this analysis should not be taken as a definitive sign that relationships do not exist.

Figure 24: Predictors of health knowledge



AGRICULTURAL PRACTICES

In this section we focus on agricultural practices. The main practice of interest is the cultivation of a permagarden. At baseline, we aim to understand the current picture of permagarden cultivation in both comparison and intervention groups so that we can assess changes in later evaluation rounds. We also aim to understand the main challenges faced by farmers when cultivating a permagarden and to test whether cultivating a permagarden is associated with improved nutritional and economic outcomes. The HATUTAN II program aims to support farmers through trainings in adopting these techniques to boost yields and create sustainable sources of food.

The sample is made up of households of grade 2 students that had farmers, as well as a separate group of farmers sampled independently from the household survey. The sample size overall is still relatively small for many of the indicators of interest, particularly in the comparison group, which limits the analyses that are possible.

PERMAGARDEN USE

We first analyze the main indicator of permagarden cultivation in both comparison and intervention groups, as well as whether training has been received on permagarden use. Table 73 below summarizes the results. The percentage receiving training was much higher in the intervention group than in the comparison group, at 14.6% compared to 5.2%. This is likely an effect from the previous HATUTAN program, which provided training on permagarden usage. However, despite receiving more training, the intervention group were less likely to be cultivating a permagarden, at 64.1% compared to 70.6% in the comparison group.

This finding shows that there is scope to further increase uptake of permagardens throughout the HATUTAN II program.

Table 73: Percentage receiving training and percentage cultivating permagarden

	Comparison	Intervention
Received training		
n	652	851
Received training on permagardens	5.2%	14.6%
Currently cultivating permagarden		
n	34	145
Cultivating permagarden	70.6%	64.1%

To gain a clearer picture of permagarden usage in both the intervention and comparison groups, the finding is disaggregated below by municipality. This can help identify any municipalities where extra effort may be needed to boost uptake of permagarden cultivation. First of all, we can see that much of the higher percentage cultivating permagardens in the comparison group is driven by a high percentage of 83.3% in Aileu. This is also the municipality in the comparison group with the largest sample size, and as such it will have an outsized effect on the overall score. Secondly, we can see that the uptake in the intervention municipalities is more evenly spread. However, it is lower in Ermera and Oe-cusse, at 54.6% and 56.5% respectively; this suggests there may be more potential to increase uptake in these municipalities as they are starting from a lower base. We note that Oe-cusse is a municipality in HATUTAN II that was not included in HATUTAN, which may account for its lower score.

Table 74: Permagarden usage by municipality

Intervention municipalities	Cultivating permagarden
Ainaro	78.6%
Ermera	54.6%
Manatuto	66.7%
Oe-cusse	56.5%
Comparison municipalities	
Aileu	83.3%
Bobonaro	66.7%
Covalima	40.0%
Manufahi	60.0%

CHALLENGES FACED BY FARMERS

In this section we analyze the challenges that farmers faced while cultivating permagardens. This question was only asked of those cultivating a permagarden. Further to this, questions about specific challenges were only asked of those with permagarden who said that they faced challenges. Because of this, sample size is quite small.

A higher proportion of farmers in the intervention group faced challenges than in the comparison group, at 64.5% compared to 48.9%. We note that the intervention municipalities were chosen partly on the basis of greater existing deprivation which may account for the overall higher percentage facing challenges.

Table 75: challenges faced by farmers, intervention and comparison groups

	Comparison	Treatment	Difference
Faced any challenges			
n	33	141	-
Faced challenges	48.9%	64.5%	15.6
Type of challenges			
n	16	91	-
Natural disaster	25.0%	28.6%	3.6
Limited production	18.8%	18.7%	-0.1
Poor quality of seeds	6.3%	13.2%	6.9
Damaged / stolen produce	6.3%	7.7%	1.4
Unable to sell	6.3%	2.2%	-4.1
Lack of tools, materials, seeds	12.5%	5.5%	-7.0
Personal issues	0.0%	2.2%	2.2
Poor quality of produce	0.0%	7.7%	7.7*
Limited amount of land	0.0%	6.6%	6.6*
Lack of technical support	31.3%	9.9%	-21.4
Lack of money to invest	6.3%	6.6%	0.3
Pests	37.5%	51.7%	14.2
Other	12.5%	26.4%	13.9

Of the individual challenges that farmers were asked about in the survey, the most common across both groups were pests, natural disasters, and limited production. The challenges that were least common were personal issues, limited amount of land, and poor quality produce. Additionally, there were several areas where there were differences in the percentage facing a challenge across the groups. The intervention group was more likely to face the challenges of poor quality seeds, poor quality of produce, limited amounts of land, and pests, with differences of 6.9, 7.7, 6.6, and 14.2 percentage points respectively.

The intervention group was less likely, however, to face lack of tools and materials and far less likely to face lack of technical support, which may come as a result of support and training offered by HATUTAN. As well as specific challenges, the intervention was also more likely to suffer from “Other” unspecified challenges. HATUTAN II could benefit from focusing on the challenges that are highest for the intervention group, as well as those where it is underperforming compared to the comparison group.

ASSOCIATION WITH NUTRITIONAL AND ECONOMIC OUTCOMES

In this section we analyze whether permagarden usage is associated with various outcomes of interest. The two domains are nutritional outcomes and economic outcomes. HATUTAN II aims to encourage and support permagarden use based on the assumption that it should lead to a more nutritious and secure food supply, as well as opportunities to sell excess produce for profit. Here we test the assumption of a link between permagardening and improved outcomes.

It is important to note that in this section we are unable to fully assess causality. Due to the sample size and the structure of the questions the analyses possible are limited. If differences are found between the groups it can only be taken as an indicative finding, as there may be other characteristics between the groups that we can't control for that may account for the difference. For example, if average income

happens to be lower in one of the groups we might expect worse economic outcomes, unrelated to the practice of cultivating a permagarden.

In Table 76 below we analyze how permagarden usage is associated with nutritional outcomes for intervention households. The two indicators of interest are whether the student in the household had eaten on the day of the EGRA test, and whether anyone in the household had gone a day without eating in the previous 30 days. The results are somewhat mixed with respect to the effect of cultivating a permagarden. Students within a household that cultivated a permagarden were less likely to have eaten on the day of the test, which is a negative outcome. However, households in a permagarden were also less likely to have had anyone in the household go a day without eating in the previous 30 days, which is a positive finding and may point to a steadier food supply. It is important to note here that neither result was statistically significant.

Table 76: Nutritional outcomes by permagarden use

	Did not have permagarden	Did have permagarden	Difference
Student eaten on test day	81.8%	77.8%	-4.0
Household not eaten	13.5%	12.9%	-0.6

In Table 77 below we test for differences in economic outcomes. The results are mixed and the effect sizes are not statistically significant. Households with a permagarden were slightly less likely to have savings, which can be taken as a negative finding, and were more likely to use savings on debt, which can also be taken as a negative finding for cultivating a permagarden with respect to not doing so. However, they were also more likely to use savings for household or business investment, a positive sign.

Table 77: Economic outcomes by permagarden use

	Didn't have permagarden	Did have permagarden	Difference
Household has savings	80.8%	74.2%	-6.6
Uses savings on investment (household or business)	16.7%	23.2%	6.5
Uses savings on debt (household or business)	0.0%	5.8%	5.8

In summary, the picture is mixed for nutritional outcomes and negative for economic outcomes. Across both, the effect sizes were relatively small and not statistically significant. As stated in the introduction the analysis is somewhat limited – however, on the basis of the evidence collected the assumption of better outcomes for permagarden farmers is not supported. However, we also note that households cultivating permagardens were also somewhat more likely to have experienced natural disasters; within intervention areas, 37.6% of farmers cultivating permagardens faced natural disasters, while only 15.4% of farmers who did not have permagardens faced natural disasters. This may explain some of the results found above.

FARM SALES

Lastly, in this section we will focus on farm sales for farmers participating in a VSLA. At baseline we aim to understand the main characteristics of farmer selling their crops for profit, including what percentage sell crops for profit rather than just for household consumption, what percentage of their crops they sell, and whether any profit is made. The HATUTAN II program aims to support farmers directly through training and

therefore a potential benefit is that farmers are more profitable while using improved, sustainable agricultural practices.

Below in Table 78 we can see the percentage of farmers growing crops for household consumption, growing crops for sale, and growing crops for both household consumption and for sale. This is broken down by comparison and intervention. The first thing to note is the small sample sizes – 59 for the intervention group and 12 for the comparison. This means the sample has low power and it will be hard to detect trends statistically significantly in future rounds of evaluation. Secondly, it is also of note that very few households grow crops for sale only – almost all use at least some of their crops for household consumption. There are also some differences between the two groups. The comparison group is split approximately evenly between those growing crops for household consumption only and for both sale and household consumption, while the intervention group is split approximately two thirds in favor of both sale and household consumption.

Table 78: Percentage of farmers selling crops or only using crops for household consumption

	Comparison	Intervention
n	12	59
For sale only	8.3%	0.0%
For household consumption only	50.0%	28.8%
For sale and for household consumption	41.7%	71.2%

An additional question allows us to further explore those who grew crops for both sale and household consumption. Those who grew crops for both were then asked to state what proportion of their crops they sold. As seen in the table below, the average proportion sold per household was around half for both the comparison group and the intervention group. We can also study the percentage of household that sold at least half of their crops. Again this shows a higher figure for the intervention group – approximately three-quarters in the intervention group sold half or more of their crops, while half of the comparison group sold at least half of their crops.

Table 79: Proportion of crops sold, by treatment group

	Comparison	Intervention
n	6	42
Average proportion sold by households	0.53	0.54
Selling half or more	50.0%	71.4%

We disaggregate these scores by municipality below. The sample sizes for each of the municipalities is very low for the comparison municipalities, which we thus exclude from the analysis. The proportion of crops grown is relatively even across municipalities, with a range of 0.42 (for Ermera as the lowest) to 0.62 (for Oe-cusse at the highest). The results in Manatuto—the second-lowest, after Ermera—may reflect lower productivity, given the dry weather in this municipality, as well as distance to markets. Regardless, given that Manatuto is lower and that the rest are more closely cluster with little variance, it would be beneficial to focus particular efforts on Manatuto.

Table 80: Average proportion of crops sold, by municipality

Intervention municipalities	Average proportion sold
Ainaro	0.54
Ermera	0.42
Manatuto	0.48
Oe-cusse	0.62

Finally, in the table below we briefly summarize the percentage of farmers selling crops who had made a profit from selling crops. We can see that in both intervention and comparison groups, almost all farmers who sold crops made a profit from doing so, at 100% of the comparison group and 95.2% of the intervention group. This suggests that there is little progress to make in improving this indicator – once a farmer is selling crops, they will make a profit. This indicator should be monitored at future rounds of evaluation largely to check for any falls in percentage. However, in the farmers' survey there is no information on how much profit a farmer was making, and thus we cannot assess how this varied between treatment and comparison, municipality, or any other characteristic of interest.

Table 81: Percentage of farmers making a profit from selling crops

	Comparison	Intervention
n	6	42
Making a profit from selling crops	100.0%	95.2%

ECONOMIC EMPOWERMENT

In this section we analyze economic empowerment by looking at activity around savings and loan use. There are several ways in which the program is expected to be beneficial for economic empowerment, including spillovers from other aspects of the program, increased capacity of government institutions and government support, the promotion of gender equality and better intra-household decision-making, and through the promotion of VSLAs. We will first analyze savings, including how many households had savings, where savings were kept, and what savings were used for. We will disaggregate by intervention and comparison groups, so that we can look at the change for each of these groups in later rounds of evaluation. We will then look at VSLAs specifically – what VSLAs loans were used for and whether use of savings differed by whether a household was a VSLA member or not. Finally, we will examine the association between VSLA membership and improved nutritional and economic outcomes.

SAVINGS

First, we report the percentage of households in each group that had any savings. In the comparison group, 52.3% had any savings, compared to 62.7% in the intervention group; this difference was statistically significant. In the table below we see the breakdown of where households kept their savings in both groups. Across both groups the most common categories were either at home or in a VSLA. However, households in the intervention group were more likely to keep their savings in a VSLA by nearly 30 percentage points and were less likely to keep their savings at home by 22 percentage points. This may be partly explained by the existing impacts from HATUTAN – in the endline evaluation an increase in VSLA membership was seen in the intervention over the comparison group.

Table 82: Location of savings, by treatment group

	Comparison	Intervention	Difference
VSLA	27.0%	56.6%	29.6*
Microfinance group	1.2%	1.6%	0.4
Kept at home	72.5%	50.3%	-22.1*
Kept at a bank	4.9%	4.1%	-0.8
Other	1.2%	0.6%	0.5

In Table 83 below we look at how households use their savings. Because VSLA membership and its association with improved outcomes and behaviors is of particular interest for HATUTAN II, we disaggregate by whether a household is a VSLA member. Across both groups the most common item to spend savings on were food and education, with between 86% and 93% having used savings on these items. Traditional ceremonies, building, business, and agriculture were also common items to spend savings on.

Table 83: Use of savings, by VSLA participation

	Not a VSLA member	VSLA member	Difference
n	526	455	-
Food	92.8%	86.2%	6.6*
Education	88.4%	86.4%	-2.0
Traditional ceremonies	41.4%	27.9%	-13.5*
Building	18.3%	21.3%	3.0
Business	14.6%	22.6%	7.9*
Agriculture	11.0%	14.1%	3.1
Healthcare	8.4%	8.4%	0
Investment (on business or household asset)	5.3%	4.4%	0.9
Debt	3.0%	4.2%	1.2

The structure of VSLAs—whereby the value of savings accumulates as members take loans and repay with interest—means that VSLA members may have higher savings and be able to use their savings more strategically. Along these lines, there were a few differences between the groups. VSLA members were less likely to spend savings on food by 6.6 percentage points and this finding was statistically significant. This can be seen an indicator that VSLA members are in better financial health as spending savings on food is often a sign of financial distress. VSLA members were also statistically significantly more likely to spend savings on business and less likely to spend savings on traditional ceremonies. Again, a higher percentage spending savings on business can be seen a sign of financial health as it requires taking on a level of financial risk. We note, however, that financial health may also drive participation in VSLAs; in other words, households in less financial stress may have the savings and time to join a VSLA. The practical significance of a lower percentage spending savings on traditional ceremonies is less clear, but may be due to higher awareness of the need to prioritize spending on education, nutrition, or health and greater knowledge of the benefits of doing so.

VSLA LOAN USE

In section we analyze how those who took out VSLA loans used their loans. In the table below we look at the percentage of households using their loans on various items, disaggregated by treatment group. Across

both groups, the most common use of loans were food and education, with percentages between 58% and 68%. Also relatively common were loan usage for business, traditional ceremonies, and agriculture.

Across most items there was little difference between intervention and comparison groups and most differences were small and not statistically significant. However, the comparison group was significantly more likely to spend loans on business, by 13.9 percentage points. Similar to the description above, taking out a loan for business investment is often a sign of good financial health, as it implies the household is in a sufficiently good position to incur the risk of a loan; this may suggest that the intervention group is less financially secure. Additionally, the intervention group was more likely to spend loans on education by a reasonably high 9.6 percentage points, although the finding fell short of statistical significance.

Table 84: Uses of VSLA loan, by treatment group

	Comparison	Intervention	Difference
n	41	213	-
Education	58.5%	68.1%	9.6
Food	58.5%	62.0%	3.5
Business	31.7%	17.8%	-13.9*
Traditional ceremonies	12.2%	14.6%	2.4
Agriculture	9.8%	8.5%	-1.3
Household asset	4.9%	0.5%	-4.4
Healthcare	2.4%	2.4%	0.0
Debt	0.0%	0.0%	0.0
Other	12.2%	4.2%	-8.0

As loan use on education is of particular interest and is seen as a desirable outcome,¹⁴⁹ this is disaggregated by municipality below to better understand the difference observed in the above table. Table 85 below shows the breakdown by municipality. One finding immediately of note is the small sample size for the comparison municipalities; the samples are too small for interpretation and as such the focus will be on the intervention group.

Table 85: Percentage using loan on education, by municipality

Intervention municipalities	Using loan for education
Ainaro	73.1%
Ermera	70.3%
Manatuto	65.7%
Oe-cusse	58.7%
Comparison municipalities	
Aileu	65.0%
Bobonaro	36.4%
Covalima	100.0%
Manufahi	66.7%

¹⁴⁹ We note one exception to this, however, may come if loans are used to purchase school uniforms, as this expense does not help improve the child's educational attainment and may be due to school personnel making uniform sales a "business."

The percentage using loans on education is relatively even across the municipalities with a range of about 15 percentage points from highest to lowest. This suggests that the higher percentage spending loans on education was not driven by particular circumstances in a single municipality. However, it is of note that the municipality of Oe-cusse has a lower percentage spending loans on education than the other municipalities. This might in part be down to the fact that Oe-cusse was not included in the HATUTAN program and thus has not already benefitted from the program. It is therefore recommended that particular attention is focused on Oe-cusse throughout the HATUTAN II program.

VSLA MEMBERSHIP, NUTRITION, AND INVESTMENT

In this section we briefly analyze whether VSLA membership is associated with various outcomes of interest. The two domains are nutritional outcomes and economic outcomes. HATUTAN II aims to encourage VSLA membership with the expectation that it should lead to increased financial security, with follow-on effects on other domains. Here we test the assumption of these links. It is important to note, however, that in this section we are unable to fully assess causality due to limited sample size and potential confounding characteristics.

Table 86: Difference in nutritional and economic outcomes by VSLA membership

	Not a VSLA member	VSLA member	Difference
Nutritional outcomes			
Student eaten on test day	85.6%	83.3%	-2.3
Household not eaten	9.8%	10.6%	-0.8
Caregiver dietary diversity	2.9	2.9	0.0
Economic outcomes			
Uses savings on investment (household or business)	18.1%	25.7%	7.7*
Uses savings on debt (household or business)	3.0%	4.2%	1.2

In Table 86 we can see the difference between the outcomes of interest by VSLA membership. On the three nutritional outcomes—whether the student had eaten on the day of the EGRA test, whether any member of the household had gone without eating, and caregiver dietary diversity—the effect sizes were small and not statistically significant, and we can therefore conclude that there is little relationship between nutritional outcomes and being a VSLA member. However, there is a finding of note for the economic outcomes. There is little difference in whether a household used savings on debt, but households in VSLAs were more likely to have used savings either business or household investment. This is related to the finding on savings found earlier in the section. Again, this may suggest that VSLA households are more financially secure, as they are in a position to spend more savings on non-essential goods and to take risk on business investment.

GENDER AND POWER

The baseline assessment was designed to allow for an analysis of gender and power dynamics. Key areas of inquiry around gender and power were defined by CARE based on extensive field research. The key areas of inquiry correspond to areas where the characteristics and dynamics of gender and power relations are typically negotiated. Overall, the gender analysis seeks to analyze gender and power dynamics across both the public and private spheres in order to better understand the different priorities, needs, activities,

and responsibilities of men and women (and boys and girls). Additionally, the gender analysis further explores how the intersectionality of marginalization—such as through overlaps in age or disability status—can give rise to discrimination or exclusion in society.¹⁵⁰

DIVISION OF LABOR

In this section, we analyze the gendered division of children's participation in household tasks. Within the household survey, we asked caregivers about household tasks their second-grade child performs. This included caregiving, housework (e.g., cooking or cleaning), fetching water or firewood, agricultural work, and helping with a family business. Caregivers also reported on the amount of time it takes their child to perform those tasks and whether household responsibilities ever cause their child to arrive late to school or limit the time the child spends studying or doing homework.

Gendered Division of Labor

Analyzing the gendered division of labor, we find that female grade 2 students are significantly more likely to perform housework tasks compared to male students, with caregivers reporting that 61.21% of female students perform daily housework tasks, as compared to 36.6% of male students. In contrast, male students are significantly more likely to participate in agricultural work, with caregivers reporting that 34.6% of male students perform daily agricultural work, as compared to 26.4% of female students. However, after disaggregating by intervention area, we find that these significant gender differences in the participation in agricultural tasks only hold for comparison areas (Table 87). Furthermore, we find no significant differences in the gendered division of fetching water or firewood, caregiving, or helping with a family business; overall, fetching water is the most common task performed by each gender and assisting with a family business is the least common. These findings highlight how **gender norms seem to influence children's participation in household tasks, with girls carrying a disproportionate workload.**

Table 87: Percentages of grade 2 children performing various daily household tasks

	Intervention			Comparison		
	Male	Female	P-value	Male	Female	P-value
n	434	370		320	339	
Caregiving	70.7%	69.5%	0.29	65.9%	70.2%	0.24
Housework	42.2%	66.8%	<0.001*	29.1%	55.2%	<0.001*
Fetching	80.9%	78.9%	0.49	70.9%	70.2%	0.84
Agriculture	35.3%	33.5%	0.61	33.8%	18.6%	<0.001*
Business	17.3%	17.8%	0.33	9.4%	9.1%	0.53

Looking at gender differences in children's performance of household tasks across municipalities in intervention areas (Ainaro, Ermera, Manatuto, and Oe-cusse), in the below table, we find a comparable pattern of findings as in the aggregated analysis disseminated above. It is worth noting that **gender differences in the performance of housework tasks appear the largest in Ermera**, where 71.6% of girls participate in housework tasks as compared to 37.7% of boys.

¹⁵⁰ See CARE International, *Good Practices Framework: Gender Analysis* (Geneva: CARE International, 2012).

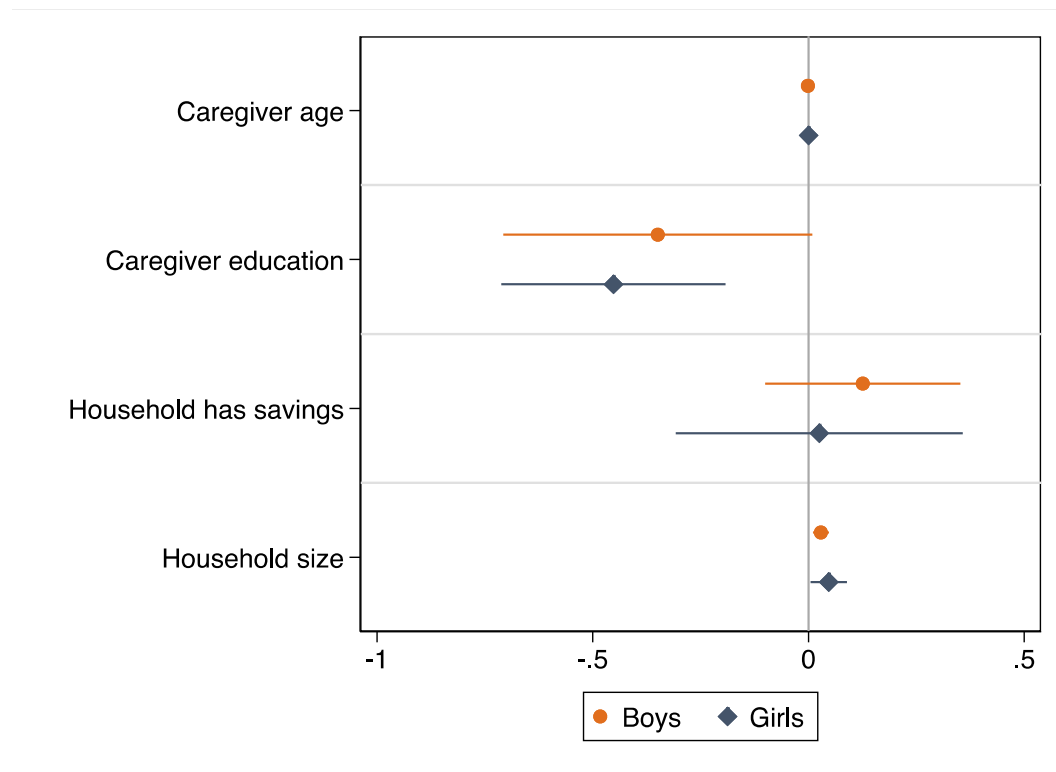
Table 88: Percentages of grade 2 children performing various daily household tasks by municipality

	Male	Female	Difference
Ainara			
n	113	90	
Caregiving	63.7%	62.2%	-1.5
Housework	31.9%	52.2%	20.3
Fetching	74.3%	66.7%	-7.6
Agriculture	21.2%	21.1%	-0.1
Business	11.5%	13.3%	1.8
Ermera			
n	175	141	
Caregiving	76.0%	71.6%	-4.4
Housework	37.7%	71.6%	33.9
Fetching	87.4%	85.1%	-2.3
Agriculture	39.4%	34.8%	-4.6
Business	16.0%	14.2%	-1.8
Manatuto			
n	67	69	
Caregiving	74.6%	66.7%	-7.9
Housework	35.8%	58.0%	22.2
Fetching	64.2%	69.6%	5.4
Agriculture	19.4%	15.9%	-3.5
Business	10.5%	10.1%	-0.4
Oe-cusse			
n	79	70	
Caregiving	65.8%	77.1%	11.3
Housework	72.2%	84.3%	12.1
Fetching	89.9%	91.4%	1.5
Agriculture	59.5%	64.3%	4.8
Business	34.2%	38.6%	4.4

To further understand the extent to which various household and caregiver characteristics influence children's gendered participation in household tasks, we ran a predictive model including caregivers' age and education, as well as information on household size and whether the household has savings (as a proxy for household economic status). We also include municipality fixed effect to control for factors, such as intervention status, which vary at the municipality level. The outcome variable is operationalized as the number of household tasks that caregivers report that their child performs. Figure 25 shows results for predictors of children's participation in household tasks by the gender of the child. We find that **caregiver education significantly predicts the number of household tasks girls participate in at home**, where girls whose caregivers have completed secondary levels of education, or higher, participate in significantly

fewer household tasks than girls with less educated caregivers. For boys, there is a small relationship between their participation in household tasks and their caregiver's education, but this effect does not reach statistical significance. **Household size significantly predicts children's performance of household tasks, for both girls and boys**, where children of higher educated caregivers generally participate in fewer household tasks. Caregiver's age, and whether the household has savings do not appear significant predictors of children's performance of household tasks, for either gender.

Figure 25: Predictors of the number of household tasks children participate in, by child's gender



Unsurprisingly, these results suggest an association between caregivers' education and the extent to which their children are affected by and conform to traditional gender norms. This suggests that it may be helpful to more heavily target households in which caregivers have a low educational level with HATUTAN II activities seeking to reduce girls' disproportionate participation in household tasks.

Time Spent on Household Tasks

We also asked caregivers about the time their grade 2 child spends on various household tasks. The below table displays the time spent on tasks by the gender of the child and treatment group. We find that caregivers generally report very similar amounts of time spent on tasks for children of each gender, with most caregivers estimating that their grade 2 child spends a quarter of a day on these tasks (69.6%), while 0.6% estimate that their child spends a full day on these tasks. Overall, these results suggest that **girls and boys dedicate a relatively similar amount of time to daily tasks**, with most children spending a quarter of a day on these tasks, as estimated by their caregivers. We note, however, that social desirability bias likely means that children's housework responsibilities are underestimated, as many caregivers may be aware that it is undesirable for children to spend large portions of their time on housework. This is further supported by the qualitative data. While both caregivers and teachers mentioned that housework negatively

affects studying time for both boys and girls, it was also highlighted that girls tend to have less time to study due to housework tasks than boys. For example, a mother from Oe-cusse stated:

Boys have more time [to study] than girls because girls have more tasks at home: washing dishes, cooking, and cleaning the house. Boys have time to study at home, and play; but girls don't. They have a lot of work.

- KII with mothers, Oe-cusse, Int. 36

We examine whether children's participation in household tasks differs across municipalities in the intervention areas. **We find that children in Oe-cusse are reported to dedicate the largest amount of time on household tasks**, with 32.6% spending half a day on household tasks as compared to 4.5% - 7.6% in the other three areas. Out of the household tasks listed in the previous section, children in Oe-cusse are substantially more likely to spend time doing housework, helping with fetching water or firewood, helping with agricultural work, and helping with a family business as compared to children in the other intervention areas. Caregiving is the only task that children in Oe-cusse don't seem to spend a disproportionate amount of time on as compared to the other intervention areas; however, this may be in part because children involved in caregiving are more likely to not attend school at all, but rather be kept out of school in order to raise other children or care for elders.

Table 89: Time spent on various daily household tasks, stratified by gender and treatment group

	Intervention			Comparison		
	Male	Female	P-value	Male	Female	P-value
n	402	337		282	301	
Whole day	0.5%	1.2%	0.32	0.4%	0.3%	0.96
Half day	13.7%	14.0%	0.92	9.2%	7.0%	0.32
Quarter day	67.9%	70.3%	0.48	68.8%	72.8%	0.43
An hour a day	13.4%	13.1%	0.88	14.9%	15.3%	0.90
Does not do chores	3.8%	0.3%	0.009*	6.0%	5.3%	0.71

Household Tasks and Impact on Schooling

Caregivers were also asked about the impact the time spent on household tasks has on their child's schooling. Most caregivers report that household tasks do not make their child late to school (90.2%), while 0.4% report that tasks often make their child late. Ten percent of caregivers report that household tasks reduce the time their child spends studying at home and doing homework. The below table summarizes the impact household tasks have on children's schooling by the gender of the child and treatment group. **We find no significant gender differences in the perceptions of caregivers of whether tasks made their male or female children late for school.**

In the qualitative data, several teachers raised concerns of the excessive time children spend on household tasks and its negative effect on their schooling. For example, a teacher in Ainaro stated:

If children's parents continue to expect them to do chores at home, they will struggle in school. Parents assign their children tasks such as fetching water, collecting firewood, and other household duties. This results in children knowing little and forgetting what they learn at school. They get up in the morning, grab their notebooks, and go to school. They always say "Oh." when asked about something at school.

- KII with teachers, Ainaro, Int. 37

Table 90: Impact of household tasks on children, by child gender

	Intervention			Comparison		
	Male	Female	P-value	Male	Female	P-value
n	402	337		282	301	
Tasks make student late often	0.3%	0.6%	0.48	0.4%	0.3%	0.96
Tasks make student late sometimes	9.2%	14.8%	0.02*	6.4%	4.3%	0.27
Tasks do not make student late	89.3%	84.3%	0.03*	92.9%	94.7%	0.38
Student has less time to study	10.7%	14.0%	0.98	9.6%	6.3%	0.74

Perhaps unsurprisingly, given the large amount of time caregivers in Oe-cusse report that their children spend on housework tasks, when disaggregating these results by municipality, we find that parents of children in Oe-cusse are substantially more likely to report that household tasks reduce the time their child has to study and do homework (35.3%) than caregivers in other municipalities (6.3 - 9.2%), and that their child is sometimes late to school due to household tasks (24.8% as compared to 5.0 - 11.3% in other intervention municipalities). Girls in Oe-cusse and Ermera are slightly more likely to be late to school due to household tasks than boys, while girls in Ainaro and Manatuto are more likely to have household tasks interfere with their ability to study at home or do homework. The table below further shows these results by municipality.

Table 91: Impact of household tasks on children, by child gender and municipality

	Male	Female	Difference
Tasks often or sometimes make student late			
Ainaro	5.0%	6.9%	1.9
Ermera	8.5%	16.3%	7.8
Manatuto	4.9%	5.2%	0.3
Oe-cusse	21.9%	28.8%	6.9
Student has less time to study			
Ainaro	3.0%	13.2%	10.2
Ermera	6.7%	5.9%	-0.8
Manatuto	6.6%	12.1%	5.5
Oe-cusse	35.2%	35.5%	0.3

These findings suggest that **children in Oe-cusse carry a disproportionate burden of household tasks** as compared to children in the other intervention municipalities, with children in Oe-cusse spending more time on these tasks and as a consequence, suffering the largest interference with their school attendance and ability to do homework. Thus, it might be helpful to specifically target Oe-cusse with HATUTAN II activities seeking to minimize the interference of children's household tasks with their schoolwork and performance.

HOUSEHOLD DECISION-MAKING

In this section, we analyze gendered patterns in household decision-making. In the household survey, we asked caregivers about who makes decisions regarding their children's eating and hygiene practices. The

below table summarizes caregivers' reported involvement in various decisions in their households by treatment group. The vast majority of respondents in both intervention and comparison areas reported that either they themselves or in conjunction with their spouse made decisions on their child's (92.6%) or baby's eating (97.1%) and hygiene practices (90.8%). Caregivers generally report little involvement of elders in household decision-making.

The low proportion of male caregivers does not provide us with enough statistical power to conduct a detailed analysis of gender differences in respondents' answers to each option, except the ones that were selected by most respondents: "myself alone" and "myself and my spouse". Here we find that women are significantly more likely to state making each of the three household decisions alone, as compared to men. **These results suggest that the responsibility of household decision-making relating to caregiving disproportionately falls on women.** No significant aggregated gender differences are found in whether respondents indicate that decisions are taken in conjunction with their spouse.

Table 92: Caregivers' reported involvement in household decision-making

Decisions on child's eating practices	Intervention	Comparison
n	1,012	659
Myself alone	41.8%	46.7%
Myself and my spouse	50.4%	46.4%
Myself and/or spouse with elders	1.7%	2.3%
Elders	2.3%	1.1%
Spouse alone	3.9%	3.5%
Decisions on child's hygiene practices	Intervention	Comparison
n	802	658
Myself alone	52.0%	54.4%
Myself and my spouse	45.5%	42.3%
Myself and/or spouse with elders	0.8%	0.9%
Elders	0.3%	0.9%
Spouse alone	1.5%	1.5%
Decisions on baby's eating practices	Intervention	Comparison
n	84	45
Myself alone	41.7%	48.9%
Myself and my spouse	51.2%	46.7%
Myself and/or spouse with elders	2.4%	2.2%
Elders	2.4%	0.0%
Spouse alone	2.4%	2.2%

Looking at gendered decision-making within households across intervention municipalities in the below table, we find that female caregivers in Oe-cusse are substantially more likely to report making decisions on their child feeding and hygiene practices alone than female caregivers in other intervention municipalities, and are less likely to report that their husband is involved in the decision making, either in conjunction with herself or the husband alone. Thus, **while caregiving responsibilities disproportionately fall on women in all intervention municipalities, this is outstandingly the case in Oe-cusse.** This could potentially be empowering for women, as a sign that their husband trusts them to make decisions; alternatively, it could also be limiting, with women provided with little assistance from their husbands.

	Myself alone	Myself and my spouse	Other
Decisions on child's eating practices			
Ainaro	39.2%	53.5%	7.3%
Ermera	35.0%	53.4%	11.6%
Manatuto	44.5%	50.0%	5.5%
Oe-cusse	61.1%	36.9%	2.0%
Decisions on child's hygiene practices			
Ainaro	54.7%	43.4%	1.9%
Ermera	49.0%	47.5%	3.5%
Manatuto	48.5%	51.5%	0.0%
Oe-cusse	57.7%	38.9%	3.4%
Decisions on baby's eating practices			
Ainaro	38.5%	57.7%	3.8%
Ermera	43.6%	51.3%	5.1%
Manatuto	50.0%	40.0%	10.0%
Oe-cusse	33.3%	44.4%	22.3%

CONTROL OF PRODUCTIVE ASSETS

In addition to household tasks relating to caregiving, we asked caregivers who in their household makes decisions related to productive assets, including large and small household purchases, loans, gardens, produce, livestock, and household businesses. Moreover, respondents were asked about decision-making on their permagardens.

The table below shows caregivers reported involvement in decision-making related to productive assets. The majority of respondents in both intervention and comparison areas reported that they made decisions related to productive assets in conjunction with their spouses. The only exception to this is decisions related to small purchases, which respondents are equally likely to state that they themselves make as well as in conjunction with their spouse. Looking at these response patterns by the gender of the caregiver, we find that, in general, female caregivers are more likely to report making decisions with limited monetary impact themselves, such as making a small household purchase, and male caregivers are more likely to make decisions with larger monetary impact themselves, such as a large purchase, selling livestock, or starting a business. Likewise, female caregivers seem to agree with this, with them being more likely to state that these decisions are made by their husbands alone. **Altogether, these results suggest that female caregivers have limited decision-making power with regard to control of productive assets, as compared to men.** As with household tasks, caregivers generally report little involvement of others, such as elders, in decision-making related to productive assets.

Table 93: Caregivers' reported involvement in decision-making related to productive assets

Large purchases	Intervention	Comparison
n	780	636
Myself	9.7%	12.6%
My spouse	29.0%	30.2%
Myself and my spouse	55.8%	52.0%
Others	5.5%	5.2%
Small purchases	Intervention	Comparison
n	800	659
Myself	40.1%	42.5%
My spouse	12.1%	11.5%
Myself and my spouse	44.4%	42.0%
Others	3.4%	3.9%
Sell produce	Intervention	Comparison
n	60	12
Myself	25.0%	33.3%
My spouse	8.3%	16.7%
Myself and my spouse	63.0%	50.0%
Others	3.3%	0.0%
Sell/consume chicken	Intervention	Comparison
n	991	649
Myself	19.9%	20.5%
My spouse	18.4%	20.7%
Myself and my spouse	57.3%	54.1%
Others	4.4%	4.8%
Sell/consume livestock	Intervention	Comparison
n	982	638
Myself	12.9%	10.7%
My spouse	22.8%	26.2%
Myself and my spouse	58.2%	57.1%
Others	6.1%	6.6%
Start business	Intervention	Comparison
n	921	603
Myself	24.2%	23.3%
My spouse	12.1%	14.6%
Myself and my spouse	61.8%	59.7%
Others	1.9%	2.4%

Aggregating by intervention municipality, gendered decision-making in each municipality follows a similar pattern as the aggregated findings described above. The largest gender discrepancies are, however, noticed in **Ermera, where decisions on whether to sell livestock disproportionately fall on men**, with 40.3% of women reporting that these decisions are taken by their husbands alone. For comparison, in other

municipalities, these percentages range between 13.7% and 18.7%. Out of the four intervention municipalities, **decision-making on productive assets is generally most likely to be made by both partners together in Manatuto**, potentially due to the prevalence of matrilineal cultures in this municipality. These results suggest that women in Ermera may be facing the greatest deficits in decision-making power over productive assets, whereby men make the primary decisions that have major implications for household finances or food security.

Furthermore, we find that female caregivers' age significantly predicts their involvement in decision-making over productive assets, with older women being significantly more likely to report making decisions about large purchases, livestock, or businesses themselves. The same pattern is found for women's educational level, with female caretakers who have completed secondary levels of education or higher being significantly more likely to make these decisions themselves. These results suggest that it may be more beneficial to target young women (or households with young, female caregivers), as well as women with lower levels of education, for activities seeking to improve women's control of productive assets, as these groups of women may face the greatest deficits in decision-making power.

Caregivers were also asked who makes decisions on what to plant in their permagardens. **Most participants report making these decisions together with their spouses or alone** (see Table 94). Unfortunately, the low number of male caregivers responding to this question (only eight) does not provide us with enough statistical power to conduct a detailed analysis of gender differences in respondents' answers to each option.

Table 94: Caregivers' reports on who makes decisions on what to plant in their permagarden

Permagarden cultivation decisions	Intervention	Comparison
n	93	24
Myself	24.7%	20.8%
My spouse	12.9%	8.3%
Myself and my spouse	59.1%	66.7%
Others	3.2%	4.2%

Lastly, respondents who participated in VSLAs were also asked who in their household makes decisions about how to use the VSLA loan. Consistent with the results thus far, the majority of respondents (55.5%) stated that they and their spouse together make the decisions, followed by just the respondent themselves (31.0%) or just the respondent's spouse (11.0%). As for garden decisions, the current sample size does not allow for reliable conclusions to be drawn on potential gender differences in respondents' answers to each option.

CLAIMING RIGHTS AND MEANINGFUL PARTICIPATION IN PUBLIC DECISION-MAKING

We asked caregivers whether they have received training on permagardens and whether they have received support from agriculture extension services. Furthermore, heads of households were asked about household members' participation in VSLAs.

We find that, among all respondents, men report receiving agriculture extension services at higher rates than women – 14.5% compared to 9.9% respectively – although this difference does not reach statistical significance. All in all, 8.2% of respondents report that they have received training on permagardens, with no substantial gender differences in respondents' answers. However, looking at the four intervention

municipalities, we find that female respondents in Oe-cusse (30.8%) are significantly more likely to have received training on permagardens than females in the other three municipalities (0% – 3.5%).¹⁵¹

Table 95: Caregivers' reports on whether they receive support from AES or training on permagardens

Training/participation	Intervention			Comparison		
	Male	Female	P-value	Male	Female	P-value
n	40	587		43	411	
Support from AES	30.0%	11.8%	0.31	0.0%	7.3%	0.02*
n	46	776		53	605	
Permagarden training	10.9%	10.9%	0.17	9.4%	4.8%	0.40

Respondents were also asked about the number of male and female household members participating in a VSLA. Forty-six percent of households report keeping their savings in VSLA. Among households with members participating in VSLAs, on average, 1.6 household members participated in a VSLA. Women were more likely to participate in a VSLA than men; on average, respondents reported that 67.8% of the household members participating in a VSLA were female. Furthermore, 50.8% of households reported that all VSLA members were female, while only 15.8% of households reported that all VSLA members were male. Disaggregating by intervention municipality, we find that on average, 61.5% of VSLA participants in Ainaro were female, 62.0% in Oe-cusse, 67.2% in Ermera, and 74.9% in Manatuto. **These results suggest that VSLAs may be more effectively targeted towards women than towards men, which may help increase women's financial independence.**

CONTROL OVER ONE'S BODY

We asked caregivers whether a husband is justified in beating his wife given four circumstances: if she goes out without telling him, if she neglects the children, if she argues with him, and if she burns the food. Among intervention respondents who were asked about at least one scenario,¹⁵² 50.6% believed that a husband is justified in beating his wife in at least one scenario. Respondents are most likely to say a husband is justified in beating his wife if she neglects the children (43.6%). About 35% say it is justified if she goes out without telling him and about four in ten if she argues with him (38.0%). Approximately one quarter (25.7%) say it is justified if she burns the food. The below table displays the percentages of respondents stating the abovementioned forms of GBV are justified, by treatment group and for female caregivers only.

¹⁵¹ This may be due to programs run by Oxfam and Caritas through local NGOs in Oe-cusse.

¹⁵² Respondents were not asked these questions if another person was present; 416 were asked at least one question. Male caregivers were not intended to be asked these questions, and as such, we remove from the sample the 22 male caregivers/respondents who were asked at least one of these questions.

Table 96: Situations in which respondents consider a husband justified in beating his wife

Situation	Intervention	Comparison
She goes out without telling him	35.4%	43.6%
She neglects the children	43.6%	49.1%
She argues with him	38.0%	41.8%
She burns the food	25.7%	30.1%
At least one of the above	50.6%	58.1%

Looking at the four intervention municipalities in the below table, we first note that sample size for Oe-cusse is very low; as such, we do not include results in the table. **We find that respondents in Ainaro are more likely to consider domestic violence justified in at least one of the circumstances** than respondents in Ermera and Manatuto. In Ainaro respondents are most likely to consider violence justified if the mother neglects her children (46.6%) and if she goes out without telling her husband (43.9%). Given these findings, Ainaro might benefit from heavier targeting of interventions promoting domestic gender-based violence awareness; however, it should be noted that domestic gender-based violence seems to be greatly normalized across all intervention municipalities, and as such, interventions are highly warranted in all municipalities.

Table 97: Situations in which respondents consider a husband justified in beating his wife, by municipality

Situation	Ainaro	Ermera	Manatuto
n	58	74	42
She goes out without telling him	43.9%	36.0%	24.4%
She neglects the children	46.6%	46.7%	34.2%
She argues with him	37.3%	39.2%	34.2%
She burns the food	27.6%	25.7%	19.1%
At least one of the above	54.2%	52.6%	40.5%

We further analyze whether respondents' views of whether violence is justified in at least one circumstance is associated with the age of caregivers. We find a significant relationship between age and attitudes towards domestic gender-based violence among respondents, with younger respondents being more likely to consider domestic violence justified in each of the scenarios, including when caregiver education is controlled for. These results are quite surprising and suggest that **programming might benefit from directly targeting younger caregivers**. No relationship is found between caregivers' level of education and views toward domestic violence, nor between household financial status (i.e. whether the household has savings or not) and views towards domestic violence.

VIOLENCE AND RESTORATIVE JUSTICE

In the household survey, caregivers were asked about the ways in which teachers handle misbehavior in class. They were asked about positive/neutral forms of discipline (giving a verbal warning, informing parents, and having a conversation with the child), and negative forms of discipline (shouting at the child, using corporal punishment, and assigning chores). Moreover, caregivers, as well as school administrators, were asked about avenues for reporting abuse at school.

Teachers' Discipline Practices

For teachers' discipline practices, we find that, among all respondents, caregivers were most likely to state that teachers had a conversation with the child (39.7%), or that they gave a verbal warning (39.3%), followed by shouting at the child (35.3%), and using corporal punishment (31.4%). Respondents were least likely to state that teachers informed parents (18.9%) or that the teacher assigned chores to the child (10.7%). Disaggregating by gender, we find that **caregivers of male children are significantly more likely to state that their child's teacher uses corporal punishment (35.0%) compared to caregivers of female children (27.5%).**

Table 98: Teacher's use of different discipline practices, by treatment group and student's gender

Outcome	Intervention			Comparison		
	Male	Female	P-value	Male	Female	P-value
n	434	370		320	339	
Gives verbal warning	38.9%	37.8%	0.75	40.9%	39.8%	0.77
Inform parents	18.2%	19.5%	0.65	20.0%	18.0%	0.51
Has conversation with child	41.2%	43.5%	0.52	36.6%	36.6%	0.99
Shouts at the child	40.3%	34.3%	0.08	31.6%	33.3%	0.63
Uses corporal punishment	38.7%	27.3%	<0.001*	30.0%	27.7%	0.52
Assigns chores	11.5%	11.9%	0.87	9.7%	9.1%	0.81

The use of corporal punishment and other negative discipline practices is concerning as it is likely to decrease student attendance and motivation. This concern was raised by several caregivers during the qualitative interviews.¹⁵³ For example:

They (the school) will come see us and inquire as to why the children are away from school. We responded that our son was late to school yesterday and saw the other children already queued up. He became afraid and returned back home, fearing that the teacher would beat him.

- FGD with fathers, Oe-cusse, Int. 23

Simultaneously, several respondents also mention that, at home, children might also be beaten by their parents for not going to school, leaving children stuck between two bad options:¹⁵⁴

Like my son, he won't go [to school], even if I tell him to go, and says "My friends are already in class, I'm already late". Even if we beat him, he still won't go. Even when I threatened him with a stick, he still wouldn't go to school.

- FGD with mothers, Oe-cusse, Int. 35

The below table disaggregates results by municipality. In Manatuto, we find higher reported rates of many discipline practices—both positive and negative—than in other intervention municipalities; this may suggest more active teachers or more informed caregivers. However, Manatuto also has the highest reported use of corporal punishment of all municipalities. Otherwise, Oe-cusse stands out as the municipality where teachers are most likely to assign chores and where shouting at children is also relatively common.

¹⁵³ FGD with fathers, Manutoto, Int. 20; KII with fathers, Oe-cusse, Int. 23; KII with mothers, Ermera, Int 28; FGD with mothers, Manutoto, Int. 31; FGD with mothers, Oe-cusse, Int. 32;

¹⁵⁴ KII with coordinator, Ainaro, Int. 2; KII with mothers, Oe-cusse, Int.35

Table 99: Teacher's use of different discipline practices, by municipality

Situation	Ainaro	Ermera	Manatuto	Oe-cusse
n	203	316	136	149
Gives verbal warning	41.9%	35.8%	36.8%	40.9%
Informs parents	16.3%	17.4%	20.6%	23.5%
Has conversation with child	45.8%	36.7%	50.0%	42.3%
Shouts at the child	37.0%	31.7%	44.9%	44.3%
Uses corporal punishment	26.6%	35.8%	41.2%	30.9%
Assigns chores	9.9%	7.6%	16.2%	18.8%

Additionally, we analyze the reported use of discipline practices by whether the caregiver reports their second-grade child to have a physical¹⁵⁵ or cognitive and mental health disability.¹⁵⁶ **We find no significant association between physical disability and discipline practices.** Likewise, **we find no significant association between cognitive and mental health disability and discipline practices.** Previous evaluations of HATUTAN I have found significant associations between cognitive and mental health disability and discipline practices, which have suggested that students with mental disabilities may face amplified challenges in teacher-student interactions. Given the vulnerability of these groups; of both mentally and physically disabled students; we suggest further monitoring of these factors in future rounds before any firm conclusions are drawn about the relationship between teachers' discipline practices and students' disabilities.

Avenues for Reporting Abuse

In the household survey, caregivers were asked to whom they could report abuse if their grade 2 child was abused or harassed at school. School administrators were asked the same in the school survey. As shown in Table 100, we find that most caregivers, in both intervention and control areas, state that they would report abuse to the school director/administrator.

Overall, 16.4% of respondents state that they would not be able to report abuse, suggesting that there may be barriers to accessing restorative justice for children abused at school. Examining this relationship further, we find that **caregiver education significantly predicts whether caretakers are aware of avenues to report abuse.**

Disaggregating by the intervention municipalities, **we find that respondents in Oe-cusse are significantly more likely to state that they would not be able to report abuse, as compared to the other intervention areas.** In other words, in Table 100, the high percent of intervention caregivers stating that abuse cannot be reported is driven by results in Oe-cusse. The magnitude of these differences is striking with 42.3% of respondents in Oe-cusse stating that they would not be able to report abuse, as compared to 4.4% - 15.9% in other intervention areas. Given the findings reported above, of caregiver education significantly predicting whether caretakers are aware of avenues to report abuse, and considering that generally caretakers' education levels are the lowest in Oe-cusse out of all the municipalities assessed, these results are not unsurprising. Another predictor of this, which is significant in Oe-cusse but not in other

¹⁵⁵ Students are classified as having physical disability if they were reported to have an issue with at least one of the following: eyesight, hearing, or mobility.

¹⁵⁶ Students are classified as having a mental/emotional disability if they were reported to have an issue with at least one of: memory, self care, communication, anxiety (monthly or more frequently), or depression (monthly or more frequently).

intervention areas, is whether the caretaker is a farmer, with caretakers who are farmers being significantly more likely to not know where to access restorative justice for children abused at school.

Table 100: Avenues for reporting abuse, by treatment group

Household survey: Reporting abuse of child at school	Intervention	Comparison
n	802	659
Head teacher	60.5%	63.4%
Police	2.4%	2.9%
Social services	0.5%	1.1%
Local authorities	2.1%	4.1%
Cannot report	17.1%	15.5%
Other	22.8%	20.6%
School survey: Reporting abuse of child in toilets	Intervention	Comparison
n	107	93
Family/relatives	3.7%	3.2%
Director/administrator	68.2%	39.8%
Teacher	15.9%	37.6%
PTA	0.9%	3.2%
Cannot report	0.0%	1.1%
Other	6.8%	8.6%
Don't know or did not respond	8.4%	6.5%
School survey: Reporting abuse of child by teacher	Intervention	Comparison
n	107	93
Family/relatives	3.7%	6.5%
Director/administrator	70.1%	46.2%
Teacher	12.2%	33.3%
PTA	2.8%	3.2%
Cannot report	0.0%	1.1%
Other	6.8%	7.5%
Don't know or did not respond	8.4%	2.2%

ASPIRATIONS AND STRATEGIC INTERESTS

Within the household survey, we asked the caregivers about whether boys and girls were equally skilled at math and reading as well as a range of questions about whether girls and boys had equitable experiences and opportunities at schools. Table 101 summarizes the findings for intervention and comparison areas.

Perceived Gender Gaps in Literacy and Numeracy Skills

We find that among all respondents, roughly half of caregivers stated that they think boys and girls have the same capacity for reading and writing (58.0%), and for math (53.0%). However, among those reporting that one gender has enhanced capacities beyond the other, **caregivers were more likely to state that girls have more capacity for reading and writing as well as for math than boys**: 13.9% of respondents stated that girls have more capacity than boys for reading and writing and 14.8% stated that girls had more capacity for math, whereas only 5.5% of respondents stated that boys have more capacity than girls for

reading and writing and 5.2% stated that boys had more capacity for math. This trend also emerged from the qualitative interviews, with several respondents noting that girls are often considered having higher capabilities than boys in the classroom. However, this is not attributed to inherited gender differences in intelligence but rather gender differences in self-discipline and/or time spent studying, or lack of skills of the teacher.¹⁵⁷ As one teacher described it:

Some people say that the challenge faced is that male students cannot read. In my opinion, it's not true that they can't read, but rather that they're misbehaving and don't want to listen. On the other hand, female students are more disciplined in character and listen better; probably because they are afraid.

- KII with teachers, Ainaro, Int. 38

Gendered Experiences and Opportunities at School

In general, the vast majority of respondents either believed that schools treated students equitably by gender (as measured by the encouragement of students and students' abilities to ask questions, or get help in class; 58.9% - 65.1%), or stated that they were unsure (24.4% - 32.4%). On average, these two responses accounted for around 90% of all responses to questions about who was encouraged to participate, able to ask questions, and able to ask for help in class. This was echoed by the qualitative respondents, who unanimously stated that boys and girls receive the same treatment and opportunities at school.¹⁵⁸ For example:

I feel that teachers don't treat them differently, because a teacher's real job is to teach all students, not treat them differently based on gender or age.

- KII with teachers, Manatuto, Int. 44

Although these are positive results, it is important to note that social desirability bias in respondents' answers, and/or unconscious gender biases that affect the way teachers respond to and treat children, are likely and cannot be ruled out. Furthermore, although respondents state that girls and boys are treated equivalently when asked about this explicitly, respondents' answers to other questions suggest that they consider boys and girls to have different characteristics and behavior, for example with girls being shyer than boys,¹⁵⁹ and this might lead to differential treatment of boys and girls.

Table 101: Caregivers' perceptions of gendered literacy and numeracy skills, and of gendered experiences at school

Literacy skills	Intervention	Comparison
n	804	659
Equal	57.6%	58.6%
Girls better	13.8%	14.1%
Boys better	4.5%	6.7%
Neither	0.4%	0.8%
Don't know	23.8%	19.9%

¹⁵⁷ KII with teacher, Ainaro, Int. 38; KII with teacher, Manatuto, Int. 44

¹⁵⁸ KII with coordinators, Ainaro, Int. 1; KII with coordinators, Ainaro, Int. 2; KII with coordinators, Manatuto, Int. 7; KII with teachers, Manatuto, Int. 43; KII with teachers, Manatuto, Int. 44

¹⁵⁹ KII with coordinators, Ainaro, Int. 1; KII with coordinators, Ermera, Int. 3

Math skills		
Equal	53.0%	56.8%
Girls better	15.1%	14.4%
Boys better	5.6%	4.7%
Neither	0.9%	1.4%
Don't know	25.5%	22.8%
Encouraged to participate		
Equal	67.4%	70.4%
Girls more	5.5%	4.7%
Boys more	1.1%	1.1%
Neither	0.6%	0.3%
Don't know	25.4%	23.5%
Able to ask questions		
Equal	56.0%	62.5%
Girls more	6.3%	4.0%
Boys more	2.7%	1.4%
Neither	1.0%	1.7%
Don't know	34.0%	30.5%
Able to get help		
Equal	62.6%	68.1%
Girls more	4.9%	3.6%
Boys more	1.9%	1.4%
Neither	0,37%	1.1%
Don't know	30.4%	25.8%

Disaggregating by the intervention municipalities, we find that respondents in Oe-cusse display the greatest uncertainty in their answers, with the proportion of respondents indicating that they “don’t know” to the questions on gender differences in learning capacities and whether the genders have equitable experiences and opportunities at school ranging between 48.3% and 77.9% to each of the questions. Keeping in mind the results reported on in the previous section, with 42.3% of caregivers in Oe-cusse stating that a child’s abuse at school cannot be reported, **we speculate that caregivers’ involvement and awareness of what occurs at school seems to be more limited as compared to the other intervention municipalities.** This may be due to lower levels of connection between caregivers and schools, as well as lower caregiver education levels. No marked differences are found in respondents’ answers across the other three intervention municipalities.

At last, caregivers were asked about the maximum level of education they could support for their second-grade child. **The majority of caregivers stated that they could support their child through university, with no substantial differences between caregivers of boys and girls (60.4% and 57.8% respectively).** It should be noted that these high rates likely reflect social desirability bias or wishful thinking, rather than caregivers’ actual ability or intent to support their children’s education; as a result, this is not necessarily a true picture of the differences in households’ abilities and desires to support their children’s education. Furthermore, although survey results don’t indicate a marked difference in caregivers’ intentions to support their girls through education as compared to boys, qualitative results indicate otherwise, as stated by a teacher in Oe-cusse:

Parents always say this proverb, “Sending your daughter to school is the same as sending someone else’s wife to school - because when she gets married, it is her husband and his family that will benefit from her education. Therefore, they say, don’t send girls to school, they should stay home and help their parents. When a man falls in love with them, they can form a family so we can get my money back.

- KII with teacher, Oe-cusse, Int. 23

This suggests that caregivers might not see value in investing in their daughters’ education, even though the benefits of education are acknowledged (i.e., higher earnings); and, as disseminated in the previous sub-section, with girls being more likely to be considered having higher learning capabilities than boys. This highlights that not only poverty might be a barrier to girls’ education, but also cultural resistance or unwillingness.

LEARNING AGENDA

The McGovern-Dole Learning Agenda aims to answer questions related to school meal program implementation and education. For HATUTAN II specifically, the learning agenda focuses on literacy, health, nutrition, and agriculture. The learning agenda also includes a sustainability component; this is discussed more under *Program-specific Outcomes*.

EDUCATION AND LITERACY

Relationship Between School Feeding and Literacy

A key area of interest for HATUTAN II and the McGovern-Dole Learning Agenda is the effect of SFPs on learning, including student literacy. We first seek to understand ways in which the combination of school meal interventions and educational interventions improve education and literacy levels.

At baseline, we found that due to delays in government distribution of SFP funding, only 15% of intervention schools reported providing meals to students on the day of data collection. This limited prevalence of school meal provision reduces our ability to draw clear linkages between school feeding and literacy; however, in order to better understand potential effects, we limit our analysis to two intervention municipalities, Ainaro and Manatuto. Eleven schools in Ainaro and five in Manatuto—41% and 26% of schools in these municipalities, respectively—were observed providing meals to students on the day of data collection.

In a simple regression with overall EGRA scores as the outcome of interest and provision of school meals as the predictor, we find a positive but not statistically significant relationship. In other words, school provision of meals is associated with a 5.8 percentage point increase in literacy scores, but this is not significant. However, when we include control variables for student gender, age, and school fixed effects in this model, we find a significant and negative relationship between school meals and literacy scores: Provision of school meals is significantly associated with a 3.4 percentage point decrease in overall EGRA scores, all else held constant. We note that this runs counter to findings in the predictive analysis of literacy outcomes in intervention municipalities; however, as this predictive analysis included all municipalities, its results for school meal provision may be a reflection of limited school feeding prevalence at baseline rather than the actual impact of school meals.

Overall, this analysis provides a mixed picture of the impact of school feeding on literacy; we do not suggest that the above findings are definitive, however, due to limitations in the data as a result of SFP funding delays. A variety of confounding factors—including those that will be affected by the HATUTAN II program—

may also influence both school feeding and literacy. We now explore these factors to better understand the linkages between school feeding interventions, education interventions, and literacy.

One key factor which could affect both school feeding and literacy is training of school administrators. If relevant given proposed changes to SFP policy in Timor-Leste—whereby administrators may no longer manage the SFP—HATUTAN II will seek to improve the capacity of school administrators to advocate for SFP funding and manage the SFP. Better-trained school administrators are also more likely to coach teachers, thus improving teaching practices and the quality of education.

Administrators were not asked about training provided to them in the school survey; however, they were asked whether they provided coaching to teachers, which we use as a proxy for both administrator involvement and whether administrators have been trained. Interestingly, at baseline in intervention schools, we find no significant relationship between administrator coaching and EGRA scores and within Ainaro and Manatuto, we find a significant but negative relationship between coaching and provision of school meals. Along these lines, adding coaching as a control variable has little effect on the regression between school feeding and overall literacy scores.

A second key factor is PTA involvement, as PTAs may both assist with SFP management and advocate for improved student education outcomes. Almost all schools had a PTA at baseline; however, reported levels of PTA activity varied widely, from inactive to very active. Although analysis is highly limited since provision of school meals was predominantly driven by government funding issues, the analysis does suggest that PTAs may play an important role in strengthening linkages between school feeding and literacy, potentially by providing support for both. As such, interventions which target PTA efficacy and activity may help improve overall program efficacy, as well as improving the cost effectiveness of SFP interventions.

Relationship Between Nutrition, School Feeding, and Literacy

The learning agenda also seeks to understand differences in school feeding program-literacy linkages for mal- and undernourished children. We note that at baseline, over half of the students were underweight, suggesting that undernourishment is extremely prevalent. However, to better understand nutrition, education, and school feeding dynamics, we utilize students' dietary diversity scores, with students consuming less than three healthy food groups (i.e., not processed or sugary foods) considered not to consume an acceptable diet. At baseline, based on this metric, 65.5% of intervention students were not consuming an acceptable diet.

At baseline, for Ainaro and Manatuto, we find a positive though not significant relationship between whether school meals were provided and whether students are adequately consuming an acceptable diet. Two dynamics may influence this: First, we would expect that school meals would help improve student nourishment by providing them with an additional meal including at least rice, beans, peanuts, and fish powder (two food groups). However, if school meals attract students who are hungry or who live in food insecure households, then we might expect a negative linkage between school feeding and dietary diversity due to higher levels of deprivation. The combination of these two dynamics could produce mixed results.

Looking at all intervention students, meanwhile, we again find a positive but not significant relationship between whether the student consumed at least three food groups, student consumption of protein-rich foods, and overall literacy scores. This positive association is not surprising; we would expect better-nourished students to be more attentive and to likely come from better educated or wealthier families, all of which should correlate to improved educational outcomes.

Lastly, we add student consumption of at least three food groups and consumption of protein-rich sources as control variables into the regression examining the relationship between school feeding and overall literacy scores. When dietary diversity is added as a control, we find no significant relationship between school meal provision and literacy scores. This suggests that the mechanism by which school meals

improve literacy may indeed be through improved student nutritional outcomes. Overall, these findings suggest that student dietary diversity may be an important dynamic influencing educational outcomes from school meal programs, although the extent of the relationship is not clear.

Relationship Between School Feeding and Teaching

The McGovern-Dole learning agenda seeks to understand the impact of school meal interventions on the resources available to teachers, such as classroom time on task, teacher motivation, and teachers' use of engaging teaching practices. The program's Theory of Change argues that classroom time on task may improve when students' nutrition needs are met through school feeding, that teacher motivation may increase as teachers observe changes in students' behavior, and that teachers may be more likely to see positive outcomes from engaging teaching practices when students are fed and able to pay attention, thus engendering a positive feedback loop whereby teachers increase their use of engaging practices.

In the section *Student Attentiveness*, our predictive analysis found that for intervention schools, there was a significant and positive relationship between school meal provision and working memory (a proxy for attentiveness). This finding provides evidence in support of the Theory of Change's hypothesis that school feeding may improve classroom time on task.

If students become more attentive due to school feeding, teacher attendance may increase as teachers observe positive changes in student behavior and become more motivated. Improved teacher attendance may then lead to stronger education outcomes for students. In accordance with this hypothesis, in the section *Predictors of Literacy Outcomes*, we found a positive and significant relationship between teacher attendance and overall EGRA scores within comparison schools and a positive, though not significant, relationship between the two variables within intervention schools. However, we note that the quality of instruction is also a vital component for student learning, discussed more below.

For the relationship between school feeding and teacher attendance, as hypothesized, we find a significant, positive relationship between school feeding and teacher attendance within Ainaro and Manatuto. However, given that observed provision of school meals was driven by external factors, including the timing of data collection within specific schools, we do not further analyze this dynamic.

Lastly, we examine potential linkages between school feeding and the use of positive teaching practices. We note that sample size is small; as such, results should only be taken as indicative of possible relationships. Our results are less conclusive than those above; among all intervention schools, we find a significant but negative relationship between provision of school meals and the number of positive teaching practices observed, and no significant relationship between provision of school meals and use of corporal punishment or angry/harsh language towards students. In other words, these results do not show a clear link between school feeding and improved teaching. However, it is important to note that teaching practices may be expected to change slowly, and only as a result of continued training, feedback, and positive classroom results. As such, HATUTAN II interventions which continue to build on progress made during HATUTAN may be important to fully establish these linkages.

SCHOOL FEEDING PROGRAM IMPLEMENTATION

Community-Level Systems

The McGovern-Dole learning agenda and the HATUTAN II program share a common interest in understanding the community-level systems required for successful implementation and sustainability of school meal programs. The HATUTAN II program specifically aims to identify effective partnerships and exit strategies for program sustainability. This baseline report finds that in most schools (71% comparison, 88% intervention), the school directors or administrators were responsible for overseeing the feeding

program,¹⁶⁰ while the PTA was responsible in 43% of intervention schools and only 19% of comparison schools. The level of PTA involvement varied across the intervention municipalities, with Ermera and Oe-cusse having higher participation rates than Ainaro and Manatuto.

At baseline, we find that the majority of schools had a PTA, with all schools in intervention municipalities and 85% of schools in control municipalities having one. On average, intervention schools had five PTA members, while comparison schools had four. However, during the data collection, a significant proportion of schools in both intervention (54%) and comparison (71%) municipalities reported that their PTA did not hold any meetings in 2023. Among intervention municipalities, Ainaro and Oe-cusse had the highest percentage of schools (64% and 75%, respectively) reporting no PTA meetings during the year, while Ermera and Manatuto had a lower percentage of schools (40.5% and 42.1%, respectively) without PTA meetings. These findings suggest that while most schools had a PTA, they were not actively involved in the school meal program as evidenced by the lack of meetings held.¹⁶¹

Food Production, Procurement, and Preparation

The McGovern-Dole and HATUTAN II programs seek to evaluate the sustainability of meal program components, including food production, local procurement, and food preparation. The study found that kitchen space is widely available in most intervention schools (90.0%) and clean water is accessible for meal preparation. However, there are disparities in the availability of clean water between intervention municipalities. Notably, Ainaro had a significantly lower percentage of schools with access to clean water—63.4%—compared to Ermera and Manatuto, at 83.6% and 90.3% respectively; Oe-cusse fell in the middle of the range, at 80.7%. These findings suggest the need for targeted interventions to address the uneven distribution of resources and ensure program sustainability, especially for critical water and sanitation areas (such as clean water for meals).

Regarding food production and local procurement, almost all intervention schools at baseline purchased food from local sources, with 100% purchase rates in intervention schools in Manatuto and Oe-cusse, while purchase rates in Ermera and Ainaro were 90% and 74%, respectively. The primary foods purchased by intervention schools at baseline were dark green vegetables (82%), starchy foods (e.g., potato, taro, yellow sweet potato, and cassava) (64%), and vitamin A-rich foods (e.g., pumpkin, carrot, and purple sweet potato) (44%). However, insufficient budget and inadequate farmer's produce were identified as the main reasons for not purchasing local produce among both comparison and intervention schools. Ainaro schools primarily cited budget constraints, while Ermera schools mentioned insufficient produce and uncertain availability due to production fluctuations at certain times.

Note from the program: Since the schools had not received funds to purchase local produce, the responses received refer to practices in previous years and may reflect desirability bias rather than actual practice.

Food Safety and WASH

The McGovern-Dole learning agenda and HATUTAN II program share a common goal of promoting food safety and effective water, sanitation, and hygiene (WASH) interventions in schools. In this regard, the baseline survey revealed a range of practices and opportunities related to food safety across the surveyed schools. For instance, while 79% of intervention schools had clean water available for food preparation,

¹⁶⁰ Under the new SFP law, school administrators are no longer intended to have responsibility for the SFP, which will instead be transferred to SFP Management Teams. As such, we expect that this percentage will decrease as the SFP law is increasingly rolled out.

¹⁶¹ Given that data collection took place during a transition point for the new SFP law, it is also possible that some PTA members instead joined the SFP Management Teams; however, we do not have data to confirm this.

less than a quarter of schools (23%) had handwashing stations, and only about one-third (30%) reported using detergent daily to clean the kitchen. Notwithstanding, the household survey of parents' perception of the meals provided to their children indicated that most parents in the intervention group believed that the meals were prepared hygienically (90%) and tasted good (85%).

In addition, the sanitation of storage spaces in intervention schools was reported to be satisfactory by a significant proportion of respondents, with 94% indicating that the storage spaces were at least somewhat clean. In addition, almost all respondents (95%) reported that food was raised off the ground in some manner, such as through the use of pallets, shelves, or other means.

HEALTH AND NUTRITION

Relationship Between WASH Programs and Literacy

The HATUTAN II learning agenda seeks to understand how WASH projects impact learning and literacy outcomes. As such, we analyze the relationships between handwashing behaviors and health/hygiene knowledge reported by caregivers and student literacy outcomes. We hypothesize that improved WASH knowledge and behaviors may lead to improved literacy outcomes if these behaviors reduce student illness and improve student attentiveness. We control for caregiver education in our analysis as a key confounding variable that may affect both student educational outcomes and health/hygiene behaviors and knowledge.

Looking first at handwashing behaviors, we analyze the relationship between caregivers who reported that they always wash their hands before preparing food, presence of a handwashing station with soap, and student-level outcomes of interest. For intervention areas, we find no significant relationship between handwashing behaviors, presence of a handwashing station, and overall EGRA scores in a variety of models controlling for caregiver education, student gender and age, and school fixed effects. However, we do find a significant relationship between the number of school days missed due to illness and whether the house has a handwashing station with soap; students in households with a handwashing station with soap miss 0.4 fewer days of school per week due to illness, on average, controlling for caregiver education. Additionally, we find a significant and positive relationship between working memory scores and handwashing behaviors, controlling for caregiver education: Grade 2 students of caregivers who “always” washed their hands scored, on average, around 5 percentage higher on the working memory test, all else constant. This relationship remains positive, but is no longer significant, when controls for student gender, age, and school fixed effects are added. In other words, it appears that there may be a positive relationship between health behaviors, student illness, and student attentiveness, as measured through days missed due to illness and working memory. This relationship may be due to improved student health outcomes, which effect both attendance and attentiveness; for example, if weak handwashing behaviors result in mild diarrhea for students, students may still attend school but may be distracted by their poor health.

Moving on to health and hygiene knowledge, as with handwashing behaviors, we find no significant relationship between health knowledge and literacy outcomes. However, we do find a significant, though small, relationship between health knowledge and whether a student was absent due to illness: A one-point improvement in health and hygiene knowledge was associated with a 0.4 percentage point higher likelihood that the student was absent due to illness in the week preceding data collection. This finding is somewhat counterintuitive, as we would expect better knowledge of health and hygiene to be associated with less student illness. However, it is possible that student illnesses are, in this case, driving caregivers to gain more knowledge of hygiene; a caregiver with an unwell child may have more incentives to learn about health and hygiene in order to care for their child. Alternatively, more awareness of health and hygiene may increase the likelihood that parents allow their children to remain home from school to rest.

Overall, this analysis shows an inconclusive but potentially positive relationship between health and hygiene behaviors and knowledge and student literacy, attendance, and attentiveness. We find a potential link

between access to handwashing stations with soap and student absences, as well as between handwashing behaviors and student attentiveness. Both of these dynamics may then drive improvements in overall literacy.

Relationship Between Nutrition and Student Outcomes

In the above analysis under *Relationship Between Nutrition, School Feeding, and Literacy*, we found potential positive relationships between school meal provision and student nutrition, as well as between student nutrition and literacy outcomes. This suggests that school meals may play an important role in the outcomes of students, especially malnourished students, although findings were inconclusive. To further examine these relationships, in this section, we analyze the relationship between student nutrition and student attendance and illness.

Our analysis found that around 23% of intervention students were absent due to illness on at least one day of school during the week preceding data collection. Among students who were absent due to illness, an average of around 2 school days were missed in the week preceding data collection.

However, we find no significant relationship between student dietary diversity and whether the student was absent due to illness or the number of days missed due to illness. We also find no significant relationship between student undernourishment (measured as students who ate fewer than three healthy food groups), student consumption of protein-rich foods, and illness-related absences. We do, however, find a significant relationship for intervention students between BMI and the number of days missed to illness: A one point increase in BMI was associated with 0.1 fewer school days missed, controlling for factors varying across municipality.

Overall, these results suggest a possible, though inconclusive, relationship between nutrition and student attendance and illness. Given the possible positive relationship between school meals and nutrition, this suggests that school meals may have an effect on reducing absences due to illness. It is important to note, however, that many confounding factors may also affect this relationship, including hygiene practices (at both the student and community levels), public health measures, and access to healthcare. As such, it is important for HATUTAN II to continue targeting health and hygiene behaviors to reinforce the benefits gained through improvements to nutrition.

AGRICULTURE

The HATUTAN II learning agenda seeks to establish how local procurement during harvest time can be supplemented with international food aid to promote sustainable school feeding. The extent to which this can be analyzed with quantitative data is limited, as we cannot assess the proportion of school meals produced with local produce or international aid and quantitative indicators on sustainability are limited at present. In addition, at baseline we cannot assess trends and are unable to comment on the effectiveness of the HATUTAN II program. However, it is still possible to set out baseline values for later analysis and compare the intervention group against the comparison group (taking into account that many schools in the intervention group took part in HATUTAN and have already benefitted).

In the endline evaluation for HATUTAN the impact of the school feeding program was established. During HATUTAN's baseline and endline evaluations (2019 and 2023 respectively), HATUTAN was not able to deliver commodities to fill gaps caused by the delay in government SFP funding. It was only during midline that HATUTAN was able to fully deliver imported commodities to support school meal provision. This appears to have been effective, with 88% of intervention schools providing meals at midline compared to only 30% of comparison schools. Overall, these patterns suggest that international food aid can indeed provide a useful supplement to local procurement; however, both international aid and local procurement have important limitations. For the former, international aid requires availability of low-cost, high-quality food

imports; strong administrative and procurement systems; and effective and sanitary transportation. For the latter, local procurement requires consistent funding (from government or other sources) to support food purchases; strong local management systems; and existence of high-quality, affordable local foods to purchase, among other needs.

Next, we analyze the dynamics of local procurement of food. In this baseline analysis we compared the percentage of schools who stated that they purchased produce from local farmers in the intervention group against the comparison group. We find that 86.0% of comparison schools bought food locally for school feeding, while 89.7% of intervention schools bought food locally for school feeding. The finding of a higher percentage of intervention schools buying food locally is a promising one, as the HATUTAN II program aims to supplement buying local produce with international food aid rather than replace it outright. It also aims for the program to be sustainable and for schools to buy 100% of their produce locally. Examining how these figures change will be of high importance in future rounds of evaluation to ensure that practices are kept up after the program expires and that benefits for school feeding are made on a sustainable basis.

PROGRAM-SPECIFIC OUTCOMES

In addition to measures of program indicators discussed in prior section, the evaluation plan also intends to assess the performance of HATUTAN II along Organization for Economic Cooperation and Development (OECD) Development Assistance Committee (DAC) criteria. These include six key areas: design/relevance, management and coordination, effectiveness, efficiency, sustainability, and gender and social equity.¹⁶²

DESIGN/RELEVANCE

The HATUTAN II program is designed to address a wide variety of factors known to affect literacy and health. Below, we analyze the potential design and relevance of key activities. We analyze if interventions will likely be relevant to the priorities of the Government of Timor-Leste (GoTL) and schools and responsive to the needs of students, households, farmers, and schools.

Training School Administrators

The HATUTAN Theory of Change argues that strengthening school administrators' management skills and leadership is important to improve school outcomes and achieve sustainability. Administrators are expected to improve literacy outcomes through their involvement in coaching and monitoring teachers, manage school infrastructure to improve student attendance and SFP functioning, and advocate for and manage the SFP. They are also expected to ensure a functioning PTA.

At baseline, we find no significant correlations between administrators' years of experience, education levels, and provision of coaching to teachers and overall literacy scores and provision of school meals. We do, however, find a significant correlation between administrators' level of education and the use of engaging teaching practices in schools: Teachers in schools with more educated administrators tend to use more engaging teaching practices. This finding emphasizes the need for training of administrators, especially those with lower education levels, to ensure they understand the value of engaging teaching.

Additionally, we find that at baseline, 88% of respondents to the school survey stated that administrators of intervention schools were responsible for the SFP.¹⁶³ Furthermore, the majority of respondents to the school

¹⁶² We do not discuss impact as this is a baseline assessment.

¹⁶³ As HATUTAN II progresses, it may actually be a mark of success if this percentage decreases, as SFP Management Teams are intended to take over this role.

survey stated that if a girl is harassed or abused, she should report the abuse to the school director/administrator first. As such, despite the inconclusive link between administrator experience and quality and several outcomes of interest, administrators remain highly relevant to the goals of HATUTAN II. Training of school administrators may have particular relevance for the SFP and to improve avenues for reporting gender-based violence in schools.

Strengthening PTAs

HATUTAN II has identified PTAs as important to monitor school infrastructure, teacher attendance and quality, school meal provision, and other key outcomes of interest. Establishing and strengthening PTAs also provides an important means of sustainability. Program activities will thus seek to strengthen (or establish) PTAs, facilitate community meetings on school quality, and improve PTA capacity to monitor the SFP, teacher attendance, school budgets, and gender-based violence in schools, among other aspects.

At baseline, the majority of schools had PTAs, and most PTAs reported active involvement in improving school infrastructure, overseeing the SFP, monitoring safety and security, monitoring teacher and student attendance, and ensuring learning quality. As such, activities targeting PTAs are clearly relevant to the overarching goals of HATUTAN. However, we also note that more than half of PTAs did not hold any meetings in 2023, and PTA involvement in areas such as school budget management and monitoring dropout rates was relatively low.

Provision of Reading Materials

Students' access to reading materials at school and at home can substantially help strengthen reading abilities. As such, HATUTAN II will seek to support the development of content for the Lafaek student and teacher magazines and support school administrators to manage their school's reading materials.

Strengthening access to reading materials is a relevant program activity, as only 50% of intervention schools were observed to have storybooks or magazines that could be used by grade 2 classes and only 51% of observed classrooms had a reading corner. Furthermore, only 57% of households had children's books or magazines.

However, provision of reading materials does not always translate into student access to reading materials. For example, 11% of schools which were observed to have reading materials for grade 2 students also reported that they did not lend storybooks for students to take home. Schools that did not lend books reported doing so out of concern that children were careless or would lose the books. As such, while provision of reading materials remained relevant at baseline, more work is needed to ensure that reading materials are actually available to students.

Provision of School Meals

Provision of commodities to support the government-run SFP is a primary activity for HATUTAN II. At baseline, we found significant linkages between school meal provision and EGRA scores, working memory, and student attendance. The provision of school meals continues to be highly relevant for student in Timor-Leste, helping to improve nutrition, student attendance, student attentiveness, and overall literacy abilities. HATUTAN II support for school feeding is further relevant due to challenges in government management and funding of the SFP.

Partnering with Farmers' Groups

The HATUTAN II program will seek to stimulate local rural agricultural markets and increase the production, consistency, and quality of nutritious foods as well as improve nutrition consumption in households. Additionally, the program will seek to strengthen linkages between schools and farmers to increase demand for nutritious foods and to increase the quality of school meals.

At baseline, 90% of intervention schools stated that they purchase produce from local farmers for school meals. The primary reasons for not purchasing produce were insufficient budget and insufficient amounts of local produce. Support for farmers' groups may help mitigate both of these issues; increasing local production will clearly help deal with supply issues, but may also help reduce prices if farmers learn more efficient and cost-effective ways to grow produce. In other words, for HATUTAN II, support for farmers' groups remains relevant for the overarching goal of improving the dietary quality of school meals.

Forming VSLAs

The HATUTAN II program will seek to form VSLAs in order to serve as a foundation for other trainings on topics such as nutrition, agriculture, and gender. VSLAs will also provide a useful source of monetary support for their members. Because VSLAs are the foundation for other trainings, their establishment and support is of clear relevance to program goals. However, provision of support solely through VSLAs may exclude households who are not included in these groups. As such, this design choice may limit the provision of trainings solely to households with interest and capacity to participate in VSLAs. However, it is also important to note that lessons learned from HATUTAN I found that working through other community groups, such as mother support groups, Ministry of Health volunteers, or mobile clinics, was ineffective, and that VSLAs were a preferential option.

Training on Health and Nutrition Practices

Improved health, hygiene, and nutrition practices among caregivers can help improve student health and dietary quality, a key goal for HATUTAN II. These practices can also help improve education outcomes by increasing student attendance and attentiveness.

The baseline assessment found that health and hygiene knowledge was high, but that this knowledge may not be effectively translating into good health practices. As such, HATUTAN II may need to adopt more of a focus on behavior change barriers to health and hygiene practices. Additionally, while training on nutrition appears to be more relevant given relatively limited knowledge of good nutrition practices, there appear to be further barriers to nutrition than just knowledge, including economic constraints and cultural norms. As such, while activities in this area are broadly relevant, they should be carefully tailored to the local context to enhance impact.

Capacity Building and Advocacy

HATUTAN II will have a strong focus on capacity building and advocacy at the national level, including by advocating for policy changes related to the SFP and education and strengthening the government of Timor-Leste's ability to deliver the SFP. Although progress has been made, as discussed in this report, government capacity to fund and manage the SFP remains limited. As such, this workstream remains highly relevant.

MANAGEMENT AND COORDINATION

Effective management of HATUTAN II will be vital to ensure program success, as will be coordination both across implementing partners and with external stakeholders, such as the GoTL. No substantial management or coordination issues were reported in HATUTAN program documents; as such, management and coordination modalities should be continued during HATUTAN II implementation. We note, however, that one challenge to coordination with the government during HATUTAN came from frequent turnover of ministry staff and delays in government review and approval of reports and proposed materials. HATUTAN II should account for these challenges in its workplan. It will also be vital to ensure continued coordination with NGOs operating in similar areas; if external coordination is weak, the program may overlap with programs run by other agencies, resulting in inefficiencies.

EFFECTIVENESS

The effectiveness of HATUTAN II will depend on a range of factors unique to the context within individual communities. Implementation teams will need to be acutely aware of contextual issues and their impact on program activities. However, here, we discuss several factors that are likely to have a universal impact on program effectiveness, including school infrastructure, PTAs, school administrators, diversity of learning outcomes within classrooms, students' access to literacy materials, cultural norms, and systems-level issues.

School infrastructure was identified as a potential constraint to effectiveness because SFP implementation requires infrastructure, including a kitchen and clean water source, to support it. The below table shows access to relevant school infrastructure by municipality. We find that the majority of schools in intervention municipalities have a kitchen, but that access to supporting infrastructure, including clean water to prepare meals, a handwashing station, sufficient food storage, and a canteen, is more limited. Access to infrastructure is generally weakest in Oe-cusse, suggesting that there may be severe limitations to efficacy within this municipality if infrastructure challenges are not first addressed.

Table 102: School infrastructure by municipality

	Kitchen	Clean water	Handwashing station	Food storage	Canteen
Ainaro	92.6%	64.0%	24.0%	40.0%	44.4%
Ermera	97.6%	85.0%	25.0%	47.5%	2.4%
Manatuto	84.2%	87.5%	25.0%	37.5%	10.5%
Oe-cusse	75.0%	80.0%	13.3%	6.7%	10.0%
Total (intervention)	89.7%	79.2%	22.9%	37.5%	15.9%

PTAs play a critical role in the success of SFPs and overall school management. PTAs are discussed in detail in the section *School Management*; here, we note that all intervention schools reported having a PTA at baseline, although around half of intervention schools reported that no PTA meetings had been held during the current school year. PTAs were involved in a wide range of activities, including improving school infrastructure and overseeing the SFP. Engaging PTAs will likely help boost program effectiveness, in addition to improving sustainability.

School administrators were also identified as crucial for efficacy due to many activities' reliance on the ability and motivation of administrators to assist with implementation. Several program activities will focus on training school administrators, including in budgeting, procurement, human resources management, community mobilization, classroom management, and more. Quality of administrators is again discussed in more detail in *School Management*; a key finding from this section is that 46% of intervention administrators reported providing coaching to teachers on a weekly basis and only 7% stated that coaching had never been provided. This suggests that administrators may be actively engaged in school improvement.

Within classrooms, a **wide range of literacy abilities** among students was identified as a factor that may challenge program effectiveness due to the difficulty of teaching effectively for a diversity of skill levels. At baseline, we find an average "skill gap" (i.e., difference between the highest overall EGRA score and the lowest overall EGRA score in a school) of 37.3 percentage points. Furthermore, 17.8% of intervention students come from schools that include students with no literacy abilities (i.e., students scoring 0% on the

EGRA) as well as students with strong literacy abilities (50% or greater on the EGRA). Over half of students came from schools that include both students with very weak literacy abilities (5% or less on the EGRA) and relatively strong abilities (33% or greater on the EGRA). Given the acute challenges teachers face in any context to teach to a wide range of skill levels, this may be a constraint to effectiveness for HATUTAN II.

Regarding students' **access to literacy materials at school**, at baseline, 25.2% of intervention schools did not lend story books to students. Among these schools, the majority reported that they did not lend books because students would lose them or were careless with them. This suggests that administrators or teachers may mistrust students or believe that books are “too nice” for student use. As such, in future initiatives, it may be important to address administrator/teacher perceptions towards loaning reading materials in addition to providing materials.

Regarding **cultural norms**, the slow-changing nature of many cultural norms may pose a challenge to efficacy. One key area is in norms around nutrition and health practices; typical diets, for example, are heavily influenced by culture and can be highly resistant to change. Similarly, health behavior change often happens very slowly, and is not only influenced by knowledge but by cultural dynamics, beliefs, the actions taken by others within a community, and a number of other factors. As such, an emphasis on increasing knowledge—particularly of health dynamics, where knowledge appears relatively high—may have had limited efficacy in strengthening practices, as it only addresses one dynamic of behavior change.

Lastly, we note that **systems-level challenges with SFP implementation** may pose a challenge to HATUTAN II's effectiveness. Persistent delays in government provision of SFP commodities and support, for example, may limit HATUTAN II's ability to support the SFP in a timely manner. It will be necessary to continue advocacy with the GoTL to improve the consistency and reliability of SFP support.

EFFICIENCY

Efficiency refers to the extent to which program activities deliver results in an economic and timely way, including the program's value for money. If program activities are excessively costly and have only limited impact on outcomes of interest, the dedication of resources to these activities may not be justifiable. Furthermore, even if value for money is high, better understanding of program efficiency can further improve the use of limited resources. Understanding efficiency is also important from an operational perspective to better judge the feasibility of achieving outcomes given limited resources. Here, we note some key considerations for an efficiency analysis that could be undertaken by CARE or the program funder during or after program implementation.

First, resources should be considered holistically, not just in terms of monetary cost but also in terms of human, environmental, and time costs. Provision of commodities for school feeding or of literacy materials, for example, may have a relatively high financial cost but low human and time costs. Training to school administrators, meanwhile, may have a lower financial cost but require extensive staff support and a great deal of time. All of these factors must be considered in a robust analysis of program efficiency.

Second, efficiency should be considered not just in terms of the number of beneficiaries, but also in terms of higher-level impact on beneficiaries and potential trickle-down effects. For example, relatively few school administrators may benefit from HATUTAN II, especially compared to the number of school-aged children supported by the program. However, if activities targeting school administrators enable administrators to advocate for enhanced government support for school feeding, provide effective training to teachers, and engage with PTAs to support students, then the direct beneficiaries may extend benefits to thousands of additional beneficiaries. In other words, outputs (e.g., number of trained administrators) and overall program impact may vary by type of beneficiary and program activity.

Third, it is important to again note that changes in knowledge do not always correlate with changes in behavior. As such, activities which seek to improve knowledge may not efficiently translate to behavior change, especially as these activities can be costly in terms of time and human resources.

Lastly, it is important to note that HATUTAN II's design intentionally reduces some aspects of efficiency in order to reach the most at-need beneficiaries. The selection of highly remote, rural schools for intervention can significantly increase program costs; despite this, selection is justifiable in terms of development impact. Any efficiency analysis must therefore be grounded in this context.

SUSTAINABILITY

In order to ensure that the benefits of HATUTAN II persist after close of the program, sustainability should be a prominent consideration during implementation. The HATUTAN II work plan focuses on sustainability through capacity-building and training activities at the local, regional, and national levels. These activities include training of school administrators, school cooks, and teachers; establishment of VSLAs and farmer's groups; and strengthening of PTAs, aspects discussed throughout the report.

The HATUTAN II program will incorporate **training** within most of its activities. Training school administrators is expected to increase sustainability by enabling administrators to better manage schools, apply for funding, advocate for the SFP, and coach teachers. Training of school cooks is expected to increase sustainability by improving cooks' abilities to prepare nutritious and hygienic school meals. Training of teachers is expected to result in sustainable improvements to literacy and other learning outcomes through improved use of engaging teaching practices and reductions in ineffective or harmful practices. Training of farmers is expected to sustainably strengthen SFPs by improving schools' linkages with local producers. Lastly, strengthening of PTAs is expected to provide sustainable support for schools and students by improving accountability of schools to the local community.

We note that a key challenge to this approach to sustainability is attrition of trained school personnel. Indeed, in the HATUTAN endline evaluation, we found that administrators had, on average, the same amount of experience as at baseline, suggesting that there has been substantial attrition. Regardless, it is worth noting that while attrition may reduce program benefit to intended beneficiaries, it does not erase program impact. Instead, the benefits of training on administrators (or cooks and teachers) may accrue to a different group of students/schools than selected by the program.

Advocacy and capacity-building will also occur at the systems level through engagement with national line ministries and municipal authorities, although the latter are highly constrained by lack of resources. To further enhance partnerships with the government and ensure buy-in of government officials, HATUTAN II should continue to include GoTL representatives in joint monitoring sessions, approval processes, and presentations of program results.

Lastly, HATUTAN II will engage community members, teachers, and parents in a **collaborative approach to policy implementation**. This is a crucial step for sustainability, as top-down policy implementation that involves, for example, only government officials or central school administrators is less likely to succeed, as it is less likely to have buy-in from those responsible for carrying out policies.

GENDER AND SOCIAL EQUITY

The HATUTAN II program includes an explicit gender equity focus; evaluations will also seek to better understand the social equity impact of the program by collecting data on disability status of students and other factors which may disadvantage students or households. Furthermore, the program's decision to target municipalities with the worst education and health indicators in the country represents a further focus on equity.

The program seeks to engage girl students and female caregivers (including mothers). The baseline shows that, consistent with patterns found across Timor-Leste, grade 2 girls have improved education outcomes, including engagement and achievement in school, compared to boys. Teachers' attitudes towards girls and boys are also fairly equitable.

As a result of these patterns, in the context of Timor-Leste, differential impacts of HATUTAN II on girls may serve to widen the gender gap, particularly in learning outcomes where girls outperform boys at young ages. For example, as shown in the section *Literacy Outcomes*, girls consistently outperform boys in literacy assessments; findings from the HATUTAN endline evaluation also suggest that girls benefitted more from HATUTAN programming. One reason driving this may be teachers' somewhat greater likelihood of using negative teaching practices, such as a harsh tone or corporal punishment, on boys than on girls. Furthermore, caregivers were somewhat more likely to believe that girls were better at reading and math than boys, suggesting a gendered bias which may affect boys' learning. Overall, these findings suggest that particularly at young ages, there may be a need to increase focus on boy students to help them catch up to girls.

However, although girls' learning achievements and treatment in schools are on par with or above those of boys at young ages, girls still face many gendered challenges which may lead them to fall behind boys later in education and as adults. Girls bear many obligations for both academic performance and housework; while we find that girls and boys spend similar total amounts of time on housework (as reported by caregivers), we also find that girls are responsible for significantly more tasks than boys.¹⁶⁴ As a result of these obligations, girls may eventually struggle to keep up with both academic and household responsibilities.

Furthermore, our analysis shows that adult women still have limited decision-making power in households, are often limited to working as caregivers or in low-paying jobs, and face gender-based violence. Gender norms often encourage young women to start families and stay at home to care for children, rather than pursuing higher education or a career which could provide the woman with greater ability to make decisions and advocate for herself in the household. Overall, despite the great potential shown among girls in school and HATUTAN interventions, gender norms and barriers continue to reduce the options available to girls as they grow older.

These findings suggest a need for intervention to sustain girls' successes as they age, and potentially to improve boys' educational performance at young ages. However, gender norms tend to change slowly over time, and we found little change in gender and power as a result of HATUTAN interventions. This is not necessarily evidence that interventions were ineffective due to the difficulty of influencing cultural norms and the length of time necessary to do so. However, it may be useful to undertake further investigation during HATUTAN II to enable the program to have greater influence over gender norms.

CONCLUSION

This baseline assessment had provided an overview of the status of literacy, the quality of instruction, student attentiveness and attendance, the school feeding program, health and nutrition, agriculture and economic empowerment, and gender and power within HATUTAN II's target municipalities. In this conclusion, we focus on providing recommendations for HATUTAN II; we reference learning from the HATUTAN endline evaluation where applicable in order to ground recommendations in learning from the past five years of programming. In some cases, our recommendations validate the approach to improving

¹⁶⁴ Including caring for family members, cooking or cleaning, fetching water or firewood, helping with agricultural work, and helping with a family business or other work.

nutrition, health, and literacy for primary grade students. In others, they suggest gaps that could be addressed with small changes to program activities.

LITERACY AND EDUCATION

Literacy abilities remain very weak, and there is a major gap in literacy abilities between letter recognition and word recognition. The average overall score on the EGRA was only 10.9% for intervention students, and only 18.2% of intervention students demonstrated the ability to read and understand the meaning of a grade-level passage. Scores were highest—though still low in absolute terms—for letter recognition, at 21.8% for intervention students. Scores then dramatically decreased for subsequent tasks requiring students to read words and passages or interpret the meaning of a text.

Many grade 2 students have no literacy abilities, scoring 0% overall on the EGRA. Within the HATUTAN endline evaluation, we found that HATUTAN had a greater impact on students with at least basic ability to recognize letters—i.e., those scoring above 0% on the EGRA—rather than on reducing the percent of students with no literacy abilities.

Improve HATUTAN II's targeting of students with no literacy abilities. These students appear to have been insufficiently targeted by HATUTAN activities, which were more effective at strengthening literacy among higher-performing students. Tailoring future activities to the lowest-performing students to more effectively enable students to grasp basic letter and word recognition skills that are foundational for more advanced reading tasks will increase the program's reach and help achieve its goal of improving literacy among disadvantaged Timorese children.

We find moderate use of engaging teaching practices in most intervention municipalities, with relatively more frequent use of these practices in Ermera and less frequent use in Oe-cusse. However, across all municipalities, substantial potential remains to continue improving the use of engaging teaching practices, as well as reducing the use of traditional, unengaging teaching practices including copying from the board and repeating after the teacher.

While corporal punishment was not widely observed, the practice is still used by some teachers in intervention schools. Furthermore, a higher prevalence of corporal punishment was reported by caregivers than observed during classrooms observations, suggesting its use may be under-reported in our data. Given the significant negative impact of corporal punishment on students, it may be important for HATUTAN II to continue discouraging the use of this practice.

Teacher attendance was very low in Oe-cusse, at only 65% on the day of data collection and 22% on the day before data collection. Given that teacher attendance has a direct impact on student learning, HATUTAN II should particularly focus on improving this metric within Oe-cusse.

Access to reading materials is relatively high within schools; 75% of intervention schools reported lending books for students to take home. However, only 8.2% of households reported that their grade 2 child had borrowed a book from the school during the past 3 to 4 months. Furthermore, we note that schools that did not lend books generally reported doing so out of fear that students were careless or may lose the books. As such, it is important to recognize that simply increasing the availability of reading materials may not always translate to increased student access to those materials.

Student attendance was lower in intervention schools than comparison schools. Attendance rates were noticeably low in Ainaro and Ermera, at 57% on average in both municipalities. Natural disaster was frequently cited as a reason for student absences, a factor outside the control of the HATUTAN II program.

However, sickness, which may be affected by HATUTAN II activities targeting health, hygiene, and nutrition, was also cited as the reason for absence among 31% of caregivers.

SCHOOL FEEDING

Provision of school meals was relatively low at baseline. Limited provision of meals was due to delays in government provision of SFP funding. These delays had a substantial negative impact on schools' abilities to provide meals, and thus a negative impact on student hunger within schools.

Enhance the focus on advocacy activities with the Government of Timor-Leste during HATUTAN II. Delays in SFP funding continue to have a widespread negative impact on school meal provision. While some improvements were seen in this area during HATUTAN, baseline results show a clear need for continued enhancement of government capacity to provide funding regularly and consistently.

School meals have a relatively low level of dietary diversity; most schools serve carbohydrates, legumes and nuts, and dark green, leafy vegetables. Meals lack fruits and other vegetables. Improving school meal dietary diversity through linkages with local farmers should be a continued priority during HATUTAN II.

Among intervention schools providing school meals, the majority reported buying produce from local farmers. Schools that did not buy local produce reported that they did not have the budget to do so or that local produce was insufficient. Continuing to support linkages between schools and local farmers will remain an important component of HATUTAN II.

The majority of schools have a PTA involved in overseeing the SFP. However, participation in PTAs and their levels of activity were limited; in intervention areas, over half of PTAs had not met in 2023.

Support PTAs to enhance their level of activity and increase household participation. PTAs address many areas of relevance to HATUTAN II, including not only the SFP but also learning quality, school infrastructure, student and teacher attendance, and safety and security. As such, PTAs are important bodies to enhance HATUTAN II's impact and sustainability.

HEALTH AND NUTRITION

The quality of diets consumed by women of child-bearing age and children under the age of 2 years is low. Indeed, in the HATUTAN endline evaluation, we found evidence suggesting a widespread decrease in dietary quality over the past five years, with increasing reliance on grains, roots, tubers, and dark leafy greens for calories and nutrition. Consumption of protein-rich foods, in contrast, remains very low.

Over half of the grade 2 students have underweight BMIs, with an average BMI of just 13.9 kg/m² for intervention students. These findings emphasize that the weak dietary diversity and nutritional practices found above may have a tangible impact on students' health outcomes, and reiterate the importance of the SFP and other activities seeking to improve food consumption and dietary quality.

Nutrition knowledge is relatively low. While caregivers do have some knowledge of healthy nutrition practices, more work is needed to expand knowledge. However, we emphasize that knowledge does not necessarily translate into practice; substantial barriers to healthy nutrition practices may remain even for caregivers with high levels of nutrition knowledge.

Adjust activities seeking to improve the quality of nutrition in HATUTAN II. The endline evaluation for HATUTAN found limited impact on nutrition knowledge and practices. This finding is concerning given the impact of a poor-quality diet on children's health, attentiveness, school attendance, and general well-being. Further improvement in nutrition knowledge may be needed due to low knowledge found at baseline; however, our analysis of health knowledge and behaviors suggests that simply improving knowledge may not translate into improved behaviors. As such, it may be more effective to focus on other barriers to improved nutrition, such as cultural norms, economic circumstances, or preferences for processed and sugary foods.

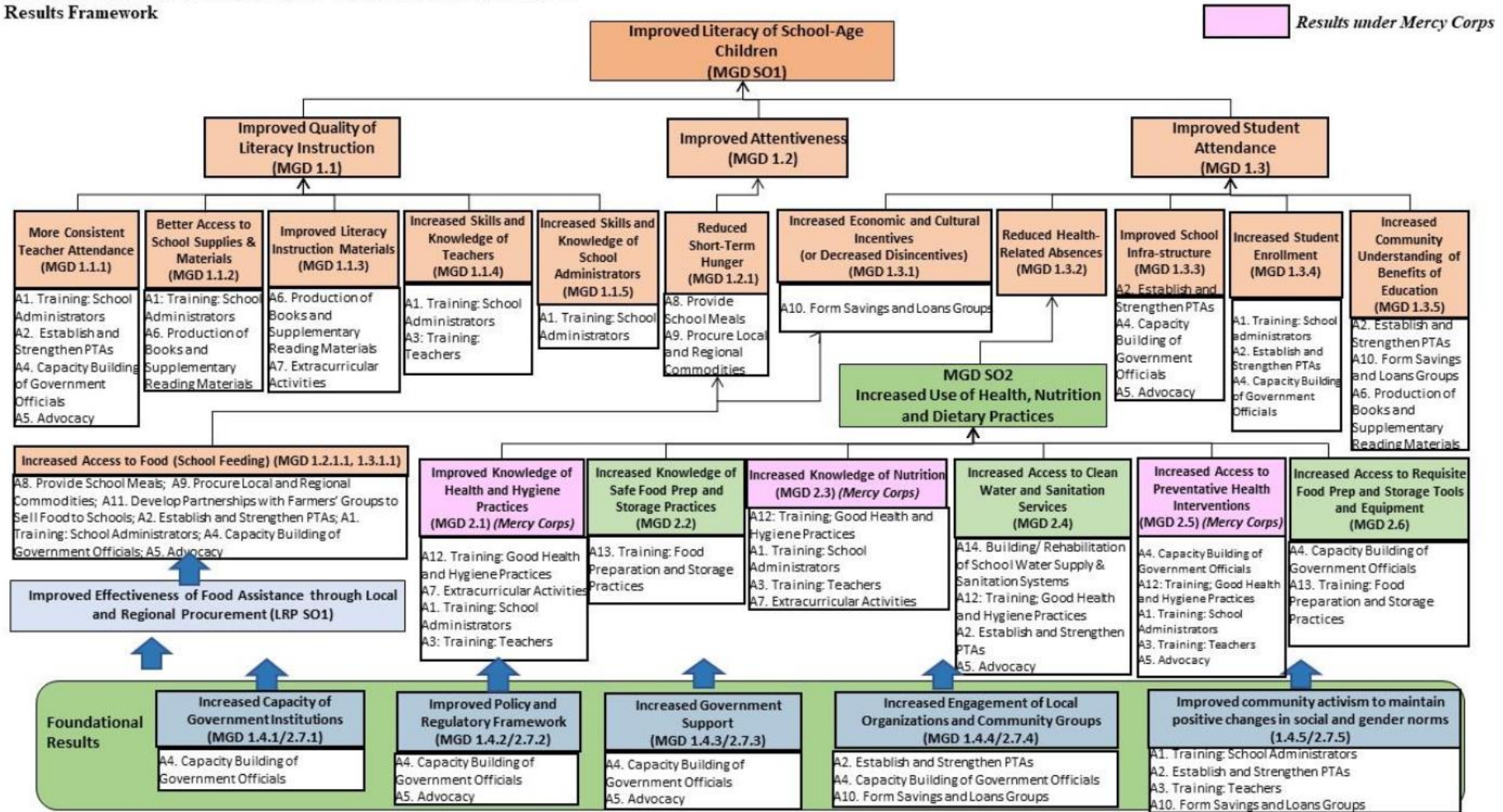
Handwashing practices were generally weak for both intervention and comparison groups; around 43% of intervention caregivers self-reported that they only occasionally wash their hands before preparing food. This is a clear sign of a need to strengthen hygienic practices among caregivers.

In contrast, knowledge of handwashing and hygiene practices was high for both intervention and comparison groups. This suggests that knowledge may not be the most salient barrier to improved health and hygiene practices, which may be more affected by cultural norms, perceived inconvenience, economic barriers, or other factors.

Address barriers other than knowledge which limit health and hygiene practices. This evaluation suggests that while knowledge of handwashing practices is strong, actual behaviors remain weak. As a result, it may be more effective to pivot future programming away from a focus on knowledge and towards other potential barriers to behavior change.

ANNEX 1: THEORY OF CHANGE

FY22 McGovern-Dole FFEEN Program in Timor-Leste: HATUTAN II
Results Framework



ANNEX 2: INDICATORS AND OUTCOMES

HATUTAN INDICATORS ASSESSED AT BASELINE

Indicator #	Indicator Description	Standard or Custom	BL (Intervention)	Year 1	Year 2	Year 3	Year 4	Year 5/Life of Project
MGD 1.1.4	Percent of students who, by the end of two grades of primary schooling, demonstrate that they can read and understand the meaning of grade level text <i>Modified at baseline: Students were assessed 2-3 months after starting Grade 2</i>	Standard #1	1.6% can respond to 80% of questions correctly 1.2% male, 2.0% female					
MGD 1.1.6	Average teacher attendance rate (on day of data collection)	Custom	75% attendance rate 79% Ainaro, 72% Ermera, 85% Manatuto, 65% Oe-cusse					
MGD 1.1.8	Number of target schools lending books to students	Custom	79 schools (74% of assessed intervention schools) 21 (78%) Ainaro, 32 (78%) Ermera, 17 (89%) Manatuto, 9 (45%) Oe-cusse					
MGD 1.1.9	Number of teachers who demonstrate use of new and quality teaching techniques or tools	Standard #4	68 teachers (66% of assessed intervention teachers) using at least four engaging teaching practices					

			<p>26 (55%) male, 42 (75%) female</p> <p>19 (76%) Ainaro, 31 (79%) Ermera, 14 (74%) Manatuto, 4 (20%) Oe-cusse</p>					
MGD 1.2	Average working memory scores for grade 2 students	Custom	<p>37% average score</p> <p>37% male, 36% female</p> <p>33% for students with cognitive disabilities, 32% for students with physical disabilities</p> <p>40% Ainaro, 42% Ermera, 35% Manatuto, 21% Oe-cusse</p>					
MGD 1.3.18	Average student attendance rate in USDA supported classrooms/schools	Standard #2	<p>64% attendance rate</p> <p>61% male, 66% female</p> <p>71% Ainaro, 56% Ermera, 69% Manatuto, 71% Oe-cusse</p>					
MGD 1.3.20	Average number of days missed by grade 2 students due to illness the previous week	Custom	<p>0.5 days</p> <p>0.5 days male, 0.5 days female</p> <p>0.6 days Ainaro, 0.4 days Ermera, 0.6 days Manatuto, 0.3 days Oe-cusse</p>					

MGD SO2	Prevalence of children with BMI-for-age z-scores above -2	Custom	47% of grade 2 children 44% male, 50% female 57% ages 5-7, 55% ages 8-10, 37% ages 11-13 56% Ainaro, 54% Ermera, 55% Manatuto, 9% Oe-cusse					
MGD 2.1	Percent of participants with knowledge of critical handwashing times	Custom	45% identified at least 3 critical handwashing times 33% male, 47% female 54% Ainaro, 47% Ermera, 38% Manatuto, 30% Oe-cusse					
MGD 2.4.30	Number of schools using an improved water source	Standard #27	93 intervention schools					
MGD 2.4.31	Number of schools using improved sanitation facilities	Standard #28	86 intervention schools					
LRP 1.3	Percent of schools purchasing locally produced nutritious food that meet quality standards	Custom	86% of schools 64% Ainaro, 88% Ermera, 100% Manatuto, 100% Oe-cusse					

MCGOVERN-DOLE STANDARD AND CUSTOM OUTCOMES

	Intervention	Comparison	Difference	P-value
Standard Outcome 1: Percentage of students who demonstrate that they can read and understand the meaning of grade level text (based on answering one comprehension question correctly)				
n	1,554	1,125		
Achieved	18.2%	17.7%	0.5	0.88
Standard Outcome 2: Percent of schools with an average student attendance rate of at least 80 percent				
n	71	57		
Achieved	26.8%	31.6%	-4.8	0.60
Standard Outcome 27: Number of schools with an improved water source				
n	107	93		
Achieved	86.9%	86.0%	0.9	0.87
Standard Outcome 28: Number of schools using improved sanitation facilities				
n	107	93		
Achieved	80.4%	67.7%	12.6	0.25
Custom 5: Percentage of teachers adhering to improved learning practices in schools (based on demonstrating four or more)				
n	103	93		
Achieved	66.0%	73.1%	-7.1	0.58
Custom 6: Percent of schools in which at least 80 percent of teachers were present on the day of data collection and the day prior				
n	107	93		
Achieved	12.2%	25.8%	-13.7	0.05*
Custom 7: Percentage of schools with access to reading materials in classrooms				
n	107	93		
Achieved	50.5%	37.6%	12.8	0.44
Custom 12: Percent of students who report they are attentive in class				
n	1,540	1,112		
Achieved	91.8%	91.9%	-0.01	0.95
Custom 13: Percentage of students who report that they did not consume any food during the school day				
n	1,550	1,123		
Achieved	14.8%	18.9%	-4.0	0.04*
Custom 16: Percentage of days of absence from school due to illness				
n	802	659		
Achieved	9.7%	8.7%	1.0	0.41
Custom 21: Percentage of participants who can identify important hygiene/sanitation practices				
n	1,012	659		
Achieved	94.8%	91.8%	3.0	0.07

Custom 23: Percentage of participants in program target groups (pregnant and lactating women, parents of school children, VSLA group members) who can identify at least three important nutrition/dietary recommendations				
n	802	659		
Achieved	50.6%	46.9%	3.7	0.28
Ministry of Agriculture Indicator: Number of schools procuring nutritious foods from local producers/farmers				
n	107	93		
Achieved	89.7%	86.0%	3.7	0.54
Ministry of Agriculture Indicator: Percentage of daily school feeding foods procured from Timorese farmers				
n	96	80		
Dark green vegetables such as water spinach, lettuce, mustard, pumpkin leaves, cassava leaves	82.3%	76.3%	6.0	0.72
Pumpkin, carrot, purple sweet potato	43.8%	37.5%	6.3	0.59
Potato, taro, yellow sweet potato, cassava	63.5%	62.5%	1.0	0.93
Beans, peas, soybeans, peanuts	37.5%	43.8%	-6.3	0.63
Beef, pork, sheep, goat, chicken, duck	10.4%	16.3%	-5.8	0.55
Eggs	6.3%	7.5%	-1.3	0.85
Rice, maize, bread	19.8%	22.5%	-2.7	0.75
Cucumber, tomato, cabbage, eggplant	7.3%	6.3%	1.0	0.74
Condiments	1.0%	1.3%	-0.2	0.90
Fish (fresh or dried), shrimp, other seafood	2.1%	2.5%	-0.4	0.88
Tofu, tempeh	2.1%	0.0%	2.1	0.35
Mango, papaya, honeydew melon, passionfruit, other yellow fruits	9.4%	11.3%	-1.9	0.73
Milk (not sweetened condensed milk)	0.0%	1.3%	-1.3	0.28
Coconut oil	0.0%	0.0%	0.0	1.0
Watermelon, tamarind, jackfruit	0.0%	0.0%	0.0	1.0

ANNEX 3: METHODOLOGICAL ANALYSIS

DEMOGRAPHICS OF ACHIEVED SAMPLE AND DIFFERENCES IN INTERVENTION AND COMPARISON SAMPLES

In this section, we describe the demographic composition of the baseline sample and analyze differences across intervention and comparison samples which may pose a challenge to analysis. In future evaluation rounds, any differences between baseline, midline, and endline cross-sectional samples will not necessarily pose a methodological challenge if characteristics vary uniformly across intervention and comparison groups. The method of analysis becomes problematic only if characteristics change over time within just the intervention group or just the comparison group. For example, if the government of Timor-Leste were to implement a teacher training program in two intervention municipalities for the next two years, we might find that learning outcomes or the quality of instructions in intervention schools improved relative to comparison schools and mistakenly attribute this to the impact of the HATUTAN program rather than the government initiative.

To attempt to control for potential differences between intervention and comparison groups, comparable sub-districts from comparison municipalities were matched with intervention sub-districts based on language, size, location, and typical livelihoods. Comparison schools were selected from these sub-districts by identifying a set of schools with a similar average “remoteness” score as that of the intervention schools in the matching sub-district. Both intervention and comparison schools included only public schools that are not currently involved in interventions focused on reading and school feeding (other than nationwide programs that cover all municipalities). This selection process reduces some of the risk to validity described above; however, it was not possible to have perfect matches between intervention and comparison areas. Furthermore, in some cases, the best matching comparison administrative post already had too many schools with similar interventions. In addition, matching sub-districts to Oe-cusse was challenging, as discussed in the main body of the report.

To better understand the potential impact of these issues, we analyze differences in demographic characteristics across intervention and comparison groups. We note that our analysis is necessarily limited to only those variables for which data was collected. Unobserved characteristics that we cannot control for may also pose a threat to inferential validity. We also note that any observed (or unobserved) differences do not affect the results reported in this assessment, as we do not utilize difference-in-differences methods in this study. However, it is important to note these differences for future evaluation rounds, as they may affect the validity of methods used in these future rounds.

Students

We first examine demographic differences across students assessed with the EGRA. We find fairly gender-balanced samples across intervention and comparison schools, with no significant differences in gender composition between intervention and comparison groups. We also find no significant differences in the rate at which students speak Tetum natively. However, the average age of comparison students was significantly (though not substantially) lower than that of intervention students. This difference may bias analysis, as we would generally expect younger students to perform worse on learning assessments. Furthermore, we find that 27.1% of students reported repeating a grade, and that students who repeated a grade were, on average, older than students who did not. Older students who are repeating a grade may also be expected to perform better on learning assessments, as they have been exposed to the material in prior years of education.

Table 103: Differences in demographic characteristics of students

Characteristic	Intervention	Comparison	Difference	P-value
n	1,554	1,202	-	-
Male	52.5%	50.6%	-1.9	0.32
Female	47.5%	49.4%	1.9	0.32
Average age (years) ¹⁶⁵	7.7	7.4	-0.3	<0.001*
Native Tetum speaker	58.1%	55.8%	-2.3	0.24

Table 104 additionally shows information on the disability status of students, as collected in the household survey. Students were classified as having a physical disability (difficulty with eyesight, hearing, or walking), a mental disability (difficulty remembering/concentrating, with self care, or communicating), or difficulty making friends if caregivers reported that the child had some difficulty, a lot of difficulty, or could not do this task at all.

Table 104: Students with disabilities by treatment group

Disability	Intervention	Comparison	Difference	P-value
n	805	696	-	-
Physical disabilities				
Eyesight	1.5%	0.8%	-0.7	0.18
Hearing	5.6%	3.3%	-2.3	0.04*
Walking or climbing	1.7%	0.8%	-0.9	0.09
Mental disabilities				
Remembering or concentrating	36.8%	24.9%	-11.9	<0.001*
Self care	30.0%	31.1%	1.1	0.67
Communicating	21.8%	20.3%	-1.5	0.47
Difficulty making friends	3.7%	2.9%	-0.8	0.43
Experiences anxiety or worry monthly or more often	15.6%	14.0%	-1.6	0.39
Experiences depression monthly or more often	6.6%	7.6%	1.0	0.46

This table first shows that physical disabilities were reported relatively infrequently by caregivers. The most frequently reported physical disability was in hearing, with around 5% of all caregivers reporting that their child had a hearing disability. Comparison caregivers were significantly less likely to report that their child had a hearing disability than intervention caregivers; if children with hearing disabilities are likely to struggle

¹⁶⁵ Excluding students with reported ages under 5 years or who did not know their age, a total of 63 comparison students and 237 intervention students.

more in school due to improper accommodations, this may lessen reported learning outcomes for intervention schools.

Mental disabilities, in contrast, were generally reported with much greater frequency. In particular, around 31% of all caregivers reported that their child had difficulty remembering or concentrating, 30% difficulty with self care, and 21% with communication. Furthermore, intervention caregivers were significantly more likely to report that their child had difficulties remembering or concentrating.

If intervention students are more likely to face difficulties remembering or concentrating, this may lead us to estimate lower learning outcomes for intervention students, as students who struggle more with memory generally tend to perform worse in school unless given proper accommodations. While it is possible that caregivers tend to overestimate the prevalence of these mental disabilities, we would expect overreporting to occur at relatively similar rates across intervention and comparison groups; it is thus likely that there is a genuine gap in memory-related disabilities across groups.

Households

Moving on to households, the below table shows differences in key demographic and livelihoods characteristics of heads of household (HoHs) and the size of households. We first find that a majority of HoHs speak Tetum-Prasa, and that comparison HoHs were significantly less likely to speak Tetum as their native language. Around half of households in both intervention and comparison groups had savings, although there were no significant differences across treatment groups.

Table 105: Differences in head of household and household characteristics

Characteristic	Intervention	Comparison	Difference	P-value
n	805	696	-	-
Native Tetum speaker	64.1%	56.4%	-7.7	0.003*
Household has savings	53.5%	52.3%	-1.2	0.61
Education level				
Primary or less	63.9%	54.9%	-9.0	<0.001*
Pre-secondary, secondary, or technical school	31.7%	40.5%	8.8	0.001*
University	4.4%	4.6%	0.2	0.86
Occupation				
Farmer (own consumption)	45.0%	39.9%	-5.1	0.05*
Farmer (sale and own consumption)	25.5%	26.7%	1.2	0.60
Unemployed	3.7%	7.4%	3.7	0.002*
Other	25.8%	26.1%	0.3	0.92

Household size				
Average number of household members	7.0	6.8	-0.2	0.20
Average number of children under 3	0.5	0.5	0.0	0.83
Average number of children ages 5-15	2.8	2.6	-0.2	<0.001*

We see more substantial differences in HoHs' education levels and occupations. We find that HoHs in comparison areas are significantly less likely to have only a primary education and significantly more likely to have a secondary or technical education. Assuming that more educated HoHs tend to have improved life outcomes and that they are more able to assist their children to learn, this dynamic could then lead us to find lower indicator values for intervention households and students. We also find that HoHs in comparison areas are significantly less likely to work as farmers for own consumption, but significantly more likely to be unemployed. While the exact implications of this dynamic are unclear, if we assume that households from more difficult economic circumstances (i.e., with HoHs who are unemployed) are also likely to have worse outcomes in areas like nutrition and health due to limited ability to afford healthy foods or healthcare, then these demographic differences may boost our estimates of indicators for intervention households relative to comparison households.

Lastly, we find that average household sizes are around 7 members for both intervention and comparison households, but that comparison households have significantly (though not substantially) fewer children aged 5-15 on average. Assuming that higher numbers of children reduce the resources available to the household and to each individual child (as resources must be spread amongst more children), this dynamic may dampen outcomes for intervention groups relative to comparison groups.

Looking now at caregivers, the below table shows differences in key demographic and livelihoods characteristics. First, we note that caregivers were overwhelmingly female: Over 90% of caregivers in both intervention and comparison households were female, with no significant difference between comparison and intervention groups. Comparison and intervention caregivers also had very similar average ages, around 37 years.

More substantial differences exist in the native languages, education levels, and occupations of caregivers. Intervention caregivers were significantly more likely to speak Tetum natively, which may allow them to better help their children with schoolwork. Looking at occupation, among both intervention and comparison groups, the majority of caregivers worked as farmers for either own consumption or both own consumption and sale, or were unemployed. However, comparison caregivers were significantly less likely to work as own-consumption farmers and significantly more likely to be unemployed. Differences in education levels, meanwhile, operate in the opposite direction. While both comparison and intervention caregivers were most likely to have a primary education or less, comparison caregivers were significantly less likely to only have this level of education and significantly more likely to have a secondary or technical education.

Table 106: Differences in caregiver characteristics

Characteristic	Intervention	Comparison	Difference	P-value
n	805	696	-	-
Female	94.2%	92.0%	-2.2	0.10
Average age (years) ¹⁶⁶	37.1	37.0	-0.1	0.90
Native Tetum speaker	63.6%	57.1%	-6.5	0.01*
Education level				
Primary or less	64.8%	54.6%	-10.2	<0.001*
Pre-secondary, secondary, or technical school	33.0%	41.8%	8.8	0.001*
University	2.2%	3.6%	1.4	0.12
Occupation				
Farmer (own consumption)	38.9%	30.1%	-8.9	<0.001*
Farmer (sale and own consumption)	21.4%	21.9%	0.5	0.83
Unemployed	19.2%	24.9%	5.7	0.009*
Other	20.5%	23.1%	2.6	0.22

Overall, it is important to note that this analysis suggests that there are significant differences between intervention and comparison households. However, the exact effect of these differences on future analysis of program impact is unclear, as some differences are likely to result in underestimates of impact while others are likely to lead us to overestimate impact. Given that we cannot estimate the exact effect size of demographic differences on outcomes of interest, it is unclear if these differences would tend to “cancel out” or would have a systematic effect on future difference-in-differences calculations.

Schools

Lastly, we analyze differences in school characteristics across treatment groups. Many school characteristics—such as access to water and electricity or book lending practices—represent outcomes of interest; as such, we do not analyze these characteristics here. However, the below table shows differences in student-teacher ratio, the types of teachers employed in schools, and whether the school has multigrade classes, dynamics which are not specifically targeted through HATUTAN interventions but which may affect learning outcomes.

¹⁶⁶ Excluding caregivers who did not know their age (117 caregivers).

Table 107: Differences in school characteristics

Characteristic	Intervention	Comparison	Difference	P-value
n	107	93	-	-
Has multigrade classes	47.7%	48.4%	0.7	0.92
Student-teacher ratio (average) ¹⁶⁷	23.5	21.2	-2.3	0.14
Permanent teachers (% of total teachers)	38.6%	51.5%	12.9	<0.001*

Across all schools, we find that around 48% of schools have multigrade classes (which tend to make teaching more difficult, as teachers must balance a wide range of learning levels in their lessons), the average student-teacher ratio is around 22 students to one teacher, and around 45% of teachers are permanent (rather than contracted or volunteer) teachers. Only one of these characteristics varies across treatment groups: Comparison schools have, on average, significantly more permanent teachers as a percent of their teaching workforce than intervention schools. If we assume that permanent teachers are more capable of effectively teaching due to potentially higher levels of education, training, or stability than contract or volunteer teachers, then this may boost comparison results relative to intervention results.

¹⁶⁷ Excluding three schools that reported 0 students enrolled.

ANNEX 4: FOOD GROUP CATEGORIES

Within the household survey and farmer's group survey, caregivers reported on the types of food they consumed during the previous day. Mothers of children under the age of 2 also reported on foods consumed by this child during the previous day. Additionally, caregivers were asked about foods eaten by their grade 2 child (i.e., the child assessed with the EGRA) during the previous day. Within the EGRA, students were also asked about foods they had eaten at school the previous day. Answers for foods consumed by the caregiver and child under 2 were categorized by food group as listed in the below table.

Table 108: Food group categorization, caregivers and children under 2

Food Group	Food Item	Respondent
Grains, roots, and tuber	Maize, rice, bread, cereals/porridge, noodles, rice, mash/residue, or other foods made from grains such as maize or wheat	Caregiver and child under 2
	White potatoes, white yams, white sweet potato, cassava, or any other foods made from roots	Caregiver and child under 2
	Thin porridge	Child under 2
Legumes and nuts	Any foods made from beans, peas, lentils, peanuts	Caregiver and child under 2
	Any foods made from nuts and seeds such as pumpkin, sunflower seeds	Caregiver and child under 2
Dairy products	Milk or food prepared with milk (not including sweetened condensed milk)	Caregiver and child under 2
	Infant formula	Child under 2
	Milk such as tinned (also not sweetened condensed milk?), powdered (depending on the type, it can also have a lot of sugar), or fresh animal	Child under 2
Eggs	Eggs	Caregiver and child under 2
Organ meat	Any liver, kidney, heart, blood, or other organ meats from domesticated animals such as cow, pig, goat, chicken, or duck	Caregiver
	Any organs from wild animals, such as game meat, bush rats, birds, wild pigeons, guinea fowl, deer, wild boar	Caregiver and child under 2 <i>Note: Counted as "flesh food" for children</i>
Flesh foods	Any meat such as beef, pork, lamb, goat, chicken, or duck	Caregiver and child under 2
	Any flesh from wild animals, such as game meat, bush rats, wild birds, deer, wild boar, wild goat	Caregiver and child under 2
	Fresh or dried fish, shellfish, or seafood	Caregiver and child under 2
	Grubs, snails, or insects	Caregiver
Vitamin A-rich dark leafy greens	Dark green leafy vegetables such as spinach, kangkung, lettuce, mustard greens, pumpkin leaves, cassava leaves, or potato leaves	Caregiver and child under 2 <i>Note: Counted as "Vitamin A-rich fruits and vegetables" for child</i>

Other vitamin A-rich vegetables and fruits	Pumpkin, carrots, squash, orange fleshed sweet potatoes or any other dark yellow or orange fleshed roots, tubers, and vegetables	Caregiver and child under 2 <i>Note: Counted as "Vitamin A-rich fruits and vegetables" for child</i>
	Ripe mangoes, ripe papaya, melon, passionfruit, or other fruits that are dark yellow or orange inside	Caregiver and child under 2 <i>Note: Counted as "Vitamin A-rich fruits and vegetables" for child</i>
	Foods made with red palm oil	Caregiver
Other fruits and vegetables	Any other vegetables, like cucumbers, tomatoes, cabbage, eggplant, etc.	Caregiver and child under 2
	Any other fruits like watermelon, tamarind, jackfruit, etc.	Caregiver and child under 2
	Any indigenous/wild fruits	Caregiver and child under 2

The list of foods was updated at during the HATUTAN endline for new questions asked about food consumption of students; the revised categorization is included below.

Table 109: Food group categorization, students

Food Group	Food Item
Grains, roots, and tubers	Rice, bread, noodles, porridge
	Corn/maize
	White potatoes, sweet potato, cassava, banana, taro, breadfruit
Legumes and nuts	Tofu, tempeh, beans, soybeans, mung beans
	Peanuts or cashews
Dairy products	Cheese
	Yogurt
	Powdered milk such as Dancow or Indomilk
Eggs	Eggs
Flesh foods and organ meats	Sausage, canned meat, or dried meat
	Beef or buffalo, goat, beef liver, or cow intestine
	Pig, wild pig, or dog
	Chicken, chicken gizzard, or chicken intestines
	Fish or seafood
Vitamin A-rich dark leafy greens	Cassava leaves, papaya leaf, spinach, water spinach, pumpkin leaves, sweet potato leaves, taro greens
	Mustard greens, chinese cabbage, bok choy, watercress, fiddlehead fern, moringa leaves, wild greens
Other vitamin A-rich vegetables and fruits	Carrot, orange sweet potato, yellow pumpkin
	Ripe mango, ripe papaya, passion fruit
	Orange or pomelo
Other fruits and vegetables	Tomatoes, eggplant, bitter gourd, green pumpkin, chayote, cucumber, cabbage
	Snake beans/long beans, French beans, seaweed, mushrooms, zucchini, lettuce

	Banana, custard apple, avocado, green mango, green papaya, jackfruit
	Pineapple, guava, star fruit, watermelon, strawberries, coconut flesh
Processed foods	Cakes, cookies, sweet biscuit, bolu
	Candies, beng-beng bars, ice cream
	Chips
	Instant noodles
	French fries, savory pancake, fried bananas, deep fried bread, deep fried tofu or tempeh, deep fried meat, fried fish, sweet doughnut
	Sweetened tea, sweetened coffee, Tehbotol, Energen, Dancow, Indomilk
	Fruit juice, fruit drinks such as Dellos
	Soft drinks such as Big Cola, Floridina, Coca-Cola, Sprite, energy drinks such as Krating Daeng

