UNIVERSITY OF INDONESIA

A SYSTEM REVIEW ON THE MICRONUTRIENTS POWDER COMMUNICATION PROGRAM IN PRAYA TENGAH, LOMBOK TENGAH DISTRICT

THESIS

in partial fulfillment of the requirements for the degree of Master of Science in Community Nutrition

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PREFACE

The most probable causes of micronutrient deficiencies on underfive children are low content in the diet and poor bioavailability, also their high metabolic needs per unit body weight as resulted from their developmental requirements. Given that the multi-micronutrients powder (MNP) can provide the requirement of micronutrients to each child, even it mixed with a small quantity of food, so that, it is might be feasible to address micronutrient deficiencies problem among young children.

In 2007, UNICEF has integrated MNP program on Chansys (Community Health Systems Strengthening) programs in Lombok Tengah District. The MNP program is mainly delivered by *Posyandu* cadres to the beneficiaries. In the implementation, communication program was embedded to enhance the compliance. In delivering all messages related to such program was mainly delivered through interpersonal communication, carried out by *Puskesmas* staff and *Posyandu* cadres. Some supporting printed material was also provided as the communication channel. Although communication program on MNP was established, however, it was not designed well. These were proven by the findings of district health office (DHO) survey at mid term in 2008, followed by supervisory visit in 2009. The survey has found that 72% of children did not like MNP and mostly (60%) caused by taste problem, and *Posyandu* cadres did not distribute MNP, mostly because of underfive rejection and taste problem. The supervisory visit revealed that mothers did not utilize MNP because their children did not like it and it might cause diarrhea after consume.

The problem captured in the DHO survey might reflect that the essential messages related to MNP were highly likely inadequate and less accessible to the targeted beneficiaries. Therefore, it is necessary to conduct a performance evaluation on the MNP communication program. This thesis is divided into six chapters which consisted of introduction (chapter 1), literature review (chapter 2), methods (chapter 3), results (chapter 4), discussions (chapter 5), and conclusions and recommendations (chapter 6). In appendix, the manuscript of thesis to be submitted to American Journal of Public Health is included.

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ABSTRAK

Nama : Andi Erwin
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Title : Telaah sistem pada program komunikasi tabur gizi di Praya Tengah, Kabupaten Lombok Tengah,

Studi *cross sectional* ini bertujuan untuk melakukan evaluasi kinerja program komunikasi tabur gizi di Praya Tengah, Kabupaten Lombok Tengah. Hasil studi menunjukkan bahwa program komunikasi tabur gizi sebagai suatu sistem tidak berjalan dengan baik. Hal ini berdampak pada rendahnya tingkat kepatuhan sasaran, yaitu ibu/pengasuh dan anaknya, terhadap penggunaan tabur gizi. Selain itu, kepatuhan ibu untuk menggunakan tabur gizi lebih dipengaruhi oleh kesukaan anak terhadap produk tersebut, daripada program komunikasi itu sendiri. Manajer kesehatan di level kabupaten, dan *Puskesmas*, serta kader *Posyandu* beranggapan bahwa masalah ketidakpatuhan sasaran disebabkan oleh anak balita tidak menyukai makanan yang telah diberi tabur gizi, dan para ibu/pengasuh tidak mau memaksa anaknya untuk mengkonsumsi makanan tersebut, serta anggapan ibu bahwa produk tersebut menyebabkan diare dan demam. Alasan lainnya adalah lemahnya aspek manajemen.

Kata kunci:
Micronutrients powder, komunikasi, telaah system kesehatan, evaluasi kinerja, anak balita, kepatuhan

ABSTRACT

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This cross sectional study aimed to conduct a performance evaluation on the micronutrients powder (MNP) communication program in Praya Tengah, Lombok Tengah District. The study found that as a system MNP communication program did not well function and it might not reach its potential benefit yet. As a result it leads to low compliance of the beneficiaries on the MNP. Also, the caregiver's compliance was influence by their children's compliance, instead of communication program. The health managers and *Posyandu* cadres have perceived several reasons as problem on that program, i.e. most of the underfive children did not like MNP, and the caregivers refuse to force feed their child to eat the food when it mix with MNP and also they perceive it might cause of diarrhea and fever. Other reasons that might hamper the program were lack of resources and poor management.

Keywords:
Micronutrients powder, communication, health system review, performance evaluation, underfive children, compliance

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LIST OF ABBREVIATIONS

Chansys	: Community health and nutrition system strengthening
DHO	: District health office/*Dinas Kesehatan Kabupaten*
EBF	: Exclusive Breastfeeding/*ASI Eksklusif*
HKI	: Helen Keller International
IDA	: Iron deficiency anemia
IMD	: *Inisiasi Menyusui Dini*/Early Breastfeeding Initiation
MNP	: Micronutrients powder
NTB	: *Nusa Tenggara Barat* Province
PAUD	: *Pendidikan Anak Usia Dini*/Early Childhood Education
Polindes	: *Pondok Bersalin Desa*/ Puskesmas Peripheral Services for Village Midwives
Posyandu	: *Pos Pelayanan Terpadu*/Health Integrated Post
Puskesmas	: *Pusat Kesehatan Masyarakat*/Health Centers Sub-district
Pustu	: *Puskesmas Pembantu*/Puskesmas Peripheral Services
Riskesdas	: *Riset Kesehatan Dasar*/ Basic Health Research Survey
UNICEF	: United Nation Children's Fund
VAD	: Vitamin A Deficiencies

OPERATIONAL DEFINITION

a. Communication on MNP program constitutes the range of activities aiming to secure high levels of acceptance and adoption of MNP by mothers of children below five years of age ("*underfives*"). In this study these activities consist of communication activities, i.e. the training program for cadres, nutrition education/counseling between cadres and mothers/caregivers, promotional media distribution, and coping mechanism, and monitoring and evaluation regarding those activities.

b. Performance evaluation ≈ Process evaluation is evaluation which is focusing on subsystem components, i.e. service input, service distribution, management and organization, support system, service output, and community participation.

c. The Micronutrients powder (MNP) is given to each home for the purpose of food-fortification. It consists of 14 essential vitamins and minerals (Vitamin A, Vitamin B1, B2, B6, B12, Vitamin C, Vitamin D, Vitamin E, folic acid, niacin, cupper, iodine, iron and zinc). One sachet of MNP/day fulfills one day's nutritional requirements of an *underfive*.

d. Training program for cadres is availability and quality of training conducted by *Puskesmas* staff on delivering intervention, i.e. MNP/sprinkle, albendazole, zinc tablet, and vitamin A.

e. Nutrition education/counseling activities are activity conduct by cadres and/or *Puskesmas* staff on delivering MNP – related messages to the mothers/caregivers staff during *Posyandu* days.

f. IEC materials are consisting of booklet (*Panduan untuk Petugas Lapangan: Pemberian Vitamin A, Obat Cacing, dan Tabur Gizi pada Anak Umur 6 - 59 Bulan di Posyandu*), leaflet, poster, banner, billboard, and radio spot adlibs.

g. SOP of training for cadres is a document of activities that consisting of the following steps, i.e. openings sessions, provision of materials, i.e. MNP (subject-technical know how), vitamin A, deworming, zinc tablets, and practice on MNP, discussion, feedback, evaluation, and conclusion.

h. SOP of nutrition education/counseling on *Posyandu* is a document of activities on distribution and communication regarding MNP at the Posyandu (*Langkah-Langkah Pelaksanaan Pendistribusian Kapsul Vitamin A, Obat Cacing, dan Sprinkle di Posyandu)*

i. Coping mechanism is peer education/intervention activities conducted by *Posyandu* cadres to diminish any negative "noise" regarding MNP in the community, for example on gossiping women group, and/or conduct mother's testimony on success story using MNP, in the social gathering of the community.

CHAPTER 1
INTRODUCTION

1.1. Background

Deficiencies of micronutrients are a major global health problem especially among underfive in low income countries, including Indonesia (Bloem, et al., 2006). In low income countries, more than half of preschool children are anemic, and an estimated 75 million and 140 million preschool children have clinical and sub clinical vitamin A deficiencies (VAD), respectively. Also, it has been estimated that about half of the world's population is at risk of inadequate intake of absorbable zinc (Rivera, Hotz, Gonzalez-Cossio, Neufeld, & Garcia-Guerra, 2003). Similar conditions still exist in Indonesia. Prevalence of iron deficiency anemia (IDA) in the younger children (< 24 months) is considered as severe public health problem (>55%). Each year, an estimated 12,000 children die from VAD (ADB & MOH, 2009), and 50% of underfive have sub clinical VAD (Atmarita, 2005). Zinc deficiency in children was categorized as high prevalence (Black, 2008). Also, study done by Fahmida, et. al., (2007) in Lombok Timur, shows that prevalence of anemia in infant was around 79.3%. Such deficiencies can have far-reaching health consequences, contributing to impairments in growth, neurobehavioral function, and immune competence, and increases in morbidity and mortality (Winichagoon, et al., 2006).

The most probable causes of micronutrient deficiencies on underfive children are low content in the diet and poor bioavailability (Rivera, et al., 2003), also their high metabolic needs per unit body weight as resulted from their developmental requirements (Demment, Youngy, & Sensenig, 2003). For young children (i.e. aged 6 – 23 months), energy and nutrient contribution from complementary food becomes increasingly important for meeting daily requirements. However, the small quantities of cereal-based porridges commonly fed to them do not contain enough micronutrients to meet daily requirements (Nestel, et al., 2003). A fundamental constraint to food bioavailability is that non-staple foods, particularly animal products, tend to be the foods richest in bioavailable micronutrients, which the poor in many developing countries desire to eat but cannot afford (Demment, et al., 2003). Based on their weight, young

children have nutrients requirement higher than adults, for example with respect to iron, the requirement of children aged 1 – 3 years almost three times higher compare to male adults aged 19 – 29 years[i]. Therefore, interventions designed to increase the intake of several essentials nutrients might be more effective in such deficiencies, and preventing growth retardation later on, than those that increase the intake of only one problem nutrient (Rivera, et al., 2003).

There are three approaches to prevent micronutrient deficiencies in children, i.e. dietary approach, fortification, and supplementations. Dietary approach is sustainable and involves tackling social, environmental, and cultural aspects. Promotion of adequate complementary feeding is essential (WHO, n.d.). However, study on complementary feeding based on local foods in Bogor Selatan shows that adequate levels of micronutrient (i.e. iron, zinc, calcium, thiamin, and niacin) requirements were difficult to achieve (Santika, Fahmida, & Ferguson, 2009). So that, mix of other strategies, including supplementation and food fortification, is therefore necessary (ADB & MOH, 2009). Supplementation is most useful for targeting larger doses of micronutrients to specific individuals (vitamin A capsule for underfive) and can have a relatively rapid impact. However, it often fails to supply all necessary nutrients (Allen, 2003). Food fortification programs (mass fortification) is an inexpensive way to add vitamins and minerals to foods or condiments that are regularly consume by a significant proportion of the population (WHO, n.d.). However, it is not adequate for young children (<2 years old) because of their high level of need and relatively low intake of staple foods (ADB & MOH, 2009). With respect to in home fortification, for this age group specific foods would need to be fortified. The term "in-home fortificants" was chosen by the experts to refer to products that could be added by end users to an individual portion of prepared food, such as a micronutrient-rich formulation in powdered or 'sprinkles' form. With regard to composition, it was recommended that in-home fortificants should contain multi-micronutrients, at least iron, zinc, and a form of vitamin A (Rivera, et al., 2003; ADB & MOH, 2009), iodine, vitamins C and D, and folic acid (Zlotkin & Tondeur, 2007). Given that the multi micronutrients powder (MNP)/sprinkles can

[i] Based on Indonesian RDA, children aged 1 – 3 years (12 kg) and male adult aged 19 – 29 years (56 kg) requires iron/d 8 mg and 13 mg, respectively.

provide the requirement of micronutrients to each child, even it mixed with a small quantity of food, so that, it is might be feasible to address micronutrient deficiencies problem among young children compare to mass fortification.

In the programmatic setting, "in-home fortificants" or MNP/sprinkles was considered more programmatically practical (HKI, 2006). This is supported by several reason, i.e. allows the child to obtain a full dose of micronutrients when mixed with a small, quantity of food (Nestel, et al., 2003; Adu-Afarwuah, et al., 2008), it is less likely to cause side effect, it could potentially be regarded more as a condiment than medicine (HKI, 2006), it is feasible to ensure their appropriate use, especially to those who has been convinced about it benefits, after just one training session even with less supervision, there is no special measuring utensils or handling is required, someone does not have to be literate to learn how to use them, and it can be easily incorporated into any feeding schedule (Zlotkin & Tondeur, 2007). Although, it does not require major changes in dietary practices, however, it should be integrated in the promotion of appropriate feeding practices, since it can only be used with complementary foods (Zlotkin, et al., 2003). This is considered important for a sustainable intervention aimed at prevention rather than treatment of a recognized illness.

The *sprinkles-concept* foresees mixing the MNP onto any semi-solid food in the household at any mealtime during the day (ADB & MOH, 2008a). This practice could be considered as a new practice for mothers/caregivers because it is recommended to be used daily. Also, it is requires mothers/caregivers' understanding about type of food that appropriate with MNP and how to mix it. Hence, to secure high level of acceptance and adoption on MNP among mothers/caregivers, communication intervention is of paramount importance (HKI, 2006).

In 2007, UNICEF has integrated MNP program on Chansys (Community Health Systems Strengthening) programs in Lombok Tengah District. The MNP program is mainly delivered by *Posyandu* cadres to the beneficiaries. In the implementation, communication program was embedded to enhance the compliance. In delivering all messages related to such program was mainly delivered through interpersonal communication, carried out by *Puskesmas* staff,

(i.e. nutritionist, midwives, and, village midwives) and *Posyandu* cadres. This communication strategy was considered as an ideal approach because interpersonal communication through nutrition education and one-on-one or small group counseling provides an opportunity for cadres to tailor message to the person and answer questions immediately (Snyder, 2007). Also, counseling has been shown to be effective in improving feeding behaviors and growth, when few consistent messages are given and implementation is well supervised (Lutter, et al., 2008). Some supporting printed material was also provide as the communication channel, such as subject know how, i.e. MNP (i.e. Vitalita) guidelines book developed by HKI, leaflet, poster, and banners, and technical know how, i.e. Vitamin A, deworming, and sprinkles/MNP field guidelines book developed by UNICEF and the ministry of health (MOH).

Several activities should be addressed in order to improve communication strategies and maintain acceptance and adoption (behavior change) on MNP among caregivers: 1) communication strategies should involve institutions (government and NGO) for advocacy activities, providers (health workers) for training activities, and people (community and religious leader) for social mobilization activities; 2) the need to conduct assessment on local complementary feeding practices for the purpose of organoleptic change (inappropriate for hot food and soup-based food); 3) nutrition counseling is recommended as an important mechanism to provide feedback between health workers and mothers/caregivers and key to ensure compliance (Lutter, et al., 2008); 4) The program promotion shall be carried out continuously to sustain the compliance (Rimbatmaja, 2009; UNICEF, 2009a, 2009b).

Integration of communication intervention within MNP program has proven to be effective in enhancing the compliance. Studies in Bangladesh and Haiti revealed that compliance rate for MNP was considered high (81% and 83%) respectively among caregivers. Similar study in North Jakarta also found high compliance, as indicated 88% of MNP consumed by the beneficiaries (ADB & MOH, 2008a). The high compliance might have been resulted by closely attach to the design of the communication program, supported by active participation of the community health volunteers as the sender of the messages, then high compliance

due to the population's high level of trust in community health workers was resulted within short duration intervention (Zlotkin & Tondeur, 2007; ADB & MOH, 2008a; Menon, et al., 2007; SGHI, 2008a).

Given the communication strategies of MNP program has been properly designed[i], it's functioning has to be monitored and evaluated, in which any information obtained from the monitoring and evaluation (monev) system shall be utilized for the purpose of improving or maintaining the quality of communication program itself. Study on MNP (*Vitalita*) in Aceh and Nias (2007) and peri-urban communities in Java and Sulawesi (2006), revealed that in the area where the communication strategies were less functioning, the acceptance of the product was markedly lower among their target population (HKI, 2006; dePee, et al., 2007).

With respect to MNP program, this study was only focusing on the period of time within July to September 2009. This was caused by early cessation of the MNP program and lacking of information on recording and reporting activities on communication activities. Mostly, the distribution had been done on August 2009, for two (August and September) or four months (August to November) supplies, and communication activities, i.e. training activities for *Puskesmas* staff and *Posyandu* cadres, and nutrition education in *Posyandu*, were held on July to September 2009[ii]. Therefore, the aim of this study is to conduct a performance evaluation on the MNP communication program within July to September 2009 in Praya Tengah, Lombok Tengah District.

1.2. Problem statements

Although communication program on MNP was established[iii], however, in my assumption, it was not well designed and its monev system was not function[iv]. To our knowledge, coping mechanism in the particular area was not functioning. Additionally, the malfunction of monev system may either lay on its construct or

[i] MNP communication strategies properly designed as indicated by the quality, accessibility, and the completeness of the message (including information on the side effect) by the targeted beneficiaries, as well as the availability of strategic coping mechanism to diminish any "noise" in the community.
[ii] Personal communication was conducted with head of nutrition unit in the DHO and *Puskesmas*.
[iii] UNICEF: Progress review of Chansys implementation 2008, unpublished report.
[iv] Functioning monev. in communication program as indicated by completeness of monev. record and utilization of such record as feedback.

the capacity of the local health system to carry it out. These were proven by the findings of DHO survey at mid term in 2008, followed by supervisory visit in 2009. The survey has found that 72% of children did not like MNP and mostly (60%) caused by taste problem, and *Posyandu* cadres did not distribute MNP, mostly because of underfive rejection and taste problem (Dinkes, 2008a). Similar findings from the supervisory visit, revealed that mothers did not utilize MNP because child did not like it and children have diarrhea after consume MNP (Dinkes & UNICEF, 2009).

On the other hand, the government has adopted and will deliver the MNP project as a part of NICE (Nutrition Improvement through Community Empowerment) Project[i] without preliminary study on the strategic communication and monev system, as well as the capacity of local health system to deliver the communication program[ii].

1.3. Rationale of the study

The Kielmann's operational (health) system model is utilized as conceptual model in this study because of its relevancy to study context. As compare to the others model (i.e. WHO health system conceptual framework, Roemer's health system model, and IDRC health system model), this model more focus on the implementation issues through a system approach in which also include community participation components (Siddiqi & Kielmann, 2009).

By considering the problem captured in the DHO survey (*see problem statement*), then I prioritize the study on the implementation of MNP communication program rather than the conceptual thinking of community towards MNP program. As reflected in the reason of mother's non compliance, I assume that:

1) The problem on the acceptability of messages, which is usually triggered by the contradiction between such messages and the conceptual thinking of the community (Ellis, Winch, Daou, Gilroy, & Swedberg, 2007), was minor.

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[i] The Government of Indonesia (GOI), through the Directorate of Community Nutrition, Directorate General of Community Health (DCN-DGCH) of the Ministry of Health (MOH), is currently implementing The Nutrition Improvement through Community Empowerment (NICE) Project with loan funding from the Asian Development Bank (ADB) (Loan No. 2348-INO [SF]).

[ii] The MNP communication program comprise of two majors component: 1) MNP communication strategy, 2) Monev system.

2) The messages were highly likely inadequate and less accessible to the targeted beneficiaries.

The result of this study will provide planners, program implementers, and other stakeholders with the subject – technical – know how, which are essential for improving the communication program related to MNP.

1.4. Research questions

a. To what extent is the MNP communication program indeed operational, so as the delivered messages can reach, be accepted, and be understood by the targeted beneficiaries?
b. What is the level of underfive children's intake on MNP as the outcome of the communication program?
c. What did health managers (i.e. DHO officer and *Puskesmas* staff) and *Posyandu* cadres perceive as problems with respect to MNP communication program and its coping mechanism?

1.5. Objectives

The overall objective of this study is to conduct a performance evaluation on the MNP communication program within July to September 2009 in Praya Tengah, Lombok Tengah District.

The specific objectives of this study are as follows:

a. To assess the availability and functioning of the essential components on MNP communication program namely: service input, service distribution, management and organization, support system, community participation, and service output.
b. To estimate the proportion of underfive children who consume the MNP.
c. To explore perceptions of health managers (i.e. DHO officer and *Puskesmas* staff) and *Posyandu* cadres on problem with respect to the MNP communication program and its coping mechanism.

1.6. Conceptual model of the study

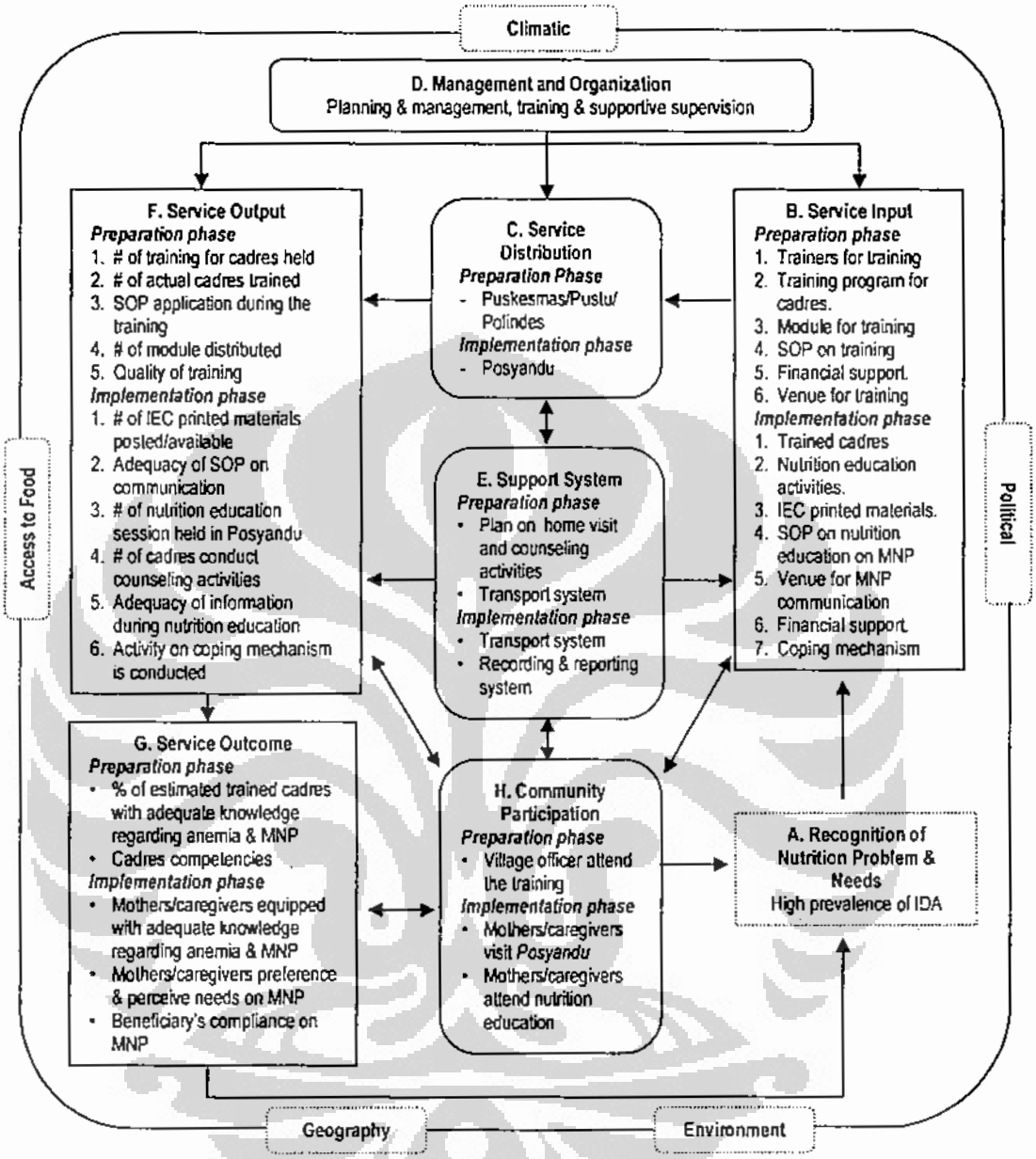

Figure 1. Conceptual Model of System Review on Micronutrients Powder (MNP) Communication Program

CHAPTER 2
LITERATURE REVIEW

2.1. Role of micronutrients in child growth and development

The role of micronutrients in the etiology of growth is being appreciated recently. Micronutrient deficiencies represent a hidden form of hunger with severe consequences on physical growth, immune functions and cognition. As many of the micronutrients are water soluble and get excreted, not all of them can be stored in the body. All of them are not available in required amounts in all the food one eats everyday (Sarma, 2009).

The effects of deficiencies are multiple and severe in children and may affect the linear growth, cognition and muscle development which are often irreversible. While the role of energy and proteins on physical growth is well-established, a deficiency in the micronutrient intake may add to the insult. The genetic potential of children for physical growth and mental development will be compromised and the susceptibility to infections is increased even in sub clinical deficiencies of multiple vitamins and minerals (Sarma, 2009).

As reviewed by Black (2003) cognitive capacity is impaired by micronutrient malnutrition. The impact of this loss on the educational achievement of children is augmented by lower attention span, increased lethargy and delayed enrollment in and early drop out from school

Several approaches may be taken to improve the intake of growth-promoting nutrients, including daily administration of micronutrient supplements, fortification of food with micronutrients or improved dietary intake on a daily basis. As growth may be affected by more than one growth-limiting nutrient, intervention studies focus on the importance of multiple micronutrients. Hence, in ensuring adequate nutrient intake, multi-micronutrient supplementation is essential in addition to food on a daily basis (Sarma, 2009).

Meta-analyses of studies conducted to assess the effects of vitamin A, iron and multi-micronutrient interventions on the growth of children <18 years showed that that interventions limited to only vitamin A or iron did not improve child growth, multi micronutrient interventions on a daily basis improve linear and

possibly ponderal growth in children (Ramakrishnan, Aburto, McCabe, & Martorell, 2004).

The growth of children can be considered continuous when observed across years, with periods of spurts and stasis. Daily differences in growth may not be visible as growth is measurable only at certain frequencies. But there are growth changes happening in the child's body during the period of stasis which becomes evident during the period of growth spurt. Hence, adequate nutrition is required everyday for normal growth to happen (Lampl, 1993).

In communities in which stunting is prevalent, it is highly likely that several nutrient deficiencies occur simultaneously in the stunted children (Rosado, 1999). Further, studies have conclusively shown that daily micronutrient supplementation improved height even in apparently healthy children. Hence, it can be concluded that the process of growth happens on a daily basis; therefore it becomes critical to provide all key micronutrients in adequate quantities to children on a daily basis (Sarma, 2009).

2.2. Micronutrients powder (MNP): the effectiveness and acceptability

In Sprinkles, the iron (ferrous fumarate) is encapsulated within a thin lipid layer to prevent the iron from interacting with food, thereby limiting changes to the taste, color, or texture of the food. Caregivers are instructed to add the entire contents of one sachet daily to any semi-solid food prepared for their infant or young child in the household, immediately before serving. Other essential micronutrients including zinc, iodine, vitamins C, D, and A, and folic acid may be added to Sprinkles sachets (Zlotkin & Tondeur, 2007).

Aside from providing iron and other essential micronutrients, the Sprinkles/MNP intervention can contribute to healthy weaning/feeding practices through the concurrent promotion of appropriate feeding practices, since Sprinkles can only be used with complementary foods (Zlotkin & Tondeur, 2007).

Study review on effectiveness of sprinkles among Pakistani children and Afghan refugee children in Northern Pakistan. Sprinkles were found to be successful in reducing the prevalence of anemia in young children from 86 to 51% within a 2-month period. They were also found to be highly acceptable with a measured compliance rate of 73%. In Bangladesh, Sprinkles were found to be

highly acceptable in an effectiveness trial. Overall anemia prevalence was reduced from 77% to 38% and mean compliance to the intervention was over 88% (Zlotkin & Tondeur, 2007).

The study on sprinkles effectiveness in Haiti (2007) found similar mode of distribution with our country. They were using rally posts (more or less similar with *Posyandu*), and local health workers through FDP (food distribution points) to deliver MNP. The result of this study demonstrates that magnitude of impact on anemia reduction (56% at 2 mo,4% at 9 mo) and recovery from anemia (56% at 2 mo, 76% at 9 mo) is comparable to that seen in efficacy trials conducted in Cambodia, Ghana, and Bangladesh. Further, the compliance was also high. Over 95% of mothers reported that they used an entire sachet of Sprinkles each time, they mixed sprinkles into solid or semisolid foods, as recommended, and the child consumed all the food the Sprinkles were mixed into (Menon, et al., 2007).

To determine acceptability and adherence to the intervention, caregivers were asked about their perception of their infants' response to Sprinkles, whether it changed the taste, color or consistency of the food to which it was added, and if there were any perceived side effects. The average number of Sprinkles sachets consumed per child out of the total assigned during trials in Ghana was ~70% (range: 50–100%). These data suggest that Sprinkles were well accepted in the communities that received the intervention (Zlotkin & Tondeur, 2007).

In study conducted in Bangladesh, using a four-point measurement scale, 60% of the mothers "extremely liked," 30% "liked," and the remaining 10% "somewhat liked" the Sprinkles intervention; no one disliked Sprinkles(ADB & MOH, 2008a). Major reasons cited for liking Sprinkles included ease in mixing Sprinkles with complementary food and that their use promoted the appropriate introduction of complementary foods, since Sprinkles could only be used if complementary foods were used (Zlotkin & Tondeur, 2007).

Study on the use of *Vitalita* Sprinkles as a component of emergency response and transition programming in Indonesia showed that the percentage of children 6 – 59 months, who had consumed *Vitalita* Sprinkles, was not so high (varied between 32 – 70%). Explicit instructions need to be given the first time someone receives the product to increase chances of acceptance (SGHI, 2008b).

Further, the Sprinkles Effectiveness Program (SEP) as part of the food progress in the poorest, most marginalized urban and peri-urban communities in Java and Sulawesi revealed that the number of *Vitalita* sachets purchased and consumed was relatively low, the fact that *Vitalita* can not be used on hot foods or on liquids is a limitation that can jeopardize acceptance when not adequately explained before first use, and single negative experience on sprinkles can diminish the demand for *Vitalita* Sprinkles in a particular area. The reasons given for not having consumed more included that the child was healthy, another supplement had already been bought, the child did not like Vitalita, there was not enough stock at the distribution point and they could not afford it (HKI, 2006).

2.3. Nutrition communication strategies

A broad spectrum of communication approaches is being used to improve nutritional status; the most prominent are dietary diversification, fortification and supplementation. The diverse ways in which nutrition communication is being used today in South and East Asian countries are illustrated in the figure below (Valyasevi & Attig, 1994).

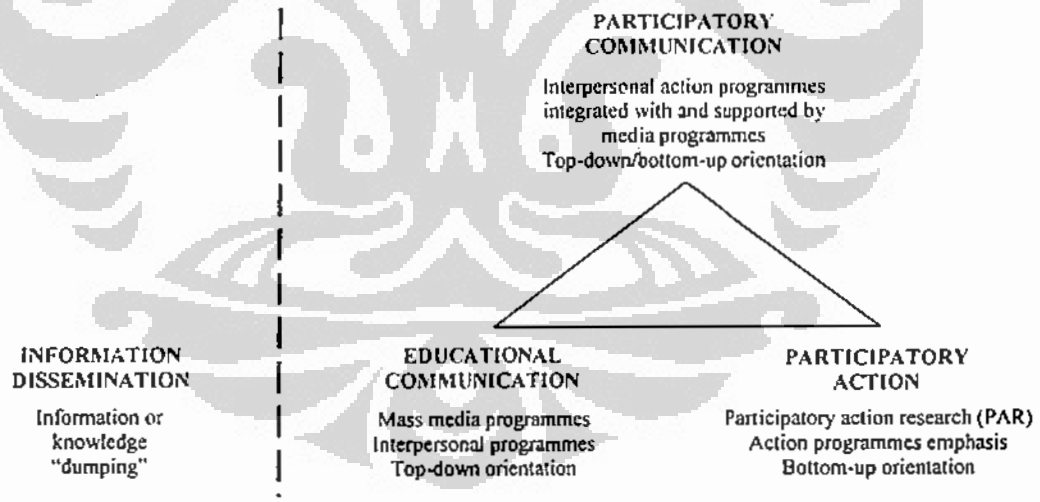

Figure 2. Major Nutrition Communication Approaches in South and East Asia

While these approaches appear to be separate, sometimes different ones are used within the same national context to address different nutritional problems. Alternatively, different approaches can be used within the same intervention program. Explanation about these strategies as follows (Valyasevi & Attig, 1994):

2.3.1. Information dissemination

This approach parallels the "knowledge dissemination" model presented by Achterberg at the inter-country nutrition education workshop. According to this model, if people receive the knowledge they need to change, then change will automatically follow. Nonetheless, this approach is centered on the belief that providing people with information is enough to get them to change their behaviors.

The mechanisms for providing information range from posters to slick radio and television spots to non-participatory group counseling sessions; where a "teacher" provides knowledge to target group members. Most of these efforts are founded on the KAB (knowledge, attitude, behavior) or KAP (knowledge, attitude, practice) model which postulates that such mechanisms lead to improved knowledge, followed by changes in attitudes and behaviors or practices.

Although this approach has been used for over 100 years, it has been shown to be ineffective. However, it is still believed to be useful by many policy-makers and it is often a cornerstone of national government efforts in nutrition communication or health education. Consequently, this method continues to be used in many programs with perhaps little or no effect. Little is known about the magnitude of resources being applied to this approach or its cost-effectiveness.

2.3.2. Educational communication

The first of three more common recent approaches is a strict educational communication approach, often characterized by one of two strategies. First, a strictly mass media approach may be used to persuade people to adopt a new product, service and/or behavior. This method is close to the information dissemination approach, but often goes beyond information dumping to apply a social advertising strategy to encourage people to try something new. However, countless experiences have shown that use of mass media alone is not effective in leading to behavior change.

At the other, education can occur primarily through face-to-face instruction in non-formal health care clinics, such as village or district health stations. Some pamphlets, brochures or posters may be used, but the assumption is that a person can be convinced to adopt a new behavior by using traditional

teaching and educational approaches. This method was common and to some extent it did lead to behavior change. In some countries, such as China, both media and interpersonal education are being skillfully combined with some positive results, generally on a small scale in clinic and community settings.

The educational communication approach rests largely on a top-down model of communication where information is passed down the hierarchy from official or doctor to patient. For individuals this strategy can work, but it may be resisted when communities are not encouraged to participate in nutrition interventions. In general, information dissemination and educational communication are characteristic strategies of government efforts, largely because they can be readily implemented through existing primary health care networks.

2.3.3. Participatory communication

Among non-governmental organizations, the primary focus is on participatory action and empowering people to identify their problems, determine viable solutions, and implement and evaluate interventions using their own resources. It is "premised on the practical reality that nutrition-oriented development projects cannot be sustained at the grassroots level if these are planned from the top, focused on individual components and isolated from a total development process".

This strategy relies heavily on a participatory action research (PAR) framework and a bottom-up development approach. The participatory strategy is very effective on a small scale and has the potential to adapt on a large scale as long as the momentum continues and people remain involved, as has happened, for example, in the Barangay Integrated Development Approach for Nutrition Improvement of the Rural Poor (BIDANI) in the Philippines

2.3.4. Participatory action

The communication component and the participatory action component are being joined into a combined top-down/bottom-up participatory communication process. Participatory communication has two very important characteristics. First, it focuses on people's felt needs through the use of formative research which entails the collection of data and information to identify important

factors that may affect a program's acceptance. The intent is to use these beliefs to build nutrition communication programs.

The second important aspect of participatory communication is that it focuses primarily on changing the environment in which people see themselves. People are a product of their environment, and the latter must be conducive to change before people can be asked to change. Social mobilization is based upon creating a local need and demand for change by initially focusing on how people view their environment, rather than how they view themselves. This need and demand rests on formative research into the needs of the people themselves. In the end, focusing on felt needs makes nutrition interventions more personal and acceptable to people since they can place a problem and its solution within their own cognitive system of understanding and way of life.

In this context, the term "people" does not mean vulnerable target groups only, but target audiences. The general public is not a uniform mass and should not be treated as such. Rather, it should be separated into specific groups according to their characteristics, needs, wants and predispositions. Media and interpersonal action programs can then take these characteristics into account and become more effective behavior-change mechanisms.

The participatory communication approach is not may not be feasible for all situations. It requires a great deal of advocacy, management and planning skills on the part of implementers, and it may have limited utility in countries where there is the need to strengthen human resources. It also requires an intimate partnership and trust between the people and local government officials, for which a great amount of political finesse and building of rapport are necessary. In countries where the people and the government are distant or, worse yet, where they see each other as adversaries, participatory communication may not be sustainable until the environment changes and becomes more conducive to this approach. In this case, participatory action programs may be a better short-term strategy.

2.4. System review on MNP communication program

2.4.1. The Chansys project

Since 2007, the UNICEF and GoI have already conduct Chansys Project in Sikka and Lombok Tengah District. It is targeting to the "golden window opportunity" of births to 24 months, where nutrition intervention can have long term and sustained impact on brain growth, development, and height and weight.

Under the Chancys Project, there are five program components, i.e. 1) strengthening community mobilization skills, 2) improving service provider skills and capacity, 3) strengthening health systems management, 4) improving infant and young children feeding practices, and 5) improving primary health practices (UNICEF, 2007a).

The Chansys Project is using several strategies for project implementations, such as training, communication, contribution to policy and dissemination of new policies, providing limited supplies and improving logistics and monitoring and evaluation (UNICEF, 2007a). Training is a key strategy that will be done in all five components. The intended practice for training is to use local trainers from DHO where possible, and supplemented by UNICEF staff and consultants. After training is concluded the routine supervision visits conducted by DHO will reinforce the new material. The Chansys will cascade training, investing in the training of trainers, who in turn able to train others.

For MNP program, training will be held at district level for *Puskesmas* staff, i.e. nutritionist, midwives and village midwives. Later they will conduct training for cadres in their working area. This training will emphasize on Vitamin A distribution, deworming, and sprinkles. The training material is Vitalita guidelines developed by HKI.

2.4.2. The Chansys communication intervention on MNP Program

The communications approach for MNP is characterized by a high reliance on interpersonal communication that can promote the desired behavior change (UNICEF, 2007a). Communication channels included media, such as Vitalita guidelines book developed by HKI, and Vitamin A, deworming, and sprinkles field guidelines book developed by UNICEF and the ministry of health; and

interpersonal sources of information, such as *Puskesmas* staff, i.e. nutritionist, midwives, village midwives and cadres.

The Chansys will capitalize as much as possible on existing materials and DHO of Lombok Tengah will be encouraged to adapt materials than create new ones. As a result Chansys communication strategies, caregivers will use MNP in as part of their children food.

As part of the community, cadres role on promoting knowledge and behavior change toward MNP to the mothers/caregivers is paramount important. Interpersonal communication through one-on-one or small group counseling provides an opportunity for outreach staff to tailor message to the person and answer questions immediately. Brief interpersonal interventions have been effective in changing a number of health behaviors, even when staff is minimally trained (Snyder, 2007).

Interpersonal communication is strong in supporting the behavior change process. In particular, it is strong in (UNICEF & WHO, 2001):

a. Explaining in detail, responding to questions and doubts, persuading and convincing target audiences about the value of the proposed behavior.
b. Legitimizing programs ideas.
c. Building consensus, bringing about behavior change, and providing support for continuation of the new behavior.
d. Addressing rumors and dealing with counter rumors campaign.
e. Responds to issues, problems, and questions of a personal nature.

2.4.3. The MNP communication program as a system

By definition, a "system" is a complex whole, a set of connected parts or components that interact together for a given purpose such as bringing a desired function and/or achieving a stated objective. A system always consists of a number of components or subsystems. Some of these are "essential" to the system's integrity, i.e. the system can not function without it, and others are merely adjunct and, though contributing to the functioning of a given system are not "essential", i.e. the system can function without it (Kielmann, 2005).

As a system, MNP communication program, consist of several essential components that have to be present, functioning well, and connected to each

others in order to achieve the intended outcome. The following components constitute communication intervention on MNP program: trained *Puskesmas* staf and cadres, nutrition education and/or counseling activities (*table 4 service*)[i], IEC/communication materials and source of fund. These activities could be considered as service input. The service input, i.e. MNP should be available and accessible for mothers/caregivers, cadres, and health personnel, for example the place for communication activities and distribution of MNP, i.e. *Posyandu,* and can access it based on their needs (service distribution).

The training for cadres on health and nutrition, especially regarding anemia and utilization of MNP and availability of communication materials will have impact on improving their ability in nutrition counseling. As a result, they could teach mothers/caregivers about such materials. These activities could be considered as service output.

The intermediate result towards ultimate objective of health system refers to service outcome are consist of mothers/caregivers equipped with proper knowledge regarding anemia and MNP, and mothers/caregivers has positive perception, satisfaction and expectation toward MNP. Another's outcome of communication intervention on MNP program is caregiver's compliance on MNP.

Another essential component for the program to be establihed and to become functional is support system. Among these systems are transport system, recording and reporting system. Community participation, i.e. support from mothers is also essential for continuity of MNP program. Lastly, it is need management system to ensure the interactions of all essential components as mentioned before are functioning.

As describe before, caregiver's compliance on MNP as the outcome of communication intervention. Therefore, these essential components, i.e. service input, service distribution, service output, management and organization, and community participation, should be presence, connected to each others, and functioning optimally in order to assure high level of caregiver's compliance on

[i] In Posyandu, GMP activities are organized in sequence in a *"five table system"* as follows: 1st table: registration, 2nd table: weighing activity, 3rd table: plotting weighing result in the growth chart (*KMS/Kartu Menuju Sehat*), 4th table: counseling based on result from plotting, and 5th table: service from health personnel (immunization, antenatal care, and family planning counseling).

MNP. Therefore, by using system approach, we could review the MNP communication program. To review such program, we have to describe the essential component that might be influence caregiver's compliance, illustrate the essential components in the feasible system models, and determine methods to elaborate all of the essential components

2.4.4. Health system review for assessing MNP communication program

A system review is one of methods/tools of system approach, which is serving itself as an effective analytical framework for a given system (Siddiqi & Kielmann, 2009). This method constitute of several steps, as follows (Kielmann, 2005):

- List of all components that are necessary, i.e. "essential", for the system to function.
- Once these essential components have been identified, then grouping these components according to major sub-components, i.e. Service input, service distribution, transport system, service output, service outcome, support system, community participation, and management system.
- Make system visualization through system modeling, i.e. graphically showing sub-components interrelationship both from sequential and interdependency points of view.
- Determine methods and its indicators to elaborate all of the essential components. There is no a single specific method to carry out, or limited to, health system review. It is having both elements, qualitative and quantitative perspectives. For example, interviewing a variety key informants and subsequently comparing their answer with information collected in others methods, this is will allow some cross validation of different views.

Therefore, in this study it is feasible to conduct a system review on the MNP communication program. Several reasons support this feasibility, as follows:

- As a system, the program consist of several sub system, i.e. service input, input accessibility, service output, service outcome, support system, community participation, and management system. Each of sub systems

comprises of essential component, i.e. training program as part of service input, etc.

- As figured out through system modeling, these sub system have interrelationship both from sequential and interdependency points of view (*see Figure 1*).
- To assess of presence and functioning of each essential components, several indicators were occupied from both, qualitative and quantitative perspectives (*see VIM on Table 3.1. and 3.2.*).

CHAPTER 3
METHODS

3.1. Variables and indicators

3.1.1. VIM on preparation phase

Table 3.1. Variables – Indicators – Methods (VIM) Matrix on Preparation Phase

No	Variable	Indicator	Method	Reference
A.	Service input	Availability of trainers regarding MNP in *Puskesmas*	Indepth interview with responsible person at *Puskesmas*. Document review at *Puskesmas*	MOH & UNICEF, 2009
		Availability of training program regarding MNP for cadres	Interview with *Posyandu* cadres & responsible person at *Puskesmas*. Indepth interview with *Posyandu* cadres & responsible person at *Puskesmas*. Document review at *Puskesmas*	Harmiko, 2007
		Availability of module for training	Interview with *Posyandu* cadres & responsible person at *Puskesmas*. Document review at *Puskesmas* & Posyandu	MOH & UNICEF, 2009; MOH, 2009
		Availability of SOP for training	Indepth interview with *Posyandu* cadres, & responsible person at Puskesmas & DHO, Document review at *Posyandu* & *Puskesmas*	Adu-Afarwuah, et al., 2008 UNICEF, 2007b
		Availability of financial support regarding MNP training	Indepth interview with responsible person at Puskesmas. Document review at *Puskesmas*	Buanasita, 2009
		Availabilty of venue for training	Interview with *Posyandu* cadres. Document review at *Puskesmas*	Buanasita, 2009
B.	Service distribution	Availability and accessibility of training venue, i.e. *Polindes/Pustu*	Interview with *Posyandu* cadres	Sumarno, et al., 2007
C.	Management and organization	Planning and management for training	Indepth interview with responsible person at *Puskesmas* & DHO. Document review at Puskesmas & DHO	Kielmann, Janovsky, & Annet, 1991
D.	Support system	Plan on home visit and counseling activities	Indepth interview with *Posyandu* cadres, & responsible person at Puskesmas & DHO, Document review at *Posyandu* & *Puskesmas*	Buanasita, 2009
		Transport system • Utilize and mode of Transportation	Interview with *Posyandu* cadres & caregivers	Harmiko, 2007
E.	Service Output	Number of training for cadres held by Puskesmas regarding MNP	Interview with responsible person in *Puskesmas* & *Posyandu* cadres. Indepth interview with *Posyandu* cadres, & responsible person at *Puskesmas* & DHO, Document review in *Puskesmas*	MOH & UNICEF, 2009; MOH, 2009 UNICEF, 2002
		Number of actual cadres had been trained regarding MNP	Interview with cadres. Document review at *Puskesmas*	UNICEF, 2002

Table 3.1. (Continued)

No	Variable	Indicator	Method	Reference
E.	Service Output	Quality of training	Indepth interview with *Posyandu* cadres, & responsible person at *Puskesmas* & DHO. Document review at *Puskesmas*	MOH & UNICEF, 2009; MOH, 2009
		Number of module distributed	Interview with cadres. Document review at *Posyandu*	MOH & UNICEF, 2009; MOH, 2009
		SOP application	Indepth interview with responsible person at *Puskesmas* Document review at *Puskesmas*	Adu-Afarwuah, et al., 2008
F.	Service Outcome	Proportion of estimated cadres with adequate knowledge regarding MNP	Interview with cadres. Cadres can mention 13 essential messages	ADB & MOH, 2008a Mudijanto, et al., 2003
		Cadres competencies on delivering MNP messages	Indepth interview with *Posyandu* cadres, & responsible person at *Puskesmas* & DHO	MOH & UNICEF, 2009; MOH, 2009
G.	Community participation	Village/sub district officer attend the training	In-depth interview with responsible person at *Puskesmas*. Document review at *Puskesmas*	MOH & UNICEF, 2009; MOH, 2009

3.1.2. VIM on Implementation phase

Table 3.2. Variables – Indicators – Method (VIM) Matrix on Implementation Phase

No	Variable	Indicator	Method	Reference
A.	Service input	Availability of trained cadres	Interview with responsible person in *Puskesmas*. Document review at *Puskesmas*	MOH & UNICEF, 2009; MOH, 2009
		Availability of nutrition education during Posyandu day	Interview with *Posyandu* cadres. Indepth interview with *Posyandu* cadres. FGD with caregivers. Document review in *Posyandu*	UNICEF, 2007b
		Availability of IEC materials	Observation & Document review in *Posyandu* & *Puskesmas* Indepth interview with *Posyandu* cadres & responsible person at *Puskesmas* FGD with caregivers.	Lutter, et al., 2008 MOH & UNICEF, 2009; MOH, 2009 Rimbatmaja, 2009
		Availability of *Posyandu* venue	Observation in *Posyondu*	Buanasita, 2009
		Availability of SOP on communication	Indepth interview with *Posyandu* cadres, & responsible person at Puskesmas & DHO. Document review at *Posyandu* & *Puskesmas*	Adu-Afarwuah, et al., 2008 UNICEF, 2007b
		Availability of financial support	Interview with *Posyandu* cadres. Indepth interview with *Posyandu* cadres, & responsible person at *Puskesmas* & DHO. Document review at *Posyandu* & *Puskesmas*	Buanasita, 2009
		Availability of coping mechanism	Indepth interview with *Posyandu* cadres, & responsible person at *Puskesmos* & DHO	Rimbatmaja, 2009
B.	Service distribution	Availability and accessibility of venue, i.e. *Posyandu*	Interview with caregivers & *Posyandu* cadres Document review at *Posyandu*	Sumarno, et al., 2007

Table 3.2. (Continued)

No	Variable	Indicator	Method	Reference
C.	Management and organization	Planning & management	Interview with responsible person at *Puskesmas*, Indepth interview with responsible person at *Puskesmas* & DHO, Document review in *Puskesmas*	Kielmann, et al., 1991
		Availability of a supportive supervision system	Indepth interview with *Posyandu* cadres, & responsible person at Puskesmas & DHO, Document review at *Posyandu* & *Puskesmas*	Kielmann, et al., 1991
D.	Support system	Transport system		
		• Utilize and mode of Transportation	Interview with *Posyandu* cadres & caregivers	Harmiko, 2007
		Availability of recording & reporting system	Document review at *Posyandu* & *Puskesmas* Indepth interview with *Posyandu* cadres, & responsible person at Puskesmas & DHO	Harmiko, 2007
E.	Service output	Number of IEC materials posted in *Posyandu*	Observation in *Posyandu*, Document review at *Posyandu*, Indepth interview with *Posyandu* cadres, & responsible person at Puskesmas & DHO,	MOH & UNICEF, 2009; MOH, 2009 UNICEF, 2007c
		Adequacy of SOP on communication in *Posyandu*	Observation in *Posyandu*, Document review in *Posyandu*,	Adu-Afarwuah, et al., 2008 Kielmann, et al., 1991
		Number of nutrition education session held in *Posyandu*	Interview with *Posyandu* cadres, Indepth interview with *Posyandu* cadres, Document review at *Posyandu*	Sumarna, 2001
		Number of cadres conduct counseling to the caregivers regarding MNP	Interview with *Posyandu* cadres, Document review at *Posyandu* Indepth interview with *Posyandu* cadres, & responsible person at Puskesmas & DHO,	UNICEF, 2002
		Adequacy of information during nutrition education regarding MNP in Posyandu days	In-depth interview with *Posyandu* cadres	UNICEF, 2007b
		Activity on coping mechanism is conducted	Indepth interview with *Posyandu* cadres, & responsible person at *Puskesmas* & DHO. Document review at the *Pasyandu*, *Puskesmas*, & DHO	Rimbatmaja, 2009
F.	Service outcome	Caregivers equipped with adequate knowledge regarding MNP	Interview with caregivers, Caregivers can mention 13 essential messages Scoring system, FGD with caregivers	ADB & MOH, 2008a Mudijanto, et al., 2003
		Caregivers preference & perceive needs on MNP	Interview with caregivers FGD with caregivers	ADB & MOH, 2008a
		Beneficiary's compliance on MNP	Indepth interview with *Posyandu* cadres, & responsible person at *Puskesmas* & DHO Interview with caregivers, Percentage of MNP consumed by their children	ADB & MOH, 2008a

Table 3.2. (Continued)

No	Variable	Indicator	Method	Reference
G.	Community participation	Caregivers visit Posyandu	Interview with caregivers, Document review in *KMS* or *KIA* book	Sumarna, 2001 UNICEF, 2007d
		Caregivers attend nutrition education/counseling session at *Posyandu*	Interview with caregivers, FGD with caregivers	Sumarna, 2001

3.2. Location and population under study

3.2.1. Geographic and demographic data

The study will be conducted in Lombok Tengah District, NTB Province and located between $116^0 05'$ – $116^0 24'$ east longitude and $8^0 24'$ – $8^0 57'$ south latitude. The District total area is 1.208,39 km^2 (120.839 ha) and its borders to the north with Lombok Barat District and Lombok Timur District, to the south with Indonesian Ocean, to the west with Lombok Barat District, and to the east with Lombok Timur District (UNICEF, 2007d).

The total population in 2007 was 831,286 people and distributed in 12 sub-districts and 124 villages. The sex ratio between male to female was 1 : 1. Population distribution by age shows that most of residence in the 15 – 64 years group of age, followed by 0 – 14 years, and then ≥ 65 years. Around 16,299 (2.0%) of residence were babies less than 12 months of age and 64,803 (7.8%) were children between the ages 12 – 48 months (UNICEF, 2007d).

The population religion is primarily Moslem with a small Hindu minority. A caste system remains in place in Lombok Tengah and this can affect how family incurs debt to pay for a bride dowry. The primary cultural group is *Sasak* and some of the customary cultural practices, such as the *Sasak* prohibition on women owning or inheriting land, have an impact on family economic potential.

The socioeconomic condition was considered low. Almost half of the families were living below the poverty line, ranging from 47% in the sub districts Praya and Jonggat to greater than 65% in Praya Timur. Also, according to National Food and Nutrition Situation in 2004, the level of vulnerability on food and nutrition in the area was categorized as high risk (UNICEF, 2007a). The economy is based on fishing, small crop production, some tourism, a revitalized traditional craft production, creating pottery and silk weavings for the tourist market. A large percentage of the population work overseas on rubber and *Kopra*

(coconut husk) plantations as TKI (*Tenaga Kerja Indonesia*). This includes women who deliver their babies and then return to work overseas before their babies are three months old (UNICEF, 2007a). Educational attainment of residents was low; around 46% of residents aged 10 years and above were not graduated from primary school. Only 1% of resident were graduated from university (UNICEF, 2007d).

At Praya Tengah sub-district, the primary health care is delivered through several levels of services, i.e. *Puskesmas*, *Polindes/Pustu*, and *Posyandu*. There are two *Puskesmas* in this sub-district, it caters 64,855 inhabitants, and of them 7,863 underfive. These facilities supervised a total 5 *Pustu*, 8 *Polindes*, and 105 *Posyandu*.

According to *Riskesdas* 2007, the prevalence of severe and moderate underweight among under five in NTB Province was higher than national average (Balitbangkes, 2008a). Lombok Tengah District had high prevalence of stunting (45.1%). Wasting and underweight still exist in borderline of threshold for high category (9 and 18.2% respectively) (Balitbangkes, 2008b). Also, since 2002 to 2006 there are raising trend of malnutrition where prevalence of underweight and severe underweight was 19.21% to 26.83 and 2.22% to 3.12% respectively (Dinkes, 2008b).

3.2.2. Area of Chansys program

The Chansys project had been conducted in six sub-districts with two rounds of area selection. At the first round in 2007, it was conducted in the four sub-districts, i.e. Pujut, Kopang, Praya Tengah, and Pringgarata. These sub-districts were selected based on the incidence of SAM (severe acute malnutrition), poverty, and nutrition staff available in the *Puskesmas*, and presence of community groups to support outreach. Other criteria included safety issues. At the second round in 2009, it was expanded in two sub districts, i.e. Praya Timur and Batukliang Utara (UNICEF, 2007a).

3.3. Study design

The design of the study is a cross – sectional study in the first round area of the project. It was assumed that particular area has more exposure on communication intervention compare to the second round area.

3.4. Subjects of the study

According to the research objectives, the study was carried out at two samples. The first sample was MNP service provider, i.e. DHO, *Puskesmas*, and *Posyandu*. The second sample was caregivers as target of MNP service provider, i.e. communication intervention. So that, data were collected from four different subjects, as follows:

a. DHO officer.
b. *Puskesmas* staff.
c. Cadres of *Posyandu*.
d. Caregivers of underfive.

Several inclusion criterias were occupied to each subject. The inclusion criteria for DHO officer and *Puskesmas* staff were had responsibilities on delivery MNP program to the community, and willing to participate by signed informed consent. The inclusion criteria for cadres were had been trained at least one time regarding MNP, and willing to participate by signed informed consent. The inclusion criteria for caregivers with underfive children described as follows:

a. The underfive registered on selected *Posyandu*.
b. The underfive aged 6 – 59 months (in complete month). The children's age on December 31st, 2009 range between 12 months (born at December 31st, 2008) until 59 months (born at December 31st, 2004). It was assumed they had received at least a two months' supply of MNP.
c. The caregivers are willing to participate by signed informed consent.

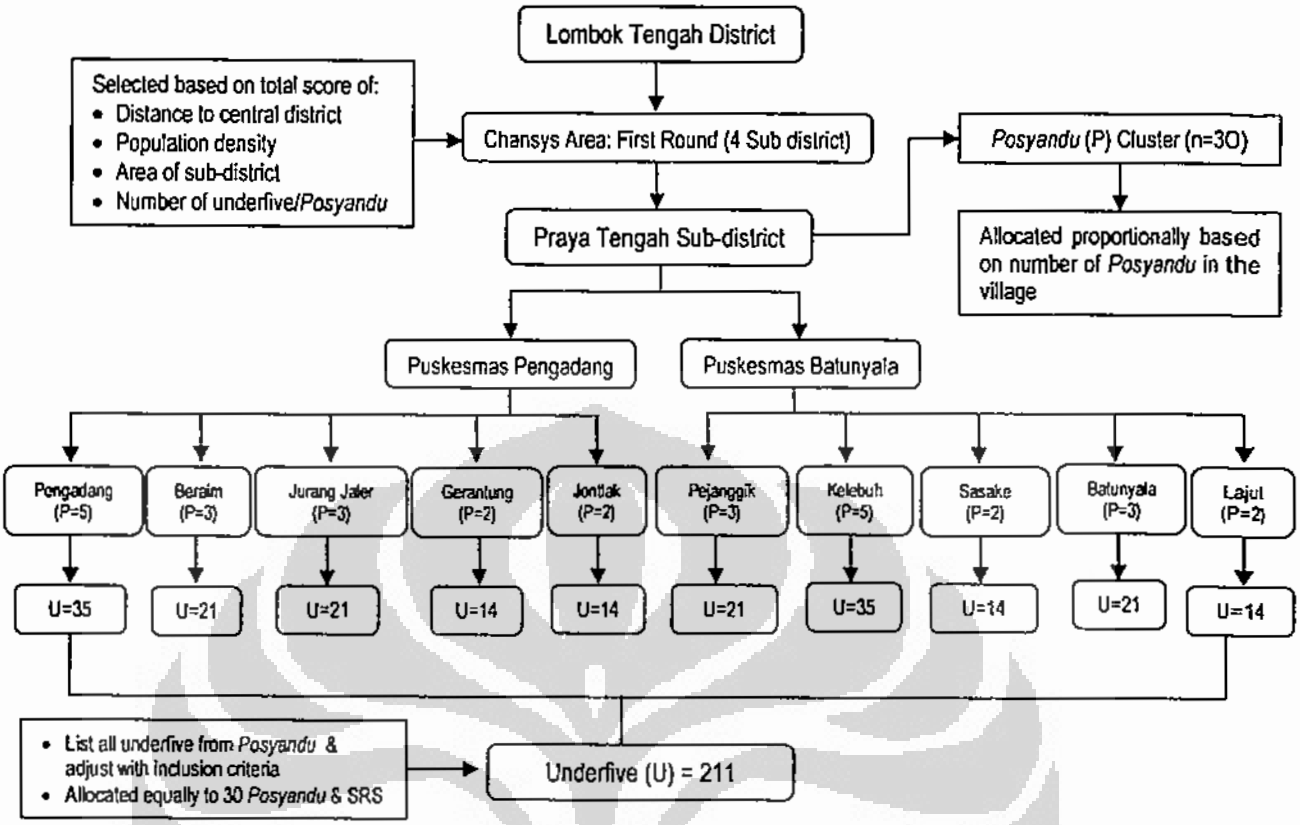

Figure 3. Scheme of Sampling Procedure

3.5. Sample size and sampling procedures

3.5.1. Sample size

The multi stage cluster sampling technique was conducted in this study. Because of the selected sub-districts had two *Puskesmas*, of which had five villages under jurisdiction, and every village has at least 8 – 15 *Posyandu*, therefore, to ensure all villages in selected sub-districts has a representative of *Posyandu* we had occupied the given method for drawn the sample.

The method was requiring the sample calculation on the clusters and target levels. The first step was determining the number of cluster, i.e. *Posyandu*, considering the number of villages is relatively small, only five for each *Puskesmas*. The second step was determining the number of target, i.e. caregivers, based on list of underfive in *Posyandu*.

3.5.1.1. Determine sample size for clusters

The calculation of sample size to determine the number of required clusters, i.e. *Posyandu* was using formula for sample survey with simple random

sampling (SRS) and finite population (Scheaffer, et.al. 1990 on Harmiko, 2007), is as follow:

$$n = \frac{Npq}{(N-1)D + pq} \quad (3.1)$$

Note:

N = 93 (Number of Posyandu)
p = 62.4% (Proportion of routine visit among underfive in Lombok Tengah) (UNICEF, 2007d)
q = 1 – p
D = $B^2/4$
B = bound of the error of estimate (15%)
n (sample size) = 30

3.5.1.2. Determine sample size for underfive

The following formula, i.e. estimating a population proportion with specified absolute precision is used to calculate the sample size of underfive children (Lemeshow, Hosmer-Jr, Klar, & Lwanga, 1997):

$$n = \frac{Z^2_{1-\alpha/2} P(1-P)}{d^2} * deff \quad (3.2)$$

Note:

P_1 (Estimated proportion) = 54.6% (Compliance of underfive who consumed Vitadele (VTDL) as recommended (UNICEF, 2002)
d = precision (10%)
Level of significance (α) = 5%
Drop out = 10%
Deff = 2
n (sample size) = 211

3.5.2. Sampling procedure

3.5.2.1. Sub-district selection

Purposive sampling had already applied for the selection of Lombok Tengah District based on targeted area of the Project. Selection of sub-district based on several criteria, as described on **Table 3.3.** below:

Table 3.3. Criteria of Sub-districts Selection

Criteria	Kopang	Praya Tengah	Pringgarata	Pujut
Distance (km)[a]	3	4	2	1
Population density (Pop/km^2) [b]	1	3	2	4
Width of area (km^2)[c]	3	2	4	1
Number of underfive[d]	1	4	2	3
Total score	8	13	10	9

Note:

[a] *Nearest to farthest, score= 4 – 1*

[b] *Less to high, score= 4 – 1*

[c] *Smallest to largest, score= 4 – 1*

[d] *Smallest to highest, score = 4 – 1*

The selected sub-district was based on the highest score, i.e. Praya Tengah Sub-district. Based on those criterias, it is considered that selected sub-district as "the best practice", if anything, the result in the remainder of the sub district even worse.

3.5.2.2. Sampling procedure for Posyandu

Sampling procedure for *Posyandu* as follow:

a. Enumeration of all villages on Praya Tengah sub-district.
b. Enumeration, clustering/mapping of all Posyandu based on villages.
c. Allocate Posyandu proportionally to numbers of Posyandu in a village, total numbers of Posyandu (n=93) and numbers of Posyandu sample (n=30) to determine numbers of Posyandu per village.
d. Numbering Posyandu on the map.
e. Simple random sampling of Posyandu by using random numbers table.
f. From the selected *Posyandu*, a cadre's will be selected as representative of all cadres present and active in the facility.

3.5.2.3. Sampling procedure for underfive

Sampling procedure for *underfives* as follow:

a. List of selected *Posyandu.*
b. Enumeration of underfive on *Posyandu* register book and adjust with inclusion criteria.
c. Numbering underfive and simple random sampling of underfive by using random numbers table. Also, Sample reserve (n=4) will be obtained by

excluding selected underfive, re-numbering, and simple random sampling by using random numbers table.

d. Equal number of underfive on selected *Posyandu*.
e. Enumeration of caregivers, based on selected underfives
f. Caregivers who were not in his/her house or out of village when enumerator came for interview, should be revisit for next day, if still, change it with reserve sample.

3.6. Data Collection Procedure

3.6.1. Preparation phase

The preparation phase was carried out in 1 week. Well trained enumerators, observer, and note taker, were recruited for the study. Training for enumerators, discussion with observer and note taker, and questionnaire pre test were carried out. The questionnaires for caregivers, cadres, and *Puskesmas*, were pre-tested twice prior to the actual data collection. All trained enumerators, observer, and note taker fluent in the local language, *Sasak*, as well as *Indonesia*

3.6.2. Data collection phase

The data collection phase was conducted on four places, i.e. at the caregiver's households, at the *Posyandu*, at in the *Puskesmas,* and at the DHO office. The data collection on the caregiver's household was carried out in 4 weeks. This survey was conducted by three local enumerators. Weekly monitoring and supervision were conducted by researcher to the enumerators about sampling procedure, completeness of questionnaires, and discussion about problem faced during data collection. The *Posyandu* assessments, i.e. interview with cadres, in-depth interview with cadres, observation, document review, and FGD with caregivers were carried out in 6 weeks. The health care provider assessment, i.e. interview with responsible person on MNP program at *Puskesmas*, in-depth interview with responsible person on MNP program at *Puskesmas* and DHO, and document review in *Puskesmas* and DHO were carried in 3 weeks. This activity was conducted by 1 researcher, 1 observer, and 1 note taker.

The activities during data collection phase were explained in detailed, as follows:

a. Interview using structured questionnaire

Interview were done to 211 caregivers of underfive children, 30 *Posyandu* cadres, and two *Puskesmas* staff. It was conducted with convenient situation (inside or outside the building, i.e. house/Posyandu/Puskesmas) of each selected subject.

b. In-depth interview

In-depth interview were done to 10 cadre's coordinator of selected *Posyandu*, two *Puskesmas* staff and one DHO staff. The in-depth interview was conducted using list of questions regarding MNP program. It was conducted with convenient situation (inside or outside the building, i.e. house/Posyandu/ Puskesmas) of each selected subject.

c. FGD

FGD were conducted in 10 *Posyandu* which were chosen randomly from the 30 selected *Posyandu*. Participants were 7 - 11 caregivers of underfive children. The selection criteria for caregivers were had underfive registered at the *Posyandu* registered book, already been given MNP, were not a *Posyandu* cadres, and was not on the respondent list that had been interviewed. The participants were purposively selected based on those criterias. The note taker and *Posyandu* cadres had planned the schedule and informed participants at least one day prior to FGD session.

During FGD session, principal investigator (PI) always acting as moderator, however, if caregivers using local terms/language or specific question did not addressed, the note taker would translate it and also raise the issue about such specific question. After FGD session, PI and note taker conducted discussion about main impressions during FGD and its preliminary conclusions. This activity mostly conducted in the head of the sub village (*Kepala Dusun*) house.

d. Observation using checklist

Observation was done at the *Posyandu*, cadres house, head of sub-village house, village office, and *Puskesmas*. The form contains of list of IEC materials, i.e. Poster, banners and billboard, nutrition education/counseling activities during *Posyandu* day, and MNP left over. These activities were conducted by one PI and

one observer. After *Posyandu* day, a debriefing session was conducted to discuss about main findings during observation and its preliminary conclusions.

e. Document review (secondary data review)

1) *Posyandu*

Document review was done at the *Posyandu,* cadres house, and head of sub-village house. Several document had been reviewed, i.e. absence book/cadres attendance, guest book and its activity, cash book, cadres diary, weighing register book, receive register on MNP (*lampiran 1*)[i], sweeping document/report regarding MNP, Vitamin A, deworming, and sprinkles/MNP field guidelines book developed by UNICEF and MOH, MNP (i.e. Vitalita) guidelines book developed by HKI, SOP on distribution and communication regarding MNP[ii], poster, banners and billboard.

2) *Puskesmas*

Document review was done in the nutrition section, health promotion section, *Posyandu,* surveillance section, and administration unit. Several document had been reviewed, i.e. MNP distribution report, cadres and *Puskesmas staff* attendance on *Posyandu* report[iii], guest book and its activity, cash book, personal SPT[iv] report, receive register on MNP (*lampiran 1*), *Puskesmas* report form regarding MNP (*Lampiran 2*)[v], nutrition education document, Vitamin A, deworming, and sprinkles/MNP field guidelines book developed by UNICEF and MOH, MNP (i.e. Vitalita) guidelines book developed by HKI, SOP on distribution and communication regarding MNP, planning document regarding MNP, minute of meeting report regarding MNP, supervision document from DHO to *Puskesmas* to *Posyandu* regarding MNP, financial support for cadres regarding MNP, training report, poster, banners and billboard.

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[i] Lampiran 1 is register form of Vitamin A, Deworming, and MNP received in the Posyandu (*Daftar penerimaan Vitamin A, Obat Cacing, dan Tabur Gizi di Posyandu*)

[ii] SOP on communication was document of SOP on Vitamin A capsule, deworming, and sprinkles/MNP distribution in Posyandu (*Langkah–langkah pelaksanaan pendistribusian Kapsul Vitamin A, Obat Cacing, dan Sprinkle di Posyandu*)

[iii] F2 Posyandu form

[iv] SPT is Surat Perintah Tugas and it was given to the Puskesmas Staff for outreach activity. The document explain what, who, and when of the particular activity.

[v] Lampiran 2 is recapitulation form of Vitamin A, Deworming, and MNP received in the Posyandu.

3) DHO

Document review was done in the nutrition section of DHO Lombok Tengah district. Several document related to Chansys program had been reviewed, i.e. action plan, communication activities report, supplies/request on equipment, its realization, training for cadres and *Puskesmas* staff report, supervision report, progress report in period of years 2007 – 2008, MNP distribution report, activity report[i], financial support for cadres regarding MNP, and monitoring and evaluation report.

3.6.3. Methods of assessment

The Kielmann's operational (health) system review was used as a tool to assess presence and functioning of essential components; also it's connectivity in the MNP communication program (*see VIM*). There are two phases, i.e. preparation and implementation phases, in the MNP communication program, as describe in detailed below:

a. Preparation phase

1) Service input

The preparation of communication on MNP program required a service input available at *Puskesmas*, consisting of:

a) Availability of trainers regarding MNP in *Puskesmas* was assessed through indepth interview with responsible person in *Puskesmas* and document review in *Puskesmas*
b) Availability of training program regarding MNP for cadres was assessed through interview with *Posyandu* cadres and responsible person in *Puskesmas*, indepth interview with *Posyandu* cadres and responsible person in *Puskesmas*, and document review in *Puskesmas*.
c) Availability of module for training was assessed through interview with *Posyandu* cadres and responsible person in *Puskesmas*, and document review in *Puskesmas* and *Posyandu*.

[i] Each planned activities and was funded by UNICEF, for example meeting and supervision to *Puskesmas* or communication facilitators (*Faskom*) should have an activity report about what, who, when, result, barriers, feedback, and conclusion.

d) Availability of SOP for training was assessed through interview with *Posyandu* cadres, responsible person at *Puskesmas* and DHO, and document review at *Posyandu* and *Puskesmas.*

e) Availability of financial support regarding MNP training was assessed through indepth interview with responsible person at *Puskesmas* and document review at *Puskesmas*.

f) Availability of venue, i.e. *Puskesmas/Pustu/Polindes*, for training was assessed through interview with *Posyandu* cadres and document review at *Puskesmas*.

2) Service distribution

Interview with *Posyandu* cadres were conducted to determine accessibility of training venue, e.g. *Pustu, Polindes, Puskesmas.* These data were based on two indicators, as follows:

- Physically accessible by walking time less than or equal to 20 minutes.
- Psychologically accessible by perceive easiness to access.

The criteria of accessibility as follows:

- Good, both of above indicators were mentioned.
- Moderate, only one of above indicators were mentioned.
- Less, none of above indicators was mentioned.

3) Management and organization

Information on planning and management during training for cadres was obtained through in-depth interview with responsible person at *Puskesmas* and DHO, and document review at Puskesmas and DHO.

4) Support system

This essential system component assessed from the following aspects:

a) Availability of plan on home visit and counseling activities was assessed through in-depth interview with *Posyandu* cadres, responsible person at *Puskesmas* and DHO. Also, document review at *Posyandu* and *Puskesmas.*

b) Interview with *Posyandu* cadres and caregivers were conducted to obtain information on transport system.

5) Service output

a) Data on number of training for cadres held by *Puskesmas* regarding MNP in the past two years was obtained by interview with responsible person in *Puskesmas* and *Posyandu* cadres, in-depth interview with *Posyandu* cadres, responsible person in Puskesmas and DHO, and document review in *Puskesmas*.

b) Data on actual number of trained cadres regarding MNP in the past two years was obtained through interview with cadres and document review in *Puskesmas*.

c) Information on the quality of training regarding MNP was obtained through in-depth interview with *Posyandu* cadres, responsible person at *Puskesmas* and DHO, and document review at *Puskesmas*.

d) Data on number of training module distributed was assessed through interview with cadres and document review at *Posyandu*.

e) Information whether SOP had been conducted during training session was obtained through indepth interview with responsible person at *Puskesmas* and document review at *Puskesmas*.

6) Service outcome

a) Proportion of estimated number of trained cadres equipped with adequate knowledge regarding MNP was obtained was obtained through interview with *Posyandu* cadres. The cadre's knowledge was considered adequate if they could mention all of 13 essential messages regarding MNP (**Table 3.4.**). These messages considered essential by followed reasons:

- Based on discussion prior to data collection with responsible person in DHO, *Puskesmas*, and several *Posyandu* cadres, in which these messages were stressing out during the training regarding MNP, and then, on nutrition education session at *Posyandu* days.
- Based on personal judgment that caregivers might sustain acceptance and obtain optimal benefit regarding MNP by knowing these messages.

Table 3.4. Essential Messages Regarding MNP

No.	Messages
	Benefit of MNP
1.	*Improve underfive growth and development*
2.	*Improve immunity*
3.	*Improve appetite*
4.	*Prevent from anemia and other micronutrients deficiencies*
	MNP preparation
5.	*Spread MNP/Vitalita/Mixme on ready to eat and solid food, i.e. rice, side dish, porridge, fruits, etc*
6.	*Do not cook*
7.	*Do not mixed with hot food, implicating on reducing iron content and changing on color and aromo of food*
8.	*Do not mixed with liquid, milk, tea, etc (not water soluble)*
	MNP recommendation
9.	*Beneficiaries were children aged 6 – 59 mo*
10.	*Dosage 1 sachet/day*
11.	*Give MNP on 1 day interval*
12.	*Underfive with severe malnourished (< -3SD WAZ) with complication should not consumed MNP on the 7 days treatment.*
13.	*Underfive with fever should be referred to Puskesmas, if malaria positive did not receive MNP until recovery.*

b) Information on cadres competency on delivering MNP messages was obtained through in-depth interview with *Posyandu* cadres, responsible person at *Puskesmas* and DHO

7) Community participation

Information on village/sub district officer had attended the training program was obtained through in-depth interview with responsible person in *Puskesmas* and document review at *Puskesmas*.

b. Implementation phase

1) Service input

The implementation of communication on MNP program required a service input available both at *Posyandu* and *Puskesmas*, consisting of:

a) Availability of trained cadres was assessed through interview with responsible person in *Puskesmas* and Document review at *Puskesmas*

b) Availability of nutrition education during Posyandu days were assessed through interview with *Posyandu* cadres, Indepth interview with *Posyandu* cadres, FGD with caregivers, and document review in *Posyandu*.

c) Availability of IEC[i] materials regarding MNP were assessed through observation and document review at *Posyandu* and *Puskesmas*, in-depth interview with Posyandu cadres and responsible person at *Puskesmas,* and FGD with caregivers.

d) Availability of *Posyandu* venue was assessed through observation in *Posyandu*.

e) Availability of SOP on communication was assessed through indepth interview with Posyandu cadres, responsible person at Puskesmas and DHO, and document review in Posyandu and Puskesmas.

f) Availability of financial support was assessed through interview with Posya*ndu* cadres, Indepth interview with *Posyandu* cadres, responsible person at *Puskesmas* and DHO, and document review at *Posyandu* and *Puskesmas*.

g) Availability of coping mechanism was assessed through indepth interview with *Posyandu* cadres and responsible person at *Puskesmas* and DHO

2) Service distribution

Interview with caregivers and *Posyandu* cadres, also document review in *Posyandu* were conducted to determine availability of *Posyandu* service in terms of open frequency within the last one year to reflect its regularity.

Interview with caregivers and *Posyandu* cadres were conducted to determine accessibility of *Posyandu.* These data were based on two indicators, as follows:

- Physically accessible by walking time less than or equal to 20 minutes.
- Psychologically accessible by perceive easiness to access.

The criteria of accessibility as follows:

- Good, both of above indicators were mentioned.
- Moderate, only one of above indicators were mentioned.
- Less, none of above indicators was mentioned.

3) Management and organization

Planning and management regarding MNP at *Puskesmas* was assessed through interview with responsible person in *Puskesmas*, in-depth interview with

[i] IEC materials consist of 1) subject know how, i.e. MNP (i.e. Vitalita) guidelines book developed by HKI, leaflet, poster, banners, and billboard, and 2) technical know how, i.e. Vitamin A, deworming, and sprinkles/MNP field guidelines book developed by UNICEF and MOH

responsible person at *Puskesmas* and DHO, and document review at *Puskesmas.* There were four items of planning and management at *Puskesmas* with potential score was 6 (**Table 3.5.**). A Score less than 50% (score=3) may suggest inadequate planning and management.

Table 3.5. Planning and Management Criterias and its Potential Score

Criteria	Score
Do you develop Gantt Chart[i]? (if yes, see the one for present period)	1
Availability of job description	
• *Do you have a job description specific regarding MNP yourself?*	1
Completeness of job description	
• *Areas of responsibility clearly defined? (if yes, give brief description)*	1
• *Detailed of activity: what should be done, elaborated, and measurable*	1
Supervision	
• *Supervisor visit the health facilities*	1
• *Supportive supervision*	1
Total	6

4) Support system

Interview with *Posyandu* cadres and caregivers were conducted to obtain information on transport system. Further, a document review at *Posyandu* and *Puskesmas*, indepth interview with *Posyandu* cadres, responsible person in *Puskesmas* and DHO were conducted to obtain information on recording and reporting system. There were five items of recording and reporting system at *Posyandu* with potential score was 5 (**Table 3.6.**). A Score of 50% or more (score=3) may suggest adequate recording and reporting system

Table 3.6. Recording and Reporting System Criterias and its Potential Score at *Posyandu*

	Criteria	Score
Routine activity	*Recording:*	
	• *Availability of form (Lampiran 1)*	1
	• *Recorded by the cadres*	1
	Reporting:	
	• *Availability of form (Lampiran 2)*	1
	• *Recorded by the cadres*	1
Sweeping activity	*Recording*	1
	Reporting	1
	Total	6

[i] A Gantt chart is a type of bar chart that illustrates a project schedule, i.e. the start and finish dates of the terminal elements and summary elements of a project, venue, and responsible person.

5) Service output

The output of communication intervention on MNP described as follow:

a) Data on number of IEC materials posted/available at *Posyandu* was obtained through observation at *Posyandu*, document review at *Posyandu*, cadre's house, and head of sub-village house, and indepth interview with *Posyandu* cadres, responsible person in Puskesmas and DHO. These data were analyzed by comparing actual numbers with ideal numbers that have been delivered from DHO to *Puskesmas* and *Posyandu.*

b) Information on adequacy of SOP on communication regarding MNP at *Posyandu* was obtained through observation and document review at *Posyandu.*

c) Data on number of nutrition education session held at *Posyandu* day during August and September 2009 was obtained through interview with *Posyandu* cadres, in-depth interview with *Posyandu* cadres, and document review at *Posyandu.*

d) Data on number of cadres conduct counseling to the caregivers regarding MNP during August and September 2009 were obtained through interview with *Posyandu* cadres, document review at *Posyandu,* and indepth interview with *Posyandu* cadres and responsible person at Puskesmas and DHO.

e) Information on adequacy of information during nutrition education regarding MNP in *Posyandu* days on August and September 2009 was obtained through in-depth interview with *Posyandu* cadres.

f) Information on activity on coping mechanism had been conducted was assessed through in-depth interview with *Posyandu* cadres, responsible person at *Puskesmas* and DHO, and document review at the *Posyandu, Puskesmas,* and DHO.

6) Service outcome

The indicators of service outcome including:

a) Caregivers who attend nutrition education session at *Posyandu* equipped with adequate knowledge regarding MNP was obtained through interview with caregivers. Caregiver's knowledge was considered adequate if caregivers could mention all of 13 essential messages regarding MNP (*see **Table 3.4.***).

Interview with caregivers who did not attend nutrition education session at *Posyandu* was also conducted, and the scoring system had been used to categorize theirs knowledge regarding anemia and MNP. Knowledge regarding anemia consist of iron food source, anemia definition, cause of anemia, sign of anemia, and adverse effect of anemia to the underfive. Knowledge regarding MNP consists of definition, its contents, beneficiaries, advantages, and benefits. Further, FGD was also conducted to the caregivers. There were 12 items of knowledge with potential score was 45 (**Table 3.7.**). The scoring criteria of caregiver's knowledge, as follows:

- Good = answer > 70% from total score
- Moderate = answer 50 – 70% from total score
- Poor = answer < 50% from total score

Table 3.7. Number of Items Scored of Caregiver's Knowledge and its Potential Score

No.	Criteria	Number of items	Potential score
1.	Anemia	4	15
2.	Iron food source	3	6
3.	MNP	6	24
	Total	12	45

b) Caregiver's preference on MNP formulation was obtained through interview with caregivers and FGD with caregivers. These items were described as follow:

(1) Perception on MNP was assessed through caregiver's preference on formulation and handling of MNP. Preference on MNP formulation was based on sachet and powder form. These were classified as follows:

- Like
- Dislike

(2) Perception on MNP handling was based on easiness to administer and store. These data were classified as follows:

- Easy
- Not easy

c) Caregiver's perceived need on MNP was assessed through their subjective judgment whether their child needs the MNP, willingness to pay if MNP will

be sold in the free market and eagerness to pay a minimal fee for MNP per sachet. The information about willingness to pay was classified as follows:

- Willing
- Unwilling

d) Beneficiary's compliance consists of caregiver's and underfive children's compliance on MNP. Caregiver's compliance was obtained through in-depth interview with *Posyandu* cadres, and responsible person on MNP program at DHO and *Puskesmas*. Underfive children's compliance was obtained based on number of MNP received and consumed on two months in a row, i.e. August and September 2009 (30 sachets). Procedure to assess children's compliance as follows:

- At the time of sample listing, enumerators asked the cadre about the period (month) she/he delivers the MNP.
- Enumerators record the numbers of boxes and/or sachets were being given to the selected children (sample) on that period. The problem was in the *Lampiran* 1 record, the number of MNP received by caregivers was unwritten. So that, the number of (Box/sachets) MNP received by the caregivers were based on theirs confirmation.
- The caregivers have confirmed the numbers of boxes/sachets received. However, the methods of MNP/Mixme been delivered to the beneficiaries were varied. Several mothers said that they had been given MNP/Mixme for four months supplies (2 box = 60 sachets) in a row, i.e. August, September, October, and November, others said that they had been given for two months supplies (1 box = 30 sachets) in a row, i.e. August, and September, and received again for two months supplies on Octobers, i.e. October and November, and others said that they had been given for two months supplies only (1 box = 30 sachets) in a row, i.e. August, and September. In general, all selected mothers stated that they were given MNP/Mixme in August at least for two months supplies (1 box = 30 sachets) in a row, i.e. in the August and September 2009.
- Enumerators ask caregivers to show the remaining unconsumed sachets if any.

Based on above consideration, the caregiver's compliance on MNP was obtained at least for two months supplies (1 box = 30 sachets) in a row, i.e. August and September 2009. The underfive children's comply with the MNP, if they were consumed 30 sachets of MNP for two months in a row, i.e. August and September 2009.

7) Community participation

The indicators of community participation including:

a) Information on caregivers visit *Posyandu* during August and September 2009 were obtained through interview with caregivers and document review, i.e. *KMS* or *KIA* books.

b) Information on caregivers attends nutrition education/counseling session at *Posyandu* during August and September 2009 was obtained through interview and FGD with caregivers.

We had realized that analyze only two months data, i.e. compliance, *Posyandu* visit, and caregivers attend nutrition education/counseling session at *Posyandu*, would have risk of an underestimated value. However, with respect to MNP distribution, it was distributed per box in August 2009 for two months supplies. So that, caregivers would be easily remember about the numbers of MNP consumed, *Posyandu* visit, and availability of nutrition education during August and September 2009.

3.7. Data analysis

In-depth interview and FGD results were analyzed following sequential step, i.e. reading, coding, displaying, reducing, and interpreting (Roshita, Februhartanty, & Septiari, 2009). Data entry, cleaning, and analysis were performed using SPSS for Windows Version 15. All variables were descriptively analyzed. Data normality was confirmed by Kolmogorov-Smirnov test. The Chi square test was used to see the proportion significant difference. A *p value* of 0.05 was used as the threshold for significance and two sided.

3.8. Ethical consideration

This study was conducted after approval of Ethical Clearance from Ethical Committee of Medical Faculty of University of Indonesia. Permission from local government (province and district level) as well as local health authority was solicited before the data collection being conducted.

The involvement of the respondent in this survey was voluntary. The interviews were done under the respondent's agreement after they had received and sign the informed consent. Recording of the discussions and information were done after asked for the participant's permission, and all the information they give to the researchers were treated confidentially and only been used for the purpose of this study.

CHAPTER 4
RESULTS

The Chansys program had using primary health services, i.e. *Puskesmas*, *Pustu/Polindes*, and *Posyandu*, in the sub-district as primary channels of one of their program, i.e. MNP program, and the communication activities of this program was targeted to caregivers of underfive as beneficiaries. At the *Puskesmas* level, they had trained several staff and later, this staff would extend the training to the cadres and supervised its activity. There was five nutrition staff responsible for nutrition program giving ratio to the inhabitant at 7.7 per 100,000. The ratio of nutrition staff to the underfive was 1 : 1,573, and ratio of trained staff regarding MNP to the active cadres was 1 : 47. In addition, ratio active cadres to the underfive was 1 : 17.

At *Posyandu* level, the cadres had been trained about the program, and later they would deliver the program, i.e. MNP messages, to beneficiaries, i.e. caregivers of underfive. Most of the cadres (89.4%;n=465) categorized as an active cadres, and 38.1% (n=177) of them had been trained regarding MNP. To describe the characteristic of these cadres, a sample was taken from this group. Their characteristics were described as followed: most of the cadres were female (90.0%;n=27), average age was 34.2±6.0 years, and had 11.6±7.0 duration of being cadres. The educational level was high, where most of them (86.7%;n=26) had finished junior high school level (basic education), and were worked (86.7%;n=26). To describe beneficiary's characteristics, a sample of caregivers was randomly selected. Their characteristics were described as followed: most of the caregivers were mothers (90.7%), the education level of caregivers and their spouses were low, most of them did not completed basic education level (60.0% and 58.8% respectively), and more than half (57.7%) of caregivers were worked **(Table 4.1.)**.

Table 4.1. Characteristics of Socio-Demographic-Economic Status of Beneficiaries

Characteristics	Statistics
Caregivers of underfives:*Mother*[1]	195 (90.7)
Age of mothers (*y*)[2]	29 (20.0;47.8)
Family size (*person*)[3]	4 (3.0;6.0)
Number of underfives cared by the caregivers: ≤ *2 person*[1]	215 (100.0)
Father's education duration[i]: ≤ *9 years*[4]	124 (58.8)
Caregiver's education duration: ≤ *9 years*	129 (60.0)
Caregiver's occupation status	
Working	124 (57.7)
Ratio of earner : dependant	1 : 1

[1]*n=215, n(%);* [2]*med(5th;95th percentile);* [3]*n=215, med(5th;95th percentile);* [4]*n=211, n(%)*

4.1. Essential components of MNP communication program

The system approach had been used in this study and the information were gathered from various informants, ranging from stakeholders, i.e. responsible person on MNP program at DHO and *Puskesmas*, and *Posyandu* cadres, and its beneficiaries. The description of the study finding was organized into two phases, i.e. preparation and implementation phases.

4.1.1. Preparation phase

a. Service input

1) Availability of trainers at *Puskesmas*.

Trained *Puskesmas* staff regarding MNP was available; at least 5 trainers in both of *Puskesmas*. According to responsible person on MNP program at *Puskesmas*, there were no specific selection criteria for trainers. The DHO directly appointed the potential trainee, and determined the venue and the schedule for training of trainers (TOT). The appointed person were nutrition staff, head of *Puskesmas*, health promotion officer, midwives coordinator, and surveillance officer from each *Puskesmas*.

2) Availability of training program for cadres

The training regarding MNP for cadres was conducted twice, i.e. the initial training and refreshment training. The initial training was conducted on July 2007, and it has been delivered to *Puskesmas* staff (TOT) and *Posyandu* cadres. The TOT has been conducted over two days on the first week of July 2007, and later

[i] Education duration based on government 9 years compulsory education program / *Wajib belajar 9 tahun*

the TOT participants would extend the training to the cadres. Further, one day training program for cadres has been conducted in the health facilities of each village on the third weeks of July 2007. In addition, there were two trainers for each village for conduct such activities. The topic delivered based on a module which is prepared by the UNICEF. The refreshment training, based on planning, it was supposed to be delivered on the second semester of the year 2008[i]. However, it was delayed until the next year (July 2009) when the MNP packaging was changed (*Vitalita* to *Mixme*).

According to responsible person on MNP program at *Puskesmas* and cadres, during this training the topic given mostly on *subject – technical know how*[ii] regarding MNP, while issues on communication skills was not included. With respect to communication strategy, there was oral agreement between cadres (trainee) and trainers (*Puskesmas* staff), which is through mass nutrition education (*penyuluhan*) during *Posyandu* session, and they had expected to conduct the nutrition session every month. Responsible person on MNP program at *Puskesmas* and DHO had expected that trained cadres have role not only as messenger of the MNP messages, but also as motivators in their *Posyandu*. In addition, the selection criteria for choosing the cadres as training participants were based on seniority and commitments (length and intensity of their services), as perceived by *Puskesmas* staff.

3) Availability of module for training.

The module used during the training for cadres was MNP (*Vitalita*) guidelines book developed by HKI with the contents described in pages 51 (***see Table 4.3.***). Responsible person on MNP program at *Puskesmas* stated (no record) that all cadres reported had received this module.

[i] Based on UNICEF progress report 2007 – 2008.

[ii] *Subject know how* regarding MNP consist of background on MNP program, MNP: what and how, vitamin and mineral deficiencies, and source and function of vitamin and mineral, Anemia on underfive children, and Iron and vitamin food sources. *Technical know how* regarding MNP consist of several activities in *Posyandu* when deliver the MNP program, i.e. preparation, distribution, recording, delivering messages, and reporting.

4) Availability of SOP for training

The SOP document on training was available but in general and there was no specific SOP regarding MNP. Responsible person on MNP program at *Puskesmas* stated that SOP for training was similar with other training, i.e. opening session, material session, discussion if any, and closing session.

5) Availability of financial support for training

Some budget was allocated for the training and it's ranged from IDR 1,000,000 – 1,800,000. Each of cadre received approximately IDR 20.000, as transportation fee.

6) Availability of venue for training

The training was delivered in the health facilities of each village, i.e. *Puskesmas* or *Pustu/Polindes*.

b. Service distribution

Based on cadres answer, the training venue was moderately accessible (Table 4.2.). Although, estimated walking time of cadres to go to the training venue were 30 minutes (7.8 – 73.5 minutes).

Table 4.2. Accessibility Criteria of *Posyandu* According to Cadres

Criteria	Total[1]
Good	11 (36.7)
Moderate	13 (43.3)
Poor	6 (20.0)

[1] *n=30, n(%)*

c. Management and organization

There was a plan for the both trainings, i.e. initial and refreshment, with respect to schedule, venue, method, trainer, and provided material. With respect to the schedule, at initial training, it was conducted based on planned schedule. However, at refreshment training, it was not in accordance to planned schedule (second semester of the year 2008), since it was delayed for about a year (July 2009). The reason of delaying as explained by responsible person at DHO that they had conducted survey as mid term evaluation to identified problems during MNP (*Vitalita*) distribution and beneficiary's acceptance on the second semester of years 2008. As the result of this survey (November 2009), it was found that so many left over of MNP (*Vitalita*), either in *Puskesmas* and *Posyandu*,

the quality of training regarding MNP for *Posyandu* cadres was fair/*cukup*. This information was confirmed by the cadre's perception that the quality of training regarding MNP for *Posyandu* cadres was also fair/*lumayan*. According to responsible person on MNP program at *Puskesmas* Pengadang, based on his observation during training, only half of cadres understand adequately on how to prepare MNP. However, he did not mention either benefit or another essential aspect regarding MNP. Subjective judgment of the responsible person on MNP program at *Puskesmas* Batunyala revealed that training more likely as re-socialization or debriefing session between trainers and cadres. In addition, there was no mechanism to evaluate whether the participants understand or not the topic given during the training. On the other hand, according to cadres that they were less understand about topic given during the training, because it was around half day training, and the topics given not only about MNP, but also covered deworming, Zn tablet and diarrhea, Vitamin A, EBF and *IMD*[i].

4) Number of training module distributed.

According to responsible person on MNP program at *Puskesmas*, during implementation of the program the module was delivered to all cadres with ratio 1 : 1. It means that for one *Posyandu* there would be one or two modules available, as it is equal to the number of cadres who were sent for the training. However, based on our observation most of the trained cadres (83.0%;n=25) did not have the module anymore, and there was no mechanism for requesting or replacement for such material.

5) Since there was no specific SOP regarding MNP, then, information on SOP application was not gathered in this study.

f. Service outcome

1) Proportion of estimated number of trained cadres equipped with adequate knowledge regarding MNP

According to responsible person on MNP program at DHO and *Puskesmas*, and *Posyandu* cadres, there are three main messages that stressing out during the training regarding MNP to the cadres, i.e. its benefit, preparation, and recommendation. Based on interview with selected cadres, it was found that none

[i] EBF is Exclusive Breastfeeding; IMD is *inisiasi menyusui dini*/ Early breastfed initiation

of them have adequate knowledge regarding the messages, giving the median score of their knowledge was 7 [3 – 9 (med, min – max)] (**Table 4.3.**)

Table 4.3. Messages Regarding Benefit, Preparation, and Recommendation of MNP

Messages	Total[1]
Benefit of MNP	
• *Improve underfive growth and development*	9 (30.0)
• *Improve immunity*	27 (90.0)
• *Improve appetite*	20 (66.7)
• *Prevent from anemia and other micronutrients deficiencies*	1 (3.3)
MNP preparation	
• *Spread MNP/Vitalita/Mixme on ready to eat and solid food, i.e. rice, side dish, porridge, fruits, etc*	30 (100.0)
• *Do not cook*	30 (100.0)
• *Do not mixed with hot food, implicoting on reducing iron content and changing on color and aroma of food*	18 (60.0)
• *Do not mixed with liquid, milk, teo, etc (not water soluble)*	22 (73.3)
MNP recommendation	
• *Beneficiaries were children aged 6 – 59 months*	26 (86.7)
• *Dosage 1 sachet/day*	23 (76.7)
• *Give MNP on 1 day interval*	21 (70.0)
• *Underfive with severe malnourished (< -3SD WAZ) with complication should not consumed MNP on the 7 days treatment.*	2 (6.7)
• *Underfive with fever should be referred to Puskesmas, if malaria positive did not receive MNP until recovery.*	3 (10.0)
Total score of knowledge[2]	7 (3.0;9.0)

[1] *n=30, n(%);* [2] *med (min-max)*

Based on above table, it was found that only several messages were often mentioned by the cadres during interview, which is distributed into three categories, i.e. benefit, preparation, and recommendation of the MNP. With respect to MNP benefit, most of the cadres express that it could improve immunity (90.0%) of the children. In terms of MNP preparation, most of them stated that it should be spread into solid food (100.0%), it should not cooked (100.0%) and should not mix it with liquid food (73.3%). Moreover, regarding MNP recommendations, most of them could express its beneficiaries (86.7%), the dosage (76.7%), and its recommended usage, i.e. every one day interval (70.0%).

2) Cadres competency on delivering MNP messages

To describe cadre's competency on this study was based on the perception of the responsible person on MNP program at *Puskesmas*. According to him/her that in general, the cadres are not competent in delivering MNP related messages. It was depend much on their educational level and health literacy, and only few cadres were considered capable or have good competency on nutrition education,

i.e. delivering MNP messages. In *Posyandu*, with respect to knowledge and skill, only senior cadres (one cadre) had significant role on the communication activities, i.e. giving nutrition education or counseling to the caregivers. The rest cadres were only active for registration, weighing, and/or plotting weight to KMS[i] during *Posyandu* day.

g. Community participation

The supports from community leader as represented by head of the village or its secretary were inadequate. During this training, as informed by most of the cadres, they only deliver speech in the opening session but did not involve in the discussion related to communication activities.

4.1.2. Implementation phase

a. Service input

1) Availability of trained cadres

A number of cadres had been trained to implemented MNP communication program, with the ratio as describe in the service output of preparation phase, i.e. number of trained cadres in the past two years (*see page 49*).

2) Availability of nutrition education session regarding MNP

As describe in *page 50*, this study had focused on the assessment of the quality of training delivered in 2009. Therefore, regarding nutrition education activities we had focused also on the assessment of this activity which is delivered on August and September 2009.

Since there was agreement between trainers and trainee, i.e. cadres, that nutrition education regarding MNP would be provided through mass nutrition education (*penyuluhan*) in *Posyandu*. According to the trained cadres, the topics delivered mostly on MNP benefit and its preparation. Also, most of them stated that during that activity, there was no simulation on the MNP preparation.

3) Availability of IEC materials regarding MNP

The IEC materials regarding MNP were provided hy DHO to *Puskesmas* and *Posyandu* on the initial project. Each of the *Puskesmas* and *Posyandu* were

[i] KMS is *Kartu menuju sehat*/growth chart at Posyandu

had received five leaflet and poster. In addition to that, there were also four banners provided for *Puskesmas*. Based on the document review it was found that IEC materials, especially poster and leaflet were planned to be delivered only for *Posyandu* cadres and *Puskesmas* staff (i.e. midwife and nutrition staff). According to responsible person from DHO, there was fund allocated for billboard, however up to now it was not produced yet. According to responsible person on MNP program from *Puskesmas*, they had received IEC materials after three months of initial training (November 2007). However, there were no additional IEC materials distributed in 2009. So that, at the initial of MNP programs the caregiver's exposure on MNP messages only from cadres and *Puskesmas* staff. This study also revealed that almost all of caregivers (94.4%;n=203) stated that *Puskesmas* staff and cadres as the main source of information regarding MNP, only 5.6% (n=12) stated that IEC materials and neighbors/other family members as the main source of information.

With respect to the messages of IEC materials, i.e. leaflet, poster, and banner, it's only emphasized the distribution aspect, i.e. where and when to get the MNP, and did not specifically addressed to this product only, but also with Vitamin A supplementation, and deworming. In addition to that, the leaflet messages regarding MNP were not explain adequately either its benefit or preparation. For example, with respect to MNP preparation, the message only "give MNP one sachet per day on one day interval in ready to eat food", it was not explain other essential messages.

4) Availability of venues for MNP communication

The MNP communication was mainly delivered during *Posyandu* session, where located either in "*Berugag*"[i] (n=21), cadres/head sub-village house (n=8), or PAUD[ii] building (n=1).

5) Availability of SOP on MNP communication during *Posyandu* session

The SOP on MNP communication during *Posyandu* session was available (UNICEF, 2007b). According to that, the messages regarding MNP should be delivered on *table 4* service, i.e. for counseling in *Posyandu*. However, the

[i] *Rumah panggung* or Gazebo
[ii] PAUD: Pendidikan Anak Usia Dini or ealy childhood education program (aged 2 – 4 years)

message was only emphasized on the preparation of MNP, i.e. "spread the MNP to the children food on one day interval". On the other hand, the communication skill, i.e. how cadres could deliver messages to the beneficiaries effectively, was not included as part of the SOP.

According to responsible person at *Puskesmas* and DHO, the SOP was attached on the training module and had been delivered during the cadres training. Further, as explained by the responsible person at *Puskesmas,* mass nutrition education usually conducted either by cadres or *Puskesmas* staff to deliver health and nutrition related messages in *Posyandu* days. On the other hand, the counseling activity was only performed for the underfive children who categorized as under redline (BGM/bawah garis merah) and it was delivered by nutrition staff from *Puskesmas*. Also, the SOP regarding MNP communication activities, i.e. delivering MNP messages, had been conducted through regular nutrition education session. However, according to cadres that they did not know there was SOP to conduct communication activities regarding MNP during *Posyandu* day, this is because they never informed about such activities during the training program.

6) Availability of financial support

There was no financial support specifically allocated on MNP communication activities. Because, based on information from responsible person at DHO, all of the budgets regarding MNP communication program were allocated only for training program and developing IEC materials. Further, head of *Puskesmas* Batunyala (personal interview) and responsible person on MNP program at *Puskesmas* have assumed that incentive would increase cadre's motivation on conducting communication activities. However, according to them, during period of years 2008 – 2009 there were no incentive for cadres from local government.

7) Availability of coping mechanism to counter the noise in the communication program

According to the responsible person at *Puskesmas* and DHO, there was no mechanism designed specifically to counter "noise" regarding MNP in the community. Further, the ***trained cadres*** were expected to have initiative to

diminish any noise in the community, although, such part was not delivered on the training.

b. Service distribution

1) Availability of *Posyandu* session in the past two years

Posyandu session, when the MNP messages delivered, was performed on regular basis in the past two years, as indicated by open frequency (96.7%;n=29 had open 24 times), with opening hours were between 09.00 – 11.00 AM.

2) *Posyandu* accessibility.

The median values of walking time for caregivers and cadres to their *Posyandu* were 10 minutes (2 – 30 minutes) and 5 minutes (5 – 20 minutes) [5^{th} – 95^{th} Percentile] respectively. In general, most of the caregivers (82.3%;n=177) and cadres (96.7%;n=29) considered *Posyandu* has good criteria of accessibility.

c. Management and organization

As mentioned before, the implementation of communication activity was integrated in local health service delivery, so that, the assessment of planning and management were focused on responsibilities distribution in each level of local health service delivery, which is determined by management areas. Therefore, the indicator to determine management and organization referred to the availability and completeness of the plan itself. At the DHO level, based on document review, it was found that the document plan regarding MNP was available. With respect to MNP communication program, the planning mainly focused on training program for *Puskesmas* staff and *Posyandu* cadres, and IEC materials production and distribution. Also, it was planned that IEC materials would be developed by considering its local contents and language. According to responsible person on MNP at DHO level, *Puskesmas* had important role on MNP distribution and communication planning, i.e. determine the number of target beneficiaries, storage, distribution, socialization and training for cadres. At the *Puskesmas* level, aside from planning regarding training program for cadres, there was no planning about communication activities that should be done to deliver MNP messages to the community, except agreement on mass nutrition education at *Posyandu* day, as explained by the cadres. In line with that, the score for planning and management regarding MNP was only 17.0%, mainly because of there was no

Gantt Chart and lack of job description to guide the *Puskesmas* staff, also, supervision activity was inadequate. According to responsible person on MNP from DHO and *Puskesmas*, supervision from DHO to Puskesmas during 2009 was conducted twice, in January and August 2009. The supervision more focusing on MNP coverage program and feedback was given orally to *Puskesmas* staff, for example give motivation to cadre's to improve nutrition education activities regarding MNP during *Posyandu* by stressing out its benefit for underfive. Further, supervision regarding MNP communication activities to from *Puskesmas* to *Posyandu* was rarely conducted, if any, the activity was not recorded, as explained by the responsible person on MNP at *Puskesmas*. Similar with that, mostly cadres cited that supervision from *Puskesmas* was only pointing out the distribution of MNP, and rarely addressed on communication aspect, for example to address why children did not like the MNP.

d. Support system

The transport system available was *Ojek* and *Angkot*. However, most of the caregivers (95.8%;n=206) and cadres (93.3%;n=28), prefer to walk to go to *Posyandu*.

Recording and reporting system on distribution of IEC materials was available. Based on document review that distribution of this material from DHO to *Puskesmas* was recorded, but there was no record on distribution from *Puskesmas* to *Posyandu*. Aside from distribution of IEC materials, recording and reporting system on communication activities, i.e. cadre's activity on delivering messages regarding MNP in the *Posyandu* was not available, although, such system for MNP distribution was set up. Based on document review that the form provided (*Lampiran 1* dan *2*) only for product distribution.

Furthermore, most of the cadres did not perform home visit and counselling activities as explained by responsible person on MNP at *Puskesmas*. However, based on in-depth interview, few cadres had admitted that they did home visit and counselling activities, but it was not planned, not recorded, and based on their own initiative.

e. Service output

1) Number of IEC materials posted/available at *Puskesmas* and *Posyandu*

At DHO level, as explained by the responsible person on MNP program, all of the IEC materials, i.e. banners, poster, and leaflet, had been delivered to the *Puskesmas* and *Posyandu*, and there was no ready stock of these materials. In addition to that, for leaflet and booklet were delivered only for *Puskesmas* staff, i.e. nutritionist or midwives, and *Posyandu* cadres, as confirmed by document review.

According to responsible person on MNP program at *Puskesmas*, five leaflet and poster, and four banners for *Puskesmas*, and five leaflet and poster for *Posyandu*, were had received from DHO. Therefore, there was no ready stock of these materials in the *Puskesmas*, as confirmed by document review. With respect to distribution of IEC materials to *Posyandu*, he/she also stated that it was delivered during *Posyandu* day. However, there was no record on the distribution of such materials.

At *Posyandu* level, according to the cadre's coordinator, they were had received five leaflet and poster from *Puskesmas*. However, based on observation and document review, only few of this material were posted or available in the *Posyandu* (**Table 4.4.**). With respect to the leaflet, most of the cadres stated that they had lost the materials because of either they forget it or other cadres or caregivers borrow it and did not return it back. For the poster, based on observation and document review, this material was posted only in the cadres or head of sub – village house where *Posyandu* located. On the other hand, if *Posyandu* located in *Berugag*, none of this material was posted or available.

Table 4.4. IEC Materials Posted/Available at *Puskesmas* and *Posyandu*

Materials	Targeted audiences	Puskesmas			Posyandu		
		Posted/ available	Reported number	%	Posted/ available	Reported number	%
Banners	Community, Caregivers	2	4	50.0			
Poster	Community, Caregivers	4	10	40.0	9	150	6.0
Leaflet	Cadres, Caregivers	0	10	0.0	2	150	1.3

In line with that, several cadres (personal interview) had admitted that they have posted the materials in *Berugag*, however in the following months it was not posted anymore, and they did not have specific storage for *Posyandu* equipment. Also, they thought that the materials were not important anymore, because the messages only focused on August 2007. Furthermore, there was no mechanism on requesting or replacement the IEC materials, as explained by either the cadres or responsible person on MNP at *Puskesmas* and DHO.

With respect to the adequacy of the IEC material, it would be judge based on the targeted audience. For banners or poster, in terms of numbers, was considered sufficient, given that it was posted. However, for leaflet, in terms of number, was considered was not sufficient, because it should be delivered to the beneficiaries, not only for cadres. In addition, it was planned that the IEC materials should be adapted with local language and its contents adjusted with local condition. However, none of the materials had been adapted with local language and adjustment of the contents was only by using image of *Lombok* children.

2) Number of nutrition education session held at *Posyandu* day

Nutrition education session was held in *Posyandu* day during either in August or September 2009 mostly 1 times (70.0%;n=21). Based on in-depth interviews with *Posyandu* cadres it was found that most of the nutrition educations regarding MNP were delivered by the trained cadres under the supervision of *Puskesmas* staff during *Posyandu* day. Further, around three quarters of the cadres explained that they were had performed such activities only one time during August 2009. Although several cadres admitted that they were performed nutrition education twice on August and September 2009, however, with respect to the topic delivered on the latter months, it was focused on sanitation, i.e. latrines, malaria, and *ARI* (Acute Respiractory Infection). Furthermore, most of the cadres perceived that caregiver's attendance during mass nutrition education session at *Posyandu* were considered high, because more than half of the mothers who had underfive children registered at *Posyandu*, attending the session. Also, it was conducted only around less than half an hour and there was no simulation on MNP preparation.

Based on observation of responsible person on MNP program at *Puskesmas*, it was found that mass nutrition education was not conducted every month regularly. For initial MNP (*Vitalita*), at the first phase distribution (August – October 2007), most of the *Posyandu* had performed mass nutrition education regarding MNP, however, on the following phase (i.e. second phase, i.e. November 2007 to sixth phase, i.e. September 2008), the intensity of such activity was decline. For the current MNP (*Mixme*), based on oral agreement during training on July 2009 between trainers (*Puskesmas* staff) and trainee (cadres), that trained cadres would re-educate beneficiaries through nutrition education session on *Posyandu* day. However, the intensity of such activity was decline also from the first phase (August and September) to the second phase (October – November).

3) Adequacy of information during nutrition education regarding MNP in *Posyandu* days.

Based on document review, it was found that at least 13 messages regarding MNP, which is distributed in the three topics (i.e. benefit, preparations, and recommendation), that should be delivered by the cadres during *Posyandu* day. However, as resulted from in-depth interview with 10 cadres, in terms of number of messages delivered, it could be concluded that the messages were highly likely inadequate. Further, these results were found consistently during the in-depth interview session, assuming that, it can also be generalized to all cadres.

With respect to the messages related MNP benefits, most of the cadres perceive that it would make children healthier and fatter, and improve their appetite, as explained by most of the cadres. On the other hand, only few cadres admitted that they delivered other messages, i.e. beneficiaries, and vitamin and mineral contents. With regard to the MNP preparation messages, most of the cadres explained to the beneficiaries that MNP could be mixed only with solid or semi solid food, especially rice or rice porridge, and then snack or street foods, fried noodles, and fruits, i.e. papaya. In addition, they had explained that MNP could not be mixed with hot and/or liquid food. In terms of MNP recommendation messages, more than half of cadres stated that MNP should be consumed one sachet per day on one day interval. On the other hand, several cadres explained that it could be consumed more than one sachet per day on one day interval or one

sachet each day. Even though not all of the messages have been delivered, most of them admitted that they did not quite sure whether the caregivers understand it or not.

4) Adequacy of SOP on MNP communication during *Posyandu* session

Based on explanation about availability of SOP on MNP communication during *Posyandu* session (*see page 53*), therefore, we could considered that SOP on communication was inadequate. Because, it was only emphasize *where* to deliver messages, i.e. *Posyandu*, *when* messages delivered, i.e. *Posyandu* day, and by *whom* messages delivered, i.e. trained cadres. On the other hand *how* to deliver messages, i.e. mass nutrition education (*penyuluhan*) or counseling activities was not elaborated in the SOP. Therefore, based on oral agreement between *Puskesmas* staff and cadres, they preferred mass nutrition education (*penyuluhan*) as main communication strategy in *Posyandu*. However, it was not elaborated how to perform such activities, i.e. time duration, how to check attendance, and availability of pre and post test.

5) Since the counseling activities was not planned (*see page 56*) and coping mechanism was not designed (*see page 54*), then, these variables were not assessed.

f. Service outcome

1) Caregivers who attend nutrition education session at *Posyandu* equipped with adequate knowledge regarding MNP

Information on adequacy of caregiver's knowledge was subtracted from 168 (78.0%) interviewee attended nutrition education regarding MNP in *Posyandu* days on August and September 2009. Based on their answer, none of them have adequate knowledge regarding the messages; giving the median score of their knowledge was 7 [2 – 10 (med, min - max)] (**Table 4.5.**).

Table 4.5. also explained that several messages were often delivered by the cadres to the caregivers, which is distributed into three categories, i.e. benefit, preparation, and recommendation of the MNP. With respect to MNP benefit, most of the mothers perceive that the product could improve immunity (92.8%) and appetite (73.2%) of their children, In terms of MNP preparation, most of them stated that it should be spread into solid food (97.6%), and did not mix it with liquid food (85.7%). Moreover, regarding MNP recommendations, most of them

could express the dosage (89.3%), beneficiaries (69.6%), and its recommended usage, i.e. every one day interval (64.3%).

Table 4.5. Information Received by the Caregivers during Nutrition Education Regarding MNP in *Posyandu* days on August and September 2009

Messages	Total[1]
Benefit of MNP	
• *Improve underfive growth and development*	36 (21.4)
• *Improve immunity*	156 (92.8)
• *Improve appetite*	123 (73.2)
• *Prevent from anemia and other micronutrients deficiencies*	1 (0.6)
MNP preparation	
• *Spread MNP/Vitalita/Mixme on ready to eat and solid food, i.e. rice, side dish, porridge, fruits, etc*	164 (97.6)
• *Do nat cook*	80 (47.6)
• *Do not mixed with hot foad, implicating on reducing iron content and changing on color and aroma of food*	60 (35.7)
• *Do not mixed with liquid, milk, tea, etc (not water soluble)*	144 (85.7)
MNP recommendation	
• *Beneficiaries were children aged 6 – 59 manths*	117 (69.6)
• *Dosage 1 sachet/day*	150 (89.3)
• *Give MNP on 1 day interval*	108 (64.3)
• *Underfive with severe malnourished (< -3SD WAZ) with complication should not consumed MNP on the 7 days treatment.*	1 (0.6)
• *Underfive with fever should be referred to Puskesmas, if malaria positive did not receive MNP until recovery.*	5 (3.0)
Total score of knowledge[2]	7 (2.0;10.0)

[1] *n=168, n(%);* [2] *med(min – max)*

Among those who did not attend nutrition education regarding MNP in *Posyandu* days on August and September 2009 (22.0%;n=47), all of them (100.0%) had poor knowledge regarding anemia and MNP. This might reflect that activity of transferring the knowledge regarding MNP by either the cadres or participants of nutrition education session in *Posyandu* to the non-participants was inadequate.

Based on FGD it was found that most of the caregivers perceive MNP as Vitamin or healthy food that could benefit their children, i.e. improve appetite, and would make children healthier and fatter. With respect to MNP preparation, there were several patterns that occur frequently: 1) administer only one sachet per day, for two or more mealtime, and give it every one day interval, 2) administer only one sachet per day, for one mealtime, and give it every one day interval, 3) administer only one sachet per day, for one mealtime, and give it every day, 4) administer one sachet for one mealtime every day, and 5) flexible administration, for example one sachet every two or three days. In terms of food,

most of them tend to mix the MNP with warm rice and vegetable broth, or rice only. However, several caregivers had perceived it as medicine and did not want to give to their children frequently, and it was consistently found during FGD session.

2) Caregiver's preference and perceive needs regarding MNP

a) Caregiver's preference on MNP formulation

All of the caregivers (100.0%;n=215) give no complaint with respect to packaging, i.e. sachet. Most of the caregivers like the MNP before mix with the food, in terms of powder form (95.8%;n=206), color (100.0%;n=215), aroma (95.3%;n=205), and taste (89.3%;n=192). All of the caregivers (100.0%;n=215) stated that a single sachet of the MNP was easy to administer and store.

b) Caregiver's perceived need on MNP

More than three quarter of mothers (77.7%;n=167) perceived that their child needs the MNP. However, among them, only half of their children (50.3%) like the MNP when mix with the food. There was significant association between caregiver's perception that their child require the MNP and the children who were like the MNP when mix with the food (**Table 4.6.**). In line with that, based on FGD, it was found that most of the caregivers perceived that their children required MNP and its preparation did not give any burden to them. However, they did not give it routinely as recommended because of their children did not like if the food mix with MNP.

Table 4.6. Distribution of Caregiver's Perceive that their Child Needs the MNP by Children Like the MNP When Mix with the Food

Caregiver's perceived their children needs the MNP	Children like MNP when Mix with Food*				Total	
	No		Yes			
	n	%	n	%	n	%
No	47	97.9	1	2.1	48	100.0
Yes	83	49.7	84	50.3	167	100.0
Total	130	60.5	85	39.5	215	100.0

**Pearson Chi Square p= 0.000*

Further, if the MNP would be sold to the free market, more than half of caregivers (68.4%;n=147) said that they have not been willing to pay. On the other hand, among those who willing to pay for the MNP (31.6%;n=68), they prefer to spend as much as IDR 4750 per box [1,000 – 15,000 (med,5th – 95th

percentile)], from the local health facilities, such as *Posyandu* or *Puskesmas* (92,6%;n=57).

g. Community participation

Support from community in *Posyandu* activities was also positive. During August and September 2009, most of the caregivers had visited the *Posyandu* (90.7%;n=195) and attend nutrition education session at *Posyandu* (78,2%;n=168), at least 1 time (**Table 4.7.**).

Table 4.7. Caregivers Visit *Posyandu* and Attend Nutrition Education Session at *Posyandu* during August and September 2009

Criterias	Posyandu Visit[1]	Attend Nutrition Education[1]
Never	20 (9.3)	47 (21.9)
1 time	17 (7.9)	159 (74.0)
2 times	178 (82.8)	9 (4.2)

[1] *n=215, n(%)*

Among those caregivers who never attend nutrition education session at *Posyandu* during August and September 2009, more than half (55.3%) of them perceived that such activities have no benefit for their children (**Table 4.8.**).

Table 4.8. Caregivers Reason for Not Attending Nutrition Education Session at *Posyandu* during August and September 2009

Reason	Total[1]
No benefit for children	26 (55.3)
Caregivers working: underfive go with grandmothers/neighbors	16 (34.0)
Posyandu location is too far	3 (6.4)
Did not know Posyandu's schedule	2 (4.3)

[1] *n=47, n(%)*

4.2. Beneficiary's compliance on MNP

The beneficiary's (i.e. the caregivers and underfive children) compliance on MNP was considered low. The underfives children compliance was only 23.7% (n=51). This is mostly because of the underfive children did not like to eat their food when it mix with MNP.

With respect to caregiver's compliance to administer the MNP, most of the cadres complain that caregiver's acceptance on MNP was low, because they did not administer the MNP routinely as recommended, which is proven by so many leftover in their house. In line with that, both, responsible person on MNP program at *DHO* and *Puskesmas* had similar perception which is low compliance of the caregivers. According responsible person on MNP program at *DHO*, this

was because of insufficient communication activities in the community. On the other hand, as explained by responsible person on MNP program at *Puskesmas* and cadres, most of the caregivers refuse to administer it as recommended, because they had perceived as cause of diseases (i.e. mostly diarrhea and fever), might change organoleptic of the food when it mixed, and children with less appetite.

Based on FGD it was found that several factors might influence caregiver's compliance, i.e. the *organoleptic* (taste, color, aroma) change of the food, their child get bored with the food, and perceived cause of diarrhea and fever. In line with that, most of the cadres, and responsible person on MNP program at *Puskesmas*, also head of *Puskesmas* (*personal communication*) admitted that the MNP could change organoleptic properties of the food if they were mixed, and the children for somehow could detect it, by directly vomiting its food.

Another reason of caregiver's low compliance was related to the benefit of MNP and its responsive feeding. More than half of caregivers perceived that it has no direct benefit in terms of improve appetite or health to their children. On the other hand, several caregivers perceived that for children who were like MNP, it bas positive influence, i.e. improve appetite. Most of the cadres and responsible person on MNP at *Puskesmas* and DHO perceived that most of caregivers did not have the patience to force feed their child to eat the food mix with MNP.

In addition, at the initial program there was compliance's mechanism, i.e. collect empty sachet containers, regarding MNP, however, it was only being conducted by for the first phase at that time, and until now there were no such mechanism has been conducted. According to the responsible person on MNP program at DHO, based on their plan, only MNP coverage that should be reported by *Puskesmas*. Therefore, such mechanism was unnecessary to be reported. According to the responsible person on MNP program at *Puskesmas*, based on TOT they know that such activities had purpose to review beneficiary's compliance and use the result as feedback to either in *Posyandu* or higher level. Also, during the training program for cadres, they were recommended to conduct such activities. However, because of the MNP was blanket program, during

Posyandu day, all of the caregivers will be given of this product, either they had collect empty sachet or not.

4.3. Health manager's and cadre's perception as problem regarding MNP communication program

The health managers (i.e. responsible person on MNP program at DHO and *Puskesmas* levels) and cadres have consistently perceived several reasons as problem regarding MNP communication program, i.e. most of the children did not like MNP, because it can change taste and odor when mix with food, the caregivers refuse to force feed their child to eat the food when mix with MNP, and they perceive it might cause of diarrhea and fever.

Another problem faced by the cadres during implementation phase that most of the caregivers perceive that the MNP has no positive influence to their child in terms of benefit, i.e. appetite and health, and their children get bored with the food. Food pattern, i.e. *sebur* (mix rice with vegetable broth) also influence caregivers acceptance with the MNP. Also, both, cadres and responsible person on MNP program at *Puskesmas* perceived that low educational level and working status of caregivers have an impact to the communication activities. For example, the children attend the *Posyandu* session with his/her neighbor, so that, the transfer of knowledge between the neighbor with caregivers might be insufficient.

Another issues revealed in this study that might hamper communication on MNP were resources and management issue. These issues were consistently found in each level of health care delivery services. At the *Posyandu*, most of the cadres feel incapable on delivering MNP messages to the beneficiaries; this is related to personnel issue. Also they perceived that supportive supervision from health workers (*Puskesmas staf*) was inadequate, and lack of financial support for supporting cadre's activities. At the *Puskesmas* level, responsible person on MNP perceived that monev activity, i.e. supervision was inadequate. It was rarely conducted, because of personnel and financial concern. Also, adequate support form inter-sector and program was needed. However, nutrition staff's perceive that mostly they were worked as "*single fighter*" during MNP communication program. Therefore, coordination between *Puskesmas* staff and job description and management areas were needed to be developed. Similar problems also

occurred at DHO level, as explained by responsible person on MNP program; he perceived that monev activity, including supervision, was inadequate, mostly because of financial concern.

In general, the health managers (i.e. responsible person on MNP at DHO and *Puskesmas*) and *Posyandu* cadres were had similar concern, that MNP communication program should involve other local stakeholders, i.e. community leaders and religious leader, not merely based on *Posyandu* activities. Further, the responsible person on MNP at DHO and *Puskesmas* also perceived that mass nutrition education *per se* was not sufficient to explain the messages, another strategy, i.e. counseling activities might be needed especially for correcting misperception regarding MNP, which is perceived cause of diarrhea and fever (***see appendix 1***).

CHAPTER 5
DISCUSSIONS

The MNP communication program should be well-planned and then well-implemented in order to secure high compliance on MNP among the beneficiaries. Further, to be effective, it should involve providers (health workers) for training activities, institutions (government and NGO) for advocacy activities, and people (community/religious leader, and community based organization, i.e. *PKK*[i], dan *grup pengajian ibu*[ii] at village levels) for social mobilization activities (ADB & MOH, 2008a; MOH, 2009).

At DHO level, planning document on MNP communication activities was available, i.e. TOT, cadres training, and production and distribution of IEC materials. However, aside from training, there was no clear guideline on what other activities that should be done by *Puskesmas* staff and *Posyandu* cadres to promote the MNP to the community. On the contrary, the responsible person on MNP program at *DHO* had realized the important role of *Puskesmas* in the MNP communication program; especially on determining socialization and training activity for cadres. However, based on survey, it was found that lack of proper planning and management occurred in *Puskesmas* level as indicated by low score (17.0%) of planning and management regarding MNP. Also, again there was no planning about communication activities that should be done to deliver MNP messages to the community. Based on our observation, low planning and management score was mainly because of there was no Gantt Chart and lack of job description to guide daily activities of the *Puskesmas* staff. Also, supervision activity regarding MNP communication activities, i.e. to address why children did not like the MNP, was rarely conducted and feedback was given orally without clear direction. This might influence cadre's activity on delivering messages on MNP. In line with that, Harmiko (2007) and Sumarna (2001), both also observed similar findings, in which planning and management score less than 50% was inadequate to support significant quality of health services, i.e. GMP program. In which lack of job description and poor supervision activities were occurred.

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[i] PKK is family welfare empowerment group/*pemberdayaan kesejahteraan keluarga*

[ii] Grup pengajian ibu/*Caregivers religious activity group by reading the Al Quran*

Above condition indicating that management responsibilities (i.e. management areas, management task, management functions, and management activities) and management strategies (i.e. management tools and techniques, and management principles) regarding MNP communication program on each level of health care delivery services were not adequately defined by program implementers. Consequently, the MNP communication program might not reach its potential benefit yet (Kielmann, 2005). In this country, issues related to the ineffective planning and management on primary health care (PHC) system has been well recognized. It seems that stakeholders has less exposed if not at all with the result of study that assessing PHC system, for example on growth monitoring program (GMP) (Harmiko, 2007; Sumarno, et al., 2007; Sumarna, 2001). To my opinion there are two things that underlying this problem, the first: many local studies regarding PHC system was not published well, secondly: many good studies that have been published were inaccessible, for example in terms of language. Therefore, the academicians, i.e. researchers and lecturers, have significant role to conduct research or interpret the research findings and make recommendation on PHC system improvements. In other words, knowledge sharing between each of stakeholders, i.e. academicians and program planners, is important to improve primary health care delivery services.

In terms of health provider's involvement, it was found that the ratio of nutritionist to the inhabitants (7.7 per 100,000) was insufficient from recommendations (22 per 100,000). This is matters, because the nutritionist was not only involved in technical issue regarding nutrition *per se*, but also in managerial issue of the nutrition program, as explained by the responsible person on *MNP* program at *Puskesmas* level. Also, each of the trained *Puskesmas* staff, should supervised 47 active cadres, and most of the supervision activity between *Puskesmas* staff and cadres was performed during *Posyandu* day. Therefore, ideally one trained cadres should served one *Posyandu* or 26 *Posyandus* per month, so that every *Posyandu* would have sufficient time regarding supervisory visit. However, based on that explanation, I assume that the ratio was inappropriate. At *Posyandu* level, most of the cadres (89.4%) were categorized as active, and each of them, took care of 17 underfive children in average, which was

quite similar with the ratio in West Lombok, where each of them, took care of 19 underfives (Harmiko, 2007). However, among active cadres, only 38.1% had been training on MNP related topics, in which might influence communication activities if knowledge and skill transfer from trained cadres to others cadre did not occurred. This is important, because this study revealed that such activity was inadequate, which is being conducted unintentionally, information regarding MNP only given orally, and no simulation about MNP benefit and its preparation.

With respect to the MNP training program, ideally this activity should considered at least four factors, i.e. number of participants i.e. should not exceeds 15 trainee for TOT and 25 trainee for cadres training, duration of time, i.e. two full days for TOT and one full day for cadres training, evaluation method, i.e. pre-post test, and topics delivered, i.e. subject know how and simulation, also communication skill (Martini & Halati, 2009). In this study, it was found that during training for cadres, the number of participants was ranged from 15 – 40, training duration was only half day, and there was no evaluation mechanism. In addition to that, the topics delivered not only about MNP *per se*, but also covered deworming, Zn tablet and diarrhea, Vitamin A, EBF and *IMD*. Further, topics regarding MNP mostly about *subject – technical know how* regarding MNP, but only given orally without simulation, while issues on communication skills was not included. Even though the health managers had perceived quality of cadres training as moderate, however, according to the trainee (i.e. cadres), they were less understood about the topics delivered. In line with that, based on survey, it was found that none of them had adequate knowledge regarding essential messages on MNP. This indicates that the 2 times cadre's training by health *Puskesmas* was ineffective or low quality of training. Consequently, it might result in poor knowledge and later influence the beneficiary's compliance. According to The United Nations Sub-Committee on Nutrition (2000), the major reason for the lack of compliance with supplementation program, i.e. iron, is the lack of appropriate training of health staff (Gross, Diaz, & Valle, 2006). In line with that, from Workshop on Scaling Up the Use of MNP in Bangkok (2009), revealed that inadequate training for health providers might lead to adverse effect and low compliance (Martini & Halati, 2009). Another experience that supported

our findings was from the Indonesian Family Nutrition Improvement Program (UPGK – Usaha Perbaikan Gizi Keluarga), which is a national intervention focusing on nutrition education through growth monitoring, delivered by cadres, shows that weaknesses in training (too brief and not practice-oriented) resulting that cadres had neither the knowledge nor skills to communicate effectively with caregivers. So that, high-quality village-based delivery is difficult to achieve (Ashworth, Shrimpton, & Jamil, 2008).

Another consideration on communication program was advocacy activities. This study revealed that such activities had been conducted through *Socialization and Technical Preparation Workshop on Chansys new intervention activities* in the each administrative level, i.e. provincial, district, sub-district, and village level. The main purpose of such activities was gathering common understanding and commitment in supporting CHANSYS new intervention program from cross sectional and cross cutting program[i] in the each administrative level. Further, such meeting was supposedly to conclude activities of each stakeholders, however, with respect to implementation of communication activities in the each administrative, only in the sub-district and village level, i.e. *Puskesmas* staff and the cadres have clear activities in delivering MNP messages.

In terms of social mobilization, even though the responsible person on MNP at DHO and *Puskesmas* had similar concern, that MNP communication program should involve other local stakeholders, i.e. community leaders and religious leader, and not merely based on mass nutrition education in *Posyandu* activities, but still, their involvement in the communication activities was minor. On the other hand, the caregiver's had better involvement in the communication activities, as judged by *Posyandu* visit and nutrition education attendance. This might be happen because during advocacy activities, the local stakeholder's role has not clearly defined. To our knowledge, in the study site the community leaders and religious leaders were highly appreciated by the community, therefore, it was necessary to involve them in the communication activities. Study

[i] Participants of *Socialization and Technical Preparation Workshop on Chansys new intervention activities* in the sub-district and village level, i.e. Head or staff from Sub-district office and *Puskesmas*, head of village or his representative, PKK, and cadres, based on progress review report, February 2009 by UNICEF

in Iran (2004) revealed that the influential people i.e. religious leaders, community leaders, and others family members (educated daughters), with their prestige, leadership, and close contact with the community, was proven to be important on bringing the particular program closer to the community (Salehi, Kimiagar, Shahbazi, Mehrabi, & Kolahi, 2004). Similar feature was also occupied during communication program on *Taburia* in North Jakarta (2008), in this program religious leaders together with *Posyandu* cadres was actively encouraged the caregivers to utilize the MNP, either in *Posyandu* session or community festivals (ADB & MOH, 2008b). Therefore, local stakeholders should be involved as local mobilizers or channels regarding MNP communication activities, to increase awareness of caregivers on the benefits of MNP. An international review suggested that social mobilization, participation, and commitment building was key issue in successful and sustainable of health program (Underwood & Smitasiri, 1999 on Harmiko, 2007).

The activities to deliver MNP communication program, i.e. mass nutrition education in *Posyandu* day, were not in place. This is because of the implementation of such activity only based on oral agreement between *Puskesmas* staff and cadres during training program, poor supervision activities from *DHO* and Puskesmas, and there was no clear guideline on how to perform such activity effectively, for example, what essential messages should be delivered, what audio visual aid should be used, how to measure audience comprehension, should occupied simulation on MNP or not, etc. Therefore, the trained cadres did not quite sure whether the caregivers understand the messages delivered or not. This findings, was quite different with communication activities on MNP *Taburia* in North Jakarta (2008). This activity has provided clear guidelines, i.e. action plan, to the cadres when managing communication activities in the community (Rimbatmaja, 2009; ADB & MOH, 2008c). As resulted in high comprehension of caregivers to the MNP (Rimbatmaja, 2009).

Aside from mass nutrition education, in which cadres as the main channel in the MNP communication program, the distribution and availability of others channel, i.e. IEC materials, was also important. Eventhough the service distribution through *Posyandu* was quite good, in which were indicated by open

frequency of the *Posyandu* on regular basis (monthly) and both, the cadres and caregivers, mostly perceived that such place have good criteria of accessibility, however, because of the venue of *Posyandu* activities mostly in *Berugag*, so that IEC materials, i.e. posters, could not be posted in the long term. It is recommended that IEC materials posted in the accessible place for all target population, i.e mosque, village office, head of village or sub village house, and PAUD buildings.

The IEC materials at least have two functions in the communication activities, as followed: 1) to provide information, i.e. booklet and leaflet, and 2) to increase motivation, i.e. posters and banners (Martini & Halati, 2009). However, based on document review, it was found that such materials in terms of number either in *Puskesmas* or *Posyandu* were lacking. In terms of information regarding MNP, the messages were only focused on one specific timeline, i.e. to motivate mothers/caregivers to bring their children and receive free MNP at *Posyandu* during August 2007, and especially for leaflet, it was not explain all of the essential messages on MNP. However, it should be considered also that even sophisticated IEC materials would not reach its potential benefit if the targeted beneficiaries could not comprehend the messages regarding MNP. From this study, it was found that more than half (60.0%) of the caregivers had low educational level, which is might affect their comprehension regarding the messages.

Therefore, based on above explanations, it seems that caregivers had less exposure to the MNP communication program, because such program only rely on mass nutrition education in *Posyandu*, and the IEC materials. On the other hand frequent exposures from various sources of communication channels are needed in order to create demand of the beneficiaries regarding MNP. According to Hornik and Kelly (2007) exposure matters for the success of communication program, based on followed reason, 1) doing repetition is effective strategy to increase likelihood of target to adopt new behavior, 2) repeated exposures increases the likelihood that a message will reach an audience member when he/she is ready to receive it, 3) if the same messages repeated in multiple channels, it creates the perception that many different sources are saying the same

thing, also audiences will begin to think it must be important, 4) heavy exposure also may increase the social discussion and diffusion of the messages through social networks.

In addition to the caregivers less exposure, in terms of knowledge, none of them had adequate knowledge regarding MNP. As described previously, there were 13 essential messages regarding MNP, and it was spread out into three titles, i.e. benefit, preparation, and recommendations. Based on survey, it was found that, several messages were commonly known by the caregivers, such as MNP benefit, i.e. it could improve immunity (92.8%) and appetite (73.2%) of their children, MNP preparation, i.e. spread it into solid food (97.6%), and did not mix it with liquid food (85.7%), and MNP recommendations, i.e. give it one sachet per day (89.3%), beneficiaries were children aged 1 – 59 months (69.6%), and administer it every one day interval (64.3%). Other messages, such as prevent from anemia and other micronutrients, do not cook, do not mix it with hot food, etc, were uncommonly known.

As mentioned before that communication activities were centered in the *Posyandu* and the cadres as main source of information, so that, inadequate knowledge of the caregivers was related with cadre's activities during nutrition education session. Therefore, several possibilities might influence caregiver's knowledge regarding MNP, i.e. cadres did not deliver the messages regarding MNP, cadres delivered only some part of the essential messages, or the caregivers did not understand the messages delivered. The first possibility was inconsistent with statement of the responsible person on MNP at DHO and *Puskesmas*, also from document review, which is suggest that communication activities were performed during *Posyandu* day. The second possibility was inline with the result of the study, for example, there was no guideline on how to perform mass nutrition education *Posyandu* day, and therefore the cadres will delivered messages regarding MNP based on their own knowledge. The third possibility was beyond the knowledge itself and it more or less towards the comprehension of knowledge. Because of that, the main reason of caregiver's inadequate knowledge was the cadres delivered only some part of the essential messages. It was in line with survey result regarding cadres knowledge, which is none of them

had adequate knowledge regarding essential messages on MNP. Also, only several messages were commonly known by the cadres, such as MNP benefit, i.e. it could improve immunity (90.0%) and appetite (66.7%) of the children, MNP preparation, i.e. it should be spread into solid food (100.0%), and should not mix it with liquid food (73.3%), and MNP recommendations, i.e. give it one sachet per day (76.7%), beneficiaries were children aged 1 – 59 months (86.7%), and administer it every one day interval (70.0%). Similar result also revealed from in depth with the cadres. With respect to the messages related MNP benefits, most of the cadres perceive that it would make children healthier and fatter, and improve their appetite. With regard to the MNP preparation messages, most of them explained to the beneficiaries that it could be mixed only with solid or semi solid food, and did not mix it with hot and/or liquid food. In terms of MNP recommendation messages, more than half of them stated that MNP should be consumed one sachet per day on one day interval.

Another consideration from caregiver's knowledge was message comprehension, i.e. whether the caregivers understand the messages regarding MNP or not. Based on survey it was found that almost all of the caregivers know that it could improve immunity (92.8%) of their children. On the other hand, based on FGD, one of the causes of caregiver's low compliance was their perception that MNP as the cause of diarrhea and fever. The contradictive between what the caregivers know and what they had perceived might reflect that they did not understand well the messages given. The reason of caregiver's low comprehension to the messages might be due to number of nutrition education was inadequate, which is only one time during August and September 2009, and they had been distracted because of the message delivered not only related to MNP, but also covered another topics, i.e. deworming, Zn tablet and diarrhea, Vitamin A, EBF and *IMD*.

The best scenario form the MNP communication program, i.e. training program, was the cadres knowledgeable regarding MNP. However, by only rely on mass nutrition education or counseling activities during *Posyandu* day were insufficient to deliver all essential messages regarding MNP. We could analyze implementation of these strategies based on time management and communication

skill. With respect to time management, according to the cadres, mass nutrition education in *Posyandu* day was performed less than 30 minutes, for example we took maximum time for such activities, i.e. 30 minutes. The messages that should be delivered were anemia, i.e. roughly estimated two messages, and MNP, i.e. 13 messages. Therefore, in total there are 15 messages, and each message is presented for two minutes, so that 30 minutes was only delivered the essential messages regarding MNP only. On the other hand, as mentioned before, the topics were covered also deworming, Zn tablet and diarrhea, Vitamin A, EBF and *IMD*. Another strategy was counseling activities, however with the ratio of trained cadres and underfives were 1 : 44, it would not reach all of the caregivers. For example, as mentioned previously *Posyandu* opening hour were only three hours ranged form 09.00 – 11.00 AM. We estimated roughly that counseling times were around two hours or 120 minutes. If the counseling consist of five topics, i.e. maternal and children health (MCH), growth and monitoring promotion (GMP), feeding practices, MNP, and infection, so that each of the topics should be delivered around 24 minutes. In terms of delivering MNP messages, 24 minutes was only suitable maximally for two caregivers. Given that there are five cadres in the *Posyandu*, which is mean they could serve for 10 caregivers, but still it was insufficient. With respect to the communication skill, this study revealed that this aspect was not delivered during the training session for cadres. However, this skill is important, because it was determined that interpersonal communication, i.e. mass nutrition education or counseling activities, was delivered either didactic or participative, and stimulating caregiver's initiatives or passive. In other words, communication skill was important in terms of persuading and convincing target audiences about the value of the proposed behavior, and later bringing about behavior change (UNICEF & WHO, 2001). Intervention study in China (2002), revealed that well trained cadres on interpersonal communication, had positive influence on improvements of children feeding practices, compare to control group (Guldan, et al., 2000).

This study also revealed that among the caregivers who did not attend nutrition education regarding MNP in *Posyandu* days (22.0%;n=47), none of them (100.0%) had either moderate or good knowledge regarding anemia and MNP.

This might reflect that activity on transferring the knowledge regarding MNP by either the cadres or participants to the non-participants did not occurred. However, this activity would not happen because their knowledge was inadequate. Moreover, It was explained also that such activities did not cover all of the beneficiaries, further, there were 12.6% (n=20) of the caregivers attend *Posyandu* day, but however they did not participate on mass nutrition education activities. According to them, such activities have no benefit for the children. Furthermore, this result depict that mass nutrition education might not effective in delivering MNP related messages, which is proven by inadequate knowledge of the caregivers. However, as study limitation, this study was not addressing well about caregiver's satisfaction on cadres method on delivering MNP messages. This is important especially to judge the methods either appropriate or not.

Each of the stakeholders, i.e. health managers, and cadres had similar perception, also caregivers admitted, that beneficiary's compliance on the MNP were considered low. This supported also from survey result, that children compliance was also low (23.7%). In line with that, from document review it was found that initial MNP (*Vitalita*) coverage was decline sharply from the initial year, and until February 2009, the coverage of MNP (*Vitalita*) only 30% or less and caregiver's acceptance was 27% (Dinkes, 2008a; Dinkes & UNICEF, 2009). It might reflect that health managers were had information about low compliance, but, there was no significant action to improve the communication program. Eventhough this study was not designed to reveal the program constraints; however, I assume that it might be happen because of either, lack of financial support, management issue, or inadequate knowledge of cadres. With regard to financial support, health managers at *Puskesmas* assume that incentive would increase cadre's motivation to conduct communication activities. However, according to them, during period of years 2008 – 2009 there were no incentive for cadres from local government. Even though lack of financial support, there are few cadres had admitted that they did home visit and counselling activities regarding MNP. In terms of management issue, there was no guideline for either cadres or *Puskesmas* staff about how to deliver MNP communication program effectively, and transfer of knowledge from trained cadres to the colleagues was

inadequate. Moreover, with respect to cadre's knowledge it was insufficient to deliver messages regarding MNP.

Because of the communication program did not functioning well, therefore, I assume that caregiver's compliance was influence by their children's compliance, instead of communication program. Also, the term of obedient was more appropriate instead of compliance, because the caregivers administer the MNP into the food only if the children like it. This was supported by explanation of the health managers (i.e. responsible person on MNP program at DHO and *Puskesmas* levels) and cadres regarding the problem on MNP communication program, i.e. most of the children did not like MNP, because it can change taste and odor when mix with food, the caregivers refuse to force feed their child to eat the food when mix with MNP, and they perceive it might cause of diarrhea and fever. Furthermore, the caregivers also had similar perception, which is their child did not like if the food mix with MNP. This problem might reflect that messages regarding MNP were highly likely inadequate and less accessible to the targeted beneficiaries. In line with that, the HKI (2006) also cited that major reason of low compliance on MNP was the children did not like it (i.e. *Vitalita*) when it mix with the food. Because of the limitation of MNP, i.e. can not be used on hot foods or on liquids, therefore the HKI had recommended that proper use of MNP should be explained adequately to the caregivers before it first use.

According to Perez-Cuevaz, et al., (1999), to design effective communication program, a health planners should engage in activities oriented to gaining understanding about what govern caregiver's decisions to conduct a particular health-related behavior. A critical component to this activity is the health planners must explore various determinants of health-related behavior to discover the caregiver's conceptual framework, which incorporates knowledge, and attitudes relevant to her community and guides his/her practices. This information matters especially on developing educational messages adapted with local context or avoid recommendations that head-on collisions with local cultural beliefs (Launer & Habicht, 1989). Study in Mexico (2007) revealed that adaptation of messages regarding micronutrient supplementation into local condition, and adopted it on communication intervention had improved

caregiver's knowledge and use of micronutrient supplement (Bonvecchio, et al., 2007).

Eventhough the conceptual thinking of the caregivers regarding MNP was not our focus in this assessment, however, some part of the conceptual thinking were revealed. For example, most of the caregivers tend to mix the MNP with warm rice and vegetable broth. This practice clearly head-on collision with one of the MNP preparation messages, i.e. it was inappropriate for hot and/or soup based food (UNICEF, 2007b, 2007c). Other consideration related to conceptual thinking was perception related to the MNP. This study found that several caregivers have had perceive the MNP as medicine and they did not want to administer it frequently. Further, most of the caregivers perceive it as vitamin, however, we have to look carefully of this perception, is it the true concepts of vitamin or not. Study from HKI regarding MNP (2006) found similar perception by the caregivers, but the concepts were quite different, in which vitamins were often perceived as necessary for children who are underweight, frequently sick, faint, pale, or developing slowly for their age. It seems that caregivers give vitamin or supplements in response to these symptoms and stop giving them when the child improves. Other consideration was immediate or observable improvement related to the MNP. In which, most of them perceived that it could make their children healthier and improve their appetite. However, after 2 or 3 times administering the MNP, they did not found such things occurred, and later on it might leads to low compliance. Therefore, with respect to MNP messages careful consideration must be paid to how it is labeled and marketed in health programmes. Because, as explained by Ellis, et al., (2007), it should be the same balances between encouraging the proper use of health package, i.e. introduction zinc therapy or MNP, and not raising unrealistic expectations of targeted beneficiaries. Because it is might disappoint if their expectations of an immediate – observable – improvement regarding such product were not fulfilled.

Although, the MNP was considered more programmatically practical (HKI, 2006) as supported by several reason, for example it does not require major changes in dietary practices (Nestel, et al., 2003; Zlotkin & Tondeur, 2007; HKI, 2006; Adu-Afarwuah, et al., 2008; Zlotkin, et al., 2003), however, it should be

integrated in the promotion of appropriate feeding practices, since it can only be used with complementary foods (Zlotkin, et al., 2003). Moreover, many studies suggested that fulfillment of macronutrient requirement is prerequisite for good absorption of micronutrient supplement. Therefore, improving quality of home feeding and caregiving should be considered as part of communication program on MNP (Fahmida, et al., 2007). Because most of the inhabitants in the study site rely on agricultural sector and were considered as poor, so that, promotion and support for family – and self – reliant approaches, for example home or community gardening, is important. In other words, as recommended by Latham (2010), plant – based food system are contribute very significantly to good nutrition, including micronutrient status, also protect against various disease, something supplements can not do. This is matters for a sustainable intervention aimed at prevention rather than treatment of a recognized illness. Although, in the study area infant and young child feeding (IYCF) program has been implemented, however, it was not part of our assessment and to date there is no data regarding the effectiveness of such program related to improvement of underfive feeding practice. Furthermore, based on baseline survey of Chansys program in Lombok Tengah District in 2007, it was found that mothers knowledge, attitudes, and behaviors related nutrition and health is relatively low, especially in terms of underfive feeding practices, as well as knowledge about the relationship between food consumption, nutritional status and health status. Further, food intake among underfive children was less varied and only 38% of them consumed at least 4 combination of food per day (UNICEF, 2007d). These findings, it seems support our findings related to feeding practices, where most of the caregivers tend to mix the MNP with warm rice and vegetable broth, or 2 combination of food per day, consequently it might hamper uptake of micronutrients from the product. Therefore, further study is needed to assess implementation of IYCF program in this area related to improvement on underfive feeding and caregiving practices.

CHAPTER 6
CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

a. All of the essential system components on MNP communication program in Praya Tengah sub-district were deficient. In the preparation phase, part of these deficiencies were due to inadequate training for cadres, plan on home visit and counseling activities was unavailable, and poor knowledge and competencies of cadres to deliver MNP communication program. In the implementation phase part of these deficiencies were lack of IEC materials, guidelines for cadres and *Puskesmas* staff to conduct communication activities were inadequate, improper plan and management in *Puskesmas*, lack of financial support, coping mechanism to diminish noise on communication was not design, inadequate record and report system, ineffective supervision, and inadequate MNP messages delivered by the cadres to the caregivers. As essential system components were strongly interrelated in their implementation, consequently, MNP communication program did not well function and it might not reach its potential benefit yet.

b. Because of planning regarding MNP communication program was not well prepared, consequently, its implementation was inadequate. As a result it leads to low compliance of the beneficiaries.

c. The health managers and *Posyandu* cadres have consistently perceived several reasons as problem regarding MNP communication program, i.e. most of the children did not like MNP, the caregivers refuse to force feed their child to eat the food when it mix with MNP, and they perceive it might cause of diarrhea and fever. This might reflect that caregiver's compliance was more influence by their children's compliance, instead of communication program, and low comprehension regarding MNP, because the messages were highly likely inadequate and less accessible to the targeted beneficiaries. Other issues that might hamper communication on MNP were resources and management issue. At the *Posyandu* level, most of the cadres self perceive incapable on delivering MNP messages, supportive supervision from health workers (*Puskesmas* staff) was inadequate, and lack of financial support. At the

Puskesmas level, monev activity, i.e. supervision was inadequate, lack of support form inter-sector and program, and unclear job description between *Puskesmas* staff regarding MNP communication program. At DHO level, monev activity, including supervision, was inadequate, mostly because of financial concern.

6.2. Recommendations

a. The influential people in the community, i.e. religious leaders and community leaders should be involved in the social mobilization activities regarding MNP.
b. Make clear guidelines about the activities on delivering MNP communication program. For example, what is the *Puskesmas* staf or *Posyandu* cadres role on conducting MNP communication activities.
c. In the preparation of the MNP communication program, it should also involve experts from other fields, anthropology and communication experts, in order to depict conceptual thinking of the community and to tailored effective messages. This is matters, especially to enhance community acceptance on MNP.
d. Further study need to be conducted to know what factors determine cadre's activities on delivering MNP communication program, either due to lack of financial support, management issue, or inadequate knowledge and skill of the cadres to perform communication activities.
e. Further study need to be conducted to know impact of cadre's communication skill on the caregiver's knowledge regarding MNP.
f. Further study need to be conducted to know what is the best methods to deliver MNP communication program to the community.
g. Further study need to be conducted to know implementation of IYCF program related to improvement of quality of home feeding and caregiving practices.

REFERENCES

Bloem, M., Briend, A., deBenoist, B., Dalmiya, N., Hill, I.D., Gross, R., Hall, A., Loretti, A., Mclean, E., Briel, T.V.d., Prinzo, Z.W., & Zupan, J. (2006). *Preventing and controlling micronutrient deficiencies in populations affected by an emergency: Multiple vitamin and mineral supplements for pregnant and lactating women, and for children aged 6 to 59 months*: Joint statement by the World Health Organization, the World Food Programme and the United Nations Children's Fund.

Rivera, J.A., Hotz, C., Gonzalez-Cossio, T., Neufeld, L., & Garcia-Guerra, A. (2003). The effect of micronutrient deficiencies on child growth: A review of results from community-based supplementation trials. *J. Nutr., 133*, 4010S-4020S.

ADB, & MOH (2009). *Enriching lives of the urban poor through food fortificatian: Feasibility, efficacy, effectiveness, and consumer research study.* Jakarta: The Asian Development Bank (ADB) & The Directorate for Community Nutrition Ministry of Health Republic of Indonesia (MOH).

Atmarita (2005). Nutrition problems in Indonesia. *Penel Gizi Makan, 28*(2), 43-55.

Black, R. (2008). Nutrition: Building a healthy foundation for the future. On *The Lancet's series on maternal and child undernutrition.* Washington, DC: Johns Hopkins Bloomberg School of Public Health.

Fahmida, U., Rumawas, J.S., Utomo, B., Patmonodewo, S., & Schultink, W. (2007). Zinc-iron, but not zinc-alone supplementation, increased linear growth of stunted infants with low haemoglobin *Asia Pac J Clin Nutr, 16*(2), 301-309.

Winichagoon, P., McKenzie, J.E., Chavasit, V., Pongcharoen, T., Gowachirapant, S., Boonpraderm, A., Manger, M.S., Bailey, K.B., Wasantwisut, E., & Gibson, R.S. (2006). A multimicronutrient-fortified seasoning powder enhances the hemoglobin, zinc, and Iodine status of primary school children in north east thailand: A randomized controlled trial of efficacy. *J. Nutr. , 136*, 1617-1623.

Demment, M.W., Youngy, M.M., & Sensenig, R.L. (2003). Providing micronutrients through food-based solutions: A key to human and national development. *J Nutr, 133*, 3879S–3885S.

Nestel, P., Briend, A., deBenoist, B., Decker, E., Ferguson, E., Fontaine, O., Micardi, A., & Nalubola, R. (2003). Complementary food supplements to achieve micronutrient adequacy for infants and young children. *J Pediatr Gastroenterol Nutr, 36*(3), 316-328.

WHO. Preventing micronutrient deficiencies: Factsheet 4 [WHO Europe]. Retrieved May 3, 2009, from www.euro.who.int/Document/NUT/Factsheet_4.pdf

Santika, O., Fahmida, U., & Ferguson, E. (2009). Development of food-based complementary feeding recommendations for 9- to 11-month-old peri-urban Indonesian infants using linear programming. *J. Nutr., 139*(1), 135-141.

Allen, L.H. (2003). Interventions for micronutrient deficiency control in developing countries: past, present and future. *J. Nutr., 133*, 3875S–3878S.

Zlotkin, S.H., & Tondeur, M. (2007). Successful approaches: Sprinkles. In K. Kraemer & M.B. Zimmermann (Eds.), *Nutritional Anemia* (pp. 269-283). Basel: Sight and Life Press.

HKI (2006). *Final report of the food for progress: Vitalita sprinkles effectiveness program (SEP) for the period May 2003 – July 2006* Jakarta: Hellen Keller International Indonesia and Asia Pacific

Adu-Afarwuah, S., Lartey, A., Brown, K.H., Zlotkin, S., Briend, A., & Dewey, K.G. (2008). Home fortification of complementary foods with micronutrient supplements is well accepted and has positive effects on infant iron status in Ghana. *Am J Clin Nutr, 87*, 929-938.

Zlotkin, S.H., Arthur, P., Schauer, C., Antwi, K.Y., Yeung, G., & Piekarz, A. (2003). Home-fortification with iron and zinc sprinkles or iron sprinkles alone successfully treats anemia in infants and young children. *J Nutr, 133*(4), 1075-1080.

ADB, & MOH (2008a). *Final report on customer research for multiple micronutrients fortificants (MMF) among underfives of poor families in North Jakarta.* Jakarta: The Asian Development Bank (ADB) & The Directorate for Community Nutrition Ministry of Health Republic of Indonesia (MOH).

Snyder, L.B. (2007). Health communication campaigns and their impact on behavior. *J. Nutr Educ Behav., 39*, S32-S40.

Lutter, C.K., Rodriguez, A., Fuenmayor, G., Avila, L., Sempertegui, F., & Escobar, J. (2008). Growth and micronutrient status in children receiving a fortified complementary food. *J. Nutr., 138*, 379-388.

Rimbatmaja, R. (2009). Lesson Learned: Communication Intervention on Taburia. Unpublished Presentation at Nutritional Anthropology Course in SEAMEO TROPMED RCCN.

UNICEF (2009a, 28 April to 1 May). *Monitoring & evaluation (knowledge & practice) of MNP programme.* Paper presented at the Workshop on Scaling Up the Use of Multiple Micronutrient Powders to Improve the Quality of Complementary Foods for Young Children, Bangkok

UNICEF (2009b, 28 April to 1 May). *MNP project in Indonesia.* Paper presented at the Workshop on scaling up the use of multiple micronutrient powders to improve the quality of complementary foods for young children, Bangkok

Menon, P., MarieT.Ruel, Loechl, C.U., Arimond, M., Habicht, J.-P., Pelto, G., & Michaud, L. (2007). Micronutrient sprinkles reduce anemia among 9 to 24 months old children when delivered through an integrated health and nutrition program in Rural Haiti. *J. Nutr., 137*, 1023-1030.

SGHI (2008a). Social marketing strategies for 'sprinkles' for controlling iron deficiency anemia among infants and young children in Bangladesh [Sprinkles Global Health Initiative]. Retrieved May 1, 2009, from www.sghi.org/worldwide_program/bangladesh_pg2.html

dePee, S., Moench-Pfanner, R., Martini, E., Zlotkin, S.H., Darnton-Hill, I., & Bloem, M.W. (2007). Home fortification in emergency response and transition programming: Experiences in Aceh and Nias, Indonesia. *Food Nutr Bull, 28*(2), 189-197.

Dinkes (2008a). *Identifikasi masalah pendistribusian tabur gizi (vitalita) di Kabupaten Lombok Tengah* (Presentation). Praya: Dinas Kesehatan Kab. Lombok Tengah (Dinkes).

Dinkes, & UNICEF (2009). *Temuan hasil pemantauan suportif kegiatan chansys* (Presentation). Praya: Dinas Kesehatan Kab. Lombok Tengah (Dinkes) & UNICEF.

Siddiqi, S., & Kielmann, A.A. (2009). Health through a system lens, *Course Module: Public Health and Community Nutrition System* (pp. 1-20). Jakarta

Ellis, A.A., Winch, P., Daou, Z., Gilroy, K.E., & Swedberg, E. (2007). Home managemet of childhood diarrhoea in southern mali - implications for the introduction of zinc treatment. *Social Science & Medicine, 64*, 701-712.

Sarma, K.R. (2009). Micronutrients - An essential aid to daily growth in children. *Indian Pediatrics, 46*, 12-19.

Black, M.M. (2003). Micronutrient deficiencies and cognitive functioning. *The Journal of Nutrition, 133*(11S-II), 3927S-3931S.

Ramakrishnan, U., Aburto, N., McCabe, G., & Martorell, R. (2004). Multimicronutrient interventions but not vitamin A or iron interventions alone improve child growth: Results of 3 meta-analyses. *J. Nutr., 134*, 2592-2602.

Lampl, M. (1993). Evidence of saltatory growth in infancy. *Am. J. Hum. Biol., 5*, 641-652.

Rosado, J.L. (1999). Separate and joint effects of micronutrient deficiencies on linear growth. *J. Nutr., 129*, 531S - 533S.

SGHI (2008b). The use of home-fortification with vitalita sprinkles as a component of emergency response and transition programming in Indonesia [Sprinkles Global Health Initiative]. Retrieved October 26, 2009, from www.sghi.org/worldwide_program/indonesia_pg1.html

Valyasevi, A., & Attig, G. (1994). Nutrition communication in south and east asia - experiences and lessons learned Retrieved November 08, 2009, from www.fao.org/DOCREP/T2860T/t2860t05.htm#nutrition

UNICEF (2007a). Final draft for the community health and nutrition system strengthening program for Lombok Tengah District, NTB Province UNICEF.

UNICEF, & WHO (2001). *Communication handbook for polio eradication and routine EPI* (1 ed.). New York: UNICEF, WHO, Rotary International, BASICS, and Ministries of Health Representatives in Africa.

Kielmann, A.A. (2005). An introduction to the health system, health system analysis, and health system research, *Course Module: Public Health and Community Nutrition System* (pp. 1-39). Jakarta

MOH, & UNICEF (2009). *Monitoring & Evaluation (Knowledge & Practice) of MNP Programme*. Paper presented at the Workshop on Scaling Up the Use of Multiple Micronutrient Powders to Improve the Quality of Complementary Foods for Young Children.

Harmiko, M.P. (2007). *A system review on growth monitoring program in Narmada, West Lombok District.* University of Indonesia, Jakarta.

MOH (2009). *MNP Project in Indonesia.* Paper presented at the Workshop on Scaling Up the Use of Multiple Micronutrient Powders to Improve the Quality of Complementary Foods for Young Children.

UNICEF (2007b). *Panduan untuk petugas lapangan: pemberian vitamin A, obat cacing, dan tabur gizi pada anak umur 6 - 59 bulan di Posyandu.* Jakarta: UNICEF & MOH.

Buanasita, A. (2009). *Perkembangan terkini tingkat kemandirian Posyandu di urban area kota surabaya.* Paper presented at the Workshop Forum Gizi dan Keluarga, SEAMEO TROPMED RCCN University of Indonesia.

Sumarno, I., Sudiman, H., Prihartini, S., Kartika, V., Ahmadi, F., Adha, D., Setiawati, B., Utami, N.H., & Putri, D.S.K. (2007). The characteristic of successful Posyandu in Gowa and Karawang Districts. *Penel Gizi Makan, 30*(2), 61-66.

Kielmann, A.A., Janovsky, K., & Annet, H. (1991). *Assessing district health needs, services, and system: Protocols for rapid data collection and analysis.* London, Basingstoke: AMREF, GTZ, and Macmillan Education Ltd.

UNICEF (2002). 2002 IDS: Evaluation of Posyandu revitalization Retrieved September 18, 2009, from www.unicef.org/evaldatabase/index_19007.html

Mudijanto, T.T., Hidayat, T.S., Hermina, Luciasari, E., Afriansyah, N., & Fuada, N. (2003). Positive factors to increase the potential of cadre's integrated service post in order to achieve the nutrition awareness family. *Penel Gizi Makan, 26*(2), 27-34.

UNICEF (2007c). Program chansys: Bahan informasi tabur gizi vitalita. The United Nation Children's Fund (UNICEF).

Sumarna, E. (2001). *Comparison of the nutritional status of underfive children from health centres with different nutrition services performance in East Sumba District.* University of Indonesia, Jakarta.

UNICEF (2007d). *Laporan akhir: Studi baseline pelayanan kesehatan dan gizi serta pengetahuan, sikap, dan perilaku masyarakat terkait kesehatan dan gizi di Kabupaten Lombok Tengah - NTB.* Jakarta: Pusat Penelitian Kesehatan Universitas Indonesia - UNICEF

Balitbangkes (2008a). *Riset kesehatan dasar (RISKESDAS) 2007: Laporan nasional 2007.* Jakarta: Badan Penelitian dan Pengembangan Kesehatan Departemen Kesehatan RI (Balitbangkes).

Balitbangkes (2008b). *Hasil riset kesehatan dasar (RISKESDAS) Propinsi Nusa Tenggara Barat 2007* Jakarta: Badan Penelitian dan Pengembangan Kesehatan Departemen Kesehatan RI (Balitbangkes).

Dinkes (2008b). *Profil Kesehatan Propinsi Nusa Tenggara Barat Tahun 2007.* Mataram: Dinas Kesehatan Propinsi Nusa Tenggara Barat (Dinkes).

Lemeshow, S., Hosmer-Jr, D.W., Klar, J., & Lwanga, S.K. (1997). *Besar sampel dalam penelitian kesehatan* (D. Pramono & H. Kusnanto, Trans.). Yogyakarta: Gadjah Mada University Press.

Roshita, A., Februhartanty, J., & Septiari, A.M. (Eds.). (2009). *Introduction to nutritional anthropology.* Jakarta: South East Asian Ministers of Education Organization Tropical Medicine and Public Health Regional Center for Community Nutrition Universitas Indonesia (SEAMEO TROPMED RCCN UI).

Martini, E., & Halati, S. (2009, 28 April to 1 May). *Communication and training: Experiences using multiple micronutrients powder.* Paper presented at the Workshop on Scaling Up the Use of Multiple Micronutrient Powders to Improve the Quality of Complementary Foods for Young Children, Bangkok

Gross, U., Diaz, M.M., & Valle, C. (2006). Effectiveness of the communication program on compliance in a weekly multimicronutrient supplementation program in Chiclayo, Peru. *Food Nutr Bull, 27*(4), S130-S142.

Ashworth, A., Shrimpton, R., & Jamil, K. (2008). Growth monitoring and promotion: Review of evidence of impact. *Maternal and Child Nutrition, 4*, 86-117.

Salehi, M., Kimiagar, S.M., Shahbazi, M., Mehrabi, Y., & Kolahi, A.A. (2004). Assessing the impact of nutrition education on growth indices of Iranian nomadic children: An application of a modified beliefs, attitudes, subjective-norms, and enabling-factors model. *British Journal of Nutrition, 91*, 779 - 787.

ADB, & MOH (2008b). *Communication intervention of Indonesia's local MMF (multi micronrtrient fortificant) in North Jakarta: Progress report summary as per October 27* The Asian Development Bank (ADB) & The Directorate for Community Nutrition Ministry of Health Republic of Indonesia (MOH).

ADB, & MOH (2008c). *Communication Intervention of Indonesia's Local MMF (Multi Micronrtrient Fortificant) in North Jakarta: Progress Report Summary as per June 10* The Asian Development Bank (ADB) & The Directorate for Community Nutrition Ministry of Health Republic of Indonesia (MOH).

Hornik, R., & Kelly, B. (2007). Communication and diet: An overview of experience and principles. *J Nutr Educ Behav., 39*, S5-S12.

Guldan, G.S., Fan, H.C., Ma, X., Ni, Z.Z., Xiang, X., & Tang, M.Z. (2000). Culturally appropriate nutrition education improves infant feeding and growth in rural Sichuan China. *J. Nutr., 130*, 1204-1211.

Perez-Cuevas, R., Reyes, H., Pego, U., Tome, P., Ceja, K., Flores, S., & Guiterez, G. (1999). Immunization promotion activities: Are they effective in encouraging mothers to immunize their children. *Social Science & Medicine, 49*, 921-932.

Launer, L.J., & Habicht, J.-P. (1989). Concepts about infant health, growth, and weaning: A comparison between nutritional scientists and madurese mothers. *Social Science & Medicine, 29*(1), 13-22.

Bonvecchio, A., Pelto, G.H., Escalante, E., Monterubbio, E., Habicht, J.P., Nava, F., Villanueva, M.-A., Safdie, M., & Rivera, J.A. (2007). Maternal knowledge and use of a micronutrient supplement was improved with a programatically feasible intervention in Mexico. *J. Nutr., 137*, 440-446.

Latham, M. (2010). Commentary: The great vitamin A fiasco. *World Nutrition, 1*(1), 12-45.

Appendix 1.
Health Manager's and Cadre's Perception as Problem regarding MNP Communication Program

Themes	*Posyandu* Cadres	*Puskesmas* staff	DHO officer
Problems	• Chidren did not like MNP • Mostly: taste and odor change • Mostly: there was no positive influence to their child • Caregivers did not patience on giving MNP to their child • Caregiver's perceive as medicine, cause of diarrhea • Mothers has working and tend to forget it • Children get bored with the food • Food pattern: *sebur* • Mostly: feel incapable on delivering MNP messages • Less financial support on *Posyandu* • Less support from *health workers* (Puskesmas staff)	• Chidren did not like MNP • Mostly: taste and odor • Caregivers did not obey the standard for giving MNP • Caregivers did not patience on giving MNP to their child • Caregiver's perceive as cause of diarrhea • Low education level of caregivers: mothers working, the children go to *Posyandu* with grandmother. • Lack of monev mostly caused by lack of financial support • Less inter sector and program support	• Chidren did not like MNP • Mostly: taste and odor • Caregivers did not obey the standard for giving MNP • Caregivers did not patience on giving MNP to their child • Caregiver's perceive as cause of diarhhea • Less motivation of cadres • Lack of monev mostly caused by lack of financial support
Problem solving & Support needed	• Suggest caregivers keep giving MNP so that children more adaptive • Improve support from *health workers* (Puskesmas staff) • Improve support from other stakeholders, i.e. community leader for social mobilization • Religious leader as channels	• Personnel issue • Improve support from other stakeholders, i.e. community leader for social mobilization • Religious leader as channels • Incentive for cadres • Counseling needed	• Improve socialization and motivation to *caregivers* • Improve support from other stakeholders, i.e. community leader for social mobilization • Counseling needed
Recommen-dations	• Pack it in the form of drink, drink mix, or sweet-tasting syrup • Pack it in the form of tablet/candy • Food form, i.e. cake, or snack	• Pack it in the form of drink, drink mix, or sweet-tasting syrup • Pack it in the form of tablet/candy • Food form, i.e. cake, or snack	• Pack it in the form of tablet/candy • Food form, i.e. cake, or snack

Appendix 2. Manuscript

MANUSCRIPT FOR PUBLICATION

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A SYSTEM REVIEW ON THE MICRONUTRIENTS POWDER COMMUNICATION PROGRAM IN PRAYA TENGAH, LOMBOK TENGAH DISTRICT

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Appendix 2. Manuscript

Abstract

Objective. This cross sectional study aimed to conduct a performance evaluation on the micronutrients powder (MNP) communication program within July to September 2009 in Praya Tengah, Lombok Tengah District, Indonesia

Methods. The Kielmann's operational (health) system review was used to assess presence, functioning, and connectivity of essential components in the MNP communication program. The study site were providers: 2 *Puskesmas*, 30 *Posyandu*, 30 cadres, responsible person on MNP program at *Puskesmas* and District Health Office, and target beneficiaries of MNP communication program: 211 caregivers with underfive.

Results. The study found that as a system MNP communication program did not well function and it might not reach its potential benefit yet. As a result it leads to low compliance of the beneficiaries on the MNP. Also, the caregiver's compliance was influence by their children's compliance, instead of communication program. The reason for low compliance, such as it can change taste and odor when mix with food, the caregivers refuse to force feed their child to eat the food when mix with MNP, and they perceive it might cause of diarrhea and fever. Other reasons that might hamper the program were lack of resources and poor management.

Conclusion. All of the essential system components on MNP communication program in Praya Tengah sub-district were deficient. As essential system components were strongly interrelated in their implementation, consequently, MNP communication program did not well function and it might not reach its potential benefit yet. Therefore, to design effective communication program, a health planners should engage in activities oriented to gaining understanding about what govern caregiver's decisions to conduct a particular health-related behavior.

Introduction

Deficiencies of micronutrients are a major global health problem especially among underfive in low income countries, including Indonesia.[1] The most probable causes of micronutrient deficiencies on underfive children are low content in the diet and poor bioavailability,[2] also their high metabolic needs per unit body weight as resulted from their developmental requirements.[3] For young children (i.e. aged 6 – 23 months), energy and nutrient contribution from complementary food becomes increasingly important for meeting daily requirements.

With respect to in home fortification, for this age group specific foods would need to be fortified. With regard to composition, it was recommended that in-home fortificants should contain multi-micronutrients, at least iron, zinc, and a form of vitamin A,[2, 4] iodine, vitamins C and D, and folic acid.[5] Given that the MNP/sprinkles can provide the requirement of micronutrients to each child, even it mixed with a small quantity of food, so that, it is might be feasible to address micronutrient deficiencies problem among young children compare to mass fortification.

In the programmatic setting, "in-home fortificants" or MNP/sprinkles was considered more programmatically practical.[6] However, because of the *sprinkles-concept* foresees mixing the MNP onto any semi-solid food in the household at any mealtime during the day.[7] This practice could be considered as a new practice for mothers/caregivers because it is recommended to be used daily. Also, it is requires mothers/caregivers' understanding about type of food that appropriate with MNP and how to mix it. Hence, to secure high level of acceptance and adoption on MNP among mothers/caregivers, communication intervention is of paramount importance.[6]

In 2007, the UNICEF has integrated MNP program on Chansys (Community Health Systems Strengthening) programs in Lombok Tengah District. The MNP

program is mainly delivered by *Posyandu* cadres to the beneficiaries. In the implementation, communication program was embedded to enhance the compliance. In delivering all messages related to such program was mainly delivered through interpersonal communication, carried out by *Puskesmas* staff, (i.e. nutritionist, midwives, and, village midwives) and *Posyandu* cadres.[8]

Although communication program on MNP was established[i], however, in my assumption, it was not well designed and its monev system was not function[ii]. These were proven by the findings of DHO survey at mid term in 2008, followed by supervisory visit in 2009. The survey has found that 72% of children did not like MNP and mostly (60%) caused by taste problem, and *Posyandu* cadres did not distribute MNP, mostly because of underfive rejection and taste problem.[9] Similar findings from the supervisory visit, revealed that mothers did not utilize MNP because child did not like it and children have diarrhea after consume MNP.[10] Therefore, this study focused on performance evaluation on the MNP communication program.

METHODS

Study Population

We included all 10 villages from 2 Puskesmas in the Sub-district. Multistage cluster sampling was occupied to drawn sample. We randomly selected 30 out of 93 Posyandu in the villages, using PPS method. In this study, responsible person on MNP program at DHO and *Puskesmas*, and *Posyandu* cadres represented service provider.

To assess ultimate outcome of MNP communication program, i.e. caregiver's compliance in the area, a sample size of 211 caregivers of underfives was needed considering design effect, and 10% possible drop out. We randomly selected the

[i] UNICEF: Progress review of Chansys implementation 2008, unpublished report.
[ii] Functioning monev. in communication program as indicated by completeness of monev. record and utilization of such record as feedback.

caregivers of underfives based on list in the *Posyandu*. Then caregivers of the underfives were interviewed as representation of MNP communication program target.

Data collection procedures

The data collection was conducted on four places, i.e. at the caregiver's households, at the *Posyandu*, at in the *Puskesmas*, and at the DHO office. Several methods had been conducted during data collection. Interview were done to 211 caregivers of underfive children, 30 Posyandu cadres, and two Puskesmas staff. In-depth interview were done to 10 cadre's coordinator of selected Posyandu, two Puskesmas staff and one DHO staff. Both activities were conducted with convenient situation (inside or outside the building, i.e. house/Posyandu/Puskesmas) of each selected subject. FGD were conducted in 10 Posyandu which were chosen randomly from the 30 selected Posyandu. Observation was done at the Posyandu, cadres house, head of sub-village house, village office, and Puskesmas. Document review was done at the Posyandu, cadres house, and head of sub-village house, *Puskesmas*, and DHO office.

Methods of assessment

The Kielmann's operational (health) system review was used as a tool to assess presence and functioning of essential components; also it's connectivity in the MNP communication program (*Figure 1*). The whole system does not function properly if one component is missing or lacking. There are two phases of communication strategies, i.e. preparation phase and implementation phases.

Preparation phase

Service input

This essential component assessed from the following aspects, i.e. availability of: trainers regarding MNP in *Puskesmas*, and training program for cadres and its

support, such as module, standard operational procedure (SOP), financial support, and venue.

Service distribution

This essential component assessed from accessibility of training venue, i.e. physically accessible by walking time less than or equal to 20 minutes and psychologically accessible by perceive easiness to access. Good accessibility if both of physically and psychologically accessible were mentioned, moderate if only one criteria was mentioned, and less if none of those criteria was mentioned.

Management and organization

This essential component assessed from planning and management activities during training for cadres.

Support system

This essential component assessed from the following aspects, i.e. availability of: plan on home visit and counseling activities, and transport system.

Service output

This essential component assessed from the following aspects, such as: number of training for cadres held by *Puskesmas*, actual number of trained cadres, the quality of training, number of training module distributed, and implementation of the SOP during training session

Service outcome

This essential component assessed from the following aspects, such as: proportion of estimated number of trained cadres equipped with adequate knowledge, in which scoring system had been used to categorize theirs knowledge, and the cadres competency on delivering MNP messages,

Community participation

This essential component assessed from the information on village/sub district officer had attended the training program.

Implementation phase

Service input

This essential component assessed from the following aspects, i.e. availability of: trained cadres, nutrition education session during Posyandu days, IEC[i] materials, *Posyandu* venue, SOP on communication, financial support, and coping mechanism to counter "noise" during implementation of the program

Service distribution

This essential component assessed from the following aspects, i.e. availability of *Posyandu* service in terms of open frequency, and its accessibility, i.e. physically accessible by walking time less than or equal to 20 minutes and psychologically accessible by perceive easiness to access. Good accessibility if both of physically and psychologically accessible were mentioned, moderate if only one criteria was mentioned, and less if none of those criteria was mentioned.

Management and organization

This essential component assessed from the planning and management activities regarding MNP at *Puskesmas*.

Support system

This essential component assessed from the following aspects, i.e. availability of transport system, and recording and reporting system regarding the MNP.

[i] IEC materials consist of 1) subject know how, i.e. MNP (i.e. Vitalita) guidelines book developed by HKI, leaflet, poster, banners, and billboard, and 2) technical know how, i.e. Vitamin A, deworming, and sprinkles/MNP field guidelines book developed by UNICEF and MOH

Service output

This output of communication intervention regarding MNP assessed from the following aspects, i.e. actual number of IEC materials posted/available at *Posyandu*, adequacy of SOP on communication regarding MNP at *Posyandu*, number of nutrition education session held at *Posyandu* day, number of cadres conduct counseling to the caregivers regarding MNP, adequacy of information during nutrition education regarding MNP, and coping mechanism activities had been conducted.

Service outcome

The outcome of communication intervention regarding MNP assessed from the following aspects, i.e proportion of the caregivers who attend nutrition education session at *Posyandu* equipped with adequate knowledge regarding MNP. Caregiver's knowledge was considered adequate if caregivers could mention all of 13 essential messages regarding MNP, and caregiver's preference on MNP formulation, handling, and their perceive needs on MNP, i.e. their subjective judgment whether their child needs the MNP, willingness to pay if MNP will be sold in the free market and eagerness to pay a minimal fee for MNP per sachet.

Community participation

The indicators of community participation including of information on: caregivers visit *Posyandu* and caregivers attends nutrition education/counseling session at *Posyandu* during August and September 2009.

Beneficiary's compliance

This indicator assessed from the caregiver's and underfive children's compliance on MNP. Caregiver's compliance was obtained through in-depth interview with *Posyandu* cadres, and responsible person on MNP program at DHO and *Puskesmas*. Underfive children's compliance was obtained based on number of MNP

received and consumed on two months in a row, i.e. August and September 2009 (30 sachets).

Data analysis

In-depth interview and FGD results were analyzed following sequential step, i.e. reading, coding, displaying, reducing, and interpreting. Data entry, cleaning, and analysis were performed using SPSS for Windows Version 15. All variables were descriptively analyzed. Data normality was confirmed by Kolmogorov-Smirnov test. The Chi square test was used to see the proportion significant difference. A *p value* of 0.05 was used as the threshold for significance and two sided.

RESULTS

The Chansys program had using primary health services, i.e. *Puskesmas*, *Pustu/Polindes*, and *Posyandu*, in the sub-district as primary channels of one of their program, i.e. MNP program, and the communieation activities of this program was targeted to caregivers of underfive as beneficiaries. At the *Puskesmas* level, they had trained several staff. The ratio of nutrition staff to the underfive was 1 : 1,573, and ratio of trained staff regarding MNP to the active cadres was 1 : 47. In addition, ratio active cadres to the underfive was 1 : 17.

At *Posyandu* level, the cadres had been trained about the program, and later they would deliver the program, i.e. MNP messages, to beneficiaries, i.e. caregivers of underfive. The cadre's characteristics were described as followed: most of the cadres were female (90.0%;n=27), average age was 34.2±6.0 years, and had 11.6±7.0 duration of being cadres. The educational level was high, where most of them (86.7%;n=26) had finished junior high school level (basic education), and were worked (86.7%;n=26). The beneficiary's characteristics were described as followed: most of the caregivers were mothers (90.7%), the education level of caregivers and their spouses were low, most of

them did not completed basic education level (60.0% and 58.8% respectively), and more than half (57.7%) of caregivers were worked (**Table 1.**).

Essential components of MNP communication program

Preparation phase

Service input

Trained *Puskesmas* staff regarding MNP was available; at least 5 trainers in both of *Puskesmas*. The training regarding MNP for cadres was conducted twice, i.e. the initial training (2007) and refreshment training (2009). The module used during the training for cadres was MNP (*Vitalita*) guidelines book developed by HKI. The SOP document on training was available but in general and there was no specific SOP regarding MNP. Some budget was allocated for the training, in which, each of cadre received approximately IDR 20.000, as transportation fee. The training was delivered in the health facilities of each village, i.e. *Puskesmas* or *Pustu/Polindes*.

Service distribution

Based on cadres answer, the training venue was moderately accessible, Although, estimated walking time of cadres to go to the training venue were 30 minutes (7.8 – 73.5 minutes).

Management and organization

There was a plan for the both trainings, i.e. initial and refreshment, with respect to schedule, venue, method, trainer, and provided material. With respect to the schedule, at initial training, it was conducted based on planned schedule. However, at refreshment training, it was not in accordance to planned schedule (second semester of the year 2008), since it was delayed for about a year (July 2009). With respect to the method, the refreshment training for cadres has no improvement from the initial training, which is the latter training was conducted only half day without simulation on

MNP preparation, because its preparation was considered similar with initial MNP (*Vitalita*), as explained by the trained cadres.

Support system

According to responsible person on MNP program at *Puskesmas* that home visit and counseling activities regarding MNP were not planned as one of cadre's activity to promote the MNP to the beneficiaries. Further, most of the cadres (90.0%;n=27) preferred to take public transportation (*Ojek* and *Angkot*[i]) to go to training venue. Because, it considered is affordable way (IDR 3700) to reach the venue.

Service output

Trainings for cadres were conducted twice in every village under supervision in the past two years. From all active cadres in *Posyandu*, there were 177 of them had been trained on MNP, giving the proportion to the active cadres (n=465) was 38.1% in the past two years. To determine the quality of training was gathered from triangulation of information source. Based on information given by responsible person on MNP program at DHO level the quality of training regarding MNP for *Puskesmas* staf and *Posyandu* cadres on August 2009 was moderate/*sedang*. The trainers from *Puskesmas* also perceive the quality of training regarding MNP for *Posyandu* cadres was fair/*cukup*. This information was confirmed by the cadre's perception that the quality of training regarding MNP for *Posyandu* cadres was also fair/*lumayan*. There was inline information from the three sources to one another.

According to responsible person on MNP program at *Puskesmas*, during implementation of the program the module was delivered to all cadres with ratio 1 : 1. However, based on our observation most of the trained cadres (83.0%;n=25) did not have the module anymore, and there was no mechanism for requesting or replacement

[i] Ojek is motorcycle public transportation, *Angkot* is autocar public transportation

for such material. Since there was no specific SOP regarding MNP, then, information on SOP application was not gathered in this study.

Service outcome

Based on interview with selected cadres, it was found that none of them have adequate knowledge regarding the messages, giving the median score of their knowledge was 7 [3 – 9 (med, min – max)] **(Table 2)**

To describe cadre's competency on this study was based on the perception of the responsible person on MNP program at *Puskesmas*. According to him/her that in general, the cadres are not competent in delivering MNP related messages.

Community participation

The supports from community leader as represented by head of the village or its secretary were inadequate. During this training, as informed by most of the cadres, they only deliver speech in the opening session but did not involve in the discussion related to communication activities.

Implementation phase

Service input

A number of cadres had been trained to implemented MNP communication program. There was agreement between trainers and trainee, i.e. cadres, that nutrition education regarding MNP would be provided through mass nutrition education (*penyuluhan*) in *Posyandu*. The IEC materials regarding MNP were provided by DHO to *Puskesmas* and *Posyandu* on the initial project. The MNP communication was mainly delivered during *Posyandu* session, where located either in "*Berugag*"[i] (n=21), cadres/head sub-village house (n=8), or PAUD[ii] building (n=1). The SOP on MNP communication during *Posyandu* session was available,[11] and had been delivered

[i] *Rumah panggung* or Gazebo
[ii] PAUD: Pendidikan Anak Usia Dini or ealy childhood education program (aged 2 – 4 years)

during the cadres training. Also, the SOP regarding MNP communication activities, i.e. delivering MNP messages, had been conducted through regular nutrition education session. There was no financial support specifically allocated on MNP communication activities. Also, the mechanism designed specifically to counter "noise" regarding MNP in the community was not deigned. Further, the ***trained cadres*** were expected to have initiative to diminish any noise in the community, although, such part was not delivered on the training.

Service distribution

Posyandu session, when the MNP messages delivered, was performed on regular basis in the past two years. In general, most of the caregivers (82.3%;n=177) and cadres (96.7%;n=29) considered *Posyandu* has good criteria of accessibility.

Management and organization

At the DHO level, based on document review, it was found that the document plan regarding MNP was available. With respect to MNP communication program, the planning mainly focused on training program for *Puskesmas* staff and *Posyandu* cadres, and IEC materials production and distribution. Also, it was planned that IEC materials would be developed by considering its local contents and language. At the *Puskesmas* level, aside from planning regarding training program for cadres, there was no planning about communication activities that should be done to deliver MNP messages to the community, except agreement on mass nutrition education at *Posyandu* day, as explained by the cadres. In line with that, the score for planning and management regarding MNP was only 17.0%, mainly because of there was no Gantt Chart and lack of job description to guide the *Puskesmas* staff, also, supervision activity was inadequate. Similar with that, mostly cadres cited that supervision from *Puskesmas* was

only pointing out the distribution of MNP, and rarely addressed on communication aspect, for example to address why children did not like the MNP.

Support system

The transport system available was *Ojek* and *Angkot*. However, most of the caregivers (95.8%;n=206) and cadres (93.3%;n=28), prefer to walk to go to *Posyandu*. Recording and reporting system on distribution of IEC materials was available, but only for distribution of this material from DHO to *Puskesmas*. On the other hand, recording and reporting system on communication activities, i.e. cadre's activity on delivering messages regarding MNP in the *Posyandu* was not available, although, such system for MNP distribution was set up. Furthermore, most of the cadres did not perform home visit and counselling activities as explained by responsible person on MNP at *Puskesmas*.

Service output

At DHO level, as explained by the responsible person on MNP program, all of the IEC materials, i.e. banners, poster, and leaflet, had been delivered to the *Puskesmas* and *Posyandu*, and there was no ready stock of these materials. In addition to that, for leaflet and booklet were delivered only for *Puskesmas* staff, i.e. nutritionist or midwives, and *Posyandu* cadres, as confirmed by document review. According to responsible person on MNP program at *Puskesmas*, five leaflet and poster, and four banners for *Puskesmas*, and five leaflet and poster for *Posyandu*, were had received from DHO. With respect to distribution of IEC materials to *Posyandu*, he/she also stated that it was delivered during *Posyandu* day. At *Posyandu* level, according to the cadre's coordinator, they were had received five leaflet and poster from *Puskesmas*. However, based on observation and document review, only few of this material were posted or available in the *Posyandu*.

Appendix 2. Manuscript

Nutrition education session was held in *Posyandu* day during either in August or September 2009 mostly 1 times (70.0%;n=21). Based on observation of responsible person on MNP program at *Puskesmas*, it was found that mass nutrition education was not conducted every month regularly. As resulted from in-depth interview with 10 cadres, in terms of number of messages delivered, it could be concluded that the messages were highly likely inadequate. Further, these results were found consistently during the in-depth interview session, assuming that, it can also be generalized to all cadres. The SOP on communication was inadequate, because, it was only emphasize *where* to deliver messages, i.e. *Posyandu*, *when* messages delivered, i.e. *Posyandu* day, and by *whom* messages delivered, i.e. trained cadres. On the other hand *how* to deliver messages, i.e. mass nutrition education (*penyuluhan*) or counseling activities was not elaborated in the SOP.

Service outcome

Information on adequacy of caregiver's knowledge was subtracted from 168 (78.0%) interviewee attended nutrition education regarding MNP in *Posyandu* days on August and September 2009. Based on their answer, none of them have adequate knowledge regarding the messages; giving the median score of their knowledge was 7 [2 – 10 (med, min - max)] (**Table 3**).

All of the caregivers (100.0%;n=215) give no complaint with respect to packaging, i.e. sachet. Most of the caregivers like the MNP before mix with the food, in terms of powder form (95.8%;n=206), color (100.0%;n=215), aroma (95.3%;n=205), and taste (89.3%;n=192). All of the caregivers (100.0%;n=215) stated that a single sachet of the MNP was easy to administer and store. More than three quarter of mothers (77.7%;n=167) perceived that their child needs the MNP. However, among them, only half of their children (50.3%) like the MNP when mix with the food. In line with that,

based on FGD, it was found that most of the caregivers perceived that their children required MNP and its preparation did not give any burden to them. However, they did not give it routinely as recommended because of their children did not like if the food mix with MNP. Further, if the MNP would be sold to the free market, more than half of caregivers (68.4%;n=147) said that they have not been willing to pay. On the other hand, among those who willing to pay for the MNP (31.6%;n=68), they prefer to spend as much as IDR 4750 per box [1,000 – 15,000 (med,5^{th} – 95^{th} percentile)], from the local health facilities, such as *Posyandu* or *Puskesmas* (92,6%;n=57).

Community participation

Support from community in *Posyandu* activities was also positive. During August and September 2009, most of the caregivers had visited the *Posyandu* (90.7%;n=195) and attend nutrition education session at *Posyandu* (78,2%;n=168), at least 1 time

Beneficiary's compliance on MNP

The beneficiary's (i.e. the caregivers and underfive children) compliance on MNP was considered low. The underfives children compliance was only 23.7% (n=51). This is mostly because of the underfive children did not like to eat their food when it mix with MNP. With respect to caregiver's compliance to administer the MNP, most of the cadres complain that caregiver's acceptance on MNP was low, because they did not administer the MNP routinely as recommended, which is proven by so many leftover in their house. Based on FGD it was found that several factors might influence caregiver's compliance, i.e. the *organoleptic* (taste, color, aroma) change of the food, their child get bored with the food, and perceived cause of diarrhea and fever. Another reason of caregiver's low compliance was related to the benefit of MNP and its responsive

feeding. More than half of caregivers perceived that it has no direct benefit in terms of improve appetite or health to their children.

Health manager's and cadre's perception as problem regarding MNP communication program

The health managers (i.e. responsible person on MNP program at DHO and *Puskesmas* levels) and cadres have consistently perceived several reasons as problem regarding MNP communication program, i.e. most of the children did not like MNP, because it can change taste and odor when mix with food, the caregivers refuse to force feed their child to eat the food when mix with MNP, and they perceive it might cause of diarrhea and fever.

Another problem faced by the cadres during implementation phase that most of the caregivers perceive that the MNP has no positive influence to their child in terms of benefit, i.e. appetite and health, and their children get bored with the food. Food pattern, i.e. *sebur* (mix rice with vegetable broth) also influence earegivers acceptance with the MNP.

Another issues revealed in this study that might hamper communication on MNP were resources and management issue. These issues were consistently found in each level of health care delivery services. At the *Posyandu*, most of the cadres feel incapable on delivering MNP messages to the beneficiaries; this is related to personnel issue. Also they perceived that supportive supervision from health workers (*Puskesmas staf*) was inadequate, and lack of financial support for supporting cadre's activities. At the *Puskesmas* level, responsible person on MNP perceived that monev activity, i.e. supervision was inadequate. Also, adequate support form inter-sector and program was needed. Therefore, coordination between *Puskesmas* staff and job description and management areas were necded to be developed. Similar problems also occurred at

DHO level, as explained by responsible person on MNP program; he perceived that monev activity, including supervision, was inadequate, mostly because of financial concern.

DISCUSSION

The MNP communication program should be well-planned and then well-implemented in order to secure high compliance on MNP among the beneficiaries. Further, to be effective, it should involve providers (health workers) for training activities, institutions (government and NGO) for advocacy activities, and people (community/religious leader, and community based organization, i.e. *PKK*[i], dan *grup pengajian ibu*[ii] at village levels) for social mobilization activities. [7, 12]

At DHO level, planning document on MNP communication activities was available, i.e. TOT, cadres training, and production and distribution of IEC materials. However, aside from training, there was no clear guideline on what other activities that should be done by *Puskesmas* staff and *Posyandu* cadres to promote the MNP to the community. On the contrary, the responsible person on MNP program at *DHO* had realized the important role of *Puskesmas* in the MNP communication program; especially on determining socialization and training activity for cadres. However, based on survey, it was found that lack of proper planning and management occurred in *Puskesmas* level as indicated by low score (17.0%) of planning and management regarding MNP. Also, again there was no planning about communication activities that should be done to deliver MNP messages to the community. Based on our observation, low planning and management score was mainly because of there was no Gantt Chart and lack of job description to guide daily activities of the *Puskesmas* staff. Also, supervision activity regarding MNP communication activities, i.e. to address why

[i] PKK is family welfare empowerment group/*pemberdayaan kesejahteraan keluarga*
[ii] Grup pengajian ibu/*Caregivers religious activity group by reading the Al Quran*

children did not like the MNP, was rarely conducted and feedback was given orally without clear direction. This might influence cadre's activity on delivering messages on MNP. In line with that, Harmiko (2007),[13] and Sumarna (2001),[14] both also observed similar findings, in which planning and management score less than 50% was inadequate to support significant quality of health services, i.e. GMP program. In which lack of job description and poor supervision activities were occurred.

Above condition indicating that management responsibilities (i.e. management areas, management task, management functions, and managerment activities) and management strategies (i.e. management tools and techniques, and management principles) regarding MNP communication program on each level of health care delivery services were not adequately defined by program implementers. Consequently, the MNP communication program might not reach its potential benefit yet.[15] In this country, issues related to the ineffective planning and management on primary health care (PHC) system has been well recognized. It seems that stakeholders has less exposed if not at all with the result of study that assessing PHC system, for example on growth monitoring program (GMP). [13, 14, 16] To my opinion there are two things that underlying this problem, the first: many local studies regarding PHC system was not published well, secondly: many good studies that have been published were inaccessible, for example in terms of language. Therefore, the academicians, i.e. researchers and lecturers, have significant role to conduct research or interpret the research findings and make recommendation on PHC system improvements. In other words, knowledge sharing between each of stakeholders, i.e. academicians and program planners, is important to improve primary health care delivery services.

In terms of health provider's involvement, it was found that the ratio of nutritionist to the inhabitants (7.7 per 100,000) was insufficient from recommendations

(22 per 100,000). This is matters, because the nutritionist was not only involved in technical issue regarding nutrition *per se*, but also in managerial issue of the nutrition program, as explained by the responsible person on *MNP* program at *Puskesmas* level. Also, each of the trained *Puskesmas* staff, should supervised 47 active cadres, and most of the supervision activity between *Puskesmas* staff and cadres was performed during *Posyandu* day. Therefore, ideally one trained cadres should served one *Posyandu* or 26 *Posyandus* per month, so that every *Posyandu* would have sufficient time regarding supervisory visit. However, based on that explanation, I assume that the ratio was inappropriate. At *Posyandu* level, most of the cadres (89.4%) were categorized as active, and each of them, took care of 17 underfive children in average, which was quite similar with the ratio in West Lombok, where each of them, took care of 19 underfives.[13] However, among active cadres, only 38.1% had been training on MNP related topics, in which might influence communication activities if knowledge and skill transfer from trained cadres to others cadre did not occurred. This is important, because this study revealed that such activity was inadequate, which is being conducted unintentionally, information regarding MNP only given orally, and no simulation about MNP benefit and its preparation.

With respect to the MNP training program, ideally this activity should considered at least four factors, i.e. number of participants i.e. should not exceeds 15 trainee for TOT and 25 trainee for cadres training, duration of time, i.e. two full days for TOT and one full day for cadres training, evaluation method, i.e. pre-post test, and topics delivered, i.e. subject know how and simulation, also communication skill.[17] In this study, it was found that during training for cadres, the number of participants was ranged from 15 – 40, training duration was only half day, and there was no evaluation mechanism. In addition to that, the topics delivered not only about MNP *per se*, but also

covered deworming, Zn tablet and diarrhea, Vitamin A, EBF and *IMD*. Further, topics regarding MNP mostly about *subject – technical know how* regarding MNP, but only given orally without simulation, while issues on communication skills was not included. Even though the health managers had perceived quality of cadres training as moderate, however, according to the trainee (i.e. cadres), they were less understood about the topics delivered. In line with that, based on survey, it was found that none of them had adequate knowledge regarding essential messages on MNP. This indicates that the 2 times cadre's training by health *Puskesmas* was ineffective or low quality of training. Consequently, it might result in poor knowledge and later influence the beneficiary's compliance. According to The United Nations Sub-Committee on Nutrition (2000), the major reason for the lack of compliance with supplementation program, i.e. iron, is the lack of appropriate training of health staff.[18] In line with that, from Workshop on Scaling Up the Use of MNP in Bangkok (2009), revealed that inadequate training for health providers might lead to adverse effect and low compliance.[17] Another experience that supported our findings was from the Indonesian Family Nutrition Improvement Program (UPGK – Usaha Perbaikan Gizi Keluarga), which is a national intervention focusing on nutrition education through growth monitoring, delivered by cadres, shows that weaknesses in training (too brief and not practice-oriented) resulting that cadres had neither the knowledge nor skills to communicate effectively with caregivers. So that, high-quality village-based delivery is difficult to achieve.[19]

Another consideration on communication program was advocacy activities. This study revealed that such activities had been conducted through *Socialization and Technical Preparation Workshop on Chansys new intervention activities* in the each administrative level, i.e. provincial, district, sub-district, and village level. The main

purpose of such activities was gathering common understanding and commitment in supporting CHANSYS new intervention program from cross sectional and cross cutting program[i] in the each administrative level. Further, such meeting was supposedly to conclude activities of each stakeholders, however, with respect to implementation of communication activities in the each administrative, only in the sub-district and village level, i.e. *Puskesmas* staff and the cadres have clear activities in delivering MNP messages.

In terms of social mobilization, even though the responsible person on MNP at DHO and *Puskesmas* had similar concern, that MNP communication program should involve other local stakeholders, i.e. community leaders and religious leader, and not merely based on mass nutrition education in *Posyandu* activities, but still, their involvement in the communication activities was minor. On the other hand, the caregiver's had better involvement in the communication activities, as judged by *Posyandu* visit and nutrition education attendance. This might be happen because during advocacy activities, the local stakeholder's role has not clearly defined. To our knowledge, in the study site the community leaders and religious leaders were highly appreciated by the community, therefore, it was necessary to involve them in the communication activities. Study in Iran (2004) revealed that the influential people i.e. religious leaders, community leaders, and others family members (educated daughters), with their prestige, leadership, and close contact with the community, was proven to be important on bringing the particular program closer to the community.[20] Similar feature was also occupied during communication program on *Taburia* in North Jakarta (2008), in this program religious leaders together with *Posyandu* cadres was actively

[i] Participants of *Socialization and Technical Preparation Workshop an Chansys new intervention activities* in the sub-district and village level, i.e. Head or staff from Sub-district office and *Puskesmas*, head of village or his representative, PKK, and cadres, based on progress review report, February 2009 by UNICEF

encouraged the caregivers to utilize the MNP, either in *Posyandu* session or community festivals.[21] Therefore, local stakeholders should be involved as local mobilizers or channels regarding MNP communication activities, to increase awareness of caregivers on the benefits of MNP. An international review suggested that social mobilization, participation, and commitment building was key issue in successful and sustainable of health program.[13]

The activities to deliver MNP communication program, i.e. mass nutrition education in *Posyandu* day, were not in place. This is because of the implementation of such activity only based on oral agreement between *Puskesmas* staff and cadres during training program, poor supervision activities from *DHO* and Puskesmas, and there was no clear guideline on how to perform such activity effectively, for example, what essential messages should be delivered, what audio visual aid should be used, how to measure audience comprehension, should occupied simulation on MNP or not, etc. Therefore, the trained cadres did not quite sure whether the caregivers understand the messages delivered or not. This findings, was quite different with communication activities on MNP *Taburia* in North Jakarta (2008). This activity has provided clear guidelines, i.e. action plan, to the cadres when managing communication activities in the community.[22, 23] As resulted in high comprehension of caregivers to the MNP.[22]

Aside from mass nutrition education, in which cadres as the main channel in the MNP communication program, the distribution and availability of others channel, i.e. IEC materials, was also important. Eventhough the service distribution through *Posyandu* was quite good, in which were indicated by open frequency of the *Posyandu* on regular basis (monthly) and both, the cadres and caregivers, mostly perceived that such place have good criteria of accessibility, however, because of the venue of *Posyandu* activities mostly in *Berugag*, so that IEC materials, i.e. posters, could not be

posted in the long term. It is recommended that IEC materials posted in the accessible place for all target population, i.e mosque, village office, head of village or sub village house, and PAUD buildings.

The IEC materials at least have two functions in the communication activities, as followed: 1) to provide information, i.e. booklet and leaflet, and 2) to increase motivation, i.e. posters and banners.[17] However, based on document review, it was found that such materials in terms of number either in *Puskesmas* or *Posyandu* were lacking. In terms of information regarding MNP, the messages were only focused on one specific timeline, i.e. to motivate mothers/caregivers to bring their children and receive free MNP at *Posyandu* during August 2007, and especially for leaflet, it was not explain all of the essential messages on MNP. However, it should be considered also that even sophisticated IEC materials would not reach its potential benefit if the targeted beneficiaries could not comprehend the messages regarding MNP. From this study, it was found that more than half (60.0%) of the caregivers had low educational level, which is might affect their comprehension regarding the messages.

Therefore, based on above explanations, it seems that caregivers had less exposure to the MNP communication program, because such program only rely on mass nutrition education in *Posyandu*, and the IEC materials. On the other hand frequent exposures from various sources of communication channels are needed in order to create demand of the beneficiaries regarding MNP. According to Hornik and Kelly (2007),[24] exposure matters for the success of communication program, based on followed reason, 1) doing repetition is effective strategy to increase likelihood of target to adopt new behavior, 2) repeated exposures increases the likelihood that a message will reach an audience member when he/she is ready to receive it, 3) if the same messages repeated in multiple channels, it creates the perception that many different

sources are saying the same thing, also audiences will begin to think it must be important, 4) heavy exposure also may increase the social discussion and diffusion of the messages through social networks.

In addition to the caregivers less exposure, in terms of knowledge, none of them had adequate knowledge regarding MNP. As described previously, there were 13 essential messages regarding MNP, and it was spread out into three titles, i.e. benefit, preparation, and recommendations. Based on survey, it was found that, several messages were commonly known by the caregivers, such as MNP benefit, i.e. it could improve immunity (92.8%) and appetite (73.2%) of their children, MNP preparation, i.e. spread it into solid food (97.6%), and did not mix it with liquid food (85.7%), and MNP recommendations, i.e. give it one sachet per day (89.3%), beneficiaries were children aged 1 – 59 months (69.6%), and administer it every one day interval (64.3%). Other messages, such as prevent from anemia and other micronutrients, do not cook, do not mix it with hot food, etc, were uncommonly known.

As mentioned before that communication activities were centered in the *Posyandu* and the cadres as main source of information, so that, inadequate knowledge of the caregivers was related with cadre's activities during nutrition education session. Therefore, several possibilities might influence caregiver's knowledge regarding MNP, i.e. cadres did not deliver the messages regarding MNP, cadres delivered only some part of the essential messages, or the caregivers did not understand the messages delivered. The first possibility was inconsistent with statement of the responsible person on MNP at DHO and *Puskesmas*, also from document review, which is suggest that communication activities were performed during *Posyandu* day. The second possibility was inline with the result of the study, for example, there was no guideline on how to perform mass nutrition education *Posyandu* day, and therefore the cadres will delivered

messages regarding MNP based on their own knowledge. The third possibility was beyond the knowledge itself and it more or less towards the comprehension of knowledge. Because of that, the main reason of caregiver's inadequate knowledge was the cadres delivered only some part of the essential messages. It was in line with survey result regarding cadres knowledge, which is none of them had adequate knowledge regarding essential messages on MNP. Also, only several messages were commonly known by the cadres, such as MNP benefit, i.e. it could improve immunity (90.0%) and appetite (66.7%) of the children, MNP preparation, i.e. it should be spread into solid food (100.0%), and should not mix it with liquid food (73.3%), and MNP recommendations, i.e. give it one sachet per day (76.7%), beneficiaries were children aged 1 – 59 months (86.7%), and administer it every one day interval (70.0%). Similar result also revealed from in depth with the cadres. With respect to the messages related MNP benefits, most of the cadres perceive that it would make children healthier and fatter, and improve their appetite. With regard to the MNP preparation messages, most of them explained to the beneficiaries that it could be mixed only with solid or semi solid food, and did not mix it with hot and/or liquid food. In terms of MNP recommendation messages, more than half of them stated that MNP should be consumed one sachet per day on one day interval.

Another consideration from caregiver's knowledge was message comprehension, i.e. whether the caregivers understand the messages regarding MNP or not. Based on survey it was found that almost all of the caregivers know that it could improve immunity (92.8%) of their children. On the other hand, based on FGD, one of the causes of caregiver's low compliance was their perception that MNP as the cause of diarrhea and fever. The contradictive between what the caregivers know and what they had perceived might reflect that they did not understand well the messages given. The

reason of caregiver's low comprehension to the messages might be due to number of nutrition education was inadequate, which is only one time during August and September 2009, and they had been distracted because of the message delivered not only related to MNP, but also covered another topics, i.e. deworming, Zn tablet and diarrhea, Vitamin A, EBF and *IMD*.

The best scenario form the MNP communication program, i.e. training program, was the cadres knowledgeable regarding MNP. However, by only rely on mass nutrition education or counseling activities during *Posyandu* day were insufficient to deliver all essential messages regarding MNP. We could analyze implementation of these strategies based on time management and communication skill. With respect to time management, according to the cadres, mass nutrition education in *Posyandu* day was performed less than 30 minutes, for example we took maximum time for such activities, i.e. 30 minutes. The messages that should be delivered were anemia, i.e. roughly estimated two messages, and MNP, i.e. 13 messages. Therefore, in total there are 15 messages, and each message is presented for two minutes, so that 30 minutes was only delivered the essential messages regarding MNP only. On the other hand, as mentioned before, the topics were covered also deworming, Zn tablet and diarrhea, Vitamin A, EBF and *IMD*. Another strategy was counseling activities, however with the ratio of trained cadres and underfives were 1 : 44, it would not reach all of the caregivers. For example, as mentioned previously *Posyandu* opening hour were only three hours ranged form 09.00 – 11.00 AM. We estimated roughly that counseling times were around two hours or 120 minutes. If the counseling consist of five topics, i.e. maternal and children health (MCH), growth and monitoring promotion (GMP), feeding practices, MNP, and infection, so that each of the topics should be delivered around 24 minutes. In terms of delivering MNP messages, 24 minutes was only suitable maximally for two caregivers.

Given that there are five cadres in the *Posyandu*, which is mean they could serve for 10 caregivers, but still it was insufficient. With respect to the communication skill, this study revealed that this aspect was not delivered during the training session for cadres. However, this skill is important, because it was determined that interpersonal communication, i.e. mass nutrition education or counseling activities, was delivered either didactic or participative, and stimulating caregiver's initiatives or passive. In other words, communication skill was important in terms of persuading and convincing target audiences about the value of the proposed behavior, and later bringing about behavior change.[25] Intervention study in China (2002), revealed that well trained cadres on interpersonal communication, had positive influence on improvements of children feeding practices, compare to control group.[26]

This study also revealed that among the caregivers who did not attend nutrition education regarding MNP in *Posyandu* days (22.0%;n=47), none of them (100.0%) had either moderate or good knowledge regarding anemia and MNP. This might reflect that activity on transferring the knowledge regarding MNP by either the cadres or participants to the non-participants did not occurred. However, this activity would not happen because their knowledge was inadequate. Moreover, It was explained also that such activities did not cover all of the beneficiaries, further, there were 12.6% (n=20) of the caregivers attend *Posyandu* day, but however they did not participate on mass nutrition education activities. According to them, such activities have no benefit for the children. Furthermore, this result depict that mass nutrition education might not effective in delivering MNP related messages, which is proven by inadequate knowledge of the caregivers. However, as study limitation, this study was not addressing well about caregiver's satisfaction on cadres method on delivering MNP messages. This is important especially to judge the methods either appropriate or not.

Each of the stakeholders, i.e. health managers, and cadres had similar perception, also caregivers admitted, that beneficiary's compliance on the MNP were considered low. This supported also from survey result, that children compliance was also low (23.7%). In line with that, from document review it was found that initial MNP (*Vitalita*) coverage was decline sharply from the initial year, and until February 2009, the coverage of MNP (*Vitalita*) only 30% or less and caregiver's acceptance was 27%.[9, 10] It might reflect that health managers were had information about low compliance, but, there was no significant action to improve the communication program. Eventhough this study was not designed to reveal the program constraints; however, I assume that it might be happen because of either, lack of financial support, management issue, or inadequate knowledge of cadres. With regard to financial support, health managers at *Puskesmas* assume that incentive would increase cadre's motivation to conduct communication activities. However, according to them, during period of years 2008 – 2009 there were no incentive for cadres from local government. Even though lack of financial support, there are few cadres had admitted that they did home visit and counselling activities regarding MNP. In terms of management issue, there was no guideline for either cadres or *Puskesmas* staff about how to deliver MNP communication program effectively, and transfer of knowledge from trained cadres to the colleagues was inadequate. Moreover, with respect to cadre's knowledge it was insufficient to deliver messages regarding MNP.

Because of the communication program did not functioning well, therefore, I assume that caregiver's compliance was influence by their children's compliance, instead of communication program. Also, the term of obedient was more appropriate instead of compliance, because the caregivers administer the MNP into the food only if the children like it. This was supported by explanation of the health managers (i.e.

responsible person on MNP program at DHO and *Puskesmas* levels) and cadres regarding the problem on MNP communication program, i.e. most of the children did not like MNP, because it can change taste and odor when mix with food, the caregivers refuse to force feed their child to eat the food when mix with MNP, and they perceive it might cause of diarrhea and fever. Furthermore, the caregivers also had similar perception, which is their child did not like if the food mix with MNP. This problem might reflect that messages regarding MNP were highly likely inadequate and less accessible to the targeted beneficiaries. In line with that, the HKI (2006),[6] also cited that major reason of low compliance on MNP was the children did not like it (i.e. *Vitalita*) when it mix with the food. Because of the limitation of MNP, i.e. can not be used on hot foods or on liquids, therefore the HKI had recommended that proper use of MNP should be explained adequately to the caregivers before it first use.

According to Perez-Cuevaz, et al., (1999),[27] to design effective communication program, a health planners should engage in activities oriented to gaining understanding about what govern caregiver's decisions to conduct a particular health-related behavior. A critical component to this activity is the health planners must explore various determinants of health-related behavior to discover the caregiver's conceptual framework, which incorporates knowledge, and attitudes relevant to her community and guides his/her practices. This information matters especially on developing educational messages adapted with local context or avoid recommendations that head-on collisions with local cultural beliefs.[28] Study in Mexico (2007) revealed that adaptation of messages regarding micronutrient supplementation into local condition, and adopted it on communication intervention had improved caregiver's knowledge and use of micronutrient supplement.[29]

Eventhough the conceptual thinking of the caregivers regarding MNP was not our focus in this assessment, however, some part of the conceptual thinking were revealed. For example, most of the caregivers tend to mix the MNP with warm rice and vegetable broth. This practice clearly head-on collision with one of the MNP preparation messages, i.e. it was inappropriate for hot and/or soup based food.[11, 30] Other consideration related to conceptual thinking was perception related to the MNP. This study found that several caregivers have had perceive the MNP as medicine and they did not want to administer it frequently. Further, most of the caregivers perceive it as vitamin, however, we have to look carefully of this perception, is it the true concepts of vitamin or not. Study from HKI regarding MNP (2006),[6] found similar perception by the caregivers, but the concepts were quite different, in which vitamins were often perceived as necessary for children who are underweight, frequently sick, faint, pale, or developing slowly for their age. It seems that caregivers give vitamin or supplements in response to these symptoms and stop giving them when the child improves. Other consideration was immediate or observable improvement related to the MNP. In which, most of them perceived that it could make their children healthier and improve their appetite. However, after 2 or 3 times administering the MNP, they did not found such things occurred, and later on it might leads to low compliance. Therefore, with respect to MNP messages careful consideration must be paid to how it is labeled and marketed in health programmes. Because, as explained by Ellis, et al., (2007),[31] it should be the same balances between encouraging the proper use of health package, i.e. introduction zinc therapy or MNP, and not raising unrealistic expectations of targeted beneficiaries. Because it is might disappoint if their expectations of an immediate – observable – improvement regarding such product were not fulfilled.

Although, the MNP was considered more programmatically practical,[6] as supported by several reason, for example it does not require major changes in dietary practices,[5, 6, 32-34] however, it should be integrated in the promotion of appropriate feeding practices, since it can only be used with complementary foods.[32] Moreover, many studies suggested that fulfillment of macronutrient requirement is prerequisite for good absorption of micronutrient supplement. Therefore, improving quality of home feeding and caregiving should be considered as part of communication program on MNP.[35] Because most of the inhabitants in the study site rely on agricultural sector and were considered as poor, so that, promotion and support for family – and self – reliant approaches, for example home or community gardening, is important. In other words, as recommended by Latham (2010),[36] plant – based food system are contribute very significantly to good nutrition, including micronutrient status, also protect against various disease, something supplements can not do. This is matters for a sustainable intervention aimed at prevention rather than treatment of a recognized illness. Although, in the study area infant and young child food (IYCF) program has been implemented, however, it was not part of our assessment and to date there is no data regarding the effectiveness of such program related to improvement of underfive feeding practice. Furthermore, based on baseline survey of Chansys program in Lombok Tengah District in 2007, it was found that mothers knowledge, attitudes, and behaviors related nutrition and health is relatively low, especially in terms of underfive feeding practices, as well as knowledge about the relationship between food consumption, nutritional status and health status. Further, food intake among underfive children was less varied and only 38% of them consumed at least 4 combination of food per day.[37] These findings, it seems support our findings related to feeding practices, where most of the caregivers tend to mix the MNP with warm rice and vegetable broth,

or 2 combination of food per day, consequently it might hamper uptake of micronutrients from the product. Therefore, further study is needed to assess implementation of IYCF program in this area related to improvement on underfive feeding and caregiving practices, and another study need to be conducted to know what is the best methods to deliver MNP communication program to the community

Appendix 2. Manuscript

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REFERENCES

1. Bloem M, Briend A, deBenoist B, Dalmiya N, Hill ID, Gross R, et al. Preventing and controlling micronutrient deficiencies in populations affected by an emergency: Multiple vitamin and mineral supplements for pregnant and lactating women, and for children aged 6 to 59 months: Joint statement by the World Health Organization, the World Food Programme and the United Nations Children's Fund; 2006 March.

2. Rivera JA, Hotz C, Gonzalez-Cossio T, Neufeld L, Garcia-Guerra A. The effect of micronutrient deficiencies on child growth: A review of results from community-based supplementation trials. J. Nutr. 2003;133:4010S-4020S.

3. Demment MW, Youngy MM, Sensenig RL. Providing micronutrients through food-based solutions: A key to human and national development. J Nutr 2003;133:3879S–3885S.

4. ADB, MOH. Enriching lives of the urban poor through food fortification: Feasibility, efficacy, effectiveness, and consumer research study. Jakarta: The Asian Development Bank (ADB) & The Directorate for Community Nutrition Ministry of Health Republic of Indonesia (MOH); 2009.

5. Zlotkin SH, Tondeur M. Successful approaches: Sprinkles. In: Kraemer K, Zimmermann MB, editors. Nutritional Anemia. Basel: Sight and Life Press; 2007. p. 269-283.

6. HKI. Final report of the food for progress: Vitalita sprinkles effectiveness program (SEP) for the period May 2003 – July 2006 Jakarta: Hellen Keller International Indonesia and Asia Pacific 2006.

7. ADB, MOH. Final report on customer research for multiple micronutrients fortificants (MMF) among underfives of poor families in North Jakarta. Jakarta: The

Appendix 2. Manuscript

Asian Development Bank (ADB) & The Directorate for Community Nutrition Ministry of Health Republic of Indonesia (MOH); 2008.

8. UNICEF. Final draft for the community health and nutrition system strengthening program for Lombok Tengah District, NTB Province In. Jakarta: UNICEF; 2007.

9. Dinkes. Identifikasi masalah pendistribusian tabur gizi (vitalita) di Kabupaten Lombok Tengah. Presentation. Praya: Dinas Kesehatan Kab. Lombok Tengah (Dinkes); 2008 November 2008.

10. Dinkes, UNICEF. Temuan hasil pemantauan suportif kegiatan chansys Presentation. Praya: Dinas Kesehatan Kab. Lombok Tengah (Dinkes) & UNICEF; 2009 February 17.

11. UNICEF. Panduan untuk petugas lapangan: pemberian vitamin A, obat cacing, dan tabur gizi pada anak umur 6 - 59 bulan di Posyandu. Jakarta: UNICEF & MOH; 2007.

12. MOH. MNP Project in Indonesia. In: Workshop on Scaling Up the Use of Multiple Micronutrient Powders to Improve the Quality of Complementary Foods for Young Children. Bangkok 2009.

13. Harmiko MP. A system review on growth monitoring program in Narmada, West Lombok District. Jakarta: University of Indonesia; 2007.

14. Sumarna E. Comparison of the nutritional status of underfive children from health centres with different nutrition services performance in East Sumba District. Jakarta: University of Indonesia; 2001.

15. Kielmann AA. An introduction to the health system, health system analysis, and health system research. In: Course Module: Public Health and Community Nutrition System. Jakarta 2005. p. 1-39.

16. Sumarno I, Sudiman H, Prihartini S, Kartika V, Ahmadi F, Adha D, et al. The characteristic of successful Posyandu in Gowa and Karawang Districts. Penel Gizi Makan 2007;30(2):61-66.

17. Martini E, Halati S. Communication and training: Experiences using multiple micronutrients powder. In: Workshop on Scaling Up the Use of Multiple Micro-nutrient Powders to Improve the Quality of Complementary Foods for Young Children; 2009 28 April to 1 May Bangkok 2009.

18. Gross U, Diaz MM, Valle C. Effectiveness of the communication program on compliance in a weekly multimicronutrient supplementation program in Chiclayo, Peru. Food Nutr Bull 2006;27(4):S130-S142.

19. Ashworth A, Shrimpton R, Jamil K. Growth monitoring and promotion: Review of evidence of impact. Maternal and Child Nutrition 2008;4:86-117.

20. Salehi M, Kimiagar SM, Shahbazi M, Mehrabi Y, Kolahi AA. Assessing the impact of nutrition education on growth indices of Iranian nomadic children: An application of a modified beliefs, attitudes, subjective-norms, and enabling-factors model. British Journal of Nutrition 2004;91:779 - 787.

21. ADB, MOH. Communication intervention of Indonesia's local MMF (multi micrantrient fortificant) in North Jakarta: Progress report summary as per October 27 The Asian Development Bank (ADB) & The Directorate for Community Nutrition Ministry of Health Republic of Indonesia (MOH); 2008 October 27, 2008.

22. Rimbatmaja R. Lesson Learned: Communication Intervention on Taburia. In. Jakarta; 2009.

23. ADB, MOH. Communication Intervention of Indonesia's Local MMF (Multi Micrantrient Fortificant) in North Jakarta: Progress Report Summary as per June 10 The Asian Development Bank (ADB) & The Directorate for Community Nutrition Ministry of Health Republic of Indonesia (MOH); 2008 June 10, 2008.

24. Hornik R, Kelly B. Communication and diet: An overview of experience and principles. J Nutr Educ Behav. 2007;39:S5-S12.

25. UNICEF, WHO. Communication handbook for polio eradication and routine EPI. 1 ed. New York: UNICEF, WHO, Rotary International, BASICS, and Ministries of Health Representatives in Africa; 2001.

26. Guldan GS, Fan HC, Ma X, Ni ZZ, Xiang X, Tang MZ. Culturally appropriate nutrition education improves infant feeding and growth in rural Sichuan China. J. Nutr. 2000;130:1204-1211.

27. Perez-Cuevas R, Reyes H, Pego U, Tome P, Ceja K, Flores S, et al. Immunization promotion activities: Are they effective in encouraging mothers to immunize their children. Social Science & Medicine 1999;49:921-932.

28. Launer LJ, Habicht J-P. Concepts about infant health, growth, and weaning: A comparison between nutritional scientists and madurese mothers. Social Science & Medicine 1989;29(1):13-22.

29. Bonvecchio A, Pelto GH, Escalante E, Monterubbio E, Habicht JP, Nava F, et al. Maternal knowledge and use of a micronutrient supplement was improved with a programatically feasible intervention in Mexico. J. Nutr. 2007;137:440-446.

30. UNICEF. Program chansys: Bahan informasi tabur gizi vitalita. In. Jakarta: The United Nation Children's Fund (UNICEF); 2007. p. 1 - 18.

31. Ellis AA, Winch P, Daou Z, Gilroy KE, Swedberg E. Home managemet of childhood diarrhoea in southern mali - implications for the introduction of zinc treatment. Social Science & Medicine 2007;64:701-712.

32. Zlotkin SH, Arthur P, Schauer C, Antwi KY, Yeung G, Piekarz A. Home-fortification with iron and zinc sprinkles or iron sprinkles alone successfully treats anemia in infants and young children. J Nutr 2003;133(4):1075-80.

33. Nestel P, Briend A, deBenoist B, Decker E, Ferguson E, Fontaine O, et al. Complementary food supplements to achieve micronutrient adequacy for infants and young children. J Pediatr Gastroenterol Nutr 2003;36(3):316-328.

34. Adu-Afarwuah S, Lartey A, Brown KH, Zlotkin S, Briend A, Dewey KG. Home fortification of complementary foods with micronutrient supplements is well accepted and has positive effects on infant iron status in Ghana. Am J Clin Nutr 2008;87: 929-938.

35. Fahmida U, Rumawas JS, Utomo B, Patmonodewo S, Schultink W. Zinc-iron, but not zinc-alone supplementation, increased linear growth of stunted infants with low haemoglobin Asia Pac J Clin Nutr 2007;16(2):301-309.

36. Latham M. Commentary: The great vitamin A fiasco. World Nutrition 2010; 1(1):12-45.

37. UNICEF. Laporan akhir: Studi baseline pelayanan kesehatan dan gizi serta pengetahuan, sikap, dan perilaku masyarakat terkait kesehatan dan gizi di Kabupaten Lombok Tengah - NTB. Jakarta: Pusat Penelitian Kesehatan Universitas Indonesia - UNICEF 2007.

Appendix 2. Manuscript

Table 1. Characteristics of Socio-Demographic-Economic Status of Beneficiaries

Characteristics	Statistics
Caregivers of underfives:*Mother*[1]	195 (90.7)
Age of mothers (*y*)[2]	29 (20.0;47.8)
Family size (*person*)[3]	4 (3.0;6.0)
Number of underfives cared by the caregivers: ≤ *2 person*[1]	215 (100.0)
Father's education duration[i]: ≤ *9 years*[4]	124 (58.8)
Caregiver's education duration: ≤ *9 years*	129 (60.0)
Caregiver's occupation status	
Working	124 (57.7)
Ratio of earner : dependant	1 : 1

[1]*n=215, n(%);* [2]*med(5th;95th percentile);* [3]*n=215, med(5th;95th percentile);* [4]*n=211, n(%)*

[i] Education duration based on government 9 years compulsory education program / *Wajib belajar 9 tahun*

Table 2. Messages Regarding Benefit, Preparation, and Recommendation of MNP

Messages	Total[1]
Benefit of MNP	
• *Improve underfive growth and development*	9 (30.0)
• *Improve immunity*	27 (90.0)
• *Improve appetite*	20 (66.7)
• *Prevent from anemia and other micronutrients deficiencies*	1 (3.3)
MNP preparation	
• *Spread MNP/Vitalita/Mixme on ready to eat and solid food, i.e. rice, side dish, porridge, fruits, etc*	30 (100.0)
• *Do not cook*	30 (100.0)
• *Do not mixed with hot food, implicating on reducing iron content and changing on color and aroma of food*	18 (60.0)
• *Do not mixed with liquid, milk, tea, etc (not water soluble)*	22 (73.3)
MNP recommendation	
• *Beneficiaries were children aged 6 – 59 months*	26 (86.7)
• *Dosage 1 sachet/day*	23 (76.7)
• *Give MNP on 1 day interval*	21 (70.0)
• *Underfive with severe malnourished (< -3SD WAZ) with complication should not consumed MNP on the 7 days treatment.*	2 (6.7)
• *Underfive with fever should be referred to Puskesmas, if malaria positive did not receive MNP until recovery.*	3 (10.0)
Total score of knowledge[2]	7 (3.0;9.0)

[1] *n=30, n(%);* [2] *med (min-max)*

Table 3. Information Received by the Caregivers during Nutrition Education Regarding MNP in *Posyandu* days on August and September 2009

Messages	Total[1]
Benefit of MNP	
• *Improve underfive growth and development*	36 (21.4)
• *Improve immunity*	156 (92.8)
• *Improve appetite*	123 (73.2)
• *Prevent from anemia and other micronutrients deficiencies*	1 (0.6)
MNP preparation	
• *Spread MNP/Vitalita/Mixme on ready to eat and solid food, i.e. rice, side dish, porridge, fruits, etc*	164 (97.6)
• *Do not cook*	80 (47.6)
• *Do not mixed with hot food, implicating on reducing iron content and changing on colar and aroma of food*	60 (35.7)
• *Do not mixed with liquid, milk, tea, etc (not water soluble)*	144 (85.7)
MNP recommendation	
• *Beneficiaries were children aged 6 – 59 months*	117 (69.6)
• *Dosage I sachet/day*	150 (89.3)
• *Give MNP on I day interval*	108 (64.3)
• *Underfive with severe malnourished (< -3SD WAZ) with complication shauld not consumed MNP on the 7 days treatment.*	1 (0.6)
• *Underfive with fever should be referred to Puskesmas, if malaria positive did not receive MNP until recovery.*	5 (3.0)
Total score of knowledge[2]	7 (2.0;10.0)

[1] *n=168, n(%);[2] med(min – max)*

Appendix 2. Manuscript

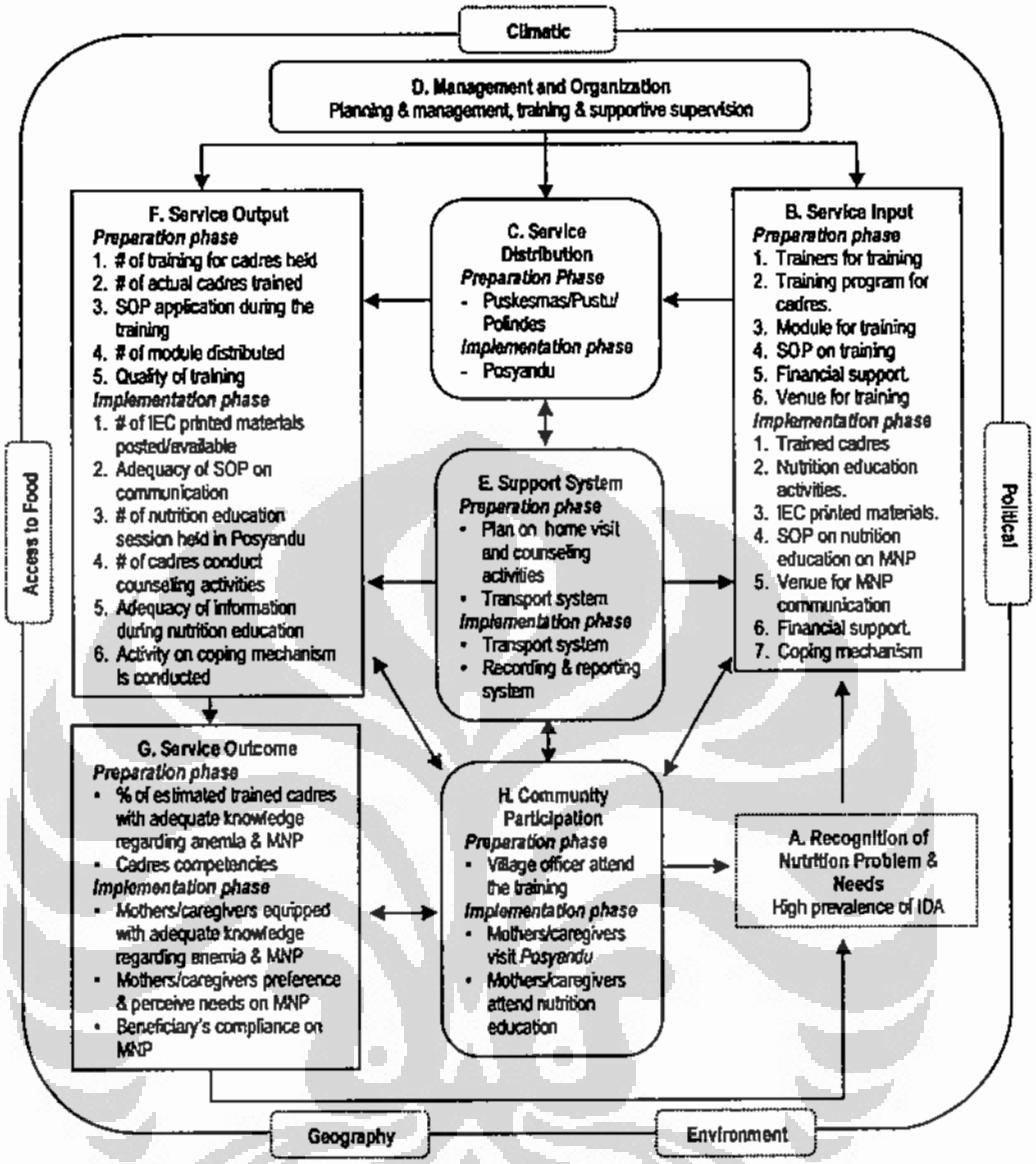

Figure 1. Conceptual Model of System Review on Micronutrients Powder (MNP) Communication Program

Appendix 3. Guideline for Author

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Relevance to public health sets the bounds to the interests of the Journal. New knowledge is the touchstone; major concerns are originality, scientific and literary quality, clarity, and technical accuracy. We invite contributions in three broad classes: 1. original unpublished work in research, research methods, and program evaluation; 2. analytic reviews or commentaries, including health policy analysis; 3. reports for special departments.

We consider a manuscript on the understanding that it (or its essential substance) has not been published—either in print or in electronic form—or submitted elsewhere, nor will be before publication in the Journal. (We will consider papers based on previously published or distributed abstracts and reports from scientific meetings.) Avoid overlap and duplication (see *Am J Public Health.* 1993;83:792–793). Results should not be broadcast in the media before the issue's embargo date. Copyright is transferred to the American Public Health As-sociation upon acceptance of a paper.

Length. Conciseness earns points. For *Articles,* the preferred length is about 3000 words (at most 4000 words) and four tables or figures; for *Commentaries* 2500 words or less; for *Briefs* about 1000 words (excepting references) and two tables or figures; and for *Letters to the Editor* up to 400 words and 12 references.

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Health Law and Ethics deals with the common ground as well as the conflicts between public health, law, and ethics. *Public Health Policy Forum* addresses papers on topics of current or future import for public health policy. *Public Health Then and Now* is devoted to history with bearing on contemporary public health (up to 6000 words). *Notes from the Field* describes field and teaching experiences of more than local interest (up to 1000 words). *Topics for Our Times* addresses issues of current interest, as in "Op Eds" (up to 1500 words).

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Authorship. We feel that authorship is depreciated by a multitude. More than six authors need justification. We ask for assur-ances in terms of the criteria of the International Committee of Medical Journal Editors (*JAMA.* 1997;277:926–934).

Format. The Journal generally follows the guidelines of the International Committee and the *American Medical Association Manual of Style* (8th ed. For other relevant information see *Am J Public Health.* 1994;84:717–718,718–719; and 1997;87:1092–1095).

Type everything (including references) double-spaced on one side of a sheet of 8 1/2 x 11–inch paper, with 1-inch margins on all sides. *Assemble materials in the order discussed below.*

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A brief indication of the interest of the paper to Journal readers is helpful. You may suggest up to four knowledgeable reviewers (include postal/e-mail addresses, telephone/fax numbers). Finally, mention and enclose your unpublished and published work supplementary to the results.

First title page. Include 1. main title; 2. "running head" of up to 20 characters; 3. names of all authors (full first names), with degrees and institutional affiliations at the time of the work; 4. name, postal/e-mail addresses, and phone/fax numbers (a) correspondence and (b) reprint requests; 5. word counts for abstract, text, and references, and the number of tables and of figures; 6. key words (best chosen from *National Library of Medicine. Medical Subject Headings, 1997.* Vol. 38. National Institutes of Health; 1997).

Second title page. Type nothing but the title (to keep reviewers blind to authorship). Elsewhere in the paper too, remove obvious indications of author identity.

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KETERANGAN LOLOS KAJI ETIK

ETHICAL --- CLEARANCE

Panitia Tetap Penilai Etik Penelitian, Fakultas Kedokteran Universitas Indonesia dalam upaya melindungi hak asasi dan kesejahteraan subyek penelitian kedokteran, telah mengkaji dengan teliti protokol berjudul:
The Committee of The Medical research Ethics of the Faculty of Medicine, University of Indonesia, with regards of the Protection of human rights and welfare in medical research, has carefully reviewed the proposal entitled:

"A System Review on the Micronutrients Powder Communication Program in Lombok Tengah District, Nusa Tenggara Barat Province (telaah Sistem pada Program Komunikasi Tabur Gizi di Kabupaten Lombok Tengah, Propinsi Nusa Tenggara Barat)".

Peneliti Utama : **Andi Erwin,SKM**
Name of the principal investigator

Nama Institusi : **Seameo-Tropmed UI**

dan telah menyetujui protocol tersebut di atas.valuasi
and approved the above mentioned proposal.

Jakarta, 11 Januari 2010

Chairman
Ketua

Prof. Dr. dr. Agus Firmansyah, SpA(K)

-Peneliti wajib menjaga kerahasiaan identitas subyek penelitian.

Appendix 5. Informed Consent

RINCIAN INFORMASI UNTUK RESPONDEN

TENTANG PENELITIAN

Judul penelitian:
Akan dilakukan penelitian berjudul:
Telaah Sistem pada Program Komunikasi Tabur Gizi di Kabupaten Lombok Tengah, Propinsi Nusa Tenggara Barat (*A System Review on the Micronutrients Powder Communication Program in Lombok Tengah District, Nusa Tenggara Barat Province*)

Pendahuluan:
Berbagai studi telah menjelaskan tentang peranan zat-zat gizi mikro terhadap pertumbuhan anak. Defisiensi zat gizi mikro atau *hidden hunger* pada balita dapat mempengaruhi pertumbuhan linear, kognisi, dan perkembangan otot yang seringkali bersifat *irreversible*. Sarma KR., (2009) mengemukakan bahwa proses pertumbuhan anak terjadi secara *daily basis* dan suplementasi harian zat gizi mikro dapat meningkatkan tinggi badan anak. Oleh karena itu, sangat penting untuk memenuhi kebutuhan harian mereka akan zat gizi mikro.
Salah satu upaya untuk memenuhi kebutuhan balita akan zat gizi mikro harian adalah dengan memberikan tabur gizi. Tabur gizi berupa bubuk yang dikemas dalam bentuk *sachet* dan mengandung zat-zat gizi mikro yang dibutuhkan oleh anak untuk memenuhi kebutuhan harian mereka. Konsep utama dari tabur gizi adalah *in-home fortification*, yaitu menaburkan atau mencampurkan bubuk tabur gizi ke dalam makanan anak, baik padat ataupun semi padat pada saat anak mulai makan (Zlotkin SH, & Tondeur M., 2007).
Perilaku ini membutuhkan pemahaman ibu atau pengasuh tentang jenis makanan yang cocok dan bagaimana mencampur tabur gizi dengan benar. Lebih lanjut, perilaku tersebut dapat dianggap sebagai perilaku baru bagi ibu atau pengasuh karena tabur gizi direkomedasikan untuk ditambahkan setiap hari pada makanan anak. Oleh karena itu, program komunikasi tabur gizi kepada ibu atau pengasuh sangat dibutuhkan terutama untuk menjamin penerimaan dan kepatuhan/*compliance* anak terhadap tabur gizi (HKI, 2006).

Tujuan dari penelitian:

Tujuan umum
Penelitian ini dilakukan untuk mendeskripsikan sekaligus menelaah sistem pada program komunikasi tabur gizi yang diselenggarakan melalui Posyandu.

Tujuan khusus:
1. Menelaah komponen-komponen sistem, yaitu *input*, distribusi *input*, *output*, aspek manajemen dan organisasi, aspek pendukung, dan partisipasi masyarakat pada program komunikasi tabur gizi.
2. Mengetahui *outcome* program komunikasi tabur gizi, yaitu kepatuhan anak balita dalam mengkonsumsi tabur gizi.
3. Mengetahui persepsi manajer kesehatan pada level Posyandu, Puskesmas, dan Dinas Kesehatan tentang program komunikasi tabur gizi.

Appendix 5. Informed Consent

Subyek yang dapat berpartisipasi

Subyek yang dapat berpartisipasi dalam penelitian adalah yang memenuhi syarat-syarat sebagai berikut:

- Ibu/pengasuh dari balita yang menerima tabur gizi dan pesan-pesan/informasi tentang tabur gizi di Posyandu.
- Para manajer/pengambil keputusan di level Posyandu, Puskesmas, dan Dinas Kesehatan berkaitan dengan pelaksanaan program komunikasi tabur gizi.

Pemilihan subyek dengan syarat-syarat tersebut di atas dengan pertimbangan bahwa

- Ibu/pengasuh dari balita merupakan orang yang paling berperan dalam pemberian makanan pada balita dan memanfaatkan pelayanan yang ada di Posyandu, dalam hal ini program tabur gizi dan proses komunikasinya.
- Para manajer/pengambil keputusan di level Posyandu, Puskesmas, dan Dinas Kesehatan memainkan peranan penting dalam pelaksanaan sistem terkait distribusi dan komunikasi tabur gizi.

Pelaksanaan Penelitian

Penelitian akan dilaksanakan di Kecamatan Kopang Kabupaten Lombok Tengah Propinsi Nusa Tenggara Barat.

Kegiatan yang akan dilakukan

1. Ibu/pengasuh akan diberi pertanyaan/wawancara tentang hal-hal yang berkaitan dengan keadaan sosiodemografi, pengetahuan tentang anemia dan tabur gizi, persepsi, kepuasan, dan harapan terhadap tabur gizi, kegiatan komunikasi dan kepatuhan/*compliance* balita terhadap tabur gizi.
2. Para manajer/pengambil keputusan di level Posyandu, Puskesmas, dan Dinas Kesehatan akan diberi pertanyaan/wawancara tentang aspek manajemen dan sistem terkait program komunikasi tabur gizi.

Permasalahan

Penelitian ini tidak menimbulkan masalah etik yang sangat berarti atau risiko apapun pada anda karena hanya menggunakan metode wawancara dan tidak terdapat pengambilan sediaan apapun pada anak.

Manfaat Penelitian

- Penelitian ini akan memberikan rekomendasi tentang pelaksanaan program komunikasi tabur gizi pada setiap manajer kesehatan di level Posyandu, Puskesmas, dan Dinas Kesehatan.
- Adanya program komunikasi tabur gizi yang baik akan menjamin kepatuhan anak balita untuk mengkonsumsi tabur gizi, meningkatkan status zat gizi mikro mereka, dan akhirnya berdampak pada pertumbuhan dan perkembangan mereka secara umum.

Kerahasiaan

Semua informasi yang diterima, termasuk informasi mengenai keadaan sosioekonomi serta kepatuhan/*compliance* terhadap tabur gizi dari anak ibu dan pengasuh utamanya, akan diperlakukan secara rahasia, dan hanya anda dan petugas berwenang saja dari penelitian ini yang dapat mengetahuinya.

Masalah Keuangan

Penelitian ini tidak menyediakan manfaat/keuntungan finansial bagi keluarga anda apabila anda berpartisipasi.

Appendix 5. Informed Consent

Hak Untuk Menolak atau Mengundurkan Diri Dari Penelitian

Setelah anda mendapat informasi yang jelas dan memadai baik secara lisan maupun membaca informasi untuk responden tentang penelitian ini, beserta informasi rinci mengenai tujuan, manfaat, dan resiko dari penelitian ini, anda akan diminta untuk mengisi dengan menandatangani lembaran persetujuan.

Anda berhak untuk menolak atau mengundurkan diri dari penelitian pada waktu kapanpun tanpa ada sanksi apapun juga. Partisipasi anda adalah **sukarela dan tanpa paksaan dalam bentuk apapun atau oleh siapapun.**

Apabila diperlukan penjelasan lebih lanjut, dapat menghubungi:

Drg. Rosnani V. Pangaribuan, Dr.rer.nat
Andi Erwin
SEAMEO TROPMED RCCN - UI
Gedung SEAMEO TROPMED Kampus UI Salemba,
Jl. Salemba Raya No. 6 Jakarta Pusat
Telepon: 021-39102950; 021-31902950; Fax: 021-3913933; 021-31902950
Selular: 08561746116

Appendix 5. Informed Consent

SEAMEO TROPMED Regional Center for Community Nutrition
Pusat Gizi Regional, Universitas Indonesia
Jl. Salemba Raya No. 6 Jakarta 10430 Telp: 021-3914017, 31930205

LEMBAR PERSETUJUAN (IBU/PENGASUH BALITA)

Untuk Berpartisipasi dalam Penelitian:

Telaah Sistem pada Program Komunikasi Tabur Gizi di Kabupaten Lombok Tengah, Propinsi Nusa Tenggara Barat

Setelah mendengar penjelasan mengenai tujuan penelitian, prosedur penelitian, resiko dan manfaat penelitian, dan semua pertanyaan-pertanyaan saya yang berkaitan dengan penelitian ini telah terjawab sepenuhnya.

Saya mengerti bahwa:

- Pada diri saya akan dilakukan wawancara tentang hal-hal yang berkaitan dengan keadaan sosiodemografi, pengetahuan tentang anemia dan tabur gizi, persepsi, kepuasan, dan harapan terhadap tabur gizi, kegiatan komunikasi dan kepatuhan/*compliance* balita terhadap tabur gizi.

Maka dengan ini saya yang bertanda tangan dibawah ini:

Nama : _____
Umur : _____ tahun
Jenis kelamin : _____
Alamat : _____

Menyatakan setuju bahwa saya akan berpartisipasi sebagai subyek penelitian ini secara sukarela dan bebas tanpa ada paksaan, dengan catatan apabila suatu ketika merasa dirugikan dalam bentuk apapun berhak membatalkan persetujuan ini.

_____, tanggal ____/_____/2010

Pembuat pernyataan,

(_____)

Mengetahui,

Penanggungjawab penelitian,

(Andi Erwin, SKM)

Appendix 5. Informed Consent

SEAMEO TROPMED Regional Center for Community Nutrition
Pusat Gizi Regional, Universitas Indonesia
Jl. Salemba Raya No. 6 Jakarta 10430 Telp: 021-3914017, 31930205

LEMBAR PERSETUJUAN (MANAJER/STAKEHOLDER)

Untuk Berpartisipasi dalam Penelitian:

Telaah Sistem pada Program Komunikasi Tabur Gizi di Kabupaten Lombok Tengah, Propinsi Nusa Tenggara Barat

Setelah mendengar penjelasan mengenai tujuan penelitian, prosedur penelitian, resiko dan manfaat penelitian, dan semua pertanyaan-pertanyaan saya yang berkaitan dengan penelitian ini telah terjawab sepenuhnya.

Saya mengerti bahwa:

- Pada diri saya akan dilakukan wawancara tentang hal-hal yang berkaitan dengan aspek manajemen dan sistem terkait program komunikasi tabur gizi

Maka dengan ini saya yang bertanda tangan dibawah ini:

Nama : _____
Umur : _____ tahun
Jenis kelamin : _____
Jabatan : _____
Alamat : _____

Menyatakan setuju bahwa saya akan berpartisipasi sebagai subyek penelitian ini secara sukarela dan bebas tanpa ada paksaan, dengan catatan apabila suatu ketika merasa dirugikan dalam bentuk apapun berhak membatalkan persetujuan ini.

_____, tanggal ____/____/2010

Pembuat pernyataan,

(_____)

Mengetahui,

Penanggungjawab penelitian,

(Andi Erwin, SKM)

DEPARTEMEN DALAM NEGERI
REPUBLIK INDONESIA
DIREKTORAT JENDERAL KESATUAN BANGSA DAN POLITIK

Jalan Medan Merdeka Utara No.7 Telp. 3450038 Jakarta 10110

SURAT PEMBERITAHUAN PENELITIAN

(S P P)

NOMOR : 440.02/2433.DI

MEMBACA	:	Surat dari Deputi Direktur Divisi Program SEAMEO-TROPMED RCCN Universitas Indonesia, Nomor 285/SEAMEO-PROG/XII/2009, Tanggal 15 Desember 2009, Perihal Permohonan Ijin Penelitian.
MENGINGAT	:	1. Keputusan Menteri Dalam Negeri Nomor : 130 Tahun 2003 tentang Organisasi dan Tata Kerja Departemen Dalam Negeri. 2. Surat Keputusan Menteri Dalam Negeri Nomor : SD.6/2/12 Tanggal 5 Juli 1972 tentang Kegiatan Riset dan Survei diwajibkan melapor diri kepada Gubernur Kepala Daerah atau Pejabat yang ditunjuk. 3. Keputusan Direktur Jenderal Sosial Politik Nomor : 14 Tahun 1981 tentang Surat Pemberitahuan Penelitian (SPP).
MEMPERHATIKAN	:	Proposal Penelitian Ybs.

MEMBERITAHUKAN BAHWA :

NAMA	:	Andi Erwin, SKM
ALAMAT	:	Kampus UI Salemba, Jl. Salemba Raya 6, Jakarta 10430
P E K E R J A A N	:	Peneliti
KEBANGSAAN	:	Indonesia
JUDUL PENELITIAN	:	Telaah Sistem pada Program Komunikasi Tabur Gizi
BIDANG	:	Kesehatan
DAERAH	:	Provinsi Nusa Tenggara Barat
LAMA PENELITIAN/ KEGIATAN	:	Januari s/d Maret 2010
PENGIKUT PESERTA	:	Terlampir
PENANGGUNG JAWAB	:	Dr. Drupadi HS Dillon, Ph.D
SPONSOR	:	-
MAKSUD DAN TUJUAN	:	Untuk mendeskripsikan sekaligus menelaah sistem pada program komunikasi tabur gizi yang diselenggarakan melalui posyandu.

AKAN MELAKUKAN PENELITIAN DENGAN KETENTUAN SEBAGAI BERIKUT :

1. Sebelum melakukan kegiatan Penelitian harus melaporkan kedatangannya kepada Gubernur Cq Kaban Kesatuan Bangsa dan Perlindungan Masyarakat/ Badan Informasi, Komunikasi dan Kesbang setempat dengan menunjukkan surat pemberitahuan ini.

2. Tidak dibenarkan melakukan Penelitian yang tidak sesuai/tidak ada kaitannya dengan judul penelitian dimaksud.

3. Harus mentaati ketentuan perundang-undangan yang berlaku serta mengindahkan adat istiadat setempat.

4. Apabila masa berlaku Surat Pemberitahuan ini sudah berakhir, sedangkan pelaksanaan penelitian belum selesai, perpanjangan penelitian harus diajukan kembali kepada instansi pemohon.

5. Hasil kajian agar diserahkan 1 (satu) eksemplar kepada Ditjen Kesbang dan Politik Up. Direktorat Pengembangan Nilai-Nilai Kebangsaan.

6. Surat Pemberitahuan ini akan dicabut kembali dan dinyatakan tidak berlaku, apabila ternyata pemegang Surat Pemberitahuan ini tidak mentaati/mengindahkan ketentuan-ketentuan seperti tersebut diatas.

Dikeluarkan di Jakarta

Pada tanggal, 29 Desember 2009

A.n. MENTERI DALAM NEGERI
DIREKTUR JENDERAL
KESATUAN BANGSA DAN POLITIK
Ub.
SEKRETARIS,

Ir. SUWARNO PUTRA RAHARJO, M.Si
Pembina Utama Madya
NIP. 19580416 198503 1 001

Tembusan :

1. Yth. Gubernur Nusa Tenggara Barat.
   Up. Kaban Kesbang dan Linmas Prov.
2. Yth. Deputi Direktur Divisi Program SEAMEO-TROPMED RCCN Universitas Indonesia di Jakarta.

PEMERINTAH PROVINSI NUSA TENGGARA BARAT

BADAN KESATUAN BANGSA DAN POLITIK DALAM NEGERI

Jln. Pendidikan No. 2 Telepon (0370) 631215

M A T A R A M

Kode Pos : 83125

REKOMENDASI

Nomor : 070/ 62/R/1/2010

1. Dasar
   Berdasarkan Surat dari Southeast Asian Miniters Of Education Organization (SEAMEO) Tropical Medicine and Public Health (TROPMED) Network Regional Center For Community Nutrition (RCCN) University Of Indonesia Nomor : 009/SEAMEO-PROG/2010 Tanggal, 11 Januari 2010.
   Perihal : Permohonan Ijin Penelitian

2. Setelah mempelajari rencana kegiatan yang diajukan, maka dapat memberikan Rekomendasi /ijin kepada :
   Nama : Andi Erwin, SKM (dkk)
   Pekerjaan : Peneliti
   Bidang/Judul : " Telaah Sistem pada Program Komunikasi Tabur Gizi di Kabupaten Lombok Tengah Provinsi Nusa Tenggara Barat"
   Lokasi : Provinsi Nusa Tenggara Barat
   Jumlah Peserta : 1 (Satu) tim
   Lamanya : 3 (tiga) Bulan (Januari s/d Maret 2010)

   Dalam melakukan kegiatan agar yang bersangkutan mematuhi ketentuan sebagai berikut :
   a. Sebelum melakukan kegiatan agar melaporkan kedatangan Kepada Bupati/Walikota atau Pejabat yang di tunjuk
   b. Tidak melakukan kegiatan yang tidak ada hubungan dengan Bidang/judul dimaksud, apabila melanggar ketentuan akan dicabut Rekomendasi/Ijin dan menghentikan segala kegiatannya
   c. Mentaati sesuai ketentuan undang-undang yang berlaku serta mengindahkan adat istiadat setempat
   d. Apabila masa berlaku Rekomendasi/ijin telah berakhir, sedangkan pelaksanaan belum selesai maka perpanjang Rekomendasi/ijin agar diajukan kepada Instansi pemohon
   e. Melaporkan hasil-hasil kegiatan kepada Gubernur Nusa Tenggara Barat, melalui Kepala Bakesbangpoldagri Provinsi Nusa Tenggara Barat.

   Demikian Surat Rekomendasi/Ijin ini dibuat untuk dapat dilaksanakan sebagaimana mestinya.

Mataram, 26 Januari 2010

An. KEPALA BAKESBANGPOLDAGRI
PROVINSI NUSA TENGGARA BARAT
SEKRETARIS

PEMERINTAH PROVINSI NUSA TENGGARA BARAT BADAN KESBANG POLDAGRI

MUHARIS ASMY, SH
NIP. 19541231198203128

Tembusan, disampaikan kepada Yth
1. Kapolda NTB
2. Kepala BPLHP Prov. NTB
3. Kepala Dinas Kesehatan Prov. NTB
4. Bupati Kab. Lombok Tengah Cq. Kesbangpol dan Linmas
5. Yang Bersangkutan

Appendix 7. Questionnaires

South East Asian Ministers of Education Organization (SEAMEO)
Tropical Medicine and Public Health (TROPMED)
Regional Center for Community Nutrition (RCCN) - University of Indonesia (UI)
Jl. Salemba Raya 6 Jakarta Pusat Phone : (021) 3913932 / 330205, Fax : (021) 3913933

PUSKESMAS QUESTIONNAIRES

Name of Subdistrict	: _____
Name of Puskesmas	: _____
Name of interviewer	: _____
Date of interview: ...../...../.....(dd/mm/yy)	Time of interview: ..... until ..... (hh.mm)

A. Respondent's Identity				Code
1.	Name	: _____	Sex: 1) Male 2) Female	( )
2.	Age	: _____ years (completed)		( )
3.	Position	:		
4.	How long have you been working in this position		_____ years _____ months	( )

B. Catchments area				Code
1.	How large is the working area of this *Puskesmas*	1) ..... km² or 2) ..... ha	77) Others, specify ..... 88) DNK	( )
2.	The population size in the *Puskesmas* working area	1) ..... people	88) DNK	( )
3.	Population density (derive from no. 1 & 2)	_____ people/km²		( )
4.	What is the nature of terrain	1) Flat 2) Mountain 3) Combination (1 & 2)	77) Others, specify ..... 88) DNK	( )
5.	What is the majority public transportation in this area	1) Car 2) Bus 3) Truck 4) No transportation	77) Others, specify ..... 88) DNK	( )
6.	Type of the *Puskesmas*	1) In-patient & out-patient 2) Out-patient	88) DNK	( )
Observe & Describe *Puskesmas* location:				
7.	According to you, cost needed to reach the *Puskesmas* from the furthest place of this sub district? Rp _____			( )

C. Trained staff, village midwives, & cadres under supervision				Code
1.	Does the DHO offer the training regarding MNP – related topics	1) Yes 0) No	88) DNK 99) No Answer	( )
2.	Do you also conduct training regarding MNP – related topics to the cadres	1) Yes 0) No	88) DNK 99) No Answer	( )
3.	Number of nutrition staff & Midwives in this *Puskesmas*	_____ & _____ staf		( ) ( )
4.	Number of trained nutrition staff & midwives regarding MNP in this *Puskesmas*	_____ & _____ staf		( ) ( )
5.	How many village under supervision of this *Puskesmas*	_____ Villages	88) DNK	( )
6.	How many midwives village under supervision of this *Puskesmas*	_____ midwives Village	88) DNK	( )

University of Indonesia

Appendix 7. Questionnaires

7.	Number of trained midwives village regarding MNP related topics under supervision in this *Puskesmas*	_____ midwives village		( )
8.	The actual *Posyandu* under supervision of this *Puskesmas*	_____ *Posyandu*	88) DNK	( )
9.	Number of cadres under supervision in this *Puskesmas*	_____ cadres		( )
10.	Number of trained cadres regarding MNP related topics under supervision in this *Puskesmas*	_____ cadres		( )

11. Puskesmas staff responsible for delivering MNP program

No.	Name	Position	Sex		Education level	Working duration (yrs)	Training have been attended
			M	F			
1.							
2.							
3.							
4.							
5.							
6.							
7.							

12. Training conducted in the *Puskesmas* in the last two year

No.	Training Topic	Month, Year	Organizer	Duration	Training method	Method of evaluation
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						

Note:
Organizer, e.g. sub district, *Puskesmas*, DHO,
Training method: Lecture discussion, etc.

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Appendix 7. Questionnaires

D. Resources

1. Resources for nutrition education

No.	Resources	Yes	No	Remark
1.	Printed counseling materials			
	Booklet			Number: Condition: *(Readable or can be used for nutrition education/not)*
	Leaflet			Number: Condition: *(Readable & can be used for nutrition education/not)*
2.	Others printed materials			
	Banners			Number: Condition: *Readable /not:* *Attached/not :* *Number attached:* *Location attached:*
	Poster			Number: Condition: *Readable /not:* *Attached/not:* *Number attached:* *Location attached:*
	Billboard			Number: Condition: *Readable /not:* *Attached/not:* *Number attached:* *Location attached:*

Note: thick (✓) Yes/No

E. Management and organization				**Code**
	Planning			
1.	Is there a local plan regarding MNP program for this district/area	1) Yes 0) No	88) DNK 99) No Answer	( )
2.	If yes, can I see them (or relevant parts of it)?	1) Available 2) No available	66) NA	( )
3.	If yes			
4.	*When the plan produced?*			
5.	*Who writes the plan?*			
6.	*Who approves the plan?*			
7.	Does the plan contains specific targets?	1) Yes 0) No	88) DNK 99) No Answer	( )
8.	What are the main specific targets set for you?			

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Appendix 7. Questionnaires

	66) NA			
9.	Does the plan specify who does what & when?	1) Yes 0) No	88) DNK 99) No Answer	( )
10.	Does the plan specify the budget needed?	1) Yes 0) No	88) DNK 99) No Answer	( )
11.	Does regular meeting/discussion between health personnel to monitor plan – implementation and to discuss problems regarding MNP program?	1) Yes 0) No	88) DNK 99) No Answer	( )
12.	If yes, when was the last one?	1) Within the last 3 months 2) > 3 months, specify	66) NA	( )
13.	Are there minutes of these meetings?	1) Yes 0) No	88) DNK 99) No Answer	( )
14.	If yes, can I see them?	1) Available 2) No available	66) NA	( )
15.	Do you develop schedule of planned activities regarding MNP program?	1) Yes 0) No	88) DNK 99) No Answer	( )
16.	If yes, can I see them?	1) Available 2) No available	66) NA	( )
17.	Do you have a job description yourself regarding MNP program?	1) Yes 0) No	88) DNK 99) No Answer	( )
18.	If yes, can I see them?	1) Available 2) No available	66) NA	( )
19.	Are areas of responsibility of MNP distribution and communication clearly defined within the health personnel team? (if yes, give brief description)	1) Yes 0) No	88) DNK 99) No Answer	( )
20.	Are the health team receive transportation fee for Posyandu activity regularly?	1) Yes 0) No	88) DNK 99) No Answer	( )
21.	If, yes can I see the record	1) Available 2) No available	66) NA	( )
	On the job training & supportive supervision			
22.	Have you attended training on anemia and MNP – related topics during past two years?	1) Yes 0) No	88) DNK 99) No Answer	( )
23.	Has any other nutrition staff attended training on anemia and MNP – related topics during past two years?	1) Yes 0) No	88) DNK 99) No Answer	( )
24.	Does the *Puskesmas* have any MNP guide books?	1) Yes 0) No	88) DNK 99) No Answer	( )
	If yes, can I see them?	1) Available 2) No available	66) NA	( )
25.	Does the *Puskesmas* have any supervisor to supervise your work regarding MNP program?	1) Yes 0) No	88) DNK 99) No Answer	( )
26.	Did she/he visit your facility during the last 3 months?	1) Yes 0) No	88) DNK 99) No Answer	( )

27.	What kind of supervisory activities conducted by your supervisor regarding MNP program?	1) Education on recording - reporting & procurement of MNP 2) Review coverege & compliance 3) Discuss & solve problems regarding MNP distribution & communication program	77) Others, specify ..... 66) NA	( )

E. Service output		**Code**
	Nutrition education	
1.	Frequency of nutrition education done in the past two years	

No.	Month	Frequency	Frequency MNP – related topics	Remarks
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				

Note:
Document review on nutrition education reports
Nutrition education is an educational activities in tha communities, i.e. Posyandu conducting by health personnel and in the form of nutrition extension (speech), group discussion, brainstorming, and/or supplementary feeding activities.
MNP – related topics:

- *Anemia & other vitamin and mineral deficiencies (VMD) in young children*
- *Overview of the MNP: what and how to use*
- *Sources and functions of vitamins and minerals in MNP*
- *Food sources rich in iron and vitamin C.*

Appendix 7. Questionnaires

South East Asian Ministers of Education Organization (SEAMEO)
Tropical Medicine and Public Health (TROPMED)
Regional Center for Community Nutrition (RCCN) - University of Indonesia (UI)
Jl. Salemba Raya 6 Jakarta Pusat
Phone : (021) 3913932 / 330205, Fax : (021) 3913933

CADRES QUESTIONNAIRES

Note:: "(*greeting*).... I am (*name*) from SEAMEO Tropmed RCCN university of Indonesia. We are visiting Lombok Tengah District for conducting research on MNP compliance. This *Posyandu* are randomly selected to participate and this interview and observation are part of the research. Your answer will be purely confidential and can only be access by us.

Inform consent:
Before I start, I will ask for your permission to participate in this research, by signing this form. In this research, I will ask several questions related to communication activities regarding MNP in *Posyandu*, and also your daily cadre's work. If you have any questions, you may ask.
There will be no risk result in this interview and observation. Your participation is voluntary. The confidentiality of your information is assured by SEAMEO-TROPMED RCCN University of Indonesia. By signing this form, you are agreeing to participate in this research.

(Signature)_____ (name) _____(date) _____

We highly appreciate your participation

Name of Posyandu	: _____
Name of ward	: _____
Name of village	: _____
Name of Subdistrict	: _____
Name of Puskesmas	: _____
Name of interviewer	: _____
Date of interview: ...../...../.....(dd/mm/yy)	Time of interview: ..... until ..... (hh.mm)

A. Cadre's Identity				Code
1.	Name of cadre	: _____	Sex: 1) Male 2) Female	( )
2.	Age	: ____ years (completed)		( )
3.	Religion	1) Moslem 2) Catolic 3) Protestant	4) Hindu 5) Budhist 77) Others, specify	( )
4.	Ethnicity	1) Sasaknese 2) Javanese 3) Balinese	77) Others, specify	( )
5.	Education	1) Never go to school 2) Elementary school (<3 years) 3) Elementary school (graduated) 4) Junior high school (graduate)	5) Senior high school (graduate) 6) University (graduated) 88) DNK	( )
6.	Main occupation (currently)	1) Farmer 2) Fisherman 3) Animal Husbandry 4) Government employee 5) Police/Militer 6) Private employee 7) District honorer (Honor daerah) 8) Entreprenuer 9) Laborer	10) Housewife 11) Unemployed 12) Student 13) Retired 77) Others, specify ..... 88) DNK 99) No answer	( )

7.	How long have you been a cadre	_____ years _____ months	88) DNK 99) No answer	( )

B. Service input — **Code**

8. Training have been attended in the last two years? ( )

Topic	Month, Years	Organizer	Duration	Method	Evaluation

Note:
1) Organizers: District, sub district, Puskesmas, etc
2) Method: Lecture, discussion, etc
3) Evaluation: pre – post test

9. How many cadres stationed in this Posyandu? _____ Cadres ( )

10. Stationed cadres in this Posyandu?

No.	Name	Active		Training experience on Anemia – MNP related topics	
		Yes	No	Yes	No
1.					
2.					
3.					
4.					
5.					
6.					
7.					

11. Number of active cadres in this Posyandu? _____ cadres (*elaborate based on no.10*) ( )

	Availability of program			
12.	What kind of nutrition service was carried out by this *Posyandu*	1) Yes 0) No	88) DNK 99) No Answer	
	1) Growth monitoring			( )
	2) Nutrition education			( )
	3) MNP program			( )
	4) Vitamin A supplementation			( )
	5) Deworming program			( )
	6) ORS program			( )
	77) Others, specify			( )

	Financial support			
13.	According to you is there any fund for delivering Posyandu services to the communities	1) Yes 0) No	88) DNK 99) No Answer	( )
	How much the cost to deliver Posyandu activities per session? Rp. _____			
14.	If Yes, source of funding	1) Yes 0) No	NA (No. 13 answer 0, 88, 99)	
	1) DHO			( )
	Amount Rp.	Frequency:		
	2) Sub district officer			
	Amount Rp.	Frequency:		( )
	3) Puskesmas			

Appendix 7. Questionnaires

	Amount Rp.	Frequency:		( )
	4) Village			
	Amount Rp.	Frequency:		( )
	77) Others, specify			
	Amount Rp.	Frequency:		( )
15.	Item of fund used for:			( )

No	Item	Amount (Rp)

66) NA (No. 12 answer 0, 88, 99)

16.	Do you receive an incentive	1) Yes 0) No	88) DNK 99) No Answer	( )
17.	What kind of incentives do you mostly received	1) Money 2) Goods/commodities	77) Others, specify ..... 66) NA (No. 16 answer 0, 88, 99	( )
18.	How frequent do you receive incentive	1) Monthly 2) Others, specify	66) NA (No. 16 answer 0, 88, 99	( )
19.	If you receive incentive in terms of money, how much it is? Rp _____ 66) NA (No. 16 answer 0, 88, 99)			( )
20.	How many cadres receive the incentive? _____ 66) NA (No. 16 answer 0, 88, 99)			
21.	Do you satisfied with incentive that you received?	2) Yes 1) Neutral 0) No	66) NA (No. 16 answer 0, 88, 99	( )
22.	Aside incentive, do you receive bonus?	1) Yes 0) No	88) DNK 99) No Answer	( )
23.	What kind of incentives do you mostly received?	1) Money 2) Goods/commodities	77) Others, specify ..... 66) NA (No. 16 answer 0, 88, 99	( )
24.	How frequent do you receive bonus?	1) Monthly 2) Others, specify	66) NA (No. 16 answer 0, 88, 99	( )
25.	If you receive bonus in terms of money, how much it is? Rp _____ 66) NA (No. 16 answer 0, 88, 99)			( )
26.	How many cadres receive the bonus? _____ 66) NA (No. 16 answer 0, 88, 99)			( )

C. Service distribution & Support system

27.	How many times this *Posyandu* open in the last two years? ___ times (see record since Aug 2007 till now)	( )

Regularity of weighing session in the last two years:

No.	Month, Year	Yes	No	If Available, note the date
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				

Note: thick (✓) Yes/No

Appendix 7. Questionnaires

28.	How many wards under working area of this Posyandu? _____ Wards			( )
29.	Transportations tools mostly used by the community to achieve this Posyandu?	1) Walking 2) Bicycle 3) Motorcycle 4) Car	77) Others, specify..... 88) DNK	( )
30.	Does the Posyandu easy to reach	1) Yes	0) No	( )
31.	Walking distance approximately to the nearest Posyandu		_____ Hrs ____ Minutes	
32.	Do you utilize transportation tools to the nearest Posyandu	1) Yes 2) Sometimes	0) No	( )
33.	If yes or sometimes, what kind of transportations tools do you mostly used?	1) Bicycle 2) Motorcycle 3) Car	66) NA (No. 32 answer 0) 77) Others, specify	( )
34.	Does the nearest Puskesmas/Pustu/Polindes easy to reach	1) Yes	0) No	( )
35.	Walking distance approximately to the nearest Puskesmas/Pustu/Polindes		_____ Hrs ____ Minutes	
36.	Do you utilize transportation tools to the nearest Puskesmas/Pustu/Polindes	1) Yes 2) Sometimes	0) No	( )
37.	How much the cost to reach the nearest Puskesmas/Pustu/Polindes? Rp _____			

D. Management and organization				**Code**
	On the job training & supportive supervision			
38.	Have you attended training on anemia and MNP – related topics during past two years?	1) Yes 0) No	88) DNK 99) No Answer	( )
39.	Has any other cadre attended training on anemia and MNP – related topics during past two years?	1) Yes 0) No	88) DNK 99) No Answer	( )
40.	Does the *Posyandu* have any MNP guide books?	1) Yes 0) No	88) DNK 99) No Answer	( )
41.	Does the *Posyandu* have any supervisor to supervise your work regarding MNP program?	1) Yes 0) No	88) DNK 99) No Answer	( )
42.	How frequent they supervised your work regarding MNP during the last years?			
	a. From Puskesmas	1 – 2x 2 – 3 x 4 – 5 x	5 – 6 x > 6 x 77) Others, specify	( )
	b. From DHO	1 – 2x 2 – 3 x 4 – 5 x	5 – 6 x > 6 x 77) Others, specify	( )
43.	What kind of supervisory activities conducted by your supervisor regarding MNP program?	1) Education on recording - reporting & procurement of MNP 2) Review coverage & compliance 3) Discuss & solve problems regarding MNP distribution & communication program 4) Explaining MNP and give solution toward MNP problem faced by the mothers/caregivers.	77) Others, specify ..... 66) NA	( )

Note: Supervisor attend Posyandu session will be based on observation on Posyandu

E. Service output		
	Cadres knowledge regarding anemia – MNP	
44.	According to you, what is anemia?	( )
	1) Low level of hemoglobin in red blood cell (2)	
	2) Lack of iron (1)	
	88) DNK 99) No answer 77) Others, specify	
45.	What cause of anemia	
	1) Low intake of iron source food (1)	( )
	2) Low absorption of iron in the body (1)	( )
	3) Infection, i.e. malaria (1)	( )
	4) Infestation, i.e. worm infestation (1)	( )

Appendix 7. Questionnaires

	88) DNK 99) No answer 77) Others, specify	
46.	Anemia sign	
	1) Fatigue (1)	( )
	2) Pallor (1)	( )
	3) Less appetite (1)	( )
	88) DNK 99) No answer 77) Others, specify	
47.	Effect of anemia on children	
	1) Adverse effect on motor and social development (1)	( )
	2) Negatively affects cognitive and brain development (1)	( )
	3) Reduce immunity (1)	( )
	88) DNK 99) No answer 77) Others, specify	
48.	Iron source food	
	1) Meat, chicken, fish, egg, etc. (2)	( )
	2) Spinach, black beans, soy beans etc. (1)	( )
	88) DNK 99) No answer 77) Others, specify	
49.	Food that enhance iron absorption	
	1) Fruits (rich on Vitamin C) (1)	( )
	88) DNK 99) No answer 77) Others, specify	
50.	Food that redue iron absorption	
	1) Tea and coffee (1)	( )
	88) DNK 99) No answer 77) Others, specify	
51.	According to you, what is a MNP	
	1) Nutrition complement among underfive, powder from, and can directly spread out on the food (1)	( )
	2) Alternative of home fortification on multivitamin and mineral (1)	( )
	88) DNK 99) No answer 77) Others, specify	( )
52.	MNP micronutrients contents	
	1) Vitamin A (1)	( )
	2) Vitamin B1 (1)	( )
	3) Vitamin B2 (1)	( )
	4) Vitamin B6 (1)	( )
	5) Vitamin B12 (1)	( )
	6) Vitamin C (1)	( )
	7) Vitamin D3 (1)	( )
	8) Vitamin E (1)	( )
	9) Folic acid (1)	( )
	10) Niasin (1)	( )
	11) Copper (1)	( )
	12) Iodine (1)	( )
	13) Iron (1)	( )
	14) Zinc (1)	( )
	77) Others, specify	
53.	MNP program: Objective and beneficiaries	
	1) Combating anemia and micronutrient deficiencies targeted 6 – 59 mo of children (1)	( )
	88) DNK 99) Nc answer 77) Others, specify	
54.	Benefit of MNP	
	1) Improve underfive growth & development (1)	( )
	2) Improve immunity (1)	( )
	3) Improve appetite (1)	( )
	4) Prevent from anemia and other micronutrients deficiencies (1)	( )
	88) DNK 99) No answer 77) Others, specify	
55.	How to use MNP?	
	1) Spread MNP/Vitalita on ready to eat and solid food, i.e. rice, side dish, porridge, fruits, etc	( )
	2) Do not cook	( )
	3) Do not mixed with hot food, implicating on reducing iron content and changing on color and aroma of food	( )
	4) Do not mixed with liquid, milk, tea, etc (not water soluble)	( )
	88) DNK 99) No answer 77) Others, specify	( )

Appendix 7. Questionnaires

56.	MNP/Vitalita recommendation	
	1) Beneficiaries were children aged 6 – 59 mo (1)	( )
	2) Dosage 1 sc/2 days (1)	( )
	3) 3 box (~90 sachet) for 6 months consumed (1)	( )
	4) Underfive with severe undernutrition (< -3SD) with complication did not received MNP on the first 7 days of treatment (1)	( )
	5) Underfive with fever should be referred to *Puskesmas*, if malaria positive did not receive MNP/Vitalita until recovery (2)	( )

57.	Do you perform the home visit activities?	1) Yes 0) No	88) DNK 99) No Answer	( )
58.	How many times home visit activities in the last 3 months	1) Never 2) 1 – 2 times	3) ≥ 3 times 66) NA (if no. 57 answer is 0/88/99)	( )
59.	What are the activities during home visit?	1) Yes 0) No	66) NA (if no. 57 answer is 0/88/99)	
	1) Provide MNP			( )
	2) Monitoring child who has flat weight			( )
	3) Monitoring undernourished children			( )
	4) Monitoring BGM's children			( )
	5) Monitoring sick child			( )
	77) Others, specify			
60.	Have you ever conduct counseling/education activities	1) Yes 0) No	88) DNK 99) No Answer	( )
61.	If yes, how many times do you conduct counseling/ education activities in the last 3 months?	1) Never 2) 1 – 2 times	3) ≥ 3 times 66) NA (if no. 60 answer is 0/88/99)	( )
62.	What are the topics given during counseling/education activities?	1) Yes 0) No	66) NA (if no. 60 answer is 0/88/99)	
	1) MNP/Vitalita			( )
	2) Growth monitoring and promotion			( )
	3) Vitamin A deficiencies			( )
	4) Iodine deficiency disorders			( )
	5) IDA			( )
	6) Diarrhea			( )
	7) Complementary food			( )
	77) Others, specify			
63	(Based on answer no. 58)What are the topics given during counseling/education on MNP/Vitalia?	1) Yes 0) No	66) NA (if no. 60 answer is 0/88/99 & no. 61 answer unless 1)	
	1) Benefit			( )
	2) Preparation			
	3) Recommendation			
	4) MNP possible adverse effect			
	5) Others, specify			

	Nutrition education	
64.	Frequency of nutrition education done in the past two years	

No.	Month	Frequency	Frequency MNP – related topics	Remarks
1.				
2.				
3.				
4.				
5.				
6.				
7.				

Appendix 7. Questionnaires

8.				
9.				
10.				
11.				
12.				

Note:

Document review on nutrition education reports

Nutrition education is an educational activities in the communities, i.e. Posyandu conducting by health personnel and or cadres in the form of nutrition extension (speech), group discussion, brainstorming, and/or supplementary feeding activities.

MNP – related topics;

- *Anemia & other vitamin and mineral deficiencies (VMD) in young children*
- *Overview of the MNP: what and how to use*
- *Sources and functions of vitamins and minerals in MNP*
- *Food sources rich in iron and vitamin C.*

Appendix 7. Questionnaires

South East Asian Ministers of Education Organization (SEAMEO)
Tropical Medicine and Public Health (TROPMED)
Regional Center for Community Nutrition (RCCN) - University of Indonesia (UI)
Jl. Salemba Raya 6 Jakarta Pusat
Phone : (021) 3913932 / 330205, Fax : (021) 3913933

POSYANDU OBSERVATION

Name of Posyandu	: _____
Name of Ward	: _____
Name of Village	: _____
Name of Subdistrict	: _____
Name of Puskesmas	: _____
Date of observation: ...../...../.....(dd/mm/yy)	Time of observation: ..... until ..... (hh.mm)

A. Start

Resource and equipments

No	Resource/ Equipments	Avail.[1)]	Remark
1.	Cadres		Number of presence:
2.	Health personnel		
	a. Midwife		Arrive time: Activities: Leave time:
	b. Nutrition staff		Arrive time: Activities: Leave time:
3.	Register of medicine received (*Lampiran 1*)		Name of the report: Items recorded: Registered by: Kept by:
4.	Report form to the *Puskesmas* (*Lampiran 2*)		Name of the report: Items recorded: Registered by: Sent Date Kept by:

No	Resource/ Equipments	Avail.[1)]	Remark
5.	Manual guide of MNP		Number: Condition:
7.	Printed Counseling material		
	Booklet		Number: Condition: *(Readable or can be used for nutrition education & counseling /not)*
	Leaflet		Number: Condition: *(Readable or can be used for nutrition education & counseling /not)*
8.	Others printed material		
	Poster		Number: Condition: *Readable /not:* *Attached/not :* *Number attached:* *Location attached:*
	Banners		Number: Condition: *Readable /not:* *Attached/not :* *Number attached:* *Location attached:*

Note: 1) Availability: thick (✓) if available

B. Process

Supervision activity after Posyandu session

No	Process	Avail.[1)]	Remarks
1)	Person in charge on supervision activities		
	a. From DHO: ..... b. Puskesmas staf:		
2)	Activities:		
	a. Education on recording - reporting & procurement of MNP		
	b. Review coverage & compliance		
	c. Discuss & solve problems regarding MNP distribution & communication program		
	d. Explaining MNP and give solution toward MNP problem faced by the mothers/caregivers		
	e. Others, specify		

Appendix 7. Questionnaires

1. Planning for sweeping after Posyandu session

No	Process	Avail.[1)]	Remarks
1)	Discuss the MNP distribution result among Cadres and health staff		
	Topic:		
2)	List of children to be sweeping		

2. Table *4 services*: Counseling activity regarding MNP

Description of counseling activity: *Counseling being given by: Health personnel or cadres:* *Number of cadres giving counseling:* *Number of counseling conducted:* *Visual aid being used:*

Key Message for MNP:

No	Process	Avail.[1)]	Not Avail.
1)	Benefit of MNP		
	Improve underfive growth and development		
	Improve immunity		
	Improve appetite		
	Prevent from anemia and other micronutrients deficiencies		
2)	MNP Preparation		
	Spread MNP/Vitalita on ready to eat and solid food, i.e. rice, side dish, porridge, fruits, etc		
	Do not cook		
	Do not mixed with hot food, implicating on reducing iron content and changing on color and aroma of food		
	Do not mixed with liquid, milk, tea, etc (not water soluble)		
3)	MNP Recommendation		
	Beneficiaries were children aged 6 – 59 mo		
	Dosage 1 sc/2 days		
	Underfive with fever should be referred to *Puskesmas*, if malaria positive did not receive MNP until recovery.		
	Still given during illness		
4)	MNP possible adverse effect		
	Blackening feces		
	Constipation		
	Little change on food color & taste		
5).	Others, specify		
	Duration of consultation per underfive (average): ..... Minutes		

3. Nutrition extension regarding MNP – related topics

Description of nutrition extention activity: *Counseling being given by: Health personnel or cadres:* *Number of audience (approximately <15 or ≥ 15):* *Methods of delivery (nutrition extension (speech), group discussion, brainstorming, and/or supplementary feeding activities).*

Process on nutrition extension

No	Process	Avail.[1)]	Not Avail.
1)	Availability of nutrition extension		
2)	MNP – related topics given:		
	a. Anemia & other vitamin and mineral deficiencies (VMD) in young children		
	b. Overview of the MNP: what and how to use		
	c. Sources and functions of vitamins and minerals in MNP		
	d. Food sources rich in iron and vitamin C.		
3)	Audio visual aids used		
	Description		
4)	Perfomance of educator		
	a. A convincing attitude & performance (not be hesitant and nervous)		
	b. Voice were loud and clear enough within participants		
	c. Must look/focus to all participants		
	d. Must standing in front of or in the middle participants		
5)	Discussion session about MNP – related topics given		
	Description		
	Duration of nutrition education: ..... Minutes		

Appendix 7. Questionnaires

South East Asian Ministers of Education Organization (SEAMEO)
Tropical Medicine and Public Health (TROPMED)
Regional Center for Community Nutrition (RCCN) - University of Indonesia (UI)
Jl. Salemba Raya 6 Jakarta Pusat
Phone : (021) 3913932 / 330205, Fax : (021) 3913933

MOTHERS/CAREGIVERS QUESTIONNAIRES

Note: "(*greeting*).... I am (*name*) from SEAMEO Tropmed RCCN university of Indonesia. We are visiting Lombok Tengah District for conducting research on MNP compliance You are randomly selected to participate and this interview are part of the research. Your answer will be purely confidential and can only be access by us.

Inform consent:
Before I start, I will ask for your permission to participate in this research, by signing this form. In this research, I will ask several questions related to communication activities regarding MNP in *Posyandu*, and also your. If you have any questions, you may ask.
There will be no risk result in this interview and observation. Your participation is voluntary. The confidentiality of your information is assured by SEAMEO-TROPMED RCCN University of Indonesia. By signing this form, you are agreeing to participate in this research.

(Signature)_____ (name) _____(date) _____

We highly appreciate your participation

Name of Posyandu	: _____
Name of ward	: _____
Name of village	: _____
Name of Subdistrict	: _____
Name of interviewer	: _____
Date of interview: ...../...../.....(dd/mm/yy)	Time of interview: ..... until ..... (hh.mm)

Name of mother/ caretaker: ..... Age ..... yr Sex: 1) Male 2) Female ( ) Relation of the respondent with the children: 1. Mother 2. Other (*specify*) ..... ( )	Name of the underfive children: ..... Age .....mo Sex: 1) Male 2) Female ( )

Appendix 7. Questionnaires

A. Demographic Data							CODE
1.	Fill in this table with data of the household member						

No (a)	Name of the family member	Sex 1. M 2. F	Date of birth (dd/mm/yy)	Education (b)	Occupation (c)	contribute to household income? (1.Yes/ 0.No)
1.						
2.						
3.						
4.						
5.						
6.						
8.						

Note:

(a)
(1) U5 children (subject)
(2) Mother
(3) father
(4) Caregiver
(5) Sibling1
(6) Sibling2
(10) others, ...

(b) Education:
(1) Never go to school
(2) Elementary school (<3 years)
(3) Elementary school (graduated)
(4) Junior high school (graduate)
(5) Senior high school (graduate)
(6) University (graduated)
(66) Not applicable (for underfive children)
(88) Do not know

(c) Main Occupation (Currently):
(1) Farmer (land owner)
(2) Farmer (not land owner)
(3) Fisherman (boat owner)
(4) Fisherman (not boat owner)
(5) Animal Husbandary
(6) Government employee
(7) Private employee
(8) Enterprenuer
(9) Driver/ Ojek
(10) District honorer
(11) Laborer
(12) Housewife
(13) Unemployed
(14) Student
(15) Retired
(77) Others (specify).....
(66) Not applicable
(88) Do not know
(99) No answer

	Note: For questions no A2 – A4, no need to read the questions. The answer will be drawn from demographic data table		
2.	Number of household member		( )
3.	Number of the underfive children in a household.....		( )
4.	Number of household member aged <15 years old and >60 years old		( )
5.	What is the religion of the mother?	1. Moslem 4. Hindu	( )
6.	What is the religion of the father?	2. Catolic 5. Budhist 3. Protestant 77) Others, specify	( )
7.	What is the ethnicity of the mother?	1. Sasaknese 77) Others, specify	( )
8.	What is the ethnicity of the father?	2. Javanese 3. Balinese	( )

B. Socio Economic Status		Code
	Note: For questions no B1-B5, no need to read the questions. The answer will be drawn from demographic data table	
9.	Father's education	( )
10.	Mother's education	( )
11.	Father's occupation	( )
12.	Mother's occupation	( )
13.	Number of household member who contribute to household income	( )

Appendix 7. Questionnaires

C. System distribution and Support system				Code
14.	Does the Posyandu easy to reach	1) Yes	0) No	( )
15.	Walking distance approximately to the nearest Posyandu		____ Hrs ____ Minutes	
16.	Do you utilize transportation tools to the nearest Posyandu	1) Yes 2) Sometimes	0) No	( )
17.	If yes or sometimes, what kind of transportations tools do you mostly used?	1) Bicycle 2) Motorcycle 3) Car	66) NA (No. 16 answer 0) 77) Others, specify	( )
18.	How much the cost to reach the nearest Posyandu? Rp _____			
19.	Does the nearest Puskesmas/Pustu/Polindes easy to reach	1) Yes	0) No	( )
20.	Walking distance approximately to the nearest Puskesmas/Pustu/Polindes		____ Hrs ____ Minutes	
21.	Do you utilize transportation tools to the nearest Puskesmas/Pustu/Polindes	1) Yes 2) Sometimes	0) No	( )
22.	How much the cost to reach the nearest Puskesmas/Pustu/Polindes? Rp _____			

D. Service output				Code
23.	Have you ever visited by cadres?	1) Yes 0) No	88) DNK 99) No Answer	( )
24.	How many times cadres conduct home visit activities in the last 3 months	1) Never 2) 1 – 2 times	3) ≥ 3 times 66) NA (if no. 53 answer is 0/88/99)	( )
25.	What are the activities during home visit?	1) Yes 0) No	66) NA (if no. 53 answer is 0/88/99)	
	1) Provide MNP			( )
	2) Monitoring child who has flat weight			( )
	3) Monitoring undernourished children			( )
	4) Monitoring BGM's children			( )
	5) Monitoring sick child			( )
	77) Others, specify			( )

E. Service outcome				Code
26.	Have you ever heard about MNP/Vitalita	1) Yes 0) No	88) DNK 99) No Answer	( )
27.	From where/who mostly do you accept information about MNP?	1) Puskesmas staff 2) Cadres 3) Poster 4) Brochure/Leaflet 5) Banners 6) Social gathering	7) Neighbour/family 8) MNP sachet 66) NA (if no. 26 answer is 0/88/99) 77) Others, specify	( )
27a	(*Based answer no. 27*) What is the reason to consider it as the main source of MNP information?	1) The material are visually appealing & attractive 2) Promotes the correct use of the MNP 3) The information are applicable & understandable	4) Expertise & trustworthiness 66) NA (if no. 26 answer is 0/88/99) 77) Others, specify	( )
28	What information do you accept regarding MNP? (Answer can be more than one)	1) Beneficiaries 2) Content 3) Benefit 4) Preparation	5) Side effect 66) NA (if no. 26 answer is 0/88/99) 77) Others, specify	( )

Appendix 7. Questionnaires

	Mothers/caregivers knowledge regarding anemia and MNP	
29.	According to you, what is anemia?	( )
	1) Low level of hemoglobin in red blood cell (2)	
	2) Lack of iron (1)	
	88) DNK 99) No answer 77) Others, specify	
30.	What cause of anemia	
	1) Low intake of iron source food (1)	( )
	2) Low absorption of iron in the body (1)	( )
	3) Infection, i.e. malaria (1)	( )
	4) Infestation, i.e. worm infestation (1)	( )
	88) DNK 99) No answer 77) Others, specify	
31.	Anemia sign	
	1) Fatigue (1)	( )
	2) Pallor (1)	( )
	3) Less appetite (1)	( )
	88) DNK 99) No answer 77) Others, specify	
32.	Effect of anemia on children	
	1) Adverse effect on motor and social development (1)	( )
	2) Negatively affects cognitive and brain development (1)	( )
	3) Reduce immunity (1)	( )
	88) DNK 99) No answer 77) Others, specify	
33.	Iron source food	
	1) Meat, chicken, fish, egg, etc. (2)	( )
	2) Spinach, black beans, soy beans etc. (1)	( )
	88) DNK 99) No answer 77) Others, specify	
34.	Food that enhance iron absorption	
	1) Fruits (rich on Vitamin C) (1)	( )
	88) DNK 99) No answer 77) Others, specify	
35.	Food that redue iron absorption	
	1) Tea and coffee (1)	( )
	88) DNK 99) No answer 77) Others, specify	
36.	According to you, what is a MNP — 1) Yes 0) No 77) Others, specify ... — 88) DNK 99) No answer	
	1) Nutrition complement among underfive, powder from, and can directly spread out on the food (2)	( )
	2) Alternative of home fortification on multivitamin and mineral (2)	( )
	3) Vitamin (1)	( )
	4) Mineral (1)	( )
	77) Others, specify	
37.	MNP/Vitalita contents — 1) Yes 0) No — 88) DNK 99) No Answer	
	1) Vitamin A	( )
	2) Vitamin B	( )
	3) Vitamin C	( )
	4) Vitamin D	( )
	5) Vitamin E	( )
	6) Yodium	( )
	7) Iron	( )
	8) Zinc	( )
	77) Others, specify	

Appendix 7. Questionnaires

38.	Benefit of MNP/Vitalita	1) Yes 0) No	88) DNK 99) No Answer	
	1) Improve underfive growth & development			( )
	2) Improve immunity			( )
	3) Improve appetite			( )
	4) Prevent from anemia and other micronutrients deficiencies			( )
	77) Others, specify			( )
39.	How to prepare MNP	1) Yes 0) No	88) DNK 99) No Answer	
	1) Spread MNP/Vitalita on ready to eat and solid food, i.e. rice, side dish, porridge, fruits, etc			( )
	2) Do not cook			( )
	3) Do not mixed with hot food, implicating on reducing iron content and changing on color and aroma of food			( )
	4) Do not mixed with liquid, milk, tea, etc (not water soluble)			( )
	77) Others, specify			( )
40.	MNP/Vitalita recommendation	1) Yes 0) No	88) DNK 99) No Answer	
	1) Dosage 1 sc/2 days			( )
	2) 3 box (~90 sachet) for 6 months consumed			( )
	3) Underfive with severe undernutrition (< -3SD) with complication did not received MNP on the first 7 days of treatment			( )
	4) Underfive with fever should be referred to *Puskesmas*, if malaria positive did not receive MNP/Vitalita until recovery.			( )

	Mothers/caregivers perception regarding MNP formulation			
41.	MNP/Vitalita's sachet preference			
41a	1) Shape & size	1) Like 2) Dislike	88) DNK 99) No Answer	( )
	If dislike, why			
41b	2) Color	1) Like 2) Dislike	88) DNK 99) No Answer	( )
	If dislike, why			
41c	3) Picture	1) Like 2) Dislike	88) DNK 99) No Answer	( )
	If dislike, why			
41d	4) Nutritional fact	1) Like 2) Dislike	88) DNK 99) No Answer	( )
	If dislike, why			
42.	MNP/Vitalita's powder preference?			
42a	1) Form	1) Like 2) Dislike	88) DNK 99) No Answer	( )
	If dislike, why			
42b	2) Color	1) Like 2) Dislike	88) DNK 99) No Answer	( )
	If dislike, why			
42c	3) Flavor	1) Like 2) Dislike	88) DNK 99) No Answer	( )
	If dislike, why			

Appendix 7. Questionnaires

42d	4) Taste	1) Like 2) Dislike	88) DNK 99) No Answer	( )
	If dislike, why			

43.	MNP/Vitalita's handling			
43a	1) How to use	1) Easy 2) Not easy	88) DNK 99) No Answer	( )
	If not easy, why			
43b	2) How to store	1) Easy 2) Not easy	88) DNK 99) No Answer	( )
	If not easy, why			

	Mothers/caregivers satisfaction regarding MNP			
44.	According to you, do you really required MNP as part of your children food?	1) Required 0) No required	88) DNK 99) No Answer	( )
45.	If no required, why?			
46.	According to you, if MNP will be sold to the free market do you still willing to purchase it?	1) Willing (go to no. 48) 0) Unwilling	88) DNK 99) No Answer	( )
47.	If unwilling, why?			

	Mothers/caregivers expectation regarding MNP			
48.	How much do you want to pay if MNP will be sold to the free market per sachet?		Rp _____	( )
	66) NA (If no. 46 answer is 0, 88, 99)			
49.	Where the place do you prefer to receive MNP	1) Puskesmas 2) Posyandu 3) Drug store	4) Small shop (warung) 66) NA (If no. 46 answer is 0, 88, 99)	( )

	Compliance			
50.	Does your child ever consume MNP/Vitalita?	1) Yes, since when..... 0) No	88) Do not know 99) No answer	( )
51.	If yes, does your child consume MNP/Vitalita during previous two months	1) Yes 0) No	66) NA (If no. 50 answer is 0, 88, 99)	( )

52.	Have you ever had organoleptic problems when MNP/vitalita spread on the food	1) Yes 0) No	88) DNK 99) No Answer	( )
53.	If yes, when was the last time?	_____ months ago	66) NA (If no. 52 answer is 0, 88, 99)	( )
54.	If yes, according to you what is the cause	66) NA (If no. 52 answer is 0, 88, 99)		( )

55.	According to you, does your child like and accept MNP/Vitalita?	1) Yes 0) No	88) DNK 99) No Answer	( )

56.	According to you does the child appetite getting better since receive MNP?	1) Yes 0) No	88) DNK 99) No Answer	( )
57.	According to you, does the child more cheerful since receive MNP?	1) Yes 0) No	88) DNK 99) No Answer	( )

58. Have your child ever experienced following conditions due to MNP/Vitalita consumption?

No.	MNP possible adverse effect	1) Yes 0) No	Do you still given MNP/ Vitalita [1) Yes / 0) No]	Action/solution taken
1.	Darkening stool	( )	( )	
2.	Constipation	( )	( )	
3.		( )	( )	
4.		( )	( )	

66) NA 88) DNK 99) No answer

59. Did your child ever suffer from the following illness in the last 2 weeks?

No.	Illness	1) Yes 0) No	Do you still given MNP/ Vitalita [1) Yes / 0) No]	Action/solution taken
1.	Fever	( )	( )	
2.	Cough	( )	( )	
3.	Diarrhea	( )	( )	
4.		( )	( )	

66) NA 88) DNK 99) No answer

60. Procedure to assess compliance

1) Ask mothers/caregivers to showing one empty sachet that already given to her child on the observation day
2) Mothers/caregivers affirm that the sachet is currently given.
3) Ask mothers/caregivers showing empty sachet on the previous day.
4) Ask mothers/caregivers showing left over sachet.

Compliance on the day of interview

Date receive MNP	Observation date	Number received	Number used	Left over
		15		

Compliance on the last three months

Date receive MNP	Number received	Number used	Left over
	15		
	15		
	15		

Compliance: _____ % ( )

F. Community Participation			Code
61.	*Posyandu attendance*		
	How many times did the child attend Posyandu during the last 6 months?	1) ____ times (Based on KMS or Not) 2) never attended Posyandu 88) DNK 99) No Answer	( )

62.	If it was < 5 times, what is the main reason? (choose 1)	(1) Mother/caregivers was busy working (2) My child was sick (3) Posyandu is too far (4) no benefit for the child (5) the child has no problem with his/her growth (66) NA (never attended Posyandu/attending ≥ 4 x) (77) other, mention:..... (99) No answer	( )

63.	Have you ever received nutrition education/counseling at Posyandu during the last 6 months??	1) Yes 0) No	88) DNK 99) No Answer	( )
64.	If yes, how frequent do you attend nutrition education/counseling at Posyandu during the last 6 months??	1) ____ times 66) NA (If No. 63 answer is 0), 88), or 99)		( )
65.	If yes, what kind of topics during nutrition education/counseling session did you receive?	1) Yes 0) No	66) NA (if no. 63 answer is 0/88/99)	
	1) MNP/Vitalita			( )
	2) Growth monitoring and promotion			( )
	3) Vitamin A deficiencies			( )
	4) Iodine deficiency disorders			( )
	5) IDA			( )
	6) Diarrhea			( )
	7) Complementary food			( )
	77) Others, specify			
66.	(Based on answer no. 65)What are the topics given during counseling/education on MNP/Vitalia?	0) Yes 0) No	66) NA (if no. 63 answer is 0/88/99 & no. 65 answer unless 1)	
	1) Benefit			( )
	2) Preparation			
	3) Recommendation			
	4) MNP possible adverse effect			
	5) Others, specify			
67.	If no, why?	1) Have no time to attend the session 2) *Posyandu* never had nutrition education/counseling session 3) Never come to *Posyandu*	77) Others, specify ..... 88) DNK 99) No Answer	( )

Appendix 7. In-depth Interview Guideline

South East Asian Ministers of Education Organization (SEAMEO)
Tropical Medicine and Public Health (TROPMED)
Regional Center for Community Nutrition (RCCN) - University of Indonesia (UI)
Jl. Salemba Raya 6 Jakarta Pusat
Phone : (021) 3913932 / 330205, Fax : (021) 3913933

GUIDELINES QUESTIONS FOR INDEPTH INTERVIEW

CADRE'S COORDINATOR

Date of interview	:	**Personal identity**		
Sub-District	:	**Name**	:	
Village	:	**Age**	:	
Puskesmas	:	**Address**	:	
Name of interviewer	:	**Occupation**	:	
Duration	:	**Last education**	:	
Place of interview	:	**Period of being in charge in current position**	:	..... **year**

General Guidelines for the interviewer:

1. Introduce yourself (and other members of the team) and mention the purpose of the interview.
2. Let her/him know that she can speak freely & ensure that there is no right & wrong answer.
3. Ask the resource person name & let her/him introduce her/himself.
4. Use the guideline questions & probe wisely to obtain the answers
5. Note the time frame (should be within 60minutes-duration). Do not forget to ask the respondent whether they have additional comments for questions that were asked to her.
6. Thank the person right afterwards the interview.

Availability of MNP program

1. How is the role of *Posyandu* in delivering MNP program? *Probing: its authority*
2. How is the mechanism of recording and reporting of MNP program? *Probing from Posyandu to Puskesmas*
3. Do you have mechanism on compliance on MNP? Do the mechanism work?
4. What is the achievement of coverage of MNP? Is it achieves the target or not? Why is not achieve the target?

MNP communication program: training program for cadres

5. Do training programs regarding MNP for cadres exist in the last two year?
6. What are the criteria in attending the training/refreshments programs?
7. What are the materials/topics given in the training/refreshment sessions?
8. According to you how is the quality of the training?

MNP communication program: Nutrition education/counseling for mothers/caregivers

9. How is role of the cadres in promoting MNP to the community?
10. How is the role of cadres in nutrition education/counseling?
11. Prior to communication process, is there any action plan about the number of nutrition extension/counseling to be done by cadres regarding MNP/Vitalita to the mothers/caregivers?

12. Is there any home visit activity undertaken by the cadres regarding MNP promotion to the mothers/caregivers?
    - o The reason conducting home visit
    - o Recording and reporting regarding home visit
13. What message should be delivered by the cadres to the mothers/caregivers regarding MNP/Vitalita when conduct nutrition education/counseling?
14. What are communication materials do you use regarding MNP program?
    - o Material for information (Flyers/flipcharts, etc)
    - o Material for Visibility/motivation (Posters/banners, etc)
    - o The procedure in the procurement of communication materials regarding MNP
15. Is there any supportive supervision from *Puskesmai* staff regarding MNP promotion?
16. Do the mothers/caregivers understand the purpose of MNP and carried out as prescribed way?
17. How is mother's perception about their children after receiving MNP?
    - o Positive impact
    - o Negative experiences with and/or negative aspects of MNP/Vitalita

Financial source

18. What is the main source of operational budget of MNP program? Is it routinely? Other source of operational budget regarding MNP program?
19. How is the utilization of the budget?
    - o Operational cadres: *probing related to MNP communication activities*
20. Is there any incentive for cadres who conduct home visit?

21. Generally what are your constraints in delivering MNP program, especially regarding nutrition education to the community?
22. How do you cope with those constraints?
23. According to you, what kind of support needed in delivering nutrition education regarding MNP?
24. Suggestion regarding to improve MNP acceptance by the caregivers

Appendix 8. In-depth Interview Guideline

South East Asian Ministers of Education Organization (SEAMEO)
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Phone : (021) 3913932 / 330205, Fax : (021) 3913933

GUIDELINES QUESTIONS FOR INDEPTH INTERVIEW

CADRE'S COORDINATOR

Date of interview	:	**Personal identity**	
Sub-District	:	**Name**	:
Village	:	**Age**	:
Puskesmas	:	**Address**	:
Name of interviewer	:	**Occupation**	:
Duration	:	**Last education**	:
Place of interview	:	**Period of being in charge in current position**	: ..... **year**

General Guidelines for the interviewer:

1. Introduce yourself (and other members of the team) and mention the purpose of the interview.
2. Let her/him know that she can speak freely & ensure that there is no right & wrong answer.
3. Ask the resource person name & let her/him introduce her/himself.
4. Use the guideline questions & probe wisely to obtain the answers
5. Note the time frame (should be within 60minutes-duration). Do not forget to ask the respondent whether they have additional comments for questions that were asked to her.
6. Thank the person right afterwards the interview.

Availability af MNP program

1. How is the role of *Posyandu* in delivering MNP program? *Probing: its authority*
2. How is the mechanism of recording and reporting of MNP program? *Probing from Posyandu to Puskesmas*
3. Do you have mechanism on compliance on MNP? Do the mechanism work?
4. What is the achievement of coverage of MNP? Is it achieves the target or not? Why is not achieve the target?

MNP communication program: training program for cadres

5. Do training programs regarding MNP for cadres exist in the last two year?
6. What are the criteria in attending the training/refreshments programs?
7. What are the materials/topics given in the training/refreshment sessions?
8. According to you how is the quality of the training?

MNP communication program: Nutrition education/counseling for mothers/caregivers

9. How is role of the cadres in promoting MNP to the community?
10. How is the role of cadres in nutrition education/counseling?
11. Prior to communication process, is there any action plan about the number of nutrition extension/counseling to be done by cadres regarding MNP/Vitalita to the mothers/caregivers?

12. Is there any home visit activity undertaken by the cadres regarding MNP promotion to the mothers/caregivers?
    - The reason conducting home visit
    - Recording and reporting regarding home visit
13. What message should be delivered by the cadres to the mothers/caregivers regarding MNP/Vitalita when conduct nutrition education/counseling?
14. What are communication materials do you use regarding MNP program?
    - Material for information (Flyers/flipcharts, etc)
    - Material for Visibility/motivation (Posters/banners, etc)
    - The procedure in the procurement of communication materials regarding MNP
15. Is there any supportive supervision from *Puskesmai* staff regarding MNP promotion?
16. Do the mothers/caregivers understand the purpose of MNP and carried out as prescribed way?
17. How is mother's perception about their children after receiving MNP?
    - Positive impact
    - Negative experiences with and/or negative aspects of MNP/Vitalita

Financial source

18. What is the main source of operational budget of MNP program? Is it routinely? Other source of operational budget regarding MNP program?
19. How is the utilization of the budget?
    - Operational cadres: *probing related to MNP communication activities*
20. Is there any incentive for cadres who conduct home visit?

21. Generally what are your constraints in delivering MNP program, especially regarding nutrition education to the community?
22. How do you cope with those constraints?
23. According to you, what kind of support needed in delivering nutrition education regarding MNP?
24. Suggestion regarding to improve MNP acceptance by the caregivers

Appendix 8. In-depth Interview Guideline

South East Asian Ministers of Education Organization (SEAMEO)
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Phone : (021) 3913932 / 330205, Fax : (021) 3913933

GUIDELINES QUESTIONS FOR INDEPTH INTERVIEW

RESPONSIBLE PERSON ON MNP PROGRAM FROM PUSKESMAS

Date of interview	:	**Personal identity**		
Sub-District	:	**Name**	:	
Village	:	**Age**	:	
Puskesmas	:	**Address**	:	
Name of interviewer	:	**Occupation**	:	
Duration	:	**Last education**	:	
Place of interview	:	**Period of being in charge in current position**	:	..... **year**

General Guidelines for the interviewer:

1. Introduce yourself (and other members of the team) and mention the purpose of the interview.
2. Let her/him know that she can speak freely & ensure that there is no right & wrong answer.
3. Ask the resource person name & let her/him introduce her/himself.
4. Use the guideline questions & probe wisely to obtain the answers
5. Note the time frame (should be within 60minutes-duration). Do not forget to ask the respondent whether they have additional comments for questions that were asked to her.
6. Thank the person right afterwards the interview.

Availability of MNP program

1. Do MNP program exist in your area?
2. How is the role of *Puskesmas* in delivering MNP program? *Probing: its authority, who are the personnel from Puskesmas in charge in MNP program.*
3. Is there any specific regulation in delivering the MNP program?
4. How is the mechanism of recording and reporting of MNP program? *Probing from Posyandu to Puskesmas and to DHO?*
5. Do you have mechanism on compliance on MNP? Do the mechanism work?
6. What is the achievement of coverage of MNP? Is it achieves the target or not? Why is not achieve the target?

MNP communication program: training program for cadres

7. Do training programs regarding MNP for cadres exist in the last two year?
8. What are the objectives of training programs regarding MNP?
9. What are the criteria in attending the training/refreshments programs?
10. What are the materials/topics given in the training/refreshment sessions?
11. What are the sources of reference using to develop the curricula of training?
12. How do you assess the successful of the training programs regarding MNP?
13. According to you how is the quality of the training?

14. Is there any monitoring/supervision mechanism from *Puskesmas* staff to beneficiaries regarding MNP promotion?

MNP communication program: nutrition education/counseling for mothers/caregivers

15. How is *Puskesmas* role in promoting MNP to the community?
16. How is role of the cadres in promoting MNP to the community? *probing role of cadres in nutrition education/counseling?*
17. How is cadre's competency on delivering MNP messages?
18. Prior to MNP communication process, is there any action plan about the number of nutrition extension/counseling to be done by cadres regarding MNP/Vitalita to the mothers/caregivers?

MNP communication program: communication material

19. What is communication materials do you use regarding MNP program?
    - Material for information (Flyers/flipcharts, etc)
    - Material for Visibility/motivation (Posters/banners, etc)
    - The procedure in the procurement of communication materials regarding MNP (from Posyandu – DHO)
    - Adaptation material with local culture

Financial source

20. What is the main source of operational budget of MNP program? Is it routinely? Other source of operational budget regarding MNP program?
21. How is the utilization of the budget?
    - Operational cadres
    - Operational health personnel

    Probing related to MNP communication activities
22. Is there any incentive for cadres who conduct home visit?

23. Generally what are your constraints in delivering MNP program, especially regarding nutrition education to the community?
24. How do you cope with those constraints?
25. According to you, what kind of support needed in delivering nutrition education regarding MNP?
26. Suggestion regarding to improve MNP acceptance by the caregivers

Appendix 8. In-depth Interview Guideline

South East Asian Ministers of Education Organization (SEAMEO)
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Phone : (021) 3913932 / 330205, Fax : (021) 3913933

GUIDELINES QUESTIONS FOR INDEPTH INTERVIEW

RESPONSIBLE PERSON ON MNP PROGRAM FROM DHO

Date of interview	:	**Personal identity**		
Sub-District	:	**Name**	:	
Village	:	**Age**	:	
Puskesmas	:	**Address**	:	
Name of interviewer	:	**Occupation**	:	
Duration	:	**Last education**	:	
Place of interview	:	**Period of being in charge in current position**	:	..... year

General Guidelines for the interviewer:

1. Introduce yourself (and other members of the team) and mention the purpose of the interview.
2. Let her/him know that she can speak freely & ensure that there is no right & wrong answer.
3. Ask the resource person name & let her/him introduce her/himself.
4. Use the guideline questions & probe wisely to obtain the answers
5. Note the time frame (should be within 60minutes-duration). Do not forget to ask the respondent whether they have additional comments for questions that were asked to her.
6. Thank the person right afterwards the interview.

Availability of MNP program

1. How is the role of Puskesmas in delivering MNP program? Probing: its authority, who is the personnel from Puskesmas in charge in MNP program.
2. Is there any specific regulation in delivering the MNP program?
3. How is the mechanism of recording and reporting of MNP program? Probing from Posyandu to Puskesmas and to DHO?
4. Do you have mechanism on compliance on MNP? Do the mechanism work?
5. What is the achievement of coverage of MNP? Is it achieves the target or not? Why is not achieve the target?

MNP communication program: training program for health personnel

6. Do training programs regarding MNP for cadres exist in the last two year?
7. What are the objectives of training programs regarding MNP?
8. What are the criteria in attending the training/refreshments programs?
9. What are the materials/topics given in the training/refreshment sessions?
10. What are the sources of reference using to develop the curricula of training?
11. How do you assess the successful of the training programs regarding MNP?
12. According to you how is the quality of the training?
13. Is there any monitoring/supervision mechanism from DHO to *Puskesmas* and beneficiaries regarding MNP promotion?

Appendix 8. In-depth Interview Guideline

MNP communication program: nutrition education/counseling for mothers/caregivers

14. How is role of the health personnel in promoting MNP to the community?
15. How is the health personnel competency on delivering MNP messages?

MNP communication program: communication material

16. What is communication materials do you use regarding MNP program?
    - Material for information (Flyers/flipcharts, etc)
    - Material for Visibility/motivation (Posters/banners/Billboard, etc)
    - The procedure in the procurement of communication materials regarding MNP (from Posyandu – DHO)
    - Adaptation material with local culture

Financial source

17. What is the main source of operational budget of MNP program? Is it routinely? Other source of operational budget regarding MNP program?
18. How is the utilization of the budget?
    - Operational cadres
    - Operational health personnel

    Probing related to MNP communication activities

19. Generally what are your constraints in delivering MNP program, especially regarding nutrition education to the community?
20. How do you cope with those constraints?
21. According to you, what kind of support needed in delivering nutrition education regarding MNP?
22. Suggestion regarding to improve MNP acceptance by the caregivers

Appendix 9. FGD Guideline

South East Asian Ministers of Education Organization (SEAMEO)
Tropical Medicine and Public Health (TROPMED)
Regional Center for Community Nutrition (RCCN) - University of Indonesia (UI)
Jl. Salemba Raya 6 Jakarta Pusat
Phone : (021) 3913932 / 330205, Fax : (021) 3913933

GUIDELINES QUESTIONS FOR FOCUS GROUP DISCUSSION

MOTHERS/CAREGIVERS

Date of FGD (mm/dd/yyyy)	: _____	Moderator: _____
Time (start-end)	: _____	Note taker: _____
Sub District	: _____	Number of participant: _____
Village	: _____	

General Guidelines for the moderator:

1. Introduce yourself (and other members of the team) and mention the purpose of the meeting.
2. Make sure that the note taker is ready.
3. Ask for their consent about using tape recorder to record the conversation.
4. Let them know that they can speak freely & ensure that there is no right & wrong answer.
5. Ask the participants name & let them introduce themselves.
6. Use the guideline questions & probe wisely to obtain the answers
7. Note the time frame (should be within 60-90 minute-duration). Note taker could give signal to moderator on remaining time.
8. Do not forget to ask the participants whether they have additional comments for each topic.
9. Be keen in observing each participants performance, make sure that everyone participates in the conversation.
10. In cases in a very dominant participants is present, ask any member of the team to exclude her from the group (alternatively, do indepth interview with the person!)
11. Thank the participants right afterwards the meeting.

1. Vitamins and minerals

   Vitamins
   - According to you what is vitamin?
   - According to you what is benefit of vitamins for your children?
   - According to you what is sources of vitamins and the kinds of foods that contain vitamins?

   Minerals
   - According to you what is minerals?
   - According to you what is benefit of minerals for your children?
   - According to you what is sources of minerals and the kinds of foods that contain minerals?
   - What are the differences between vitamins and minerals?
   - Do you think that food consumed by your children provide enough vitamins and minerals?

2. Iron and anemia
   - Have you ever heard about iron?(ask mother to explain about iron)
   - What is the difference between iron and vitamin?

- What is source of iron?
- Do you know iron supplements?
- Have you ever heard about anemia?
- What is the symptoms of anemia?
- What is the cause of anemia?
- What is the main source of information about iron and anemia?

3. Concept of using MNP
   - (Show the MNP sachets) What do you think about this product?
   - What is the main source of information about MNP?
     - Cadres: role on promoting MNP, home visit activity, etc.
     - Family members: role on promoting MNP
     - Printed material (Flyers/flipcharts, Posters/banners, etc)
   - What are the messages/information you have received?
   - How do you prepare MNP for your child?(ask mother to explain solid food, semi solid food, and liquid food)
   - Food always finished? If no, how you cope with that case?
   - Do you require MNP as part of your child food?
   - Adding MNP give more burden?

4. Have you ever experience your child doesn't want his/her meal added MNP/Vitalita? What would you do to anticipate this experience?

5. Mother's perception about their children after receiving MNP?
   - Positive impact
   - Negative experiences with and/or negative aspects of MNP/Vitalita

6. Do you have any suggestion regarding MNP formulation?

Appendix 10. CURRICULUM VITAE

NAME: ANDI ERWIN

PERSONAL INFORMATION

Date of Birth : July, 30th 1980

Place of Birth : Wawotobi

Sex : Male

Nationality(-ies) : Indonesia

Address : Jl. Saranani Lr. Sidenreng
No. 27 Kel. Korumba, Kota Kendari
Sulawesi Tenggara, 93111

E-mail : win0780@yahoo.com

Mobile : +62401-3015600
+628561746116

EDUCATION BACKGROUND

University : Fakultas Kesehatan Masyarakat, Universitas Hasanuddin
Year : 2006

Diploma/Academy : Akademi Gizi Depkes Kendari
Year : 2001

Senior High School : SMU Negeri 1 Kendari
Year : 1998

Junior High School : SMP Negeri 1 Wawotobi
Year : 1995

Elementary School : SD Negeri 1 Wawotobi

Year : 1992

TRAINING COURSES

1. Health Promotion in Nutrition Program. SEAMEO-TROPMED RCCN, Jakarta, 2009
2. Education and Training in Procurement of Governmental Materials/Services, in Kendari, S.E. Sulawesi, December 20 through 22, 2006
2. Training in Education Administration, in Ciloto, West Java, November 20 through 30, 2006.

SEMINAR & WORKSHOPS

1. Workshop on Clinical Nutrition "Nutritional Care Process (NCP) and Nutritional Diagnosis for the Enhancement of Patients' Recovery Process in Hospitals", in Kendari, S.E. Sulawesi, April 19, 2008.
2. Seminar on "Pharmacological Effects of Bee-keeping Products on Human Health", in Kendari, S.E. Sulawesi, March, 31, 2007.
3. Seminar and Workshop of the Field Internship Health Professionals of Hasanuddin University on "The Commitment of Local Government and Field Internship Health Professionals of Hasanuddin University in Promoting the Healthy Indonesia 2010 Towards the Nation's Reliable Human Resources", in Makassar, South Sulawesi, May 20 and 21, 2006.
4. Reproductive Health Seminar on "Erection Malfunction Viewed from Medical, Sociocultural, and Psychological Perspectives in Order to Improve the Community Health Status Towards the Healthy Indonesia 2010 and Great S.E. Sulawesi 2020", in Kendari, S.E. Sulawesi, June 6 , 2004.
5. National Seminar on "Food and Nutrition for the Poor", in Makassar, South Sulawesi, October 23, 2002.

ORGANIZATION & ACTIVITY

1. Secretary of Diploma IV Study Program in Nutrition, Nutrition Department, Health Polytechnic of Kendari, S.E. Sulawesi, 2009
2. Lecturer on Public Health Science, Biostatistics, and Research Methodology in Health Polytechnic of Kendari, S.E. Sulawesi, 2006 - 2008

3.	Member of the Association for Community Health Experts of Indonesia (IAKMI), 2008 until now.
4.	Secretary of Commitee on Procurement of Governmental Materials/Services, in Health Polytechnic of Kendari, S.E. Sulawesi, 2006 - 2008
5.	Head of Academic Administration Unit on Academic Section, in Health Polytechnic of Kendari, S.E. Sulawesi, 2006 - 2008
6.	Supervisor of "Independent Evaluation of The Coverage of Routine Immunization, SIA and TT Measles in Indonesia", December 15, 2007 through April 30, 2008.
7.	District Coordinator on the Field Internship Health Professionals (KKN Profesi Kesehatan) of Hasanuddin University in Maros District, South Sulawesi, January - March, 2006.
8.	Research on the Early Diagnose of DHF in the Endemic Areas, Batua Village, Makassar South Sulawesi, March, 2006.
9.	Staff of Computer Unit in Health Polytechnic of Kendari, S.E. Sulawesi, 2002 - 2004
10.	Member of the Union of Nutrition Experts of Indonesia (PERSAGI), 2001 until now.
11.	Chairman of the Students' Association of Nutrition Academy (KMAG), 1998 through 2001.
12.	Research on the Reasons of Synthetic Food Additives by Food Vendors in The Traditional Market "Pasar Kota", Kota Kendari, SE. Sulawesi June 1999.
13.	Member of Inter-School Students' Organization(OSIS), 1995 through 1998.
14.	Chairman of Youth Red Cross (PMR), 1992 through 1995.