

Evaluation Final Report

**An Evaluation of the
2012 – 2015
Maternal & Child Nutrition (MCN) Program**

**Timor Tengah Selatan (TTS) District
Nusa Tenggara Timur (NTT) Province
Indonesia**

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List of Acronyms

ASI	: Air Susu Ibu (Breast milk)
BCC	: Behaviour Change Communication
BF	: Breast Feeding
BPS	: Badan Pusat Statistik (Central Bureau of Statistics)
CU2	: Children Under Two years of age
CU5	: Children Under Five years of age
CWS	: Church World Service
DDS	: Diet Diversity Score
DEFF	: Design Effect
EBF	: Exclusive Breast Feeding
FBF	: Fortified Blended Food
FCS-N	: Food Composition Score – Nutrition
FGD	: Focus Group Discussion
Gol	: Government of Indonesia
HAZ	: Height for Age Z-score
HFIA	: House Hold Insecurity Access Scale
HKI	: Hellen Keller International
IFPRI	: International Food Policy Research Institute
IYCF	: Infant and Young Child Food
KMS	: Kartu Menuju Sehat (Growth Monitoring Card)
MCN	: Maternal Child Nutrition
MoH	: Ministry of Health
MP-ASI	: Makanan Pendamping Air Susu Ibu (Complementary Food)
NTT	: Nusa Tenggara Timur
PKK	: Pemberdayaan Kesejahteraan Keluarga (Family Empowerment and Welfare Movement)
POKJANAL	: Kelompok Kerja Nasional
PLW	: Pregnant Lactating Women
Posyandu	: Pos Pelayanan Terpadu (Village Integrated Health Post)
Puskesmas	: Pusat Kesehatan Masyarakat (Community Health Center)
RDI	: Recommended Dietary Intake
TTS	: Timur Tengah Selatan (East Central South)
UNICEF	: United Nations Children Fund
WAZ	: Weight for Age Z-score
WB	: World Bank
WFP	: World Food Program
WHO	: World Health Organisation
WHZ	: Weighr for Height Z-score
WVI	: World Vision International

Executive Summary

This executive summary presents findings from a final program evaluation conducted by the South East Asian Ministers of Education Organization (SEAMEO) Regional Center for Food & Nutrition (REFCON) between March - May, 2016. The evaluation was carried out as part of the Indonesian Ministry of Health efforts to improve maternal and child nutrition (MCN) during the “First 1,000 Days” among pregnant & lactating women (PLW) and children younger than two years of age, in Timor Tengah Selatan (TTS) district, Nusa Tenggara Timur (NTT) Province, Indonesia.

The Indonesian Ministry of Health, with support from the World Food Program (WFP) and partners, identified TTS district, NTT province for the 2012 – 2015 MCN program. In support of the National Health Program, MCN program activities were integrated into provincial and district-level health systems as a response to the exceptionally high levels of household food insecurity and chronic undernutrition among young children in this setting¹. The MCN program provided specialized nutritious foods to all children aged 6-23 mo. and PLW through local health centers, called Posyandus. It also delivered comprehensive behavior change communications (BCC) to promote infant & young child feeding (IYCF) practices and improve health-seeking behaviors. Finally, it included trainings to equip local staff and volunteers with the knowledge and skills for delivering health and nutrition messages to caregivers, as well as growth monitoring activities for children.

The objective of this study was to evaluate the program processes, behavioural outcomes, and nutritional impacts on beneficiaries enrolled in the MCN program from 2012 - 2015. Based on the findings, some recommendations are proposed.

A mixed methods evaluation was therefore conducted in March – April 2016, comprised of both quantitative and qualitative study arms. The quantitative arm included a cross-sectional nutritional survey that assessed program, health and nutrition-related indicators among caregivers and children aged 18–35 mo. This age group of children was beneficiaries of MCN program, related to the supplementation which they received as part of First 1,000 days of life program. The qualitative methods included in-depth interviews and focus groups that were conducted over two iterative phases of data collection among varied participant types, including both beneficiaries and stakeholders. Findings from both forms of data were triangulated in order to draw conclusions and make interpretations.

A total quantitative sample of 893 children aged 18-35 mo., from 34 enrolled MCN program villages and across 14 sub-districts, were surveyed. For comparison, 908 children of similar ages from 35 non-program sites were sampled. The socio-demographic characteristics of these two groups were largely similar. However, the socio-economic status of sampled MCN households was higher than that of non-MCN households. Compared to MCN program participants, more non-MCN program respondents traveling far distances to health centers and participated in the Government Social Safety Net Programme. Findings should be considered in light of these differences between samples.

¹Riset Kesehatan Dasar (Risksedas 2013), Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI

This evaluation found a lower (67.9%) prevalence of stunting among beneficiary children aged 18 – 35 mo. compared to those not in the program (74.8%). Among MCN program participants, stunting prevalence was higher (71.4%) among children aged 24-35 mo. than 61.6% among children aged 18 - 23 mo. ($p<0.001$). Stunting prevalence was different between program area and age group, and between each group in the same area.

Factors that may be important for interpretation of nutritional status indicators were also explored. Firstly, the socio-economic status of the MCN group and non-MCN group was different. This difference may explain why more households were classified as food secure in the MCN program area ($p<0.001$). Furthermore, stakeholder interviews indicated that MCN program sites may have been chosen at least partially due to their ease of access relative to non-MCN program sites. MCN program sites were found in closer proximity to towns which may help explain higher socio-economic status and greater access to resources including foods important for healthy growth and development.

Access to care was a primary barrier reported by nearly all respondents. This salient challenge included difficult-to-access health centers, limited access to transportation, and paucity of health staff available at the community level. Almost half of all caregivers had to walk >1 hour to reach the nearest health center in both groups, yet a higher proportion (48.1%) in the non-MCN group reported having to do so regularly ($p=0.017$). Despite these travel times, >90% of respondents in both groups reported making “regular visits to the Posyandu in the last 3 months.”

This study also shows that history of low birth weight, mother’s education and being 24-35 mo. of age were consistently associated with different anthropometric indices. It is important to note that being a girl would lower the prevalence of stunting. Wasting or anemia was associated with the occurrence of disease, while factors related to household’s economic situation was associated with stunting, underweight or anemia.

Except for diarrhea, there were no differences of morbidity status found between groups when comparing the prevalence of fever, measles, difficulty breathing, and cough. Data revealed a better source of drinking water in MCN areas, despite higher diarrhea prevalence of 16.2% ($p=0.005$).

Food rations fortified with micronutrients were provided to approximately 6,000 PLW and 11,500 children aged 6-23 mo. during the program. They were “highly appreciated”, “well-liked”, and “easy to consume.” Coverage was high: 86.4% of PLW received fortified biscuits and 98.3% of children aged 6–23 mo. received fortified blend foods (MPASI) at least once. Delivery of the food rations using the local Posyandu system was a facilitating factor for high coverage and acceptability. However, 66.3% of caregivers, who received food rations reported sharing them, due largely to normative food sharing practices in this cultural context, as well as high levels of household food insecurity. The fortified blended food for children was shared with siblings (52.7%) and the fortified biscuits for PLW were sometimes shared with other family members (13.6%). At posyandus’ level, program implementers felt pressure to also give food rations to all children, who came to the Posyandu, not just the intended beneficiaries.

On infant and young child nutrition knowledge attitudes and practices, this evaluation found that food and nutrition outcomes were overall better among beneficiaries of the MCN program. The timely

introduction of complementary foods was 79.8% among beneficiaries, higher ($p<0.001$), as compared to 68.7% of non-beneficiaries. Although one-fifth of beneficiaries reportedly introduced complementary foods to their children too early, this proportion was still 11% lower than that proportion of those non-beneficiaries ($p<0.001$). Food availability and food access are frequently-reported challenging in this setting, as among the beneficiary children in MCN program area had higher proportions to meet minimal meal frequency, minimal diet diversity and minimal acceptable diet, with $p<0.001$ each. However, minimum acceptable diet among children in the MCN program area was 14.9% that was below the intended outcome, regardless of program participation.

Behavior change communications (BCC) assessed in this study showed over all highly accepted by both the beneficiaries receiving them and implementers providing them. Messages were well received because they were easily understood, although not personalized, and adapted to the local context. Interpersonal messaging was preferred to mass counseling sessions and local language materials were suggested by beneficiaries for future programs. While the underlying concepts of the “First 1,000 Days” were generally clear to cadres² and mid-wives, they were less clear to caregivers who were interviewed.

Among the 340 Posyandus available, only 32.6% received trainings on health and nutrition as one of the core MCN program activities. The trainings were perceived as effectively delivering health and nutrition informations. Implementers recommended providing occasional refresher trainings, additional training time, and more practical sessions throughout the MCN program.

Between 2012 - 2015, the MCN program covered 17 sub-districts of TTS district with program activities integrated into local health systems. A higher proportion of MCN program participants possessed a growth monitoring card (KMS) than those not in the program ($p<0.001$). More than 90% of MCN program caregivers visited a Posyandu in the previous 3 months. During the period of 2013 - 2015, MCN program registration had continually increased among both children aged 6–23 mo. and pregnant and lactating women in program area, to reach 92.8% and 99.2%, respectively in 2015 .

Overall, the MCN program was well accepted by both the local TTS beneficiary and stakeholder communities. Recommendations around food rations, BCC, and MCN programming in general were elicited during the evaluation.

Participants recommended that the food rations be continued, but with more reliable distribution and delivery systems, enhanced sensitization activities, and provisions to all young children, not only those aged 6–23 mo. at Posyandu level. Health messaging in local languages, delivered through individual counselling was recommended for greater understanding and acceptance at the community level. Training staff to more effectively promote IYCF practices might have a wider influence if delivered to all Posyandus, as well as to key community influencers, such as religious leaders, husbands, and other household members, who would influence health and nutrition behaviors.

²Zulkifli (2003). Cadres are local community members who were selected by the community and are willing to work voluntarily. Directorate of Community Participation, Ministry of Health, Government of Indonesia

Stakeholders suggested better cost sharing and greater transparency among partners, as well as increased involvement of other sectors, such as agriculture, for more integrated programming. Increased community engagement, additional human resources, and sound planning were recommended by stakeholders for overcoming environmental and infrastructure-related challenges that may help ensure program sustainability in this context.

1. Introduction

1.1 Evaluation background and overview

Undernutrition is a persistent public health problem in East Nusa Tenggara (NTT) Province, especially among women and young children. A combination of factors, including high rates of acute and chronic food insecurity—especially in terms of food access and utilization, poor dietary intake, improper child feeding practices, poor water sanitation and hygiene (WASH) conditions contribute to serious under-nutrition of this population. The NTT Province has the highest level of stunting in Indonesia at 51.7%¹. Timor Tengah Selatan (TTS) is one of the districts in NTT Province with the highest prevalence of stunting and wasting among under-five children. TTS district ranks as the most food-insecure in the province, due to an increasingly hard-to-predict lean season, which intensifies the likelihood that the youngest children will fall into acute malnutrition. According to WHO criteria, the situation in TTS is critical.

The WFP's mother and child nutrition (MCN) program addressed undernutrition and micronutrient deficiencies in CU2 and pregnant and lactating women (PLW) through the provision of fortified food and nutrition education at the local community health post (Posyandu). The main purpose of this evaluation is to assess the impact of this MCN program on the nutritional status and behavioural outcomes among beneficiaries in TTS District, during 2012-2015. The evaluation was conducted in March-April 2016 and it focused on the areas where the program had been operating since October 2012. Furthermore, the evaluation assessed the extent to which MCN program objectives have been achieved. The results of this evaluation function as a reference to improve effectiveness, impact, and sustainability for future programming, strategy and policy making. The stakeholders to benefit from the evaluation results include the Directorate of Community Nutrition Ministry of Health, NTT Provincial Government and Provincial Health Office, TTS District Government and District Health Office, Sub-district Community Health Service Centre (Puskesmas), Village Integrated Health Service Post (Posyandu), and Community Leaders such as religious leaders, heads of villages, and the beneficiaries of the MCN program.

In close partnership with the Government of Indonesia and other key stakeholders, including the private sector, WFP developed program models and analytical tools aimed at strengthening evidence on the importance of increasing access to adequate nutrients through 'Right food at the Right time' for the most vulnerable populations, in particular during the first 1,000 days of life. In NTT, WFP closely worked with the Family Empowerment and Welfare Movement (PKK), an Indonesia woman's association that plays an active role in food, health and nutrition issues. WFP also provided training for local health post staff on growth monitoring of children and data recording to better address the impact of the programs on the nutritional status of the children. To address stunting challenges, WFP worked with the relevant ministries and private sector partners to develop locally produced specialized nutritious food for this setting. For example, a fortified blended food of rice soya blend, targeting children aged 6 -23 mo., and fortified biscuits targeting PLW were produced in Indonesia based on global WFP and national standards.

Since 2012, all children aged 6-23 mo. in the program areas received 1.8 kg of MP-ASI per month, an instant fortified blended food produced in Indonesia, while PLW received 3 kg per month of fortified biscuits.

1.2 Context

The NTT province is located in eastern Indonesia. It consists of one urban district and 21 rural districts and is home to a population of 4.68 million people. It is dominated by three main islands: Timor, Sumba and Flores. Out of some 1,000 islands, 42 are inhabited. WFP has its operational presence in Timor Island, which is one of the most vulnerable areas, in terms of food and nutrition insecurity in the province. With the majority of the population relying on small-scale subsistence farming, any minor shocks including climate change can have an immediate impact on population livelihoods. Natural disasters such as flooding and landslides, as well as drought, affect the islands every year. NTT is identified as one of most vulnerable provinces in eastern Indonesia and has the most alarming food insecurity rates. Lack of access to safe drinking water and sanitation, with limited access to health education and facilities, are among the contributing factors to chronic high child mortality and under-nutrition rates in NTT.

The WFP MCN program has focused on a highly vulnerable area of the country, both in terms of food security and undernutrition: TTS district in NTT. WFP targeted NTT province because it scores lowest in Indonesia on the Human Development Index, has the highest stunting prevalence of 56% in the country, and a high wasting prevalence of 13%. TTS district, ranks as the most food-insecure district in the province, due to an increasingly hard to predict lean season, which intensifies the likelihood

that the youngest children will fall into acute malnutrition. Women literacy and empowerment are known to have major influence on health and nutritional status, hence women were the focal point of the MCN program. TTS is one out of 22 districts in NTT with a population of 453,386 people and 110,070 households in 32 sub districts. WFP has covered 11,500 children aged 6-23 mo. and 6,000 PLW in 442 Posyandus in 17 sub-districts of TTS: 340 Posyandus started in 2012 and additional 100 Posyandus in 3 sub-districts since July 2014.

Based on the results of the *“Behavioral and Food Consumption/Dietary Practices Analysis Study among children under two and PLW in TTS, NTT”* (2012) by Alma Ata Center for Healthy Life and Food (ACHEAF), chronic deficiencies in nutrient intakes, limited knowledge on health and nutritional care during the first 1,000 days, certain traditions and beliefs on child care and feeding practices have contributed to inter-generational growth failure among vulnerable groups including PLW, CU2 and school-aged children in TTS, NTT³. The study also showed that the stunting prevalence among CU2 was 44%⁴. Furthermore, 39% of infants were not exclusively breastfed due to limited knowledge on breastfeeding preparation during pregnancy and poor appropriate breastfeeding and complementary feeding practices. The low nutrient intake of CU2 also played a major role where energy and protein intakes only reached 76% and 77% of Recommended Dietary Intake (RDI), respectively. Although vitamin C intake reached 68%, iron intake only met 32% of the RDI. The main reasons for low nutrient intake of CU2 were limited nutritious food availability and low purchasing power of the households. The low nutrient intake was also found as one of the major causes of undernutrition among PLW.

1.3 Maternal & Child Nutrition Program Overview

Based on discussion with MoH in order to support the National Health Program, TTS District was selected as a WFP main focus district in the NTT province for the WFP Country Program 2012 – 2015, where programs on Nutrition-Specific programs, include behavior change for improving complementary feeding and hygiene practices as well as provision of micronutrients.

³ Alma Ata Centre For Healthy Life and Food (ACHEAF), 2012

⁴ Based on 2 selected sub-districts of TTS

The figure below represents the guiding logic model for MCN program design, implementation, and evaluation.

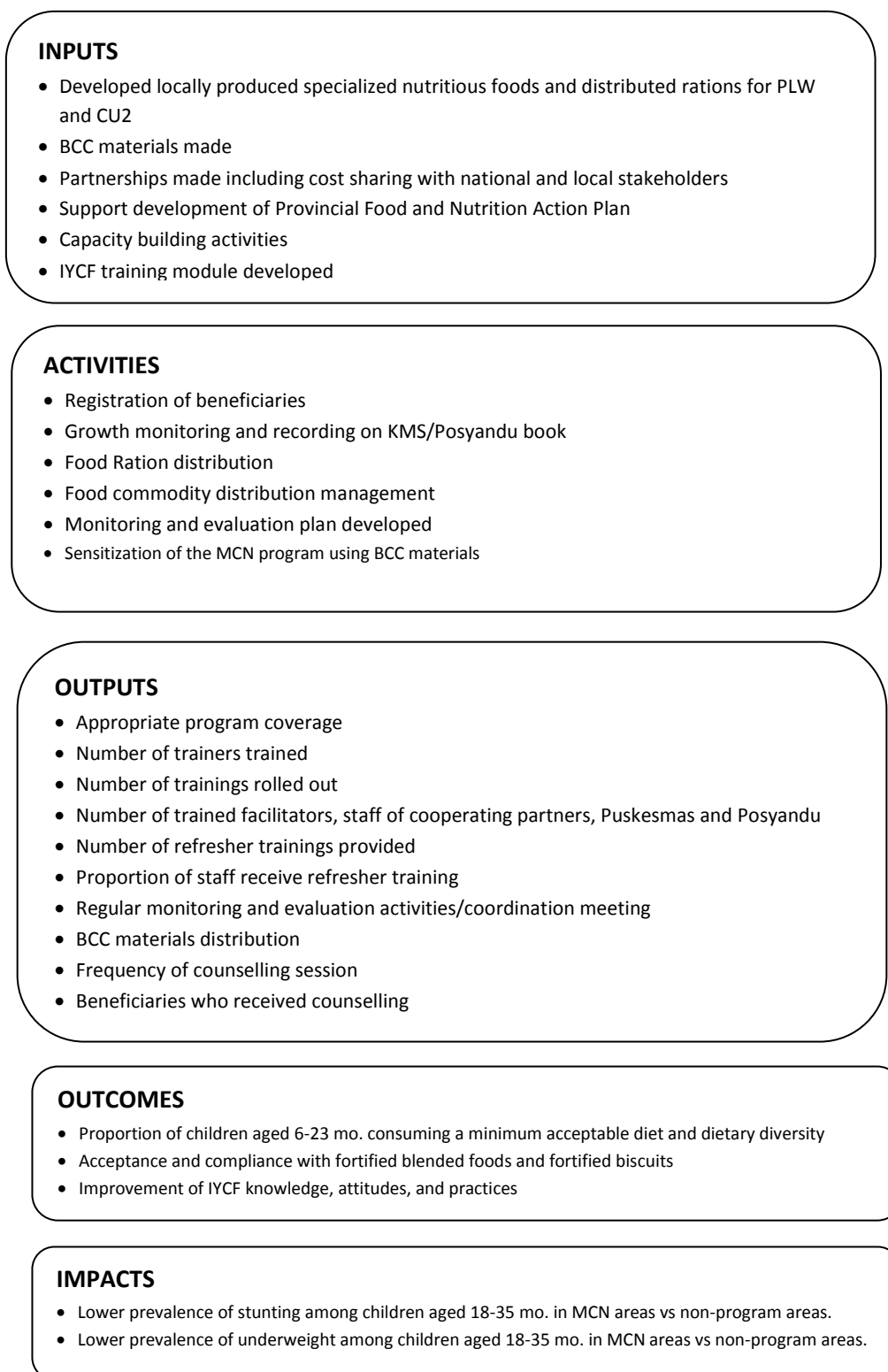


Figure 1. MCN Program Logic Model

1.3.1 MCN Program Objectives

The objectives of the MCN programs were the following:

1. Direct provision of specialized locally produced nutritious food to children aged 6-23 mo., pregnant women and lactating women in the first 6 mo. after birth through the health system (i.e., Posyandus)
2. Improvement of IYCF, including complementary feeding through comprehensive BCC
3. Strengthening the capacity of the health staff both at district and sub-district levels (Puskesmas/Community Health Post based at sub district) and community health volunteers (Posyandu Cadre) to better measure the growth and nutritional status of infants and young children and PLW, provide advice on nutrition during this life stage, and produce reliable data for program monitoring and early impact assessments. Thirty Posyandus received training on taking anthropometric measurements and collected data monthly, however these data were not reviewed in this evaluation.
4. Policy advocacy at the national and regional levels on alternative strategies to improve economic access to nutrients during the first 1,000 days through evidence creation including effectiveness studies, Cost of Diet work, engagement with SUN and private sector partners. However, policy advocacy aspect was not reviewed in this evaluation.

In light of these objectives, the following section expands upon the content in **Figure 1** by detailing specific inputs, outcomes, outputs, and outcomes of interest during this evaluation.

1.3.2 MCN Program Inputs, Activities, Outputs, Outcomes, & Impacts

Planned MCN program inputs:

- Commitment of Government of Indonesia to share costs of MCN implementation
- Cooperation and partnership made with Directorate of Community Nutrition MOH, POKJANAL Ministry of Home Affairs at central level and networks at provincial, district sub-district levels
- WFP support to local governments to develop Food and Nutrition Action Plan for NTT
- WFP to develop and provide fortified blended food targeting children aged 6-24 mo through pilot effectiveness study, which has been already evaluated in previous years
- WFP and partner to develop and provide of fortified biscuits targeting PLW
- Capacity building of national staff on program implementation and IYCF training modules

- WFP to support the development of BCC through health and nutrition education, awareness creation, IYCF trainings to health staff and cadre Posyandu, IEC materials development, and support to National Movement Nutrition Awareness 2012, all tailored to local contexts
- Sensitization of the MCN program to deliver information to external parties, including but not limited to all program stakeholders

Planned MCN program activities:

Registration of Beneficiaries within existing Posyandu facility-based services

WFP food distribution and MCN program activities were based on consultation with Provincial and District Health Offices where the government had been established its health monitoring system. The registration of beneficiaries followed the same system of existing Posyandu monitoring.

The process included all eligible beneficiaries, children aged 6-24 mo., to be registered with a yellow card available at each Posyandu and kept by the cadre. The birth date, name, gender of the child, and name of the mother is registered on this card. As soon as the pregnant woman confirms her pregnancy through a midwife or other health providers, she may register to the Posyandu and the cadre will record her name, age of pregnancy in a pink form which she brings every time she receives antenatal care to record her pregnancy status. The weight of the pregnant mother is also recorded in this form. When the registered pregnant woman has delivered her baby, then the cadre registers the birth date of the baby in the form. After the baby reaches over 6 mo. then the mother is eligible for the signature/receipt of the food. When the baby reaches 6 mo. old then the baby's name can be registered as being beneficiary classified in 6–24 mo. age group and eligible to receive the nutritious complementary food.

Monthly weighing of children aged 6 – 24 mo. at Posyandus

Every month, a mother will bring her child to the posyandu to measure her/his weight by using 'dacin' weighing scale and the cadre will record it in the book of registration of beneficiaries (SIP)—the Posyandu book. The weight should also be recorded in his/her Growth Monitoring Card (KMS) chart or the KMS in the chart of the KIA book. Furthermore, the registration book and weight records are filled-in every month. WFP provided anthropometry measurement equipment as part of this MCN program, including standard weight scales, height measurement boards, and MUAC tape.

Free food ration to all beneficiaries aged 6-24 mo. from Posyandu distribution

Children aged 6-24 mo received a monthly food ration of 1.8 kg fortified blended food or 60 g per day/child through the Posyandus. The food was packed in 20g individual sachets or 3 sachets/child/day. The fortified blended food was distributed monthly on the day of each Posyandu for up to 9 mo. per year. Some distributions were not conducted due to insufficient funds and/or food.

Behavior Change Communications / Sensitization on enhanced IYCF practices

BCC efforts included messaging on the following topics: 1) Exclusive breastfeeding and continued breastfeeding until 24 mo of age; 2) How to feed complementary food (MPASI) to children aged 6–24 mo. with gradually improved texture, how to make porridge from solid food, how to ensure dietary diversity, importance of personal hygiene, and enhanced IYCF in general. 3) Monitor child growth regularly by weighing the child at Posyandu; 4) Children aged 6-59 mo. should be given vitamin A capsules; 5) Stimulate child development through play and encourage creativities; 6) Importance of first 1,000 days, malnutrition life cycle and its consequences, nutrient contents of local foods, maternal anemia causes and consequences, importance of supplementary food for PLW and children aged 6-24 mo., hygiene and sanitation importance, and common infant hunger and fullness cues.

Training of Trainers (ToT) for staff of partners at Puskesmas and Posyandus

WFP provided training to strengthen growth monitoring activities such as measurement techniques using standard equipment, IYCF counselling trainings using national MOH – UNICEF modul, through a training of trainers of relevant program staff on guidelines and basic principles of implementation. Upon completion of the training by the WFP staff, WFP then organized training activities for other stakeholders, including staff of relevant government officials at Provincial, District and Sub-District levels. The trained facilitators conducted trainings for staff at Puskesmas, Posyandus, and cadres. The training topics included the importance of the First 1,000 days of life, Growth Monitoring, and MIYCN.

Desired MCN Program Outputs

- High proportion of eligible population who participate in program/coverage with a goal of $\geq 90\%$
- High proportion of target population who participate in an adequate number of food ration distributions with a goal of $\geq 66\%$
- Number of government staff trained by WFP in nutrition program design, implementation and other nutrition-related areas, as percentage of planned
- High proportion of women/men beneficiaries exposed to BCC by WFP, as percentage of planned

- Number of institutional sites supported by WFP (e.g. posyandu, health centres), as percentage of planned
- Number of trainings conducted and counselling frequency for caregivers and PLW, as percentage of planned

Desired MCN Program Outcomes

- Proportion of children who consume a minimum acceptable diet > 70%
- High acceptance and appropriate utilization of fortified blended foods and fortified biscuits
- Beneficiary compliance/adherence to food ration provided to children and PLW
- Successful adoption of the recommended IYCF knowledge, attitudes, and practices

Desired MCN Program Impacts

- 6% lower prevalence of stunting among children aged 18-35 mo. in MCN program areas compared to non-MCN program areas. Prevalence of stunting (height-for-age) among targeted children U2 to be reduced by 2% per year⁵ from 56% in Oct 2012 to 50% in Dec 2015.
- 9% lower prevalence of underweight among children aged 18-35 mo. in MCN program areas compared to non-MCN program areas. Prevalence of underweight (weight-for-age) among targeted children, over 3 years, with a desired reduction of 3% per year.

⁵De Onis M, Dewey KG, Borghi E, et al. The World Health Organization's global target for reducing childhood stunting by 2025: rationale and proposed actions. *Maternal and Child Nutrition* (2013), 9 (Suppl. 2), pp. 6–26

2. Methods

2.1 Evaluation Study Design

To evaluate the MCN program, a cross-sectional study was conducted to assess the impact, outcomes, and process of its activities. The mixed methods study design consisted of quantitative and qualitative methodology in order to both explain “how much” and “how many” as well as to explain the “why” and “how” behind those results. There were four groups of target respondents who participated in the mixed methods data collection:

- Children aged 18 - 35 mo.
- Pregnant and lactating women (PLW)
- Key program staff involved in implementation
- Partners and stakeholders at national and sub-national levels

More details related to sampling will be described later in each quantitative and qualitative sampling section.

2.2 Study Objective & Aims

The primary objective of this study was to evaluate the program processes, nutrition-related outcomes, and health impacts on beneficiaries enrolled in the MCN program in TTS District, NTT Province from 2012 - 2015. The secondary objective was to translate the evaluation findings into concrete policy and program-related recommendations in the future.

Specifically, this evaluation sought to address the following research aims:

1. To evaluate the coverage, quality, acceptability, and adherence to core program activities related to registration, monthly growth monitoring, program staff trainings, BCC to improve IYCF, and food ration provisions
2. To evaluate changes in maternal and child nutrition knowledge, attitudes, & practices as a result of the MCN program
3. To assess the effectiveness of the MCN program on improving the nutritional status of children aged 18-35 mo.
4. To evaluate other factors that may have influenced the nutritional status of children aged 18–35 mo. during the MCN program period
5. To develop policy and program-related recommendations to improve program delivery for the future

Study variables, indicators, and assessment methods used to address the research objectives and aims are summarized in **Table 1** below:

Table 1. Variables, indicators and methods of evaluation

Variables	Indicators	Assessment Methods
Socio-demographic data	<ul style="list-style-type: none"> • Type of family (nuclear or extended) • Age and sex of children and mothers • Parent occupation • Number of children U5 in households • Mother education • Family assets • Major sources of income 	<ul style="list-style-type: none"> • Structured interview using a structured questionnaire (A)
Household Food Security	<ul style="list-style-type: none"> • Proportion of food expenditure over income • Food security scale 	<ul style="list-style-type: none"> • Structured interview using a structured questionnaire (A)
Use and consumption of fortified biscuits and FBF (MP-ASI)	<ul style="list-style-type: none"> • Reported food ration received during program • Reported frequency of receiving food ration • Reported food ration sharing • Reported barriers and facilitating factors of utilization • Program-related challenges and facilitating factors for distributing food rations 	<ul style="list-style-type: none"> • Semi-structured interviews and focus group discussions
Dietary intake of children	<ul style="list-style-type: none"> • Single 24-hr recall • Food consumption score • Dietary diversity score • Minimum meal frequency • Minimum acceptable diet • Timely introduction to complementary foods • Complementary feeding practices • Bottle feeding practices 	<ul style="list-style-type: none"> • Structured interview using a structured questionnaire (A) • Semi-structured interviews and focus group discussions
Breastfeeding	<ul style="list-style-type: none"> • Reported exclusive breastfeeding • Reported continued breastfeeding • Reported breastfeeding on demand • Age of breastfeeding cessation 	<ul style="list-style-type: none"> • Structured interview using a structured questionnaire (A) • Semi-structured interviews • Focus group discussions
Coverage and quality of the program components	<ul style="list-style-type: none"> • Delivery coverage of key program components • Number and frequency of trainings conducted • Number of health workers and cadre received trainings based on program plan • Quality of trainings and lessons learned 	<ul style="list-style-type: none"> • Record Review (Puskesmas and Posyandu) • Semi-structured interviews • Focus group discussions
Nutritional status of children	<ul style="list-style-type: none"> • Prevalence of underweight, stunting and wasting • Birth weight 	<ul style="list-style-type: none"> • Anthropometry

		<ul style="list-style-type: none"> • Record review (Puskesmas and Posyandu) • Biochemical assessment
Morbidity rate of children	<ul style="list-style-type: none"> • Number of illness experiences in the past 2 weeks (fever, diarrhea, acute respiratory infection) • Prevalence of measles within last year • Prevalence of malaria infection 	<ul style="list-style-type: none"> • Structured interview using a structured questionnaire (A) • Biochemical assessment
Assessment of health and nutrition services availed by children	<ul style="list-style-type: none"> • Number of health and nutrition services availed in the last 6 mo., % of planned • Percent of caregivers with Growth Monitoring Card / Buku KIA or KMS • Average number of Posyandu visits in last 3 mo. by children • Quality of counselling received on IYCF or First 1,000 day visit by cadre/health staff • Constraints and challenges to access health services • Recommendations for improving health services of program 	<ul style="list-style-type: none"> • Record review (Puskesmas and Posyandu) • Structured interview using a structured questionnaire (A) • Semi-structured interviews • Focus group discussions
Participation of mother and father in social safety net program	<ul style="list-style-type: none"> • Type of program participated • Type of benefits received • Duration of program enrolment • Any other food assistance given by other organizations 	<ul style="list-style-type: none"> • Structured interview using a structured questionnaire
Program delivery of the fortified biscuits and FBF (MP-ASI)	<ul style="list-style-type: none"> • Proportion of Posyandu with history out-of-stock fortified biscuits and FBF during program • Level of acceptability toward fortified biscuits and FBF • Barriers & facilitating factors in delivering fortified foods 	<ul style="list-style-type: none"> • Record review (Puskesmas and Posyandu) • Semi-structured interviews • Focus group discussions
Dose, Reach, and Fidelity of BCC strategies and sensitization methods, materials and supporting tools	<ul style="list-style-type: none"> • Number and type of messages given, as % of planned (dose) • Proportion and type of messages received by beneficiaries (reach) • Changes in knowledge, attitudes, practices as a result of BCC and sensitization • Barriers and facilitating factors to BCC and sensitization roll-out in relation to implementation plan (fidelity) 	<ul style="list-style-type: none"> • Record review • Structured interview using a structured questionnaire (A) • Semi-structured interviews • Focus group discussions

2.3 Quantitative Methods

2.3.1 Quantitative Sampling

The sample size calculation to estimate the difference between two population proportions, using the **primary objective of stunting prevalence** reduction among children aged 18 – 35 mo., was determined by the following formula:

$$n = \frac{(Z_{\alpha/2} + Z_{\beta})^2 \times (p_1(1-p_1) + p_2(1-p_2))}{(p_1 - p_2)^2} \times \text{DEFF} \times \text{non-response rate}$$

(Confidence level of 95%, power 80%, DEFF 1.5 and 10% non-response rate)

Based on a 1.5 design effect and 10.0% non-response rate, we estimated that group sample sizes of 900 children aged 18 – 35 mo. in MCN program areas and 900 in non-MCN program areas achieved 80% power to detect a difference of stunting prevalence between the group proportions of 6%. The treatment group was assumed to be 56% under the null hypothesis and 50% under the alternative hypothesis, in accordance with the target for WFP corporate indicators at 2% reduction per year over 3 years, as agreed by WFP country office staff. In total, 1,800 children aged 18 – 35 mo. were recruited for evaluation of change in stunting as a primary indicator of this evaluation.

Sampling Procedures

A two-stage cluster sampling procedure was used in this study design, first with villages and second with children aged 18 – 35 mo. using the Posyandu registry. TTS district (**Annex 1**) is one out of 22 districts in NTT with a population of 453,386⁶ and 110,070 households in 32 sub districts.

First, a simple random sample of 34 villages from the 126 villages in 14 sub-districts in NTT that were exposed to the MCN program was designated to be the “MCN group”. A simple random sample of another 35 villages from different sub-districts with no MCN program activities was selected from the remaining 123 non-MCN program villages in NTT and designated as the “non-MCN group”, based on similar community characteristics to those of the MCN program area, and in collaboration and approval by WFP country office staff.

⁶BPS, 2010. Population Census 2010. www.bps.go.id

During preparation for sampling, the list of eligible children was obtained from each Posyandu or midwife/Puskesmas. This information was obtained prior to the training of data collectors and recruitment in collaboration with local province and district-level WFP staff. The selection of children aged 18–35 mo. in each cluster was done by using simple random sampling. In situations where the number of eligible subjects was equal to or less than the needed sample size per village, then all eligible subjects were included.

Because this evaluation study aimed to evaluate the results of the blanket coverage in the MCN program area, we randomized all households to reach a representative sample in the sampling frame in both areas. We excluded villages in the non-MCN program area where other organizations were working, including Helen Keller, Concern Worldwide, Plan International, and World Vision. We included those areas where the Government Social Safety Net program, nation-wide social assistance, was being implemented.

2.3.2 Quantitative Data Collection & Fieldwork Procedures

Interviews using a pre-tested questionnaire, anthropometry, and biochemical assessments, including hemoglobin measurements and malaria testing, were conducted among sampled children.

Structured Interviews

A structured, pre-tested questionnaire (**Annex 2-4**) was used to assess:

- Socio-demographic information
- Reported IYCF practices
- Food security indicators, such as food consumption score, household food insecurity access, and dietary diversity score using dietary assessment method
- BCC indicators, including knowledge, attitudes, and practices

Each caregiver/child participated in a one-on-one interview. The interviews lasted approximately 60 minutes.

Anthropometric assessments

Anthropometric assessment was performed on each child participant aged 18-35 mo. The basic information and measurements that constitute anthropometric assessment included the child's name, birth date, sex, length/height, and body weight. The name of the mother/caregiver was also recorded.

Body weight

The body weight of child each participant was measured by using a SECA digital body weighing scale. The weighing scale was placed on a flat surface. The subjects were not permitted to wear any slippers, hats, or other heavy clothing that may have influenced their body weight. They were asked to wear only clothing that was as light as possible. The child was asked to stand in the middle of the scale, feet inside the rubber mat, and head straight with eyes looking forward, until the measurement stabilized. The measurements were taken twice for every child until the nearest 0.1 kg and maximum height differences of 0.2 cm. A third measurement was taken only if the difference between measurements was more than 0.2 cm. Then the two closest measurements were averaged.

Body height

The body height of children was measured using the Shorr board, which is accurate, easy to assemble and use, portable, and suitable to measure children by every 1 mm in length⁷. The length was measured for all children aged 18-36 mo. while positioned lying down. The Shorr board was placed on a horizontal flat surface. The children were not permitted to wear any shoes, hats or other head accessories.

One primary assessor and an assistant worked together to correct the positioning of the child when it was not correct. Measurements were read twice to the nearest 0.1 cm⁸, including a 0.2 cm maximum difference between measurements. A third measurement was done if the difference between measurements was greater than 0.2 cm. Then all three measurements were averaged.

During training, the reliability of anthropometric measurements taken by all data collectors were assessed against an experienced anthropometry measurement expert, the gold standard, before commencement of the study. A quality control team consisting of three persons with strong experience doing anthropometric measurements re-measured 10% of the subjects.

Biochemical Assessments

Hemoglobin

The hemoglobin concentration of children aged 18 – 35 mo. was assessed using Hemocue Hb 201 System⁹. The HemoCue instruments were calibrated daily prior to data collection using external standards (HemoTrol) with low, medium and high concentrations to check reliability of the equipment. In addition, calibration was done daily using the cuvette provided by the manufacturer. Equipment

⁷LLC, 2016. www.weighandmeasure.com

⁸Gibson, 2005. Principles of Nutritional Assessment. 2nd Eds. Oxford University Press.

⁹Hemocue AB, 2016. www.hemocue.com/en/health-areas/anemia

was calibrated daily and two readings were recorded for each respondent. A drop of blood from a finger prick was taken by experienced and trained nutritionists, using disposable, sterile lancets. Hemoglobin data were recorded on a standardized form.

Malaria

Malaria prevalence was assessed among children aged 18–35 mo. using rapid testing procedures (Annex 5).

2.3.3 Quantitative Data Management & Analysis Procedures

Testing data entry templates/databases were conducted before and after pilot testing. 10% of all data was re-entered to ensure accuracy of data entry. Data re-entry was done by different data entry staff/database managers throughout study period. Data analysis was conducted following three steps:

Step 1: multi-level data checking

Step 2: data coding

Step 3: data entry and cleaning.

Data entry, management, and analysis were completed using SPSS v22 for Windows¹⁰. Anthropometric data were entered into Anthro2007 software¹¹ to determine the nutritional status of children according to the WHO Child Growth Standards¹². SPSS v22 was used for further analyses. Results for all parameters are presented for all areas of evaluation according to the terms of reference and stratified by MCN program and non-program samples as well as by other criteria where relevant.

2.3.4 Quality Assurance / Quality Control (QA/QC) for Quantitative Methods

Initial test and revisions of questionnaires

The survey questionnaire was tested for appropriateness of formatting, wording, question sequence, clarity of questions, overall instrument flow, use of appropriate local terms, and challenges/problems with responses, such as un-expected answers or inconsistencies. The time required for each questionnaire was also recorded. Any modifications and corrections were immediately corrected for improvement and re-testing during the evaluation pilot phase.

¹⁰IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp

¹¹WHO, 2007. Anthro for personal computers. Version 2: Software for assessing growth and development of the world's children. Geneva: WHO. Accessed 30 Jan 2016. <http://www.who.int/childgrowth/software/en/>.

¹²WHO, 2006. Multicentre Growth Reference Study Group. WHO Child Growth Standards based on length/height, weight and age. *Acta Paediatr Suppl.* 450: 76-85.

Manuals of Operation

These four manuals were developed to explain each question in the overall questionnaire, as well as all data collection procedures, to enumerators. They included explanations of strategies for properly asking questions and gathering key information through valid and reliable techniques.

- Manual on hemoglobin measurement using HemoCue, including how to calibrate HemoCue
- Manual on anthropometry measurements, consisting of directions for weight and weight measurements. The manual also covered calibration procedures of the weighing scale.
- Manual of withdrawing, processing, and handling blood samples in the field
- Manual for malaria testing, based on manufacturer recommendations

Enumerator Training

Prior to data collection, all enumerator candidates underwent training for 5 days on topics related to research methods, measurement tools, questionnaire administration. First, candidates participated in general training on all data collection procedures. Second, they were trained on their specific duties, based on their educational backgrounds, skills, and experience.

The selection of those enumerators who would perform anthropometric measurements was based on standardization testing. Each enumerator underwent procedures to ensure precision and accuracy while conducting anthropometric measurements. The reliability of measurements by all enumerators was assessed against an experienced anthropometric specialist. During training, enumerators performed their individual measurements on at least 10 subjects for each type of body measurement. Similarly, enumerators underwent training to perform hemoglobin and malaria testing. There was one candidate who failed to perform reliably during training, and was therefore not included as an enumerator.

Pre-Testing Instruments and Procedures

The pre-testing of the instruments was conducted in an area that was as similar as possible to the main study area, in Mollo Tengah sub-district. The objectives of the pre-test were the following:

- To assess whether the sampling strategy was feasible, for example, ensuring that the process behind finding households in the face of field challenges
- To identify potential problems and find solutions for all aspects of data collection, administration, and measurement
- To determine content validity of responses
- To try out how to arrange logistics and collaboration with local administrators

Supervision during Data Collection

During data collection, supervision was provided to enumerators during fieldwork:

- Reliability of questions filled out by enumerators
- Daily review of all completed questionnaires was completed by the field supervisor
- To check the consistency of responses, sub-samples of respondents were re-interviewed within 2-4 days following the original data collection, using a sample of questions, which had been asked previously.
- The enumerators together with the data entry team stayed in one base-camp, working together to guarantee consistency between content of questionnaires and data entry. The team held a meeting every evening, to check accuracy and completeness of questionnaires, and to prepare for the next day of data collection.
- Spot checking or supervisory visits were done by the co-investigators and quality control team to revisit 10% of the samples for re-interviews
- Supervision by principal investigator during one early study time period deemed important by study team

2.4 Qualitative Methods

This qualitative evaluation study arm was designed to complement quantitative findings. The mixed methods approach provided a more comprehensive understanding than any one type of method used alone and was designed to also corroborate key findings. This qualitative study arm was conducted in two phases, employed multiple methods, and was iterative in nature. This multi-phase design took advantage of the iterative nature of qualitative research, one of its primary strengths (**Table 2**).

Phase 1

Phase 1 included data collection from community members who had been enrolled in the MCN program during 2012 – 2015.

- Female caregivers of children aged 18 - 35 mo.
- Currently pregnant and lactating women
- Fathers/heads of households
- Grandmothers and in-laws of female caregivers of children aged 18-35 mo.
- Women Empowerment Group members (PKK)
- Community leadres (religious leaders and village headmen)

Participants in the non-MCN group were also included in the data collection for comparison purposes. Topics of data collection during this phase are outlined in detail in the qualitative instruments (**Annex 6**).

Phase 2

Preliminary findings obtained from Phase 1 were used to inform instrument development and sampling considerations for Phase 2 activities, during which key stakeholders and implementers involved in the MCN program were sampled for this subsequent phase of data collection.

- Government stakeholders (province and district levels)
- Local NGO partner staff
- National WFP staff
- Primary Health Care staff (district and sub-district levels)
- Cadres in Integrated Health Posts/Posyandus

No stakeholder level was interviewed in the non-MCN area. Topics of data collection during this phase are listed below. Topics of data collection during this phase are outlined in detail in the qualitative instruments (**Annex 6**).

2.4.1 Qualitative Sampling

A purposive sampling strategy was used to identify information-rich subjects, who had participated in the MCN program. They were purposively sampled as participants of the MCN program and stratified by specific criteria deemed important for addressing the research aims, including participants of different age ranges, organizational affiliations, geographic locations, etc.

The sampling areas were chosen to maximize the variation across MCN program areas while staying considerate of logistics realities of fieldwork that were limiting factors of covering every village of the MCN program area. Initial sampling by village was done in consultation with the respective District Health Office/Bappeda in TTS district as well with national and local-level WFP staff.

Data were collected using both semi-structured interviews and focus group discussions. Interviews provided in-depth, personal narratives of participant experiences in the MCN program. Focus groups provided normative data and group-level information that highlighted similarities and differences of perspectives among participants.

The two methods were used for corroboration of findings, in a form of methodological triangulation. Data collection was conducted until data saturation was reached among key thematic areas necessary

to fully address the study objective and aims¹³. Based on previous work conducted in this area using qualitative methods and with respect to guidelines from the scientific literature, sample size estimates were made below by geographic level and type of participant.

2.4.2 Qualitative Data Collection & Fieldwork Procedure

Training and Instrument Pilot Testing

During training and a week for piloting data collection procedures, qualitative instruments were pilot tested to ensure appropriate language. Also, the training included familiarization of qualitative data collection methods as well as specific study aims, interviewing methods, including open-ended questioning and probing, and guidelines for ensuring accurate transcription and translation of technical terms.

If there were any difficulties regarding the terms used in the instruments, then they were revised prior to and throughout data collection. These instruments were first reviewed during initial data collector training, as well as during another pilot phase just before formal data collection. They were constantly re-worked during fieldwork to best capture the information necessary to answering the research questions. Because Indonesian language was not spoken by most participants, instruments in local languages were also produced. Back translations of these instruments from the local language into Indonesian language were conducted to ensure accuracy of translations prior to the fieldwork. Several different semi-structured interview guides were used during qualitative data collection:

- Caregiver and PLW guide
- PKK member & Cadre guide
- Influencer guide (fathers, grandmothers, and community leaders)
- Stakeholder guide

Two semi-structured focus group guides were also created:

- Caregiver and PLW guide
- PKK member & Cadre guide

Data Collection

Table 2 below outlines the final sample size by phase, as well as by type of participant and method.

¹³Morse, 1995. The Significance of saturation. *Qualitative health research*, 5(2), 147-149

Table 2. Qualitative sample sizes by phase, participant type, and method

Participant Type		FGD * (n)	IDI* * (n)
Phase 1			
MCN Program	Caregivers of children aged 18-35 mo.	5	8
	Pregnant and lactating women (PLW)	3	10
	Fathers and heads of households	0	5
	Grandmothers/In-laws to female caregivers	0	5
	Women Empowerment Group for Family Welfare members	2	4
	Community leaders (religious and village leaders)	0	5
Non- MCN program	Caregivers of children aged 18-35 mo.	1	7
	Pregnant and lactating women	2	10
***Member Checking (phase 1): Interviews with PLW (n = 3), caregivers (n = 3), community leaders (n = 2)			
Phase 2			
MCN Program	Health staff (District Health Office)	0	3
	Government	0	4
	Local NGO staff	0	4
	WFP staff	0	4
	Primary Health Care staff (sub-district)	0	9
	Cadres in Integrated Health Post (Posyandu)	4	7
Non-MCN program	Cadres in Integrated Health Post (Posyandu)	2	4
***Member Checking (phase 3): Interviews with cadres (n = 3) and Puskesmas staff (n = 3)			
Total qualitative study sample(n)		19	89

*FGD: Focus-group discussion (each includes 6 -10 participants); **IDI: in-depth interview; ***Process by which data are taken back to small sample of participants to confirm interpretations of findings for improving data credibility

2.4.3 Qualitative Data Analysis

Translation & Transcription

Interviews were digitally recorded in the language that the participants felt comfortable speaking. Translation from local languages into Indonesian language was performed for those interviews/focus groups conducted in local dialects. Local translators were hired for this language support.

A debriefing process to elucidate important information based on interviews/focus groups was carried out in the field by the interviewers with the qualitative survey coordinator each day. A short field notes form was filled out by the data collector for each interview/focus group conducted. This form was the

first page of all transcripts. This process was useful for discussing missed probes, preliminary findings/themes, and generating ideas for purposefully sampling new participants in subsequent iterations of qualitative data collection throughout phases 1 and 2. The transcription process was also reviewed by WFP staff throughout the peer review to improve the quality of transcripts.

Data Management

The transcription team transcribed the digital recordings each after data collection to keep up with emerging themes. Data management followed the steps listed below:

- Data were digitally recorded in the field.
- Digital recordings were uploaded to a computer and into a secure online cloud each day in the field as backup and sharing with the extended research team.
- Debriefings occurred each day between data collectors and the qualitative survey coordinator to listen to portions of interviews for review of interviewing methods and identifying emergent themes.
- Concurrent to data collection, digital files were transcribed verbatim in Bahasa Indonesia by the transcription team. In cases when local languages were used, then the data collection team supported translation of local languages into Indonesian language during transcription work. Both the data collectors and the coordinator supported this process as needed.
- Finalized transcriptions in Microsoft Word format and in Bahasa Indonesia language were uploaded into Dedoose qualitative software for analysis on a daily basis.
- The qualitative survey coordinator reviewed transcripts on a daily basis, maximum 3 interviews/day, to ensure their completeness, the accuracy of contents in comparison to digital recordings, and identification of areas where new questions, additional probing, and/or revised sampling might be warranted.
- This process was continued until transcripts from all interviews and focus groups had been completed and uploaded into Dedoose for analysis.

Textual data were uploaded into Dedoose, as described in the above section, after transcription and translation of digital files. Using Dedoose for data management, transcripts were then coded by research team members using a combination of codes developed *a priori* as well as those that emerged from the data in an inductive analytic process drawing from Grounded Theory¹⁴.

The specific steps of qualitative data analysis are listed below:

¹⁴Charmaz, 2006. *Constructing Grounded Theory: a practical guide through qualitative analysis*. Thousand Oak, CA: Sage Publications, Inc.

- Step 1.** The transcripts were thoroughly read as transcripts were uploaded into Dedoose. Memos were taken within Dedoose during this initial ‘*read through*’ process.
- Step 2.** A detailed codebook was developed that was designed to match the specific contents of the semi-structured interview guides. It contained 44 initial codes.
- Step 3.** Research team members coded the transcripts on a daily basis using the 44 pre-existing codes in the codebooks. During coding, 2 emergent codes were added to the codebook after discussion and agreement with the qualitative coordinator.
- Step 4.** Coded chunks of text were extracted from the data set after transcripts were coded in order to address specific research objectives.
- Step 5.** Extractions were reviewed by team members for interpretation. Salient themes and sub-themes were identified. Comparisons and contrasts of all findings were made and then stratified by relevant socio-demographic characteristics of participants. WFP staff supported this process of data interpretation in a “*peer review*” process, contributing to the credibility of our findings¹⁵.
- Step 6.** Interpretations of data were taken back to selected samples of participants for “*member checking*,” a deliberate methodological process whereby participants help corroborate investigator interpretations, and/or provide additional explanations for specific issues stemming from the data.
- Step 7.** After phase 1, findings were used to develop/modify Phase 2 instruments. After both phases 1 and 2, final results were presented in data matrices, tables/figures, and as participant quotations.
- Step 8.** Select qualitative findings were deliberately presented in order to triangulate quantitative findings, illustrate key findings pertinent to the program evaluation, and help explain the ‘*why*’ and ‘*how*’ behind all other information related to MCN programming (e.g., national survey data, previous evaluation indicators, etc.).

2.4. 4 QA/QC for Qualitative Methods

To help ensure data credibility, several methodological choices were made in the design of the qualitative arm of the evaluation, in particular.

A. Iterative Design - multiple phases of data collection

This qualitative study arm included 2 iterative phases of data collection. Phase 1 was conducted with beneficiaries and influencers. Phase 2 was conducted with implementers and stakeholders. The

¹⁵Creswell & Clark, 2007. *Designing and Conducting Mixed Methods Research*. Thousand Oaks, CA: Sage Publications, Inc.

iterative nature of this research design allowed for incorporation of findings across phases, as well as provided time for concurrent data collection and analysis.

B. Multiple forms of triangulation

Three specific forms of triangulation were used in this qualitative evaluation. Analytic (WFP staff & SEAMEO staff), participant (beneficiaries, influencers, & stakeholders), and methodological (interviews, focus groups, & secondary data) triangulation were used in order to ensure the credibility of qualitative data. This level of triangulation is not common in most qualitative studies and underscores the rigor of our assessment approach.

C. Member checking

After approximately 80% of data collection was completed within each phase, we purposefully took back initial findings and interpretations to a selected sub-sample of participants. This process is called “member checking” and is used as a strategy to help ensure data credibility of qualitative findings¹⁵. Doing so in this evaluation gave us more confidence in our interpretations when they were confirmed, clarified, or more thoroughly explained by participants.

D. Verbatim transcriptions

We ensured that transcriptions and translations of digital files into textual files were completed verbatim. Local terms that could not be translated exactly into Indonesian language were kept in the local language as *emic* terms and phrases with accompanying explanations provided by data collectors¹⁶. Doing so helped to reduce the amount of content and meaning that inevitably may be lost in a translation/transcription process. Coupled with investigator’s field notes on the first page of every transcript, the qualitative textual data set was very rich and included both the perspectives of the participants (transcripts) and researchers (field notes) for in-depth analysis.

E. Data collection among non-program (control) participants

In addition to collecting data among MCN program participants, the research team also purposively sampled non-MCN program participants for the ability to compare and contrast information that may be helpful in evaluating the MCN program.

¹⁵Creswell & Clark, 2007. *Designing and Conducting Mixed Methods Research*. Thousand Oaks, CA: Sage Publications, Inc.

- F. ¹⁶Triandis, 1989. The self and social behavior in differing cultural contexts. *Psychological review*, 96(3), 506

Manual of operations to guide fieldwork

Finally, a qualitative field manual was used to guide field staff through all aspects of data collection, management, and analysis during the evaluation.

Secondary Data Analysis

Record reviews of WFP program data were also completed to triangulate quantitative and qualitative measures where appropriate. Specifically, they were carried out in order to understand relevant program process indicators through secondary data analysis. These reviews provided process information on the regularity of food rations provided as planned, dose and reach of messaging, number of education sessions delivered, number of trainings conducted, and for informing overall level of MCN program fidelity.

2.5 Ethical Approval and Study Permit

This evaluation study obtained ethical approval from the Health Research Ethics Committee, Faculty of Medicine, Universitas Indonesia, no:124/UN2.F1/ETIK/2016 on February 22, 2016. The Ministry of Internal Affairs, the Government of Indonesia, and the Provincial Government of NTT gave permission for this study to be conducted by SEAMEO.

3. Evaluation Results

Socio-demographic characteristics

A total sample of 893 children aged 18-35 mo. from the MCN program areas, covering 34 villages in 14 sub-districts, were surveyed. Of 908 children from the non-MCN program areas, covering 35 villages in 15 sub-districts, were sampled for comparison. The respondents were largely mothers of the children. **Table 3** outlines the household's socio-demographic characteristics comparing the MCN group and non-MCN group.

Overall, while the characteristics were similar between the MCN group and non-MCN group, some differences emerged. In the non-MCN group, the heads of households had a higher illiteracy rate and less schooling ($p=0.002$) than those in the MCN group. In the MCN program area, participants had better sources of drinking water ($p<0.001$), however, only a smaller proportion of households ($p<0.001$) had private latrines as compared to the non-MCN area.

Based on three categories of household income, almost $\frac{3}{4}$ of household in the MCN group had regular income, while it was only $\frac{1}{2}$ in the non-MCN group. About half of household in the MCN group was considered as middle-low economic status, while it was $\frac{2}{3}$ in the non-MCN group. Moreover, there was a greater proportion (11.7%) of non-MCN households participating in the Government social safety net program compared to MCN beneficiaries of 7.6% ($p=0.004$). Being in a social safety net program is an indicator of lower socio-economic status and greater need of social assistance. These socio-economic differences indicate that the MCN group likely had better overall economic conditions compared to non-MCN group.

On average, households in both the MCN and non-MCN groups spent greater than 80% of household expenditures on food commodities, characterizing nearly all sampled households as living in poverty¹⁷. Most other socio-demographic characteristics indicate that MCN and non-MCN groups were similar.

¹⁷World Bank, 2016. <http://www.worldbank.org/en/news/infographic/2016/05/27/india-s-poverty-profile>

Table 3. Household socio-demographic characteristics by program group

Socio-demographic characteristics	MCN group (n = 893)	Non-MCN group (n = 908)	p-value
Age of children in mo. #	26.7±5.1	26.8±5.1	0.733
Gender of children, n(%)			
Male	449 (50.3)	468 (51.5)	0.592
Female	444 (49.7)	440 (48.5)	0.592
Number of siblings in household, #	1.7±1.6 (n=893)	1.8±1.6 (n=908)	0.101
Age of mothers in years, #	31.4±7.4 (n= 867)	31.4±6.9 (n=834)	0.953
Mother years of schooling, n(%)			
Illiterate	52 (5.8)	72 (7.9)	0.079
< 6 years	75 (8.4)	88 (9.7)	0.343
6-12 years	693 (77.8)	716 (78.9)	0.549
>12 years	71 (8.0)	31 (3.4)	<0.001*
Mother occupation, n(%)			
Housewife	698 (78.2)	727 (80.2)	0.298
Others	195 (21.8)	180 (19.8)	
Head of household gender, n(%)			0.692
Male	872 (97.6)	884 (97.4)	
Female	21 (2.4)	24 (2.6)	
Head of household years of schooling, n(%)			
Illiterate	48 (5.4)	83 (9.2)	0.002*
<6 years	83 (9.3)	126 (13.9)	0.002*
6-12 years	690 (77.4)	668 (73.8)	0.081
>12 years	66 (7.4)	20 (2.2)	<0.001*
Type of household income, n(%)			
Not regular income	238 (26.7)	427 (47.0)	<0.001*
Fluctuate regular income	484 (54.2)	438 (48.2)	0.011*
Fixed regular income	171 (19.1)	43 (4.7)	<0.001*
Food expend. over incomelast week, #	80.4±116.0 (n=768)	87.9±115.1 (n= 738)	0.206
Wealth quantiles, household assets, n(%)			
1 st quantile	147 (16.5)	108 (11.9)	0.005*
2 nd quantile	151 (16.9)	36 (26.0)	<0.001*
3 rd quantile	188 (21.1)	246 (27.1)	0.003*
4 th quantile	138 (15.5)	142 (15.6)	0.914
5 th quantile	269 (30.1)	176 (19.4)	<0.001*
Main source of drinking water, n(%)			<0.001*
Tap water	113 (12.7)	55 (6.1)	
Protected well	204 (22.8)	139 (15.3)	
Unprotected well	202 (22.6)	192 (21.1)	
Free village water tank	16 (1.8)	27 (3.0)	
Protected spring water	144 (16.1)	193 (21.3)	
Unprotected spring water	143 (16.0)	232 (25.6)	
Rainwater	0 (0.0)	2 (0.2)	
Water from river/lake	56 (6.3)	49 (5.4)	
Buy from water sellers	14 (1.6)	18 (2.0)	
Households private latrine, n(%)	779 (87.2)	849 (93.5)	<0.001*

#mean±SD *significant at p<0.05 – between MCN group and non-MCN group

3.1. Coverage and Quality of MCN Program Activities (Evaluation Aim 1)

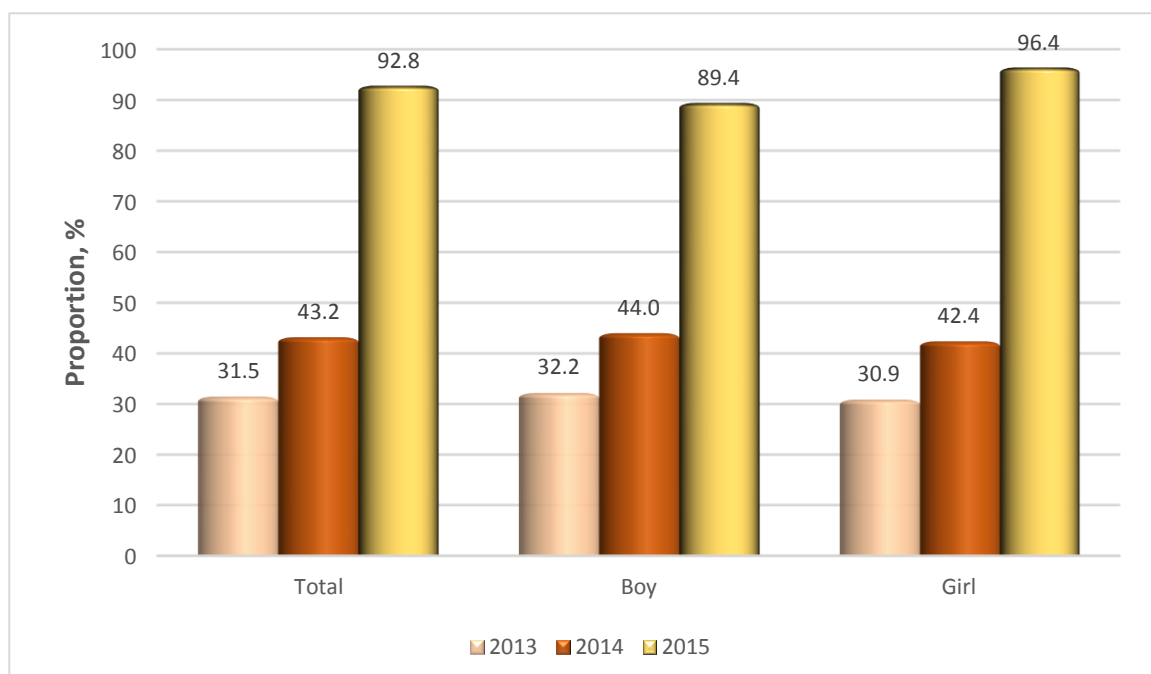
The MCN program included the following program activities, which are also explained in more details within the Methods section earlier in this report:

- A. Registration of beneficiaries within existing Posyandu facility-based services
- B. Monthly weighing of children aged 6–23 mo. at Posyandus
- C. Training staff of cooperating partners at Puskesmas and Posyandus
- D. Behavior Change Communications (BCC) for enhanced IYCF practice
- E. Free food ration provided to all beneficiaries aged 6–24 mo. through Posyandu distribution

This section of results will discuss the evaluation findings in relation to each of these program areas.

A. Registration of beneficiaries within existing Posyandu facility-based services

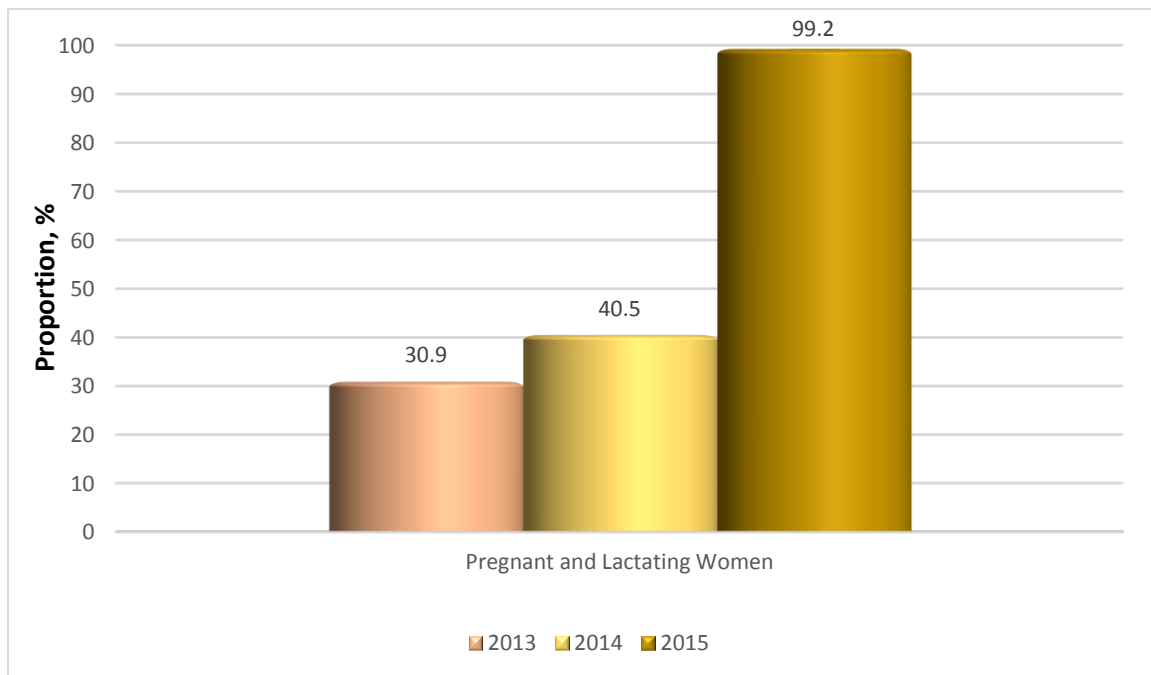
To be eligible for supplementary feeding, children aged 6–23 mo. had to be registered in the MCN program at each Posyandu. The figure below reflects secondary data of child registration that were gathered from WFP monitoring records for 2013 – 2015 year period. Each bar represents the proportion of registered beneficiaries aged 6–23 mo. based on the number planned. Since 2013 registration had continually increased and in 2015 reached over 90% of beneficiaries aged 6–23 mo.



Source: WFP Standard Project Report 2013, 2014 and 2015

Figure 2. Proportion of actual vs planned children aged 6-23 mo. who participated in MCN program (2013 – 2015)

The same monitoring data were used to evaluate the registration of PLW in the MCN program. In a similar trend, the proportion of registered PLW beneficiaries increased in the program area from 2013 until 2015 reaching nearly 100%.



Source: WFP Standard Project Report 2013, 2014 and 2015

Figure 3. Proportion actual vs. planned pregnant and lactating women (PLW) who participated in MCN program (2013 – 2015)

Qualitative data suggest that high acceptability of food rations was one of the primary reasons for the high proportion of registered children and PLW in the MCN program.

Possession of Growth Monitoring Card (KMS)

Possession of growth monitoring card, referred to as 'KMS', was an indication of beneficiaries' registration at Posyandus. A higher proportion of MCN group possessed KMS in comparison to those of non-MCN group. However, >90% of respondents in both groups indicated that they had made regular monthly visits during the previous 3 months, as presented in **Table 4**.

Qualitative data suggest that majority of mothers, who reported not having KMS in their possession, reported that the cards were being held by cadres for fear of losing them. However, this was not a promoted practice by the program.

Table 4. Registration, Reported Regular Visit and Walking Time to Posyandu during the previous 3 months.

Health service utilization	MCN group (n=893)	Non-MCN group (n=908)	p-value
Possession of Growth Monitoring Card, n(%)	444 (49.7)	237 (26.1)	<0.001*
Regular visits to Posyandu in the last 3 mo., n(%)	783 (90.7)	815 (90.6)	0.982

*significant at $p < 0.05$ – between MCN group and non-MCN group

Qualitative data suggest that even among caregivers whose children older than 12 months, when accessing child nutrition services tends to decline, regular visits to the Posyandu were still being made as a result of program incentives, including but not limited to the distribution of the food rations.

B. Monthly weighing of children aged 6 – 23 mo. at Posyandus

WFP monitoring data were used to understand the proportion of children aged 6–23 mo. who had been weighed during monthly growth monitoring from the 2012 – 2015 program period as another estimate of program coverage. While 2012 – 2013 data were not available, 2014 – 2015 growth monitoring data illustrate that 92% and 95% of beneficiary children aged 6–23 mo. were weighed monthly at Posyandus. These numbers exceed the program goals established by WFP and reflect very high coverage in a setting where, according to qualitative data, accessing Posyandus is often a major challenge for beneficiaries due to inclement weather conditions, poor roads, and far distances.

C. Training staff of cooperating partners at *Puskesmas* and *Posyandus*

WFP supported government to conduct trainings around both the food ration and enhanced IYCF practices.

Coverage of trainings

Overall, there was 100% coverage of trainings conducted among health staff in relation to the food rations. However, the training coverage was not perfect for IYCF training, as the coverage was only 32.6% in MCN program areas. Data indicate that no refresher trainings were conducted during the course of the program.

Perceived training quality

Both cadres and Puskesmas staff were asked how well the IYCF training was conducted during the MCN program. A summary of the qualitative themes that emerged in relation to perceived training quality among program implementers is described in **Table 5** below.

Table 5. Implementer Perceptions of IYCF Training Quality – Positive and Negative Themes

Positive Perceptions/Themes	Salient Quote
1) Capacity building: increased knowledge & skills	<i>“It (training) increased our experiences, we understand how to feedbreastmilk tothe children. We taughtit to other people and community.”</i> –Cadre, MCN group, interview
2) Variety of IYCF training materials and topics given	
3) Various activities during IYCF trainings: did not get bored	
Negative Perceptions/Themes	Salient Quote
1) No refresher IYCF trainings	<i>“The methods were good. However, the time was very limited. Only one day with so many materials and topics, we can not easily understand (everything).”</i> –Cadre, MCN group, Interview
2) Limited IYCF training & practice sessions to hone or improved skills	
3) Not all cadres at Posyandu levelreported havingreceived IYCF training	

Implementers had mostly positive perceptions toward the food ration and IYCF trainings conducted during the MCN program. They reportedly increased their ability to deliver health and nutrition information to the MCN beneficiaries. However, the implementers highlighted some negative issues related to trainings, such as no refresher trainings provided, as well as limited training time and insufficient practical sessions. Furthermore, not all cadres reported receiving training, which corroborates the 32.6% training coverage observed during this evaluation.

D. Behavior Change Communications (BCC) for enhanced IYCF practices

BCC to improve health and nutrition behaviors covered a wide range of topics: exclusive and continued breastfeeding; appropriate complementary feeding practices; the importance of personal hygiene; enhanced IYCF practices; provision of vitamin A capsules; using play and to stimulate child development; and the importance of the first 1,000 days, with an emphasis placed on maternal health and nutrition during pregnancy and child health and nutrition until two years.

Beneficiary and Implementer Acceptance of BCC

Using qualitative data collection, we sought to understand the perceived quality of the BCC among MCN beneficiaries and implementers. Overall, MCN beneficiaries with both higher and lower education levels, stated that the BCC messages they received were suitable as described in **Table 6**. However, beneficiaries with higher educations expressed higher acceptance of the actual BCC materials in comparison to those with lower educations. Implementers had both positive and negative perceptions after delivering the BCC throughout the MCN program activities.

Table 6. Key qualitative themes related to BCC acceptance by beneficiaries and implementers

Salient themes by type of participant		Exemplar Quotes
Beneficiaries¹		
Higher education²		
Acceptable BCC materials overall	+	<i>"We received an example how to breastfeed while pregnant 8-9 mo.. We received it from the health staff and cadres. So it was not too difficult for lactating mothers like us."</i> – Highly educated PLW, MCN group, Interview
Messages were context appropriate	+	
Lower education³		
Sometimes oral messages were unclear or forgotten	-	<i>"Just orally, no materials used. They only orally gave the messages."</i> –Beneficiary mother, MCN group, Interview
Messages were context appropriate	+	
Implementers⁴		
Messages were context appropriate	+	<i>"The mothers were happy if we directly talked to them, so it's face-to-face. I did not use a flipchart... There are posters and flipcharts in the Posyandu, but honestly, we never bring them so we simply do it face-to-face..."</i> - Cadre, MCN group, Interview
Would prefer having health staff, not cadres deliver the messages	-	
Local language preferred to Indonesian language	-	

¹Beneficiaries= PLW who participated in MCN program; ²Higher education = senior high school or above; ³Lower education = junior high school or below; ⁴Implementers = cadres and Puskesmas/ health staff

To better understand overall acceptance, we also collected qualitative data on beneficiaries' and implementers' perceptions of BCC quality related to the importance of A) enhanced IYCF, and B) the first 1,000 days.

Enhanced IYCF: Findings indicate that enhanced IYCF topics were simple and easy-to-understand for MCN beneficiaries. In addition, the personalized and targeted nature of the BCC was positively received by beneficiaries and implementers, who expressed the importance of using materials that had been adapted to the local context. However, the absence of local language materials/messages was a challenge. In addition, mass counseling sessions appeared to be negatively perceived by beneficiaries and implementers, who preferred using individual-level, one-on-one counseling.

First 1,000 days: During interviews, most mothers did not understand what is meant by the "First 1,000 days." By contrast, most implementers, especially cadres and midwives, clearly understood the importance of this time period for health and nutrition, and were able to explain it during interviews when asked. **Table 7** further summarizes these findings in relation to IYCF and the First 1,000 days.

Table 7. Beneficiary Perceptions of BCC toward enhanced IYCF and the First 1,000 Days of Life

Enhanced IYCF	Exemplar Quotes
Positive perceptions: <ul style="list-style-type: none"> • Simple, easy-to-understand • Targeted and personalized messaging 	<p><i>“So helpful...We received material on how to give breastmilk, how to breastfed, how to feed our children...it was like from the beginning until the end. Complete!”</i></p> <p style="text-align: right;">–Beneficiary, MCN group, Focus Group</p>
Negative perceptions: <ul style="list-style-type: none"> • Hard-to-understand Indonesian language • Individual counseling preferred 	
First 1,000 days of Life	
<ul style="list-style-type: none"> • Implementers largely understood importance. • Most beneficiaries did not understand the concept of stunting. 	<p><i>“Somehow I think it (stunting) is because of genetic problems. But the doctor said that it is because of not having enough food and drink.”</i></p> <p style="text-align: right;">– Beneficiary, MCN group , Focus Group</p>

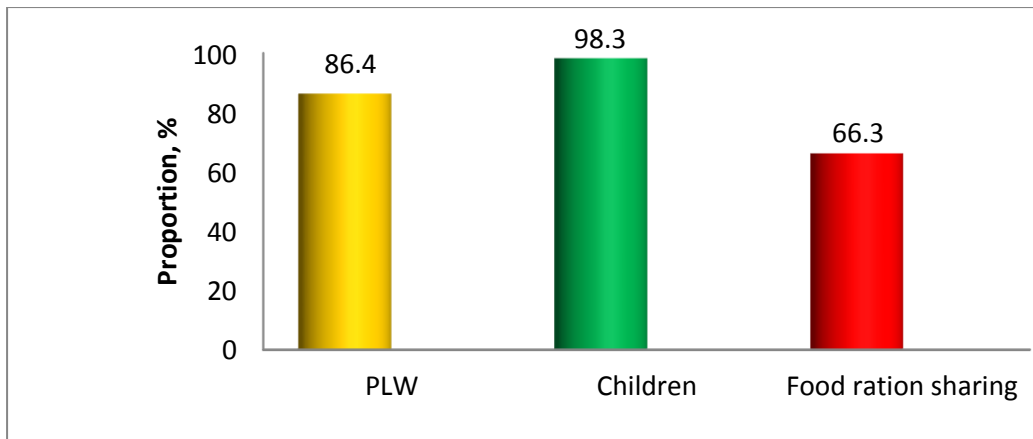
Both MCN beneficiaries and cadres explained stunting to primarily be either a genetic problem or due to insufficient food intake meaning food in **quantity**. Hardly any participants discussed the importance of food **quality** as it related to chronic undernutrition, as indicated by stunting.

E. Free food ration provided to all beneficiaries aged 6 – 24 mo. at Posyandu distributions

Children aged 6–24 mo. received a monthly food ration of 1.8 kg fortified blended food (i.e., 60 grams per child/day) distributed through the Posyandu system. The food ration was packaged in 20-gram individual sachets to be consumed three times per day by each child. It was meant to be distributed monthly in each Posyandu day for at least 9 mo. every year. In this evaluation, both qualitative by interviews and quantitative by questionnaire measures were used to understand food ration coverage, acceptability, and utilization.

Food Ration Coverage and Sharing Practices

Based on beneficiary self-report, 86.4% of PLW received fortified biscuits and 98.3% of children received fortified blend food (MPASI) at least once. **Figure 4** illustrates that food ration coverage was >85% among both PLW and children aged 6–23mo. However, 66.3% of the beneficiaries, who received food rations reported sharing them. Caregivers explained that the fortified blended food for children was shared with siblings (52.7%), and that the fortified biscuits for PLW were sometimes shared with other family members (13.6%).



PLW= Pregnant & Lactating Women; Children = beneficiaries aged 18 - 35 mo.

Figure 4. Reported food ration coverage by type of beneficiary and reported sharing

Food Ration Acceptability

In addition to coverage and utilization, we collected qualitative information to evaluate the overall acceptability of the food rations provided during the MCN program. **Table 8** highlights the key themes that emerged in relation to acceptability by both MCN beneficiaries and implementers. They are listed in order of salience (by row) and type of participant (by column): those sub-themes listed closer to the top of each of the themes 1 - 3 are more salient than those lower in the same column.

Overall, the food rations were appreciated, well-liked, and understood as both food and nutritional supplements. Most MCN beneficiaries viewed the rations as a snack that to some extent could be shared. There were mixed perceptions related to their actual health and nutrition benefits: some people indicated that they had shorter-term benefits (e.g., “good for snacking”), whereas others felt there were longer-term benefits (e.g., “yields healthy children”). Although distribution of food rations at the Posyandu was acceptable, however, some MCN beneficiaries, specifically those with lower education, complained that Posyandu distribution was too far away from their households.

The flavor of the food ration was highly acceptable by all MCN beneficiaries and implementers. Some children experienced difficulties consuming cooked fortified blended foods, and instead, preferred to eat the ‘dried’ blended food direct from the package. Some children older than 1 year of age did not like to have MPASI as they usually ate solid food every day.

“He put MPASI in his hand then he tasted it...he did not like blended MPASI. He only wants the dried one, without water, just directly from the package. He just did not like the blended food (porridge-look-food).”

-Beneficiary, MCN group, Focus Group

Table 8. Salient food ration acceptability themes by educational level of beneficiary and Implementer

Beneficiaries ¹ (higher education) ²	Beneficiaries ¹ (lower education) ³	Implementers ⁴
Theme 1. Distribution at a familiar location (Posyandu), but still can be improved		
Posyandu is a familiar place	Posyandu is a familiar place	Posyandu is a familiar place
Distribution wasnot always completed on Posyandu day	Far distances make pickup challenging	Distribution not always completed on Posyandu day
	Distribution not always completed on Posyandu day	Sometimes distribution done at cadre houses
	Sometimes distribution done at cadre houses	
Theme 2. Highly acceptableflavor/taste, with only minor challenges reported		
Highly acceptable food ration	Highly acceptable food ration	Highly acceptable food ration
Some children (>12 mo.) did not easily consume fortified blended food	Some children (>12 mo.) did not easily consume fortified blended food	Some children (>12 mo.) did not easily consume fortified blended food
Some children prefer to have 'dried' MPASI	Some children prefer to have 'dried' MPASI	Some children prefer to have 'dried' MPASI
Theme 3. Some understanding offood ration benefit; used mainly as a snack for satiety, not primarily a nutritional supplement		
- Moms become healthy - Increases bodyweight - Good for snacking	- Good for snacking - Reduces hunger	- Supports healthy baby - Increases bodyweight - Good for snacking
- Supports healthy delivery	- Supports healthy delivery	- Supports healthy delivery
- Increasesbaby's bodyweight - Helpsimprovedietary intake	- Increasesbaby's body weight - Contributes to a good body	- Increases baby's bodyweight - Makes active children
- Yields healthy children - Improves creativity	- Smart baby - Yields healthy children	- Smart baby - Contributes to good growth

¹Beneficiaries: those who participated in MCN program

²Higher education: senior high school or above

⁴Influencers: fathers, grandmothers, women empowerment groups

³Lower education: junior high school or below

Food Ration Utilization

In addition to those factors already mentioned above related to acceptability, there were several other facilitating factors and barriers that we identified through qualitative data collection and were related to the ease or difficulty of food ration utilization by households.

Facilitating factors of Appropriate Utilization

The food ration was free

Most beneficiaries stated that because the food ration was given free of charge, and they could easily get access to it.

“Happy, because (we) got (handouts) starting from 0-12 mo.... I did know that my child was eligible for the aid...we simply accepted it and are grateful, without thinking too much about it. We’re also grateful because the government gavethis handout for both our good and our children’s good.”

– Mother of child aged under five , MCN group, Interview

The biscuit for PLW was reportedly ‘easy to consume’

Most PLW stated that biscuit ration was easy and convenient to consume because they could consume individual biscuits directly from the package. Consequently, biscuit sharing with other family members was common within households. Based on its high acceptability and ease of consumption, our qualitative data suggest that the biscuits were shared more frequently with family members than was the MPASI.

The food ration flavors were highly acceptable

Both the flavors of the biscuit and the MP-ASI were reportedly highly acceptable. Underconsumption, particularly based on any rejection of acceptability, did not emerge as a theme for either type of food ration. However, data suggest that the biscuits were more highly acceptable in terms of flavor than was the MPASI. This high acceptability, coupled with its convenience, as presented in point B above, lent itself to be a product that was easy to share with other non-beneficiaries.

Direct delivery of food rations to Posyandu

Th Posyandu sites as a channel for distribution was overall acceptable to MCN beneficiaries, as they were familiar with the Posyandu locations and regular monthly health activities being held there. Posyandus were largely accessible for most beneficiaries, despite some far distances for households located further away than average, that caused some access challenges during the rainy season in particular. Before distributing food rations, cadres received training on food rations. They stated that the trainings were very useful to understand how to communicate to caregivers on appropriate storage and distribution of food rations, as well as how to write a report on distribution.

Barriers to Appropriate Consumption

Food ration sharing was difficult to avoid

Food sharing was commonly reported by beneficiaries both at household and community levels. At Posyandu distribution sites (community level), food rations were distributed to all children who came to the Posyandu every month, not only those children aged 6–24 mo. within the MCN program. Thus, based on some interview data, intended child beneficiaries aged 6–24 mo. may have received less MP-ASI than they should have received. Children, who were older than 24 mo. of age, were reportedly receive some MP-ASI, but in much more limited quantity than those aged 6 – 24 mo. Therefore, it is unclear whether this Posyandu-level sharing was so widespread that the distribution system needs to be reconsidered. It may be that re-training of Posyandu staff would suitably address this issue at certain distribution sites.

At the household level, food ration sharing was also reported by MCN beneficiaries. Data suggest that the MP-ASI was shared with children older than 24 mo. and the biscuits for PLW were shared with other family members. Mothers reported that they were unable to avoid doing so, as they did not have enough other food to provide for all family members. Hence, the food rations became a solution to address household's food insecurity, as they no longer had to buy or provide food items or snacks for children older than 24 mo. of age, or other family members, who were hungry. This finding can be largely explained by the interdependent cultural context within which this MCN program was implemented. Food sharing is a core cultural value among this population: the community norm is to share with others what one has, food in particular.

Due to reported food ration sharing at the Posyandu and household levels, the intended effect of food rations on nutritional status of PLW and young children may have been more obvious, had the items not been shared. Further study is needed to more accurately determine the specific levels of sharing, as well as ways to reduce its practice in future similar programs.

Jealousy of non-beneficiaries due to targeted programming of vulnerable groups

Being a beneficiary of the MCN program was regarded highly by community members. Social jealousy was reported by respondents, who indicated that this feeling stemmed largely around the food rations. After children grew older than 24 mo., they were no longer eligible to receive food rations at the Posyandu. There was an indication that social jealousy stimulated food sharing practices at the Posyandu level, in particular.

“The negative impact is that the aid is specialized only intended for pregnant mothers and babies 6-24 mo. of age...well so it is a pity for those of any other age group. I once heard a story that in the past WFP also gave aid, but at that time it was equally distributed to all of them... suddenly the aid became more limited (in this program)... That means it is not a surprise that the cadres (don't know) what to do, because they want to follow WFP rules, but they also they care about (all of) the people there.”

-Local NGO partner, Interview

MCN beneficiaries and implementers reported difficulties not sharing food rations with those who were no longer eligible to receive them. Stakeholders expressed similar opinions during interviews, and acknowledged this challenge faced by aid programs, if only targetted certain age groups or specific types of vulnerable sub-populations.

Posyandu distribution site faced some logistical challenges

Distribution of food rations to such a large number of MCN beneficiaries was reportedly a complicated process involving strong coordination efforts in challenging field settings of rural Indonesia.

Long waiting times for food rations at Posyandu sites

Caregivers explained that Posyandus typically delivered the food rations only at the end of Posyandu activities each day. The distribution process usually took more than 3 hours once it started. The mothers reported that they typically arrived at 8 AM, when the Posyandu started its activity, and received food rations only after all activities were completed done, around 12 noon. The reason for the long wait was that implementers first had to calculate number of all children who visited Posyandu on that very Posyandu day, and compared the number to how many beneficiaries were meant to receive the food ration. Implementers stated that they felt pressure to deliver food rations to all children, who came to the Posyandu, not only to the intended beneficiaries.

“They received 90 (MP ASI) per child. We calculated it first, if then the number of MP ASI are not enough for all children coming to the Posyandu, we would give 60 (MPASI) instead and distribute them to all children. The same goes for the biscuit.”

-Cadre, MCN group, Interview

Realities of Poor Infrastructure, Inclement Weather, and Field Coordination

Poor infrastructure, including bumpy and sometimes impassable roads, was considered to be a regular challenge faced by those individuals who had to make the delivery of food rations. Moreover, some of the more remote villages had no proper road available, making access even more difficult.

“Mollo Barat...it is a difficult area. However, the distance is not quite as far as Mollo Tengah, but the road is very bad, and transportation is difficult as well...it is because we cannot often pass through the road (for distribution).”

– Local NGO partner, TTS District, Interview

Weather challenges were persistent mostly during the 3 month rainy season, as partners reported not easily being able to pass through roads, where the river crossed during that particular season. The

roads were sometimes so challenging that the food ration delivery process could even stop entirely for a specific month. In such cases, double food rations were delivered the following month. These challenges made it difficult sometimes for implementers, especially Puskesmas personnel, to coordinate food ration deliveries on time, since those personnel were not involved directly in the distribution process.

“The distribution occurs directly to cadres in each Posyandu without any information provided to us in Puskesmas. The Posyandu is given the MPASI or the biscuit or what not. It is difficult for us to contact (the cadres in Posyandu), so it might be result in the distribution not going directly to the beneficiaries...so this issue becomes a barrier for Puskesmas in adequately controlling the food ration distribution. We do not know how many MPASIs and biscuits are distributed to each Posyandu.”

– Puskesmas/ health staff, MCN area, Interview.

As a result of these logistics and coordination challenges reported in the field, sometimes late food ration deliveries were made only in days or months after the planned Posyandu distribution days. When the food rations failed to arrive as planned, then the MCN beneficiaries would not receive any food ration during that particular month, hence beneficiaries had to make special trips to the Posyandu sites to get food ration days after normal Posyandu distribution days had already passed. Sometimes doing so was not possible for households, and therefore emerged as a barrier to uptake and utilization.

“Because there’s another experience people had: the mothers who come to Posyandus...they depend on these food rations. If biscuits or MPASI come late, or no food ration comes at all, then mothers do not come to the Posyandu at all. No food ration means mothers do not come to weigh their children. And the next time if cadres have the ration available, then mothers would come to the Posyandu, in which case they would receive two mo. of food ration in total. All mothers came to receive those rations.”

-Beneficiary, MCN group, Focus Group

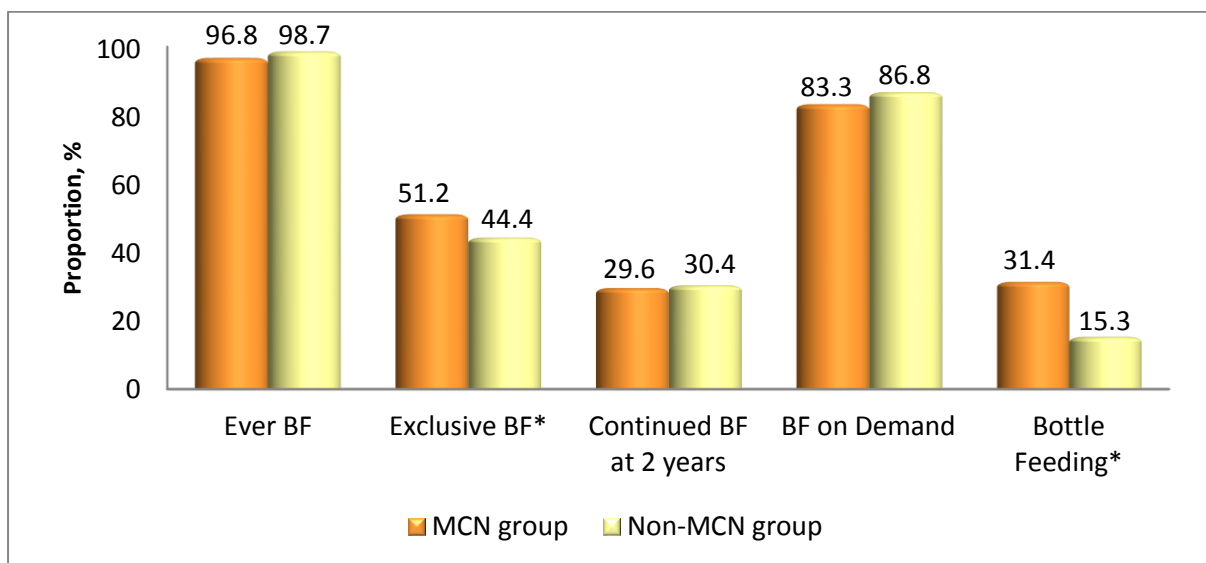
Data strongly suggested that the food rations were a hook for attracting households to visit the Posyandu sites for the monthly weighing of children.

3.2. To evaluate infant and young child nutrition knowledge, attitudes, and practices (Evaluation Aim 2)

This section outlines quantitative findings related to breastfeeding and complementary feeding practices. Within sub-sections 3.2.1 and 3.2.2, qualitative data are presented that help to explain and contextualize the quantitative findings for better interpretation of results.

3.2.1 Reported Breastfeeding Practices

Reported breastfeeding practices comparing MCN group to non-MCN group are illustrated below.



BF: breastfeeding; **MCN:** Maternal & Child Nutrition Program

*significant at $p < 0.05$ – between MCN group and non-MCN group

Figure 5. Reported breastfeeding practices among children aged 18-35 mo, by program group

Almost all mothers (>95%) in both groups reported practiced breastfeeding. However, only 51% and 44% of mothers in the MCN and non-MCN areas reported exclusive breastfeeding, respectively. This difference was significant ($p=0.004$).

In both program groups, >80% of mothers reported breastfeeding on demand, but < 1/3 mothers in either group continued breastfeeding until 2 years. Reported bottle feeding practices differed by study groups ($p < 0.001$): 31.4% children were bottle-fed in the MCN group as compared to only 15.3% in non-MCN group.

This finding is curious, considering the other positive findings reported among respondents, who had participated in the MCN programme.

Table 9 presents findings related to bottle feeding, specifically illustrating that almost all mothers in both groups used bottles to provide liquids other than breastmilk to children. Only 3 respondents in each group reported using a bottle for breastmilk feeding. Information about the specific types of “other liquid” was not collected in this survey.

Table 9. Reported bottle feeding practices by program group

Bottle feeding practices	MCN group (n=893)	Non-MCN group (n=908)	<i>p-value</i>
Drink from bottle yesterday, n(%)	280(31.4)	139(15.3)	<0.001*
Breastmilk	3 (1.1)	3 (2.0)	0.671
Other liquids	261 (98.9)	145 (98.0)	
Drink formula milk on the previous day, n(%)	212 (23.7)	96 (10.6)	<0.001*
Frequency of formula feeding on the previous day¹	2 (1, 8)	2 (1, 7)	0.561

¹Median (min, max); *significant at $p < 0.05$ – between MCN group and non-MCN group

The reported consumption of formula milk on the previous day of the interview was higher among children of MCN group to non-MCN group ($p < 0.001$). Similarly, it is not clear why such a difference between groups emerged, since formula feeding was not promoted as an enhanced IYCF practice during the MCN program. When formula feeding was reported, findings indicate that the median number of times caregivers fed their children was reportedly just “2 times per day” in both groups, a lower frequency than might be expected with traditional breastfeeding practices.

Contextualizing breastfeeding survey results with qualitative findings

To help contextualize the quantitative findings above and gain a more in-depth understanding of breastfeeding practices, interview and focus group results are presented in **Table 10** below. Findings are organized in relation to factors motivating exclusive breastfeeding, weaning practices, and sources of information about breastfeeding. Findings are stratified where appropriate.

Exclusive breastfeeding practices and motivating factors

In-depth interview data suggest that overall maternal MCN beneficiaries with higher formal education levels, and to some extent, those who were enrolled in the MCN program but with lower education levels, had a more detailed understanding such as increased knowledge on exclusive breastfeeding benefits, and reported practicing it more “exclusively” than those, who were not in the program.

Table 10 provides an overview of reported exclusive breastfeeding practices and underlying motivators by program group, maternal education level, and type of participant.

Table 10. Qualitative themes related to exclusive breastfeeding practices and underlying motivators, by type of participant and educational level

Type of participant	Reported practices	Factors motivating breastfeeding presented as salient themes
Beneficiaries¹ (MCN program mothers) (higher education²)	Largely reported exclusive breastfeeding	<ul style="list-style-type: none"> - Child’s good growth and development - Child’s creativity and intelligence - Child’s physical health - Breastmilk is better for child’s health than formula milk
Beneficiaries¹ (MCN program mothers) (lower education³)	Reported exclusive breastfeeding, but with provision of teato child’s diet—understood to still constitute “exclusive breastfeeding” by respondents	<ul style="list-style-type: none"> - Important to follow recommendations from Puskesmas and Posyandus that mothers should exclusively breastfeed their children - Important for child growth and development - Good for brain development
Non-MCN program mothers	Reported exclusive breastfeeding, but with provision of tea to child’s diet—understood to still constitute “exclusive breastfeeding” by respondents	<ul style="list-style-type: none"> - Good for brain developmentBrain development - The child would be more active
Influencers⁴	Largely reported exclusive breastfeeding, but acknowledged tea and water being introduced before 6 mo.	<ul style="list-style-type: none"> - Because of “the benefit of breastmilk” - Important to follow recommendations from Puskesmas and Posyandus that mothers should exclusively breastfeed their children

¹**Beneficiaries:** those who participated in MCN program

²**Higher education:** senior high school or above

⁴**Influencers:** fathers, grandmothers, women empowerment groups

³**Lower education:** junior high school or below

The MCN beneficiaries, who had higher education levels seemed to understand detailed benefits of exclusive breastfeeding, rather than just practicing exclusive breastfeeding as it was promoted as a guidelines to follow.

“I know (why to exclusively breastfeed) because the baby needs breastmilk. They really need breastmilk to grow...Bonding between the baby and mother also will be stronger when we give them breastmilk.”

-Mother of child Under Five, MCN group, High education, Interview

Discussing the increased bond between baby and mother through exclusive breastfeeding is a theme that emerged from MCN group, but not by those in the non-MCN group.

Perceived importance of continued breastfeeding until 2 years

Overall, interview data suggest that mothers in the MCN program had greater awareness of the suggested continued breastfeeding practices from 6–23 mo. regardless of educational level. MCN beneficiary mothers and influencers in MCN program areas were generally able to explain recommended breastfeeding practices and its importance from birth until 23 mo.. However, despite this awareness, qualitative data support quantitative findings that the majority of those who continued breastfeeding practices likely ceased before a child’s second birthday.

“I give her breastmilk, 0 to 6 mo. only breastmilk, 7 to 12 mo. complementary feeding & breastfeeding. If we want to give continued breastfeeding, we can continue it, like for more than 1 year, and then at 1.5 years...then I think we have to stop giving breastmilk.”

-Mother of child U5 years, MCN group, Low education, Interview.

Mothers in non-MCN group largely suggested that breastfeeding should be continued until only about 1 year or *“depending on a child’s need.”* These qualitative findings indicate a need for a greater awareness of continued breastfeeding until 2 years among mother of both MCN and non-MCN group.

There was no difference ($p=0.857$) in age of breast fed cessation between MCN group (16.03 ± 6.20 mo.) and non-MCN group (15.98 ± 5.20 mo.).These quantitative findings substantiate the qualitative finding, that greater awareness of continued breastfeeding importance is necessary, as well as other support such as interpersonal support to mothers, to facilitate breastfeeding practices for longer duration than the mean of 16 mo. observed in this evaluation study.

Sources of information about recommended breastfeeding practices

In both the MCN program and non-program areas, study participants reported receiving breastfeeding-related information through similar channels. Although most participants used the term “health staff” generally, the qualitative data provided some insights into specific types of health staff, who were relaying key messages. Overall, though it seems that “health staffs” were a reliable source of breastfeeding information in this community, regardless of MCN program involvement, messages were received most often times at Posyandu or Puskesmas levels.

“... in the Posyandu it is recommended that babies 0 until 6 mo. of age should only be given breastmilk exclusively...”

Local women’s support group, MCN group, Interview

More detailed information regarding various information channels through which women reported receiving breastfeeding messages is presented in **Table 11**.

Table 11. Sources of information on breastfeeding practices by participant type and educational Level

Type of participant	Person passing messages	Place where messages received
Beneficiaries¹ (higher education²)	Health staff Midwives Doctors	Posyandu Hospital
Beneficiaries¹ (lower education³)	Health staff	Puskesmas Posyandu
Non-MCN program mothers (higher education)	Doctors Midwives	Puskesmas Hospital
Non-MCN program mothers (lower education)	Midwives	Posyandu Puskesmas
Influencers⁴	Health staff	Posyandu Puskesmas

¹**Beneficiaries:** those who participated in MCN program;

²**Higher education:** senior high school or above

⁴**Influencers:** fathers, grandmothers, women empowerment groups

³**Lower education:** junior high school or below

Data in **Table 11** do not suggest one channel being more trusted than any others. Furthermore, data do not indicate the importance of community-based, informal channels, such as neighbors or in-laws, as primary channels through which breastfeeding messages were given or received. It is most likely that these non-biomedical channels did exist, and were important for messaging. Future sensitization efforts should capitalize off these existing channels within the health system such as health staff at Posyandus and Puskesmas. In addition, use formative research to explore the informal channels for messaging and communications that may also be just as important, but was not yet revealed during this evaluation study.

3.2.2 Reported Complementary Feeding Practices

According to global recommendations¹⁸, complementary feeding practices of children aged 6–23 mo. may be assessed using indicators including, but not limited to those in the following domains:

- Timing of complementary food introduction

- Dietary diversity
- Minimum meal frequency
- Minimum acceptable diet for breastfed and non-breastfed children

Quantitative findings from each of these domains are summarized in **Tables 12– 15**, comparing findings of the MCN group to those of non-MCN group. Qualitative findings are interspersed throughout the section to support numerical findings. Food consumption scores were calculated using dietary data, and are presented within **Table 12** below.

Timing of complementary food introduction

The timely introduction of complementary foods was reportedly higher (79.8%) among MCN group than among non-MCN group of 68.7% ($p < 0.001$). Although 20% of MCN group reportedly introduced complementary food to their children too early, this proportion was approximately 11% lower than that of the non-MCN group ($p < 0.001$), as depicted in **Table 12**.

Table 12. Timing of complementary food introduction by program group

Complementary feeding practices	MCN group (n = 887)	Non-MCN group (n = 906)	p-value
Introduction of complementary foods, n(%)			
Timely introduction	708 (79.8)	622 (68.7)	<0.001*
Too soon or too late	179 (20.2)	284 (31.3)	<0.001*

*significant at $p < 0.05$ – between MCN group and non-MCN group

The qualitative findings provide additional details about the timely introduction of complementary foods, including the types of foods reportedly introduced by caregivers as well as their level of knowledge related to foods that should be introduced.

Overall, mothers in both MCN and non-MCN groups reported introducing complementary foods from 6 mo. of age and transitioning to a new food around 9 mo. This finding would reflect knowledge of timely introduction, but not necessarily practices. Mothers, who had lower levels of education in both program groups, reported giving instant porridge as the first food to their child around 6 mo.. Among non-MCN group, specifically, instant or soft porridge, was described to be the first complementary foods introduced to children at 6 mo.

“If I introduce food before 6 mo. old, then I am afraid that the baby could not digest it. At the age of 6 mo., we can give SUN porridge (brand of instant porridge) or banana...That’s all I know.”

– Mother of CU2, non-MCN group, Interview

The **Figure 6** below was developed by comparing most frequently reported complementary foods introduced to children at 6, 9, and 12 mo. Themes were stratified to see the progression of food introduction over time and by program participation. For instance, it illustrates that MCN beneficiaries first introduced very soft porridge at 6 mo., soft porridge at 9 mo., and soft rice at 12 mo., whereas mothers of non-MCN group reported introducing instant porridge first at 6 mo. and then feeding plain rice at 9 mo. onward.

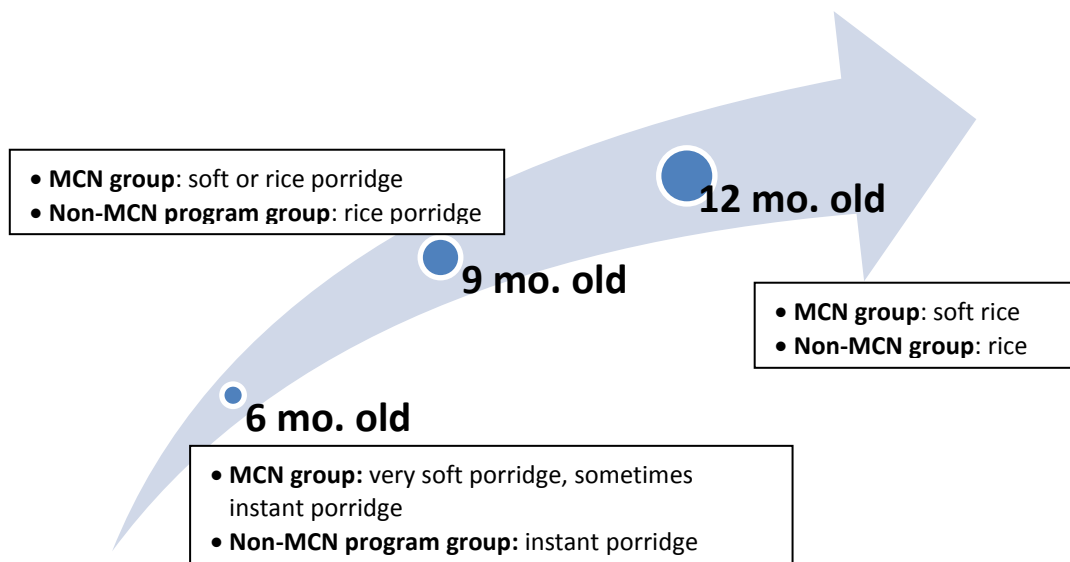


Figure 6. Mothers' Introduction of Complementary Foods by program group and time

During interviews, we probed about fortification of porridge and rice with local foods. Mothers of MCN and non-MCN groups described being constrained by access to different types of food in the household. Enrolled mothers of the MCN group, in particular, described a willingness to put an egg or vegetables into a child's meal, but explained that such foods were often unavailable at home.

"...Sometimes they(children)refuse to eat and they get cranky if we only have porridge or rice...we eat only porridge or rice without a side dish...almost everyday. I have no choice...we have to eat (instant) noodles...no vegetables available, but we can still find instant noodles, dried fish, and then (I can)just give him these foods."

-Mother of CU5, MCN group, Interview

As a result of providing only the familiar cereals such as rice and porridge to young children, mothers explained that their children commonly refused to eat. Despite an indication from interviews that there was increased knowledge among mothers, who had been in the MCN program, data suggest that they may have been constrained at the household level by a lack of access to nutrient-rich complementary foods being promoted in the MCN program.

Dietary diversity

Although food availability and access were frequently-reported as challenges to most households in this setting, survey data showed that the proportion of children, who met minimum dietary diversity was higher among all children aged 18 – 35 mo.in the MCN group than those in the non-MCN group as presented in **Table 13**.

Table 13. Minimum dietary diversity by program group

Complementary feeding practices	MCN group (n = 893)	Non-MCN group (n = 908)	p-value
Met minimum dietary diversity, n (%)			
All children	166 (18.6)	67 (7.4)	<0.001*
18-23 mo.	63 (19.5)	18 (5.4)	<0.001*
24-35 mo.	103 (18.1)	49 (8.5)	<0.001*

*significant at $p < 0.05$ – between MCN group and non-MCN group

Specifically, among children aged 18–23 mo. as well as those of aged 24–35 mo., dietary diversity was also higher among MCN group. However, <20% children of the MCN group met the minimum dietary diversity. The qualitative interview data were therefore analyzed to better understand the determinants of low overall dietary diversity among children. Using ‘frequency of mention’ as an indicator of knowledge related to foods important to the healthy growth and development of young children, data suggest that there was higher awareness of the animal-source foods importance among PLW and caregivers of the MCN group than PLW and caregivers in the non-MCN group. MCN beneficiaries stated that animal source foods were important, second most frequently mentioned to only staple foods, which were the top-cited food important for young children among 18 respondents. However, only one participant out of 17 total from the non-MCN program qualitative sample mentioned animal-source foods as being important. Data from the influencers, including fathers, grandmothers, and mother-to-mother support groups, who resided in MCN program areas, perceived animal-source foods to be important, but less so than more-frequently-mentioned staple foods and vegetables. Overall, the qualitative data support the quantitative findings of increased dietary diversity among MCN group. These findings are positive and may reflect some level of increased awareness/knowledge toward the importance of animal-source foods for young children by participants in the MCN group. All groups, however, reported having limited access to the level of dietary diversity they desired.

“...sometimes she(young child)eats porridge, sometimes if she gets bored, she will have rice. Sometimes she has vegetables or soup. Sometimes...she eats fish, it depends on money (available). If I have money, then she will have fish. If I do not have (money), then she will have mostly vegetables. It depends on our money...”

Participants across groups primarily cited a lack of access to diversified foods due to household money shortages and/or a lack of availability of foods in the market as barriers to dietary diversity for young children.

Minimum meal frequency

Quantitative data indicate that <20% of all breastfed children were able to meet minimum meal frequency in both MCN and non-MCN groups, as described in **Table 14**. However, the proportion of children aged 18–35 mo. reaching minimum meal frequency increased among those, who no longer breastfed, although no more than 50% did so in any program group, regardless of age.

Table 14. Minimum meal frequency by program group, breastfeeding status, and child age

Complementary feeding practices	MCN group (n = 893)	Non-MCN group (n = 908)	p-value
Met minimum meal frequency, n (%)	559 (62.6)	480 (52.9)	<0.001*
Breastfed children			
All children	147 (94.2)	126 (96.9)	0.276
18-23 mo.	102 (94.4)	90 (96.8)	0.426
24-35 mo.	45 (93.8)	36 (97.3)	0.444
Non-breastfed children			
All children	412 (55.9)	354 (45.5)	<0.001*
18-23 mo.	132 (61.4)	109 (45.8)	0.001*
24-35 mo.	280 (53.6)	245 (45.4)	0.007*

*significant at $p < 0.05$ – between MCN group and non-MCN group

Among children aged 18–35 mo. who no longer breastfed, there was a greater proportion reaching minimum meal frequency in the MCN group than in the non-MCN group ($p < 0.001$), regardless of age group.

Minimum Acceptable Diet

The minimum acceptable diet among children aged 18–35 mo., regardless of age group, was higher in the MCN group than non-MCN group ($p < 0.001$) as presented in **Table 15**. However, overall, no more than 22.9% of children in any program or age group consumed a minimum acceptable diet, which was mainly due to not having adequate dietary diversity. This means that desired MCN program outcomes to reach minimum acceptable diet of >70% was not met.

Table 15. Minimum acceptable diet by program group, breastfeeding status, and child age

Complementary feeding practices	MCN group (n = 893)	Non-MCN group (n = 908)	p-value
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Met minimum acceptable diet, n(%)	133 (14.9)	51 (5.6)	<0.001*
Breastfed children			
All children	34 (21.8)	7 (5.4)	<0.001*
18-23 mo.	23 (21.3)	4 (4.3)	<0.001*
24-35 mo.	11 (22.9)	3 (8.1)	0.068
Non-breastfed children			
All children	99 (13.4)	44 (5.7)	<0.001*
18-23 mo.	34 (15.8)	8 (3.4)	<0.001*
24-35 mo.	65 (12.5)	36 (6.7)	0.001*

*significant at $p < 0.05$ – between MCN group and non-MCN group

Food Consumption Score (FCS)

Using dietary diversity, food frequency, and weighting the importance of foods consumed, food consumption scores were calculated¹⁹. Overall, findings indicate that children aged 18–35 mo. in the MCN group had higher food consumption scores than those in the non-MCN group, as depicted in **Table 16**. Specifically, there were fewer children in the MCN group with ‘poor’ scores ($p < 0.001$) and more children with ‘acceptable’ scores ($p < 0.001$). However, children aged 18–35 mo. reached ‘acceptable’ consumption of 39.0% in the MCN group and 29.4% in non-MCN group. There was no difference of ‘borderline’ scores between the two groups.

Table 16. Food Consumption Score by program group

Complementary feeding practices	MCN group (n = 893)	Non-MCN group (n = 908)	p-value
Food consumption score, n(%)			
Poor	178 (19.9)	249 (27.4)	<0.001*
Borderline	367 (41.4)	392 (43.2)	0.373
Acceptable	348 (39.0)	267 (29.4)	<0.001*

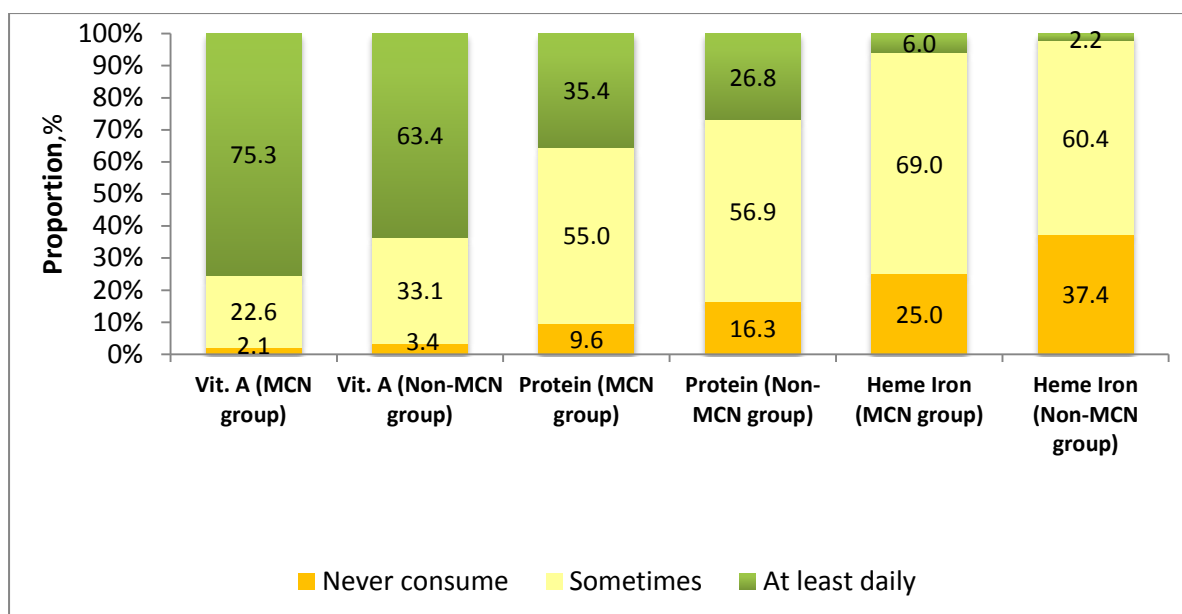
*significant at $p < 0.05$ – between MCN group and non-MCN group

Food Consumption Score – Nutritional Quality Analysis (FCS-N)

To better understand the nutritional adequacy of reported diets consumed between children in the MCN and non-MCN groups, we conducted additional analysis of food consumption focusing on

¹⁹Wiesmann, D., Bassett, L., Benson, T., & Hoddinott, J. (2009). *Validation of the World Food Programme's Food Consumption Score and Alternative Indicators of Household Food Security*. Intl Food Policy Res Inst.

nutritional quality²⁰. **Figure 7** illustrates the results of nutritional quality analysis by nutrient type, overall illustrating that vitamin A, protein, and heme-iron were all consumed in significantly higher proportions ‘at least daily’ by children in the MCN program group than those in the non-MCN program group ($p < 0.001$ each nutrient).



*Frequency of reported consumption: **Never:** 0 times; **Sometimes:** 1 – 6 times; **At least daily:** ≥7 times

Figure 7. Food Consumption Score – Nutrient Quality Assessment (FCS-N) by program group and nutrient

Among children aged 18–35 mo. in the MCN group, approximately 75% reported consuming a daily food source containing vitamin A and 35% reported consuming a food with protein. Only 6% of the children consumed heme-iron foods daily, suggesting that access to animal-sources such as egg, fish, and meat, likely remained a challenge for most children in this setting.

Specific dietary data indicate that children in both program groups more frequently consumed vitamin A-rich vegetables as opposed to vitamin-A rich animal sources (e.g., liver), lending additional evidence that children in both groups consumed only a small proportion of animal sources in their overall diets.

Influencers of caregiver decision-making

Qualitative data were collected to help contextualize some of these food consumption data by examining who primarily influences caregiver knowledge and attitudes toward infant and young child feeding within the study communities.

²⁰WFP, 2015. FCS-N Manual

Findings suggest that many different persons influence caregiver knowledge and attitudes, without differences between MCN group and non-MCN group. In both groups, midwives and cadres were identified as the most important influencers to caregivers regardless of their educational level or involvement in the MCN program. Secondly, slightly less important influencers of infant and young

child feeding were doctors and religious leaders. However, highly educated caregivers gave more weight to doctors and health staff. These findings suggest that individuals at both community and health system-levels are important influencers for caregivers in relation to infant and young child feeding. Data collected from MCN beneficiaries, implementers, and influencers of caregivers, alike, all suggest that while mothers were inevitably the main decision-makers for their children's welfare, including that resulting from feeding practices, however, cadres, midwives, doctors, husbands, neighbors and even religious leaders may act as health and nutrition advisors.

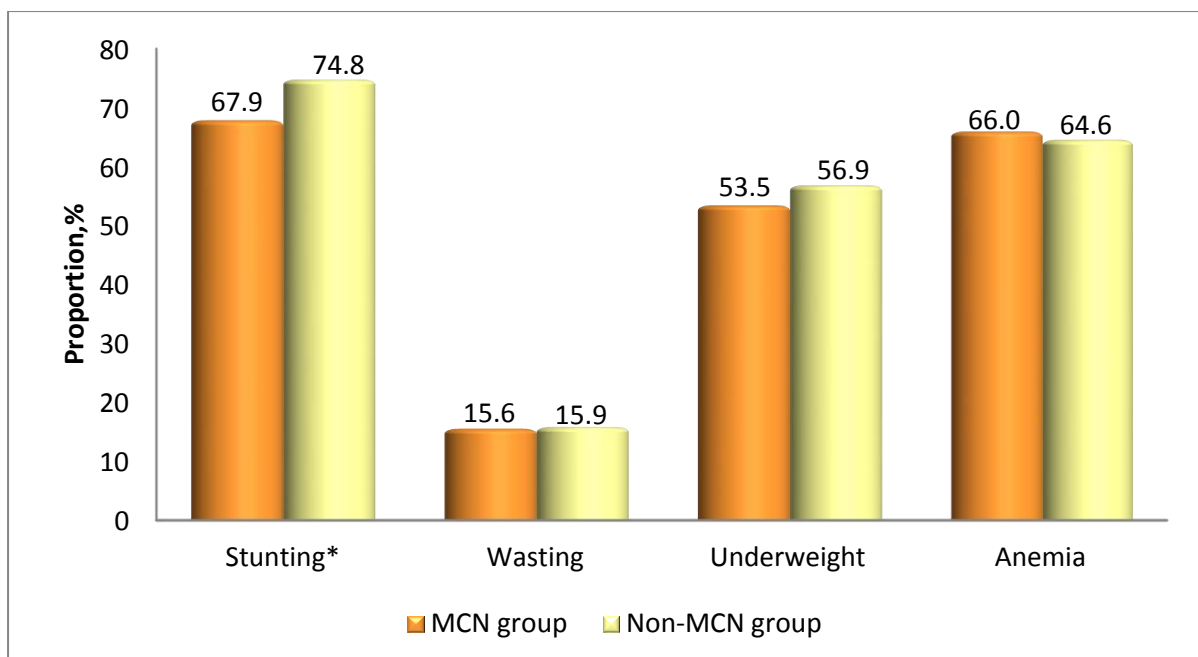
From an evaluation standpoint, the MCN program was able to successfully work within the social networks of this cultural context to utilize these various types of channels in delivering key health and nutrition messages. It is possible that using this multi-level sensitization and behavior change communications strategy is one explanation for seeing the positive differences in food consumption scores and nutritional quality between MCN and non-MCN groups. Any future health and nutrition programs in this NTT context should strongly consider these findings, highlighting the importance of multi-level influences on maternal care practices, in designing programs appropriately. Using multiple channels at both community and health-facility levels, rather than taking a solely biomedical approach, may have been a key facilitating factor for improving infant and young child feeding practices in this MCN program.

3.3. Nutritional status of children aged 18 – 35 mo. (Evaluation Aim 3)

In this section, we present quantitative evaluation results from anthropometric and health records data. Specifically, nutritional status indicators are described and then used for comparison between children aged 18–35 mo. who were MCN program beneficiaries and non-MCN program beneficiaries of the same age range. Findings related to stunting, wasting, underweight, and anemia are explained where possible throughout this section.

Nutritional status indicators

Overall, data indicate that there was a lower (67.9%) prevalence of stunting among children aged 18–35 mo. in the MCN program group compared to those (74.8%), who were not exposed to the program (**Figure 8**). However, indicators of wasting, underweight, and anemia were not different between MCN and non-MCN groups.



*significant at $p < 0.05$ between MCN group and non-MCN group

Figure 8. Prevalence of nutritional status indicators among children aged 18-35 mo. by program group

Stunting

Although the prevalence of chronic undernutrition, as indicated by stunting (Height-for-Age Z-score), was lower among MCN group than non-MCN group, however, it was substantially higher than any recent provincial (NTT) or national estimates among CU5 reported by Indonesian Government (Risksedas, 2013), as well as data derived from WFP monitoring data of TTS district which indicated a 46.9% prevalence in the first half of 2015²¹. Both Government and WFP estimates were data from different age group of children, therefore, results are not comparable. In addition, other nutrition surveys conducted in Indonesia²² showed a higher stunting prevalence among children age 24 mo. and older – the reasons, which may explain such high levels of chronic undernutrition among children aged 18–35 mo. in this evaluation study.

²¹WFP, 2015. MCN Monitoring Data

²²Food Security Council, Ministry of Agriculture and World Food Programme, 2015. Food Security and Vulnerability Atlas of Indonesia. 1 - 172

Table 17 illustrates stunting prevalence stratified by by program group and children’s age range. MCN group had much less (6.9%) stunting prevalence as compared to non-MCN group, indicating that MCN program impact was met. Meanwhile, stunting prevalence was higher among children older than 24

mo. within MCN group. However, the difference stunting prevalence between two different age groups in non-MCN group was much less obvious, indicating that children without food ration after 24 mo. of age experienced growth retardation more than those children with food ration. As MCN program was addressed to children aged 6-24 mo., thus food ration was discontinued afterwards, hence the beneficial effects of the nutrients support on linear growth subsided among children older than 24 mo. Whilst in the non-MCN group, children without nutrition support were not able to experience suitable growth before or after 24 mo. of age.

Table 17. Prevalence of stunting among children aged 18-35 mo. by program and age group

	MCN group (n=893)	Non-MCN group (n=908)	p-value (program group)
Prevalence of stunting, n(%)			
All age group	606 (67.9)	679 (74.8)	<0.001*
18-23 mo.	199 (61.6)	235 (71.0)	0.011*
24-35 mo.	407 (71.4)*	444 (76.9)*	0.032*
<i>p-value (age group)</i>	0.003	0.047	

*significant at $p < 0.05$

Wasting, Underweight, Anemia

There were no differences on wasting, underweight, or anemia prevalence among all children between MCN and non-MCN group, as illustrated in **Table 18**. Age-specific data illustrate significantly lower wasting and anemia prevalence among children aged 24-35 mo. than that of 18-23 mo. in each program group. No difference of underweight prevalence was found by age group of children.

Despite findings that show a lower prevalence of wasting and anemia among children 24-35 mo. of age compared to those 18-23 mo., the burden of wasting, underweight and anemia remains very high. The underweight prevalence of 53.5% in the MCN group and 56.9% in non-MCN group were both more than double the national estimate of around 20% found across Indonesia among CU5¹. As the underweight prevalence difference between MCN and non-MCN group was 3.4%, this means MCN program could not reach the desired program impact of 9% difference.

Similarly, the anemia prevalence of 66% in the MCN group and 64.6% in the non-MCN group were both more than double the national estimate of 28.1% found across Indonesia among CU5¹. These findings highlight the strong, continued need for public health program in this particular area of the country.

Table 18. Prevalence of wasting, underweight, and anemia among children aged 18-35 mo. by program and age group*

Nutritional status	MCN group (n=893)	Non-MCN group (n=908)	<i>p-value</i> (program group)
Wasting prevalence, n(%)			
All age group	144 (15.6)	139 (15.9)	0.880
18-23 mo.	74 (22.9)**	76 (23.0)**	0.988
24-35 mo.	65 (11.4)	68 (11.8)	0.857
<i>p-value(age group)</i>	<i>p<0.001</i>	<i>p<0.001</i>	
Underweight prevalence, n(%)			
All age group	477 (53.5)	517 (56.9)	0.140
18-23 mo.	161 (49.8)	184 (55.6)	0.141
24-35 mo.	316 (55.5)	333 (57.7)	0.457
<i>p-value(age group)</i>	0.101	0.534	
Anemia prevalence, n(%)			
All age group	588 (66.0)	586 (64.6)	0.537
18-23 mo.	235 (73.0)**	235 (71.2)**	0.615
24-35 mo.	353 (62.0)	351 (60.8)	0.675
<i>p-value(age group)</i>	0.001	0.002	

*Data derived from birth records

**Significant at $p<0.05$

Low birthweight

Using health records data, the evaluators calculated the prevalence of low birthweight (<2,500 grams) of children aged 18–35 mo. in MCN and non-MCN program groups by age group. There were no differences of low birthweight between program or age groups, as depicted in **Table 19**.

Table 19. Prevalence of low birthweight among children aged 18-35 mo. by program and age group*

	MCN group (n=893)	Non-MCN group (n=908)	<i>p-value</i> (program group)
Low birthweight, n(%)			
All age group	106 (16.2)	77 (15.8)	0.877
18-23 mo.	43 (18.1)	30 (15.9)	0.537
24-35 mo.	63 (15.1)	47 (15.8)	0.783
<i>p-value(age group)</i>	0.305	0.989	

*Data derived from birth records

**Significant at $p<0.05$

The findings in **Table 21** are similar to the global estimate by WHO of 15.5%²³, yet higher than national estimate of 9% low birthweight in Indonesia¹. The majority of pregnant women in this setting have been found to consistently face serious food access challenges, resulting in both macro- and micro-nutrient intake deficits⁴. Pregnant women’s low compliance with the fortified biscuits due to high levels of sharing reported in qualitative findings may have also contributed to limited birth outcomes despite participation in the MCN program.

The nutrition condition in TTS district of NTT province remains critical. Without longitudinal data, it is not possible to conclude from our data set with any certainty that the MCN program caused changes to the nutritional status of MCN beneficiaries.

3.4 Other Influencing Factors of Nutritional Status (Evaluation Aim 4)

Many multi-level factors influence the nutritional status of a population, as illustrated by the food and nutrition conceptual framework below. Therefore, this evaluation sought to fully evaluate MCN program impact by also describing important individual and household level factors that may have influenced results, including but not limited to indicators in the following domains of the figure below:

Individual-level factors

- Morbidity

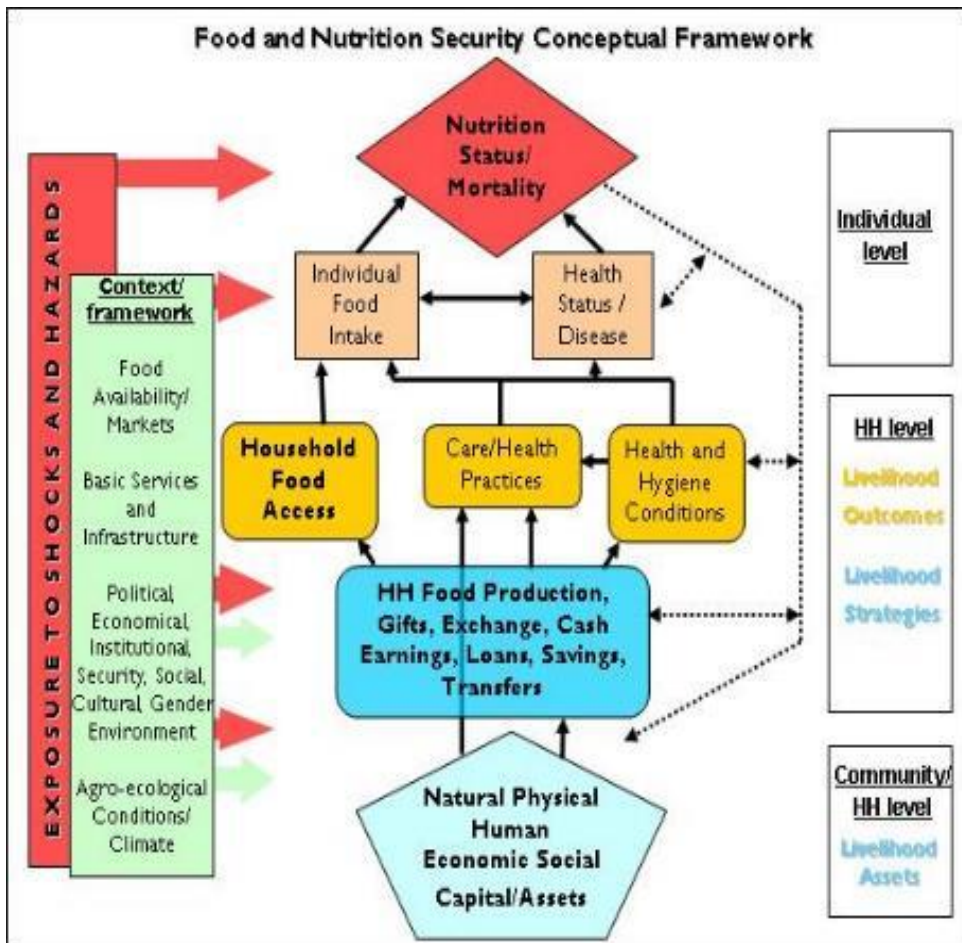
Household-level factors

- Household food insecurity
- Access to care at health facilities
- Water, sanitation, hygiene (WASH)

¹Riset Kesehatan Dasar (Riskesdas 2013), Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI

⁴Alma Ata Centre For Healthy Life and Food (ACHEAF), 2012

²³WHO/UNICEF, 2004. Low Birthweight: Country, Regional and Global Estimate. New York



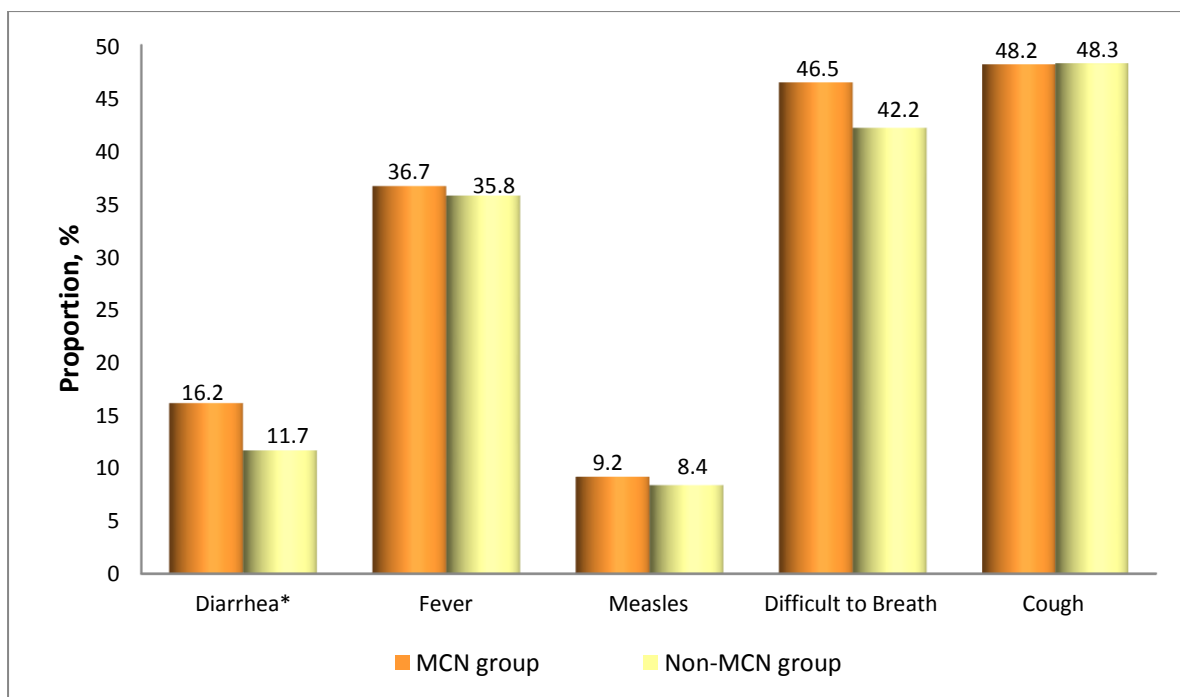
*Modified from UNICEF, 1999

Figure 9. WFP Food and Nutrition Security Conceptual Framework

Morbidity

The morbidity status of children aged 18–35 mo. is presented in **Figure 10** below. Except diarrhea, no differences of morbidity status were found comparing the prevalence of fever, measles, difficulty breathing, or cough between the MCN and non-MCN groups.

Only 4 total participants had positive tests for malaria using HemoCue, with no difference between the two program groups. Nearly half of all children in each program group were reported by their caregivers to have “difficulty breathing” in the previous two weeks - an indicator of acute respiratory infection (ARI).



*Significant at $p < 0.05$; **Y-axis is scaled to reflect a 50% maximum proportion

Figure 10. Morbidity status of children aged 18-19 mo. by program group **

It is likely that the higher-than-normal prevalence in both groups reflects the seasonal increase of ARI cases in TTS, that is typically experienced by children during the annual rainy season²⁴ when the evaluation study was conducted.

Diarrhea

Diarrhea was higher (16.2%) among children in the MCN group in comparison to those of non-MCN group of 11.7% ($p=0.005$), as illustrated in **Figure 10**. It is not clear why more children in the MCN group had a higher proportion of diarrhea than children in the non-MCN group, despite a better water source in the MCN group. With higher diarrhea prevalence in the MCN group, the MCN program impact was not noticeable in this evaluation study.

Household Food Insecurity

The Household Food Insecurity Access Scale (HFIAS) is a commonly-used tool to evaluate household food insecurity among a target population²⁴. Overall, data indicate that households enrolled in the MCN program had a lower mean \pm SD score of household food insecurity than those that were not enrolled in the program, as presented in **Table 20**.

²⁴USAID, 2007. FANTA III Household Food Insecurity Access Scale (HFIAS) for Measurement of Food Access: Indicator Guide

Table 20. Overall household food insecurity access scale (HFIAS) score by program group and level of food insecurity

	MCN group (n = 893)	Non-MCN group (n = 908)	p-value
Composite HFIAS Score[#]	6.8±6.0	8.6±5.8	p<0.001*
Level of food insecurity, n(%)			
Food Secure	224 (25.1)	109 (12.0)	<0.001*
Mildly Food Insecure	199 (22.3)	206 (22.7)	0.838
Moderately Food Insecure	275 (30.8)	367 (40.4)	<0.001*
Severely Food Insecure	195 (21.8)	226 (24.9)	0.126

[#] Mean±SD

*Significant at p<0.05 between MCN group and non-MCN group

There were both more than twice the number of households and double the proportion of households classified as “**Food Secure**” in the MCN group (p<0.001). Similarly, there were approximately 10% more households in the non-MCN group that were categorized as “**Moderately Food Insecure**” (p<0.001). Specific scale items were used to calculate the food insecurity composite scores and classifications above. **Table 21** presents each of the specific items assessed within the HFIAS by program group. Out of 9 total food insecurity scale items, 6 of them (66.7%) individually were lower, hence more food secure among MCN group as compared to non-MCN group.

Table 21. Household Food Insecurity Access Scale (HFIAS) items and scores by program group

Item No.	HFIAS Item Content	MCN group (n= 893)	Non-MCN group (n= 908)	p-value
1.	Worried about not having enough food, n(%)	624 (69.9)	746 (82.2)	<0.001*
2.	Unable to eat kinds of foods preferred, n(%)	612 (68.5)	754 (83.0)	<0.001*
3.	Ate just a few kinds of food every day, n(%)	593 (66.4)	755 (83.1)	<0.001*
4.	Ate food preferred not to eat, n(%)	547 (61.3)	694 (76.4)	<0.001*
5.	Ate smaller meals than desired, n(%)	409 (45.8)	486 (53.5)	0.001*
6.	Ate fewer meals in a day, n(%)	312 (34.9)	375 (41.3)	0.005*
7.	Ate no food at all, n(%)	169 (18.9)	159 (17.5)	0.437
8.	Went to bed at night hungry, n(%)	99 (11.1)	104 (11.5)	0.805
9.	Ate no food entire day and night, n(%)	83 (9.3)	75 (8.3)	0.438

*significant at p<0.05 between MCN group and non-MCN group

Although this evaluation study showed that food security scores were overall higher among households that had participated in the MCN program, still only 25% and 12% of sampled households were food secure in MCN and non-MCN program households, respectively.

This finding may help to explain the higher prevalence of anemia among children aged 18–35 mo. in this evaluation compared to that of national estimate among CU5. Another study in rural Indonesia showed that household food insecurity was related to anemia in CU5²⁵.

In our sample, we found that being severely food insecure as a household was a determinant of reporting child diarrhea in the previous 2 weeks, as presented in **Table 22**. However, being a household in the MCN program also was a factor of diarrhea in the previous 2 weeks. Possessing a private latrine or having an older child (aged 24-35 mo.) was each a determinant of not having diarrhea in the previous 2 weeks. Further data to explain these phenomena is needed.

Table 22. Logistic regression model of factors influencing diarrhea occurrence among children aged 18–35 mo. in the previous 2 weeks

Morbidity status	Predictors	B (SE)	Exp(B)	p-value
Diarrhea in previous 2 weeks*	Constant	-1.15 (0.30)	0.32	<0.001**
	Severe Food Insecure	0.43 (0.15)	1.54	0.005**
	MCN participation	0.37 (0.14)	1.45	0.007**
	Household private latrine	-0.44 (0.21)	0.65	0.034*
	Age of child(24-35 mo. old)	-0.37 (0.14)	0.69	0.008**

*Caregiver self-reported

**significant at $p < 0.05$ between MCN group and non-MCN group

Access to Health Facilities

The difficulties faced while accessing health facilities are typical in resource-constrained settings such as that of NTT, where infrastructures are weak and health centers are far distances from households. Our evaluation found that accessing care was also a barrier to MCN program activities in this context, including difficult-to-access health centres, limited access to transportation, and a paucity of health staff available at the community level.

Approximately half of respondents in both MCN and non-MCN groups had to walk more than 1 hour to reach the nearest health center, with a higher proportion of 48.1% by mothers in the non-MCN group as compared to 42.4% of mothers in the MCN group ($p=0.017$). However, despite the reported travel times, >90% of women in both groups claimed making “regular visits to the Posyandu in the last 3 mo.”, reflecting the use of health care facilities by all mothers of CU5.

Qualitative data also support the far distances and remote locations of health centers in relation to beneficiary households as a barrier to accessing health care in NTT district.

²⁵Campbel et.al, 2011. Relationship of household food insecurity to anaemia in children aged 6–59 mo. among families in rural Indonesia: *Annals of Tropical Paediatrics: International Child Health*, Vol.31, Issue 4

“Living in this area, flanked by two rivers, means a life-or-death situation during this rainy season...transportation is difficult since we’re living in a rural area.”

- Women’s empowerment group, MCN group, Interview

Qualitative data also indicated that midwives were not always available to women within their own communities. Thus, pregnant and lactating women had to travel in order to get access to Puskesmas to meet midwives, nurses, or doctors. Transportation was a reported challenge among participants within some areas of TTS district. Women explained that only very limited transportation was usually available to get access to health services, provided road conditions were even passable. Other times, when available, the transportation came with a monetary cost that made access more difficult or not possible at all. These access barriers were identified as salient barriers to consistent program participation, thus likely having an effect on the extent to which MCN programming could make a positive impact on nutritional status through the First 1,000 days.

Choice of MCN program sites

Geographically, the MCN program targeted easier-to-access communities, according to stakeholder participants of this evaluation study. Communities that are more closely located to towns (e.g., Soe in NTT district) were generally easier to access than non-MCN program communities.

“When we choose communities to have a program for malnutrition...the number (of malnourished cases) is not really different, so...we choose them based on the most feasible areas (for programming)...for example, we chose Soe, an urban area, where malnutrition is higher than it is in other sub-districts...we consider both the number of malnutrition cases as well as logistics. For example, there is an area (not chosen for MCN) that we really cannot pass (due to logistical difficulties)...but it is too bad (we did not chose it for the MCN program)...so we consider (first) the number of malnutrition cases, then any logistics issues...whether we can reach the (program) areas or not...then what local partners, local governments, and their agreements(to participate). So it (choosing program sites) is a really, very long process and much consideration...very difficult to calculate.”

– Stakeholder in NTT Province, Interview

This finding is supported by the higher socio-economic status of the MCN group in this assessment, a finding that may also be one determinant of the better/lower household food insecurity access scores, as well as better nutritional status of stunting indicator found among MCN beneficiary children. Therefore, if true, then being an easier-to-access community may confound any relationship between MCN program involvement and nutritional status impact.

Overlapping development programs in NTT district

In addition, several other development initiatives have been implemented in NTT district, making it difficult to isolate those, who only had participated in the MCN program, from any others, in this assessment. One on-going government initiative is the Social Safety Net Program.

In this assessment sample, a greater number of non-MCN program participants were enrolled in this Government program in comparison to those of the MCN program ($p=0.004$). However, analyses revealed that there was no difference in any nutritional status indicator for children aged 18–35 mo. whose households participated in the Social Safety Net Program as compared to those from the MCN program or the non-MCN program.

Understanding Determinants of Nutritional Status

Using multi-variate analysis, we explored the factors that may have been contributors of child nutritional status in this evaluation study.

Stunting

Logistic regression analysis shows that history of low birth weight and being 24-35 mo. old increased the risk to be stunted, while mother's higher education, being a girl and better food consumption profile reduced the risk.

Wasting

The risk to be wasted was increased by history of low birth weight, subfebrile, and experienced diarrhea in the last 2 weeks, while the risk was reduced by mother's higher education and being 24-35 mo. of age. Subfebrile may be an indication of chronic infection or persistent low grade inflammation, in combination with the history of diarrhea, hence increased nutrient requirements. Failure to provide sufficient nutrients during such episode resulted in reduction of body weight leading to wasting. Mothers with higher education may have better practice of child care including providing her children with proper quality and quantity food. The older the children, the better performance of immune system, thus better handling over any health disturbances such as inflammation and diarrhea.

Underweight

History of low birth weight increased the risk to be underweight, while mother's higher education and higher wealth quintiles reduced the risk. Similarly, with the history of low birth weight, children started with low nutritional status. Fail to compensate with good nutrition during early years of life, causing the children were unable to overcome the previous low nutritional condition, hence less chance to

improve body weight, thus children could not reach a weight level in accordance with their age, leading to underweight. Higher educated mothers practiced better IYCF and better socio-economic status helped the food availability at the household to feed good nutritious food to the children.

Anemia

The risk of anemia was increased by moderate food insecurity and fever during the last two weeks, while the risk was reduced by being 24-35 mo. old and milk/dairy product consumption the previous day. Moderate food insecurity may have caused unavailability of quality nutrients necessary for hemoglobin formation, among others iron, especially good bioavailable iron – the heme-iron, which was observed in this evaluation study. As fever also indicates inflammation/infection, it contributed to the risk of being anemic. Older children with their higher capability immune system, may have been able to handle infection, hence less likely to become anemic. Dairy products provide animal protein and some micronutrients to human body, thus may have reduced the risk of anemia.

As children in both groups consumed very low quality diet, mostly staple and vegetables, and almost no animal protein source, the impact of food ration was not maximal, especially in combination with imperfect compliance to the MCN program, as the food ration was shared to other non-beneficiaries including family member. The difference in stunting prevalence between MCN and non-MCN groups might be related to better mother’s education level and food consumption profile in MCN group.

Among all predictors observed in **Table 23**, it appears that history of low birth weight, mothers’ education and children’s age were predictors of nutritional status. Second in line was food intake, socio-economic level and disease occurrence. MCN program aimed at providing access to nutrients during the first 1,000 days of life. Low birth weight is one of the indicators used to know the impact of the food ration program in PLW. As even after food ration the prevalence of low nutritional status was still higher than national data, the local health system should consider all these factors seriously in tackling major undernutrition problem in TTS district. The concern should also go to the educational system, as higher education of women would help tackling the health and nutrition problems, as women are considered as the main decision maker, thus the key person for the welfare of their children.

Table 23. Logistic Regression Analysis on Factors Influencing Nutritional Status of Children

Nutritional status	Predictors	B (SE)	Exp(B)	p-value*
Stunting	Constant	1.54 (0.57)	4.65	<0.001
	• History of Low Birth Weight	0.65 (0.19)	1.92	0.001
	• Age group (24-35 mo. old)	0.32 (0.13)	1.38	0.016

	• Mother education level (higher level)	-0.29 (0.15)	0.75	0.047
	• Gender of children (girl)	-0.42 (0.13)	0.66	0.001
	• Food Consumption Profile	-0.28 (0.09)	0.76	0.002
Wasting	Constant	-0.89 (0.28)	0.41	0.002
	• Sub-febrile body temperature	0.72 (0.29)	2.06	0.012
	• Diarrhea in the last 2 weeks	0.70 (0.20)	2.01	0.001
	• History of Low Birth Weight	0.68 (0.19)	1.98	0.001
	• Mother education level (higher level)	-0.50 (0.20)	0.61	0.012
	• Age group (24-35 mo. old)	-0.62 (0.17)	0.54	<0.001
Underweight	Constant	0.47 (0.16)	1.60	0.003
	• History of Low Birth Weight	0.88 (0.18)	2.40	<0.001
	• Mother education level (higher level)	-0.28 (0.14)	0.76	0.043
	• Wealth Quintiles (higher quintiles)	-0.13 (0.05)	0.88	0.005
Anemia	Constant	1.34 (0.20)	3.84	<0.001
	• Moderate Food Insecure	0.22 (0.11)	1.25	0.038
	• Fever in the last 2 weeks	0.21 (0.11)	1.23	0.048
	• Age Group (24-35 mo. old)	-0.49 (0.11)	0.61	<0.001
	• Milk and dairy products intake on the previous day	-0.29 (0.13)	0.74	0.023

*significant at $p < 0.05$

3.5 Summary of participant recommendations to improve programming (Evaluation aim 5)

Overall, the MCN program was well accepted by both the local TTS and stakeholder communities. Recommended improvements were systematically compiled during this assessment through the qualitative data collection, as presented in **Table 24**. They may be taken into account to modify future programming for beneficiaries and stakeholders alike. Based on the data, key recommendations fell into three primary categories.

Table 24. Participant recommendations to improve MCN program delivery

Food Rations	<p>1) Food rations should be continuously distributed and delivered at Posyandu level – focus on improving supply chains/logistics.</p> <p><i>“I mean, please give us the opportunity to continue to receive the biscuit ration...we ask that WFP supports us to provide this biscuit (after this assessment). We propose this recommendation so that the biscuit (food ration) will not stop.”</i></p> <p>– Government stakeholder, TTS District, Interview</p>
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	2) More and better sensitization about food rations is needed.
	3) Food rations should be provided for all Posyandu children, not just those under two years.
	4) Changing the biscuit to another type of food ration was suggested by health staff and stakeholders because the biscuit was reportedly highly shared among household members. Perhaps another form of a commodity will be just as acceptable but not so widely shared.
Behavior Change Communications	1) Include film, posters, flipcharts with more pictures rather than text due to illiteracy of local populations
	2) The BCC materials should be in local languages, not only in Indonesian language
	3) Individual counseling is preferred to large group sessions by beneficiaries
	4) IYCF trainings need to be delivered to all Posyandus, not just some of them.
	5) BCC should foster more interpersonal and community-level support from religious leaders, husbands, family members, and other influencers. The social influence in this context is very strong and therefore sensitization among social networks is important for behavior change. <i>“If this program continues, then it should involve the husbands. We have to think about how to engage husbands, because most of them think that child care is just mothers’ responsibilities. So we have to think about how to involve husbands as well (in the future).”</i> – Government stakeholder in TTS District, Interview
Program-related Recommendations	1) Cost sharing responsibilities should be clearly informed to Puskesmas
	2) MCN programs should be accompanied by other community programs, such as those of agriculture (nutrition-sensitive).
	3) Local food production aspect of this program should be included as a central part of this type of program.
	4) Coordination, communication, and engagement efforts should be increased between WFP and local stakeholders

	<p><i>“They (WFP) said that they have agreement between WFP and the District Health Office...OK then if they have one. But at least they have to do sensitization, and coordination with Puskesmas even at the grassroots level. I think it is because lack of communication (that some issues arose during the program).”</i></p> <p style="text-align: right;">– Puskesmas/health staff, Interview</p>
	<p>5) Providing incentives for cadres could be considered as part of future programming and program-related promises from program to cadres need to be kept throughout program life cycles.</p> <p><i>“We are highly empowered (workers),so if they said ‘no incentive’, then we would be OK not receiving anything....But why did they promise that we would receive an incentive, and we ended up with nothing?”</i></p> <p style="text-align: right;">- Cadres, MCN program, Interview</p>
	<p>6) To achieve program sustainability,increased community empowerment, IYCF trainings, and community engagement in the program will be important</p>
	<p>7) Address barriers that were found during this assessment, including geographic conditions of the setting and human resources limitations</p>
	<p>8) Conducting a pilot program before scaling up program implementation may be useful to identify such barriers and to make improvements ahead of time in future MCN projects.</p> <p><i>“...Pilot. Pilot in small areas, then we can develop a good system (for scale up)...among small areas and include regular inputs (during pilot) for developing a monitoring and evaluation system, an evidence-bas...I think we have to strengthen the evidence-based aspect (of this program) through a pilot system.”</i></p> <p style="text-align: right;">- Stakeholder, Interview</p>

4. Conclusions and Recommendations

Overall, this mixed methods evaluation of the 2012 – 2015 MCN program highlighted an integrated maternal and child nutrition program that was highly accepted, well implemented, and impactful on some important indicators. It also identified facilitating factors and barriers to program implementation that can be lessons learned for future programs both in this context and others.

There were many positive findings from this evaluation. Overall, the program activities were highly accepted, including the Posyandu-level trainings, monthly growth monitoring activities, specialized nutritious food rations, and behavior change communications. Comparing findings from the MCN program area to the non-program area, exclusive breastfeeding practices, dietary diversity scores, minimum acceptable diet, and food consumption indicators were all suggestive of better dietary practices among beneficiaries. However, these indicators were largely still very low in comparison to global and national standards of optimal maternal and child nutrition.

Food availability and access remain primary challenges to households in this setting, despite findings from this evaluation suggesting some improved knowledge and attitudes toward optimal infant and young child feeding. While a lower stunting prevalence among children aged 18–35 mo. who were in the MCN program is positive, the very high prevalence underscores the importance of continued health and nutrition support needed. Yet to underline the importance of poverty alleviation in the area as any nutritional support program is less effective if the beneficiaries can not even meet their basic food needs – because the food ration then becomes the basic need – which is not the purpose of the program. High morbidity among young children also remains a persistent threat to healthy growth and development in this setting, regardless of improved nutrition.

This evaluation found that the strong collaboration of WFP with Government stakeholders, partners, and community members was a facilitating factor of program implementation. This positive finding may also allow for successful continuation and/or improved likelihood of program sustainability moving forward. However, we recommend that improved cost sharing, clearer and more consistent communications, deliberate involvement of other sectors (e.g., agriculture), consideration of locally-available foods, and increased coordination may be needed for overall program improvement.

Some specific improvements are recommended. The training program coverage was approximately only 30% of total Posyandus, limiting the potential for capacity development and behavior change communications throughout the MCN program area. Similarly, trainings and messaging could be

improved by being more tailored to specific types of sub-groups through a heavier focus on interpersonal communication, as well as delivered in local languages and through pictures/visual images in consideration of high illiteracy rates in this setting. The implementation of re-trainings in future programs was suggested by many participants in this evaluation.

In addition, while the specialized nutritious foods were highly accepted by beneficiaries, data suggested that sharing among non-beneficiaries was very common and potentially a limiting factor of their desired impact on health and nutrition through the first 1,000 days. Funding and logistics issues resulting in inconsistent and sometimes late food ration distribution emerged as areas for improvement. However, these challenges were not always a result of poor programming. For example, poor road conditions and harsh weather are inevitable in many contexts where similar programs will be implemented; however, they should be considered during future program planning and design. We found that strong coordination at all steps of the supply chain is important for ensuring timely delivery of food rations and clear communications to beneficiaries. Furthermore, thorough and participatory formative research may help future programs introduce specialized nutritious foods more effectively, so that they are shared less often while still being highly accepted by beneficiaries.

While many of the important dietary and nutritional status indicators were higher in the MCN program area than in the non-program area, they are still reflective of a nutrition situation that would greatly benefit from continual integrated support by a variety of sectors in the face of poverty, household food insecurity, and high disease burden. The range of findings from this evaluation highlight both the challenges and potential for maternal and child nutrition programming during the First 1,000 Days, using this type of integrated approach not only in this context but also in others similar to it.

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6. Annexes

Annex 1. Map of TTS District, NTT Province and List of Villages

Annex 2. Quantitative questionnaire non-MCN program area

Annex 3. Quantitative questionnaire MCN program area

Annex 4. 24 hour recall form

Annex 5. Rapid Malaria Test

Annex 6. MCN guidelines for Qualitative Data

Annex 7. Field Notes for Qualitative Data