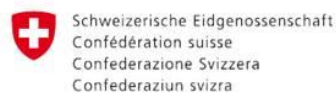


## Report

# Study on factors influencing mothers and family members to use BMS products and how it affects health, nutrition behavior, and economics

By:



Swiss Agency for Development  
and Cooperation SDC



### Lead consultant:

Dr. Phetsavanh Chanthavilay, MD, PhD

### Consultant's assistants:

Dr. Vathsana Somphet, MD, MPH

Dr. Soudavanh Soysouvanh, MD, MPH

Dr. Khampieng Phetlavanh, MD

Luang Namtha Province, Lao PDR

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Supervisor and data collectors came from University of Health Science, Vientiane Capital, Lao PDR. The methodology and report writing were performed by Lead consultant, Dr. Phetsavanh Chanthavilay ([Phetsavanh456@gmail.com](mailto:Phetsavanh456@gmail.com)). The survey was prepared and facilitated by local Care International staffs and district and provincial healthcare workers.

## **Abbreviation**

ANC:	Antenatal Care
BMS:	Breastmilk Substitute, which includes Infant formula (0+ months), follow up/on formula (6 + months), growing up milk (12 + months) and any other milk for children 0-24 months
EBF:	Exclusive breastfeeding within the first 6 months of life
FGD:	Focus Group Discussion
FPFEIT:	Food Product and Feeding Equipment for Infants and Toddler
IDI:	In-depth Interview
IEC:	Information Education Center
LNT:	LuangNamtha
NNC:	National nutrition center
PHO:	Provincial Health Office
PNCs:	Provincial Nutrition Committees
VHV:	Village Health Volunteer

## **Executive summary**

### **Background**

Exclusive breastfeeding for the first six months of life is recognized by the World Health Organization, UNICEF, and Lao PDR (Ministry of Health) as the single most effective and important intervention to prevent infant and young child mortality and for improving the growth and development of children as well. In Lao PDR, exclusive breastfeeding before 6 months of age and adequate and safe breast milk substitute are suboptimal despite the Decree On Food Product and Feeding Equipment for Infants and Toddler implemented in 2019. In order to strengthen the capacity of Lao Civil Society Organizations and Provincial Nutrition Committees (PNCs) to implement this decree, concrete evidence must be gathered. Hence, this research identifies the factors influencing mothers and family members to use BMS products and how it affects health, nutrition behavior, and economics.

### **Methodology**

The qualitative research was conducted using observation and interviews through Focus Group Discussion (FGD) and individual in-depth interview (IDI). The observation involved recording general information about the community environment, behavior for using BMS products and breastfeeding practices among families.

We conducted 12 FGDs (2 FGDs per village), 12 IDIs and 13 key informants from 24<sup>th</sup> August to 18<sup>th</sup> September 2020 in three districts of Luang Namtha province. This includes Namtha, Sing and Long district. FGDs were conducted with mothers and fathers separately in every village. Two in-depth interviews with women with children under 3 years old were conducted in every village. Key informant interviews were conducted with village health volunteers and technical staffs from health center, district and provincial hospital. Key informant interviews were also conducted at the national level at the Mother and Child hospital and National Nutrition Center. Shops and markets were visited to assess the type of BMS availability in Luang Namtha province.

### **Research finding**

Among the respondents in our study, the overall rate of EBF within the first 6 months of life was 40% with the highest rate found among the Leu ethnic group in Sing district. None of the respondents continued breastfeeding until their children reached 2 years of age. The mean duration of breastfeeding was 12.7 months. The most common determinants influencing BMS use mentioned in female FGD were work and child's health.

The determinants affecting EBF and influencing BMS use are correlated and shared. This include work, insufficient breastmilk and social support (peers and family's influence).

- Work/employment was cited as the main reason that mothers have to leave their child when they reach the age of 1 or 2 months at home with parents or parents-in law, who have no choice but to feed the child with regular meal or BMS. For high income family, infant formula was used, and for low income family, growing-up milk or condensed milk were used. Breastmilk pumping is rarely practiced in our study population. It was told that this practice is more common in urban setting and among healthcare workers, stated by district health officer and expert from national nutrition center.
- Insufficient breastmilk that is not caused by illness push some mothers to transition from feeding their children with breastmilk to BMS. Most mothers follow a similar process when transitioning to BMS. First, the BMS is provided to the child, and the child's health is observed and assessed. If the child does not get diarrhea, the use of BMS is considered as proper and safe. Otherwise, a new brand will be considered. Most

of the respondents did not know how to resolve the problem of insufficient breastmilk and understand how to increase amount of breastmilk through different means, such as increasing frequency of giving breastmilk.

- Socio-economic factor affects BMS frequency in urban settings. Mother with high income tends to avoid practicing breastfeeding due to fear that it will result in misshaped breasts.
- Gender role plays an important role in the Akha ethnic group in which women are not only treated as the main family caregiver but are also seen as responsible for seeking income. Some mothers have been criticized if they refused to go to work and preferred to look after their child at home.
- Peers and family also influence (social factor) BMS use. Within the community, it is very common to exchange information through word of mouth. Many mothers reported that they have seen their peers feed their children with BMS, and found that their children looked healthy without any problem.
- Advertisement increases positive attitudes towards BMS and allow people to transition more easily to BMS and gain family agreement. The most common advertisement is Thai TV. The advertisement was found not only in the media, but also within health facilities, where healthcare workers advise mothers to use BMS since the early stage.
- Misusing condensed milk as BMS is common in some ethnic groups. People still believe that condensed milk is another type of BMS that could be used to feed their child. However, this occurs mostly in low income family.

**Recommendation:** Based on the finding, there is an urgent need of improving maternal health services and prioritizing mothers' health, who may struggle from insufficient breastmilk. The specific health service relevant to this issue should be implemented through a more effective approach.

An awareness raising campaign should be carefully planned and use a variety of presentation methods, such as brochures and videos relevant to the local ethnic culture and custom. The communication should be clear and implemented using peer education. Changing behavior and custom would take time, and hence a long-term program approach will be needed.

## **I. Background and rational**

Exclusive breastfeeding for the first six months of life is recognized by the World Health Organization, UNICEF, and Lao PDR (Ministry of Health) as the single most effective and important intervention to prevent infant and young child mortality and for improving the growth and development of children as well [1]. With compelling evidence on the importance of breastfeeding and complementary feeding in child survival, growth and development, international nutrition and public health communities have been devoting increased attention to infant and young child feeding (IYCF) with a focus on “the first 1000 days” [2].

Globally, the coverage of exclusive breastfeeding (EBF) during the first six months of age is low, only about 40%, and falls significantly short of the global 2030 goal of 70%. Only a fourth of infants 6-23 months of age received nutritionally adequate and safe complementary foods for their age [4]. Many factors influencing the EBF depends on the local context. The systematic review reported that the factors affecting EBF includes mother employment; maternal perceptions of insufficient breast milk supply; medical barriers related to illness of mothers and/or infants as well as breast problems and maternal and significant other’s beliefs about infant nutrition [5]. In Lao context, the survey in 2012 reported that 19.6% of mothers gave BMS before their infants reached 6 months of age. Thai TV was the main source of information about BMS. Mothers with higher socio-economic status were more likely to use BMS than others [6]. Additionally, a qualitative study identified that breastfeeding practice was suboptimal, particularly among first-time mothers, despite being well-informed about its benefits. The determinants of breastfeeding practice were mainly work and traditional belief and advices [7].

The Decree On Food Product and Feeding Equipment for Infants and Toddler was implemented in Lao PDR in 2019. However, ensuring effective implementation remains a challenge particularly in ethnic settings and people with high socio-economic status. In order to strengthen the capacity of Lao Civil Society Organizations and Provincial Nutrition Committees (PNCs) to implement this decree, concrete evidence through a research study is needed [8]. Therefore, it is important to identify the factors influencing mothers and family members to use BMS products and how it affects health, nutrition behavior, and economics.

## **II. Objective**

### **1.1 General objective**

The objective of the study was to provide in-depth analysis of factors influencing mothers and caregivers of child under 3 years old to use BMS products and how it affects health, nutrition behavior, and economics in Luang Namtha Province.

### **1.2 Specific objective**

1. Assessing the main barriers and constraints for mothers and caregivers regarding exclusive breastfeeding and breastfeeding practices;
2. Exploring gender roles regarding breast milk feeding (e.g. How are decisions made regarding the need to exclusively breastfeed up to 6 months or more?).
3. Assessing the perception of mothers and care givers about the impact of Breastmilk Substitutes (BMS) products; regarding children’s health, nutrition behavior and economic in the families;
4. Assessing the social and cultural beliefs, attitudes, practices and knowledge that influence the increasing of BMS Products in LNT province;
5. Describing elements that need to be in place in order to have an enabling environment for development of effective breastfeeding practices, including quality maternal and child health care services, information and availability of healthy food.



6. Identifying the strategies for the best implementation of Decree On Food Product and Feeding Equipment for Infants and Toddler, No.472/GOL, 30 December 2019 (Lao New BMS Decree).

### III. Methodology

#### Study design

A qualitative research design was developed for this exploratory study using observation and interviews through Focus Group Discussion (FGD) and individual in-depth interview. The observation involves recording general information about the community environment, behavior for using BMS products and breastfeeding practices among families.

#### Study sites

The study was conducted in 6 villages in Namtha, Sing and Long districts in Luang Namtha province. The village selection took into account the diversity of ethnicity in the province. The following villages were included:

**Table 1: Characteristics of study sites**

N	District name	Village name	Scaling	Ethnicity	City/rural setting
1.	Long district	Donengeng	No	Akha	City
2.		Chakhamtarn	Yes	Akha	Rural
3.	Sing district	Huakoi	No	Leu	City
4.		Mom village	Yes	Leu	Rural
5.	Namtha district	Donemoun	No	Khmou	City
6.		Tisan	Yes	Hmong	Rural

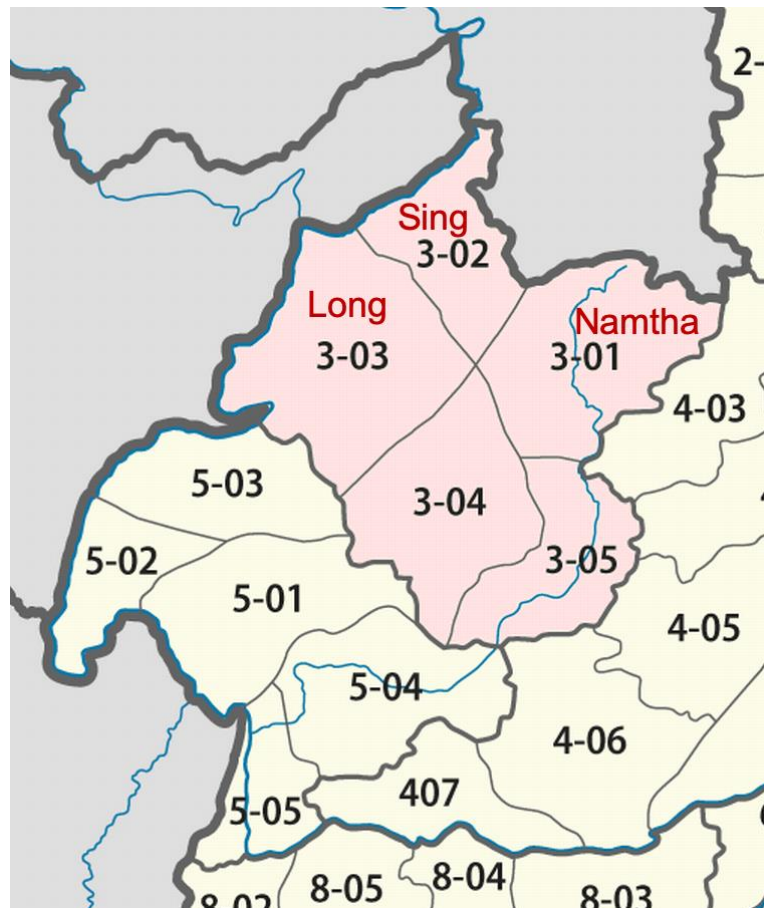
The selection of villages was done in coordination with the CARE LNT team and Provincial Health Office (PHO). Villages that are not involved in the Scaling Project were also included. One city and rural village per district were selected to represent the semi-urban/urban and rural settings. The selected rural villages are involved in Scaling project of Care International Lao and located far away from the city, accessible without paved road.

As shown on the map below, Luang Namtha province is situated in the northern part of Lao PDR, and comprises of five districts, which include Namtha, Sing, Long, Viengphouka and Na Le district. The selected districts in the study are located on the northern part of the province sharing borders with Oudomxay province for Namtha district, with China for Sing district and with Myanmar for Long district (Figure 1).

According to the national statistics bureau, the total population in Luang Namtha province was 192,000 people, 92,000 female in 2018. Among these, Namtha district is the largest, followed by Sing and Long district.

**Figure 1 Map of Luang Namtha province and its districts**





**Study participants and sampling**

FGDs were conducted with fathers and mothers separately in each village. Two in-depth interviews were conducted in each village with women with children under three years old. We purposively selected the participants for FGDs and in-depth interviews. A total of 12 in-depth interviews (IDI) of mothers having children aged under 36 months old (two IDIs per village), 12 FGDs (half male and half female FGDs) and 13 key informants were included in the study. We interviewed three key informants per district (one VHV, one healthcare worker from health center, district health office) and two key informants from Vientiane capital (National Nutrition Center) and one from the provincial level.

**Table 2: Ethnicity villages by district**

District	Village	Ethnicity
Long	Chakhamtarn	Akha: 60 % of total population
	Donengeng	Leu: 11 % of total population
Sing	Mom	Akha: 45 % of total population
	Huakoi	Leu: 30 % of total population
Namtha	Tisan	LaoLoum

	Donemoun	Kh mou
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## **Data collection tools and procedure**

### ***Training***

1 week prior to the data collection, a training was organized to explain to the data collection team about the objective of the study and interview questions. As the trainees had good experiences and skills in qualitative survey, the training took only half a day, and the pre-test was done accordingly. The team was explained to adjust and adapt the interview questions based on the information they received from the respondents and to report back to the lead consultant.

The team was organized by a person responsible for district coordination and developing protocol of village selection.

### ***Field work***

The data collection team visited the provincial health office to inform the study objective, population and study sites and duration of the survey. The team was then formed and any information needed were collected from provincial care staffs. Data was collected first in Long district, followed by Sing and Namtha district. We spent two days travelling and collecting the data in each district.

FGD and in-depth interviews were carried out. We selected two villages per district in coordination with the CARE LNT team and Provincial of Health to conduct two FGDs comprising 6-8 people per village. FGD aimed at exploring knowledge, attitude and decision towards breastfeeding practice, barriers of breastfeeding practice in their community, their opinions on breastmilk substitute, their suggestion of more effective way to improve breastfeeding practice, and good practice of BMS in their community.

To further identify factors influencing mothers and caregivers to use BMS products and how it affects health, nutrition behavior, and economics, in-depth interviews were conducted with women with children under 36 months of age who fed their child with BMS. Two mothers were selected per village.

Key informants were also interviewed. Interviews were conducted with healthcare workers of district hospital, health center and VHV in each district. Moreover, observation design was done in the villages to allow in-depth analysis of behavior of using BMS products and breastfeeding practices among families.

The interviews were conducted using a semi-structured interview guide in Lao language and were accompanied by an interpreter of ethnic languages. The pictures were taken with signed consent forms.

Daily meetings were conducted after the interviews in order to adjust interview questions and to check for accuracy and important information.

### **Marketing survey of Breastmilk Substitute**

We also conducted a small survey on the BMS available at local markets of Long, Sing and Namtha district, LNT province. The number of shops selected for each district was selected based on the size of the district. 4 shops were selected in Long district, 8 in Sing district and 12 in Namtha district to represent the BMS shops in LNT province. Except in Namtha district, all shops were located in the main market of the district.

After giving a verbal consent, the shop owners or seller were interviewed using the questionnaire form, which composed of seven parts: 1) type of the shop, 2) the type of BMS availability, 3) the price of BMS, 4) the amount of sale per month, 5) the promotion given, 6) the sources of products purchasing, 7) the advices to the clients.

The interview was conducted at a convenient time and took no longer than 10 minutes. The interviewers also verified by themselves the type of BMS available at the shop.

## **Data analysis**

The content analysis was conducted to determine the factors influencing mothers and caregivers of child under 3 years old to use BMS products. The transcripts were read back and forth between the entire dataset and codes were extracted to identify the themes and sub-themes. Themes were then explained and coded in the finding. Moreover, the quantitative analyses were also conducted to summarize the characteristics of study population, mean duration of breastfeeding practice and proportion of EBF and BMS use. The characteristics of BMS availability in LNT province was also analyzed using the descriptive statistics.

## **Ethical consideration**

The research was approved by the research ethics review committee of University of Health Sciences prior to conducting the study. All the study participants were clearly informed about the objectives or purposes, procedures, risks and benefits, privacy and confidentiality issues of the study, and they had the right to refuse or to stop the interview whenever they wanted. All data will be kept confidentially at CARE International in Lao PDR. Only aggregated data were presented in the research finding. The written consent forms were obtained.

## **IV. Findings**

Based on: SDC, 2018, urbanization process in Lao PDR. The villages classified as “urban” if any three of the following criteria are met: 1) Village is part of a provincial or district municipality; 2) >70% of households use electricity; 3) >70% of households use piped water; 4) Village is accessible by road all year around; and 5) Village has permanent all day market.

There were a total of 12 in-depth interviews (IDI) of mothers having children aged under 36 months old, 12 FGDs (half male and half female FGDs) and 13 key informants included in the study. Among key informants, we interviewed one VHV, one healthcare worker from health center, district health office and provincial health office. At central level, we interviewed two technical staffs responsible for breastfeeding from National Nutrition Center and one from mother and child hospital, Vientiane capital, Lao PDR (Figure 2).

For each district, a rural village and a semi-urban village were purposively selected. In Long district, villages with Akha ethnic mothers were selected. In Sing district, villages with Leu ethnic were selected, and in Namtha district, Hmong and Khmou ethnic villages were selected (Rural and semi-urban setting, respectively) (Table 2).

### **4.1 Socio-demographic characteristics**

#### ***Key informants at national and provincial level***

Two key informants from National Nutrition Center graduated as a medical doctor. Both of them are in charge of breastfeeding promotion. One is junior staff, and another is senior staff who has been working in this area for 26 years. The key informant who was interviewed at provincial level graduated in environmental discipline and has been working in the nutrition area at provincial health office for 9 years (Table 1).

### ***Key informants at district level and others***

At district level, the key informants graduated from a college of health sciences which provides the degree of primary health care services. The mean age was 35.6 years old (min=34 and max=38 years old). They have been working for mother and child health and related activities at district health office for an average of 8.5 years (min=0.7 and max=15 years) (Table 1).

At health center level, the key informants had the same education level of interviewees at district level, but were in charge of providing treatment and health promotion in approximately 10 villages. The mean age and duration of working at health center was 28.3 years old (min=28 and max=29 years old) and 5 years (min=3 and max=7 years), respectively (Table 1).

At village level, we interviewed Village Health Volunteer (VHV). In our study, VHV mostly had primary school education level with a mean age of 40.6 years old (min=34 and max=47 years old). They have been working as a VHV for an average of 13 years (min=0.2 and max=29 years). They are responsible of coordinating health-related activities in the village and educating villagers about health, sanitation and breastfeeding (Table 1).

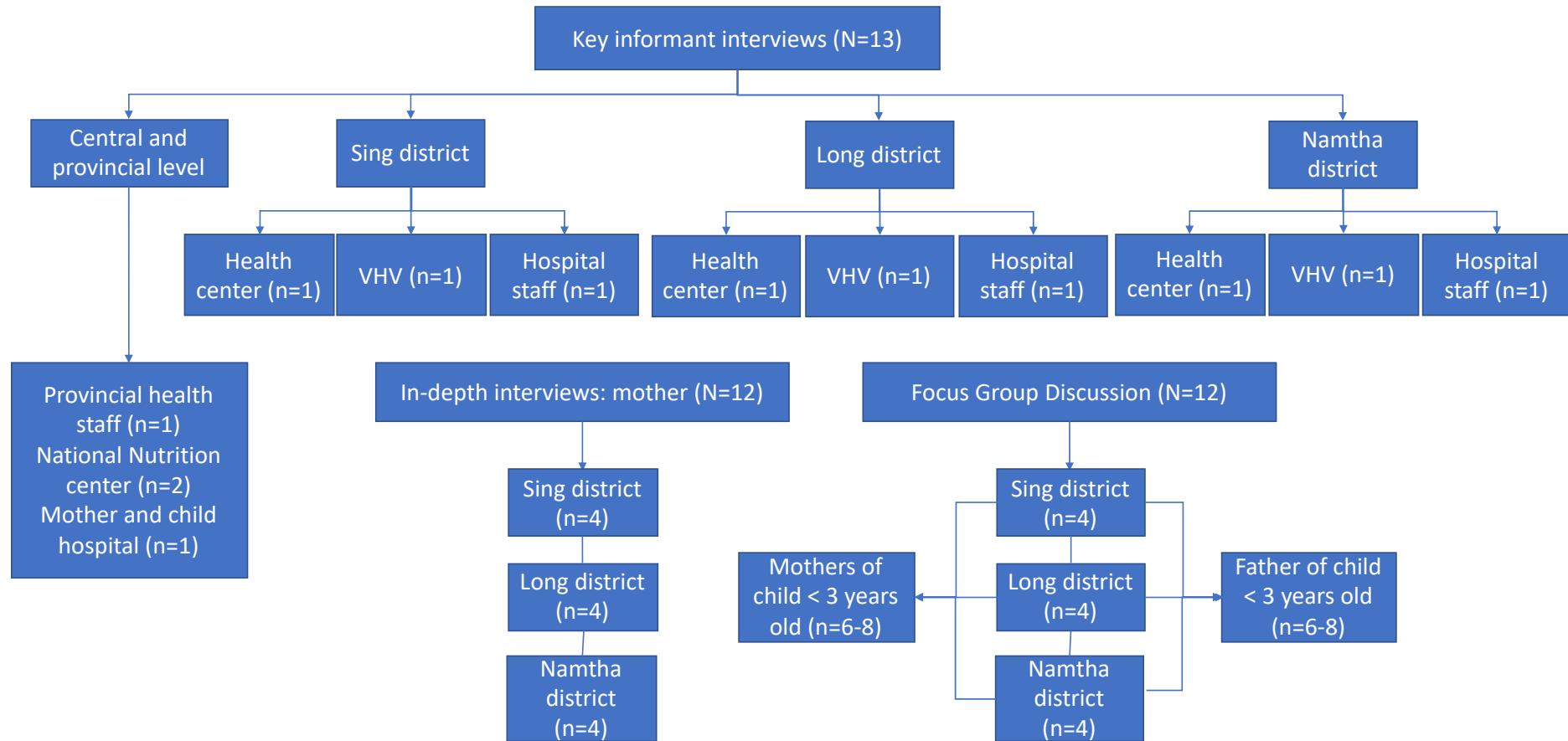
### ***Mother's IDI***

Two IDI with mothers were conducted at each of the six villages. The mean age of the mothers was 26.9 years old (min=18 and max=36 years old). Among the mothers living in rural setting, the majority of interviewees had education level at primary school or lower. Only one interviewee was at upper secondary school level. Meanwhile, two of the six interviewees in semi-urban or urban settings were at upper secondary school or higher level. 10 of 12 interviewees were farmers, and 9 of 12 delivered at a health facility. The average number of children for mothers living in rural and semi-urban setting were similar, with an average of 2 children (min=1 and max=3 children) (Table 2).

### ***FGD participants***

The mean age of female participants was 25.5 years old (min=22.8 and max=29.7 years old). Mean age of male participants was 27.6 years old (min=24 and 31.8 years old). Compared to male groups, female groups had higher education level. Among these, the majority of education level was upper secondary school. The majority of participants work as farmers and had delivery at a health facility. The average number of children they had was 2 children (min=1 and max=3.1 children) (Table 3).

**Figure 2: Flowchart of number of participants included in the study**



**Table 3: Socio-demographic characteristics of key informants' participants**

<b>Key informant</b>	<b>Level</b>	<b>Place of work</b>	<b>Age (Years)</b>	<b>Education level</b>	<b>Occupation</b>
KI 1	National level	National center for nutrition	60	Medical doctor	Vice-director
KI 2		National center for nutrition	27	Medical doctor	Technical staff
KI 3		Mother and child hospital, Vientiane capital	45	Medical doctor	Technical staff
KI 4	Provincial	Provincial health office	33	Bachelor's degree	Technical staff
KI 5	Long district	District health office	35	College	Healthcare worker
KI 6		Sivilay health center	29	College	Healthcare worker
KI 7		Chakhamtarn Village	34	Primary school	Village health volunteer
KI 8	Sing district	District health office	38	College	Healthcare worker
KI 9		Mom village health center	28	College	Healthcare worker
KI 10		Mom village	41	Primary school	Village health volunteer
KI 11	Namtha district	Namtha district health office	34	College	Healthcare worker
KI 12		Health center	28	College	Healthcare worker
KI 13		Donemoun village	47	Secondary school	Village health volunteer



**Table 4: Socio-demographic characteristics of IDIs' participants**

<b>IDI number</b>	<b>District</b>	<b>Villages (Ethnic)</b>	<b>Setting</b>	<b>Age of mothers</b>	<b>Age of last child (Years)</b>	<b>Education level</b>	<b>Occupation</b>	<b>Place of delivery</b>	<b>Number of children</b>
IDI 1	Long	Chakhamtarn (Akha)	Rural	24	1.1	Primary school	Farmer	Home	3
IDI 2		Chakhamtarn (Akha)		27	1	Illiteracy	Farmer	Home	3
IDI 3		Donengeng (Akha)	Urban/semi-urban	31	1.3	Illiteracy	Farmer	District hospital	3
IDI 4		Donengeng (Akha)		24	0.5	Illiteracy	Farmer	Home	2
IDI 5	Sing	Mom (Leu)	Rural	27	1.2	Primary school	Farmer	Health center	2
IDI 6		Mom (Leu)		32	1	Primary school	Farmer	Health center	2
IDI 7		Huakoi (Leu)	Urban/semi-urban	25	1.1	Upper secondary school	Farmer	District hospital	1
IDI 8		Huakoi (Leu)		30	2.3	Primary school	Housewife	District hospital	1
IDI 9	Namtha	Tisan (Hmong)	Rural	20	2	Primary school	Farmer	Provincial hospital	1
IDI 10		Tisan (Hmong)		18	0.2	Upper secondary school	Housewife	Provincial hospital	1
IDI 11		Donemoun (Kamou)		29	1.4	College	Farmer	Provincial hospital	3

IDI 12		Donemoun (Kamou)	Urban/ semi- urban	36	0.6	Primary school	Farmer	Provincial hospital	3
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**Table 5: Socio-demographic characteristics of FGDs' participants**

FGD number	District	Villages	Mean age of parent (Years)	Mean age of last child (Years)	Majority of education level	Majority of occupation	Delivery place	Mean number of children
FGD 1	Long	Chakhamtarn (Female)	22.8	0.9	Illiteracy (50%)	Farmer (100%)	Health center (83.3%)	2.2
FGD 2		Chakhamtarn (Male)	24	0.6	Primary school (100%)	Farmer (100%)	Health center (100%)	2.7
FGD 3		Donengeng (Female)	25.3	1.2	Secondary school (66.6%)	Farmer (87%)	District hospital (100%)	2.5
FGD 4		Donengeng (Male)	28.2	1	Primary school (80%)	Farmer (100%)	District hospital (100%)	2.4
FGD 5	Sing	Mom (Female)	22.8	1.6	Upper secondary school (42%)	Farmer (87%)	Provincial hospital (37.5%)	1.3
FGD 6		Mom (Male)	26.2	0.6	Upper secondary school (80%)	Farmer (80%)	District hospital (40%)	1.4
FGD 7		Huakoi (Female)	29.7	1.4	Upper secondary school (62%)	Farmer (100%)	District hospital (42%)	3.1
FGD 8		Huakoi (Male)	29.8	1.3	Primary school (60%)	Farmer (80%)	District hospital (100%)	1.6

FGD 9	Namtha	Tisan (Female)	23.4	1.1	Upper secondary school (50%)	Farmer (100%)	Provincial hospital (100%)	1.4
FGD 10		Tisan (Male)	24.5	0.6	Upper secondary school (100%)	Farmer (100%)	Provincial hospital (100%)	1
FGD 11		Donemoun (Female)	28.9	1.1	Upper secondary school (50%)	Farmer (90%)	Provincial hospital (100%)	2.7
FGD 12		Donemoun (Male)	31.8	1.5	Secondary school (50%)	Farmer (90%)	Provincial hospital (100%)	2.5

## 4.2 Breastfeeding situation at national level

We analyzed the breastfeeding practice and its determinants at national level based on the experiences and views of national experts in nutrition and breastfeeding who have been working on this issue for several years at the national level.

The current rate of EBF until 6 months of age in Lao PDR was 45% in 2017, increasing from 40% in 2011, but lagging behind the national goal of 50%-60%. The immediate breastfeeding after birth also increased to 50% in 2017 from 30% in 2011, but breastfeeding until 2 years old of age remains relatively low with only 27%. On the other hand, BMS use is steadily increasing, from 3% in 2006 to 17% in 2011 and 23% in 2017 due to increase in advertisement.

There are many factors affecting the breastfeeding practice. This includes traditional belief and custom; husband, family and community support of breastfeeding; mother's education level; gender role; work and increased supply and marketing of BMS.

- Traditional beliefs were found to be a particularly important determinant among Khmou ethnic group. The provision of pre-masticated rice in the early days of life is a common practice in this group. Moreover, custom and society affect the mother's food consumption behavior. Mothers still believe in food taboos and may eat only ginger juice after delivery, leading to insufficient breastmilk. The national expert on breastfeeding said, *"It's difficult to increase exclusive breastfeeding practice because of custom and family beliefs. As we all know, behavior change is always a challenge and takes time. For instance, masticated rice for a baby has been a common practice since 1994. Until now, we still find this practice. It is difficult to change, but this kind of practice has been reducing. It's about belief and common practice that people are used to doing."*
- Support from family and community is another factor because breastfeeding practice requires their understanding and support. Previous experiences and views of neighbors and parents-in law affect mother's decision-making. Moreover, mothers are more likely to decide to go to work and leave their children with parents-in law when they face pressure to do so from their family. In this case, parents-in-law feed the children with BMS or even condensed milk.
- Mother's education level may affect the decision of BMS use. According to the last national survey in 2017, mother's education level was significantly associated with stunting and underweight in children under 5 years old. Mothers with high education level are more likely to access the right information, resulting in a better practice in child feeding.
- Gender role is one of the main factors. Husband has to understand the postpartum status, and help his wife by providing good food and doing household duties. Stress and depression are a common factor associated with insufficient breastmilk and are a common condition of postpartum, especially for mothers who are in an unhealthy relationship or in an unsupportive environment.
- Work is a common reason found particularly in rural setting where mothers have to go to the farm and leave their children with parents-in law from the first 2-3 months of their child's life. In urban setting, mothers face fewer difficulties in practicing breastfeeding thanks to the new policy on maternal leave. This policy applies only in the government sectors, but efforts are being made to extend this policy to the private sectors in the future. The 5-6 months maternal leave allows mother to take a break from their work and have time to feed their children appropriately. They also learn how to continue giving breastfeeding after 6 months such as through breastmilk pump, which is currently a common practice. However, some urban mothers have negative attitudes

towards breastfeeding due to body shape perception. These mothers fear that breastmilk feeding may result in misshaped breasts and are more likely to use BMS.

The factors affecting BMS use includes BMS advertisement; low scale of implementation and enforcement of the decree of BMS ban. Other factors include mother's education level, work and family's support, all of which are described above.

- BMS advertisement remains a huge challenge despite the effort of banning this. Businesses find myriad of ways to advertise their products, including violation of the rules, bribery and ambiguous form of advertisement. Within the urban setting, advertisement by Thai TV has made BMS a fashion of child feeding. A doctor at a mother and child hospital in Vientiane capital said, *"People learn from the TV and their peers about BMS. They commonly prepare and bring the infant formula while preparing for the delivery. The family feeds the child with infant formula at birth because they are afraid that the child would get hungry and that the mother doesn't have enough breastmilk at delivery."* She also stated, *"Even doctors and nurses also feed their child with infant formula at birth. I think it might be because we don't really make an effort to fight BMS advertisement and support breastfeeding in the society"*.
- Low scale of implementation and enforcement of the decree is another contributor for BMS use. The last version of regulation of BMS advertisement involved only the Ministry of Health. The food and drug department and related sectors perform the monitoring and evaluation of the regulation, but they are only able to give warnings to violators and cannot punish them. Moreover, lack of an effective monitoring system leads to violation even in the health facilities.

### **4.3 Breastfeeding education activities**

The common information sources of breastfeeding in Lao PDR are social medias, radio, TV, medical doctors and village volunteers. The village volunteer project was established nationwide by providing a breastfeeding training of trainer to village women union in 2010. These trainers have a role of providing education on breastfeeding to villagers by visiting their homes.

The education campaign is not a difficult task. There are materials and human resources to launch the campaign. The difficulty is changing behavior which cannot be done only by increasing knowledge, but requires many other combination factors that need time and consistent effort. In general, the breastfeeding education has three main goals: 1) Protection of breastfeeding practice, which consists of creating regulations and teams for monitoring and evaluation; 2) Breastfeeding promotion, which aims at promoting the availability of safe spaces for breastfeeding in the workplace, and at providing information about the benefits of breastfeeding and how to confront insufficient breastmilk and other conditions. The annual campaign of breastfeeding is organized as the Breastfeeding Day; 3) Breastfeeding promotion in the family and hospitals in which healthcare workers are responsible to provide the appropriate management and breastfeeding education for mothers at antenatal care, delivery and postpartum care.

### **4.4 Implementation of the new decree of BMS**

Due to the limited scale of implementation for the previous decree, the new version was signed in 2019 to facilitate the activities. The decree was issued by the Bureau of the Prime minister, and collaboration between ministries is now possible. This will lead to a more effective and large scale enforcement of the decree.

The new decree was nationally disseminated at the last national nutrition meeting in 2020, but the implementation remains pending as the guideline has not been completed yet. The national nutrition center is currently working on the national guideline of implementation which is expected to be done this year and disseminated nationwide next year. The ministries involved in the new version include Ministry of Health, Bureau of Prime Minister, Ministry of Information, Culture and Tourism, National Women Union, three mass organizations, Lao Front for National Development, Ministry of Industry and Commerce, and Ministry of Justice. This would facilitate the implementation and enforcement of the decree.

## **4.5 Laung Namtha province**

### **4.5.1 General information**

There are many ethnic groups in Luang Namtha province. This includes Lao-loum, Thaidam, Phounoy, Mong, Laotheung, Leu, Akha, and Khmou. Akha ethnic group is biggest group in Long district, Khmou and Akha ethnic group in Sing district, and mixed ethnic groups in Namtha district.

In Luang Namtha province, many projects are working to improve the nutrition status of the population. Some projects work in the health sector, while others focus in the agricultural sector to enhance food security. The combination of these programs will help to improve health of the population. This requires the collaboration of different sectors such as the health sector, agriculture sector and administration sectors. The international organizations involved in this nutritional goal are Care International through the Scaling project, UNICEF, World Food Program, World Vision, and Supra. The challenge of project implementation is mainly the continuation of activities, which may be difficult if additional funding is not secured.

The rate of EBF at the six first month of life in LNT province was 60% in 2017. The higher rate was found among Hmong and Akha ethnic groups and those living in urban settings because of less superstitious practices against breastmilk feeding. However, the malnutrition of children under 5 years old is more common in these ethnic groups due to other nutritional behavior and scarcity of food.

### **4.5.2 The proportion of EBF and duration of breastfeeding**

Despite the limitation of sample size to represent the whole population, we draw some idea of the burden of breastfeeding practice in LNT province. Among the respondents of FGD, the overall rate of exclusive breastfeeding was low. Only 40% of mothers who have children under 36 months practiced exclusive breastfeeding until their children reached 6 months of age. The proportion of EBF was not different in rural and semi-urban/urban settings in Luang Namtha province. However, in Sing district, mothers are more likely to practice EBF than other districts (more than 50%). Among the mothers from Sing district who participated in FGD, some were from the Leu ethnic group, who commonly understand Lao language very well. Moreover, among the high proportion of EBF (more than 50%) of study population, Leu practice EBF the most (80%), followed by Akha ethnic in semi-urban/urban setting (70%) (Table 4). The most common reason for being unable to practice EBF was the mother needing to work at the farm, and hence having to leave the child with other caregivers at home.

None of the respondents continued breastfeeding their children until 24 months of age. The overall mean duration of breastfeeding was 12.7 months, which is likely to be similar among different ethnicity and setting. However, feeding colostrum is very common – nearly all mothers gave their child colostrum (Table 4).

The proportion of BMS is relatively high, but consistent with the proportion of EBF. Overall, 50% of mothers included in the study used powdered milk, 40% used cow milk and 30% used

condensed milk. The highest proportion of powdered milk users was found in Namtha district (80%). The participants of FGD in this district were mainly from Hmong and Kamou ethnic groups. The highest proportion of condensed milk users were found in Long district with no difference between those living in rural and semi-urban setting. Akha ethnic group was the main users of condensed milk (80% in rural setting and 100% in semi-urban setting). Among those using breastmilk substitute, only Akha ethnic fed their child with BMS due to work. Others considered BMS as a supplementary food which would make their child healthy with good development (Table 4).

**Table 6: Summary of exclusive breastfeeding practice by category**

Categories	Proportion of EBF (%)	Mean duration of breastfeeding (Months)	Reason of not EBF	Breastfeeding until 2 years (%)	Colostrum (%)	Reason of BMS use	Formula milk (%)	Growing up milk (%)	Condensed milk (%)
<b>Overall</b>	40	12.7	Work	0	90	Healthy	50	40	30
<b>Setting:</b>									
Rural	40	11.8	Work	0	90	Healthy	40	30	30
Semi-urban/urban	40	14.0	Work	0	90	Healthy	50	50	30
Long district	30	13.0	Work	0	100	Healthy	30	40	90
Sing district	80	12.3	Work	0	100	Healthy	30	70	0
Namtha district	10	13.0	Work	0	80	Healthy	80	0	10
<b>Ethnicity:</b>									
Akha ethnics:	30	13.0	Work	0	100	Work	30	40	90
Rural setting	0	12.0	work	0	100	work	0	0	80
Semi-urban/urban	70	14.0	work	0	100	work	70	80	100
Leu ethnics:	80	12.3	Work	0	100	Healthy	30	70	0
Rural setting	100	10.5	-	0	100	Healthy	50	50	0
Semi-urban/urban	50	14.0	work	0	100	Healthy	0	80	0



Hmong ethnics (Rural setting)	20	13.0	Work	0	80	Healthy	80	0	20
Kamou ethnics (Semi- urban/urban)	0	Unknown	work	0	80	Healthy	80	0	0

**Note:**

Data were derived from all mothers included in the FGDs, which included 6-8 people per group, and there were 6 FGDs.

EBF: Exclusive breastfeeding until 6 months

BMS: breastmilk substitute

### 4.5.3 Knowledge and attitude toward breastfeeding and Exclusive Breastfeeding

#### A. Knowledge towards breastfeeding and EBF

The level of knowledge towards breastfeeding is relatively low among mother and father of children aged under 36 months in our study. The majority of participants did not know the true benefit of breastfeeding and simply stated that breastmilk helps their children to be healthy. Some others even thought that there was no difference in benefit between breastmilk and BMS. Furthermore, they did not know how long breastfeeding should be continued to maximize the benefit, and the majority did not understand why practicing exclusive breastfeeding is important. Overall, only 40% practiced exclusive breastfeeding within the first 6 months of life, and none of them continued breastfeeding their children until 2 years old.

The benefit of breastfeeding was mentioned by a few participants. They mentioned that breast milk provides nutrients, promotes growth, supports the immune system, and makes children smarter and healthier. *“Breastfeeding makes children smart, healthy and grow faster,”* said a mother in Dongneng Village. In contrast, the majority of participants did not know the true benefit of breastfeeding and could not clearly state its effects on children. A mother of Akha ethnic in semi-urban setting said, *“I learned how to feed my child from other people such as my mother, my peers, and people in the village. They said that the child must be breastfed, and I followed their advice. But I have no idea about why it should be breastmilk. I just know that he/she is my child and that I have to give him/her breastmilk.”*

Regarding colostrum, also commonly known as “yellow milk,” several respondents knew that it is nutritionally superior to normal breast milk and should be given to the new born babies. *“I gave the colostrum to my child because it is the first milk and full of vitamins that support the child’s development and health. It should be given to the babies,”* said a mother in Donmoun village.

The majority knew that the adequate duration for EBF is 6 months and that breastmilk should be provided up to 2 years. A mother living in the city and working as a housewife, whose husband supported the family financially, said, *“Exclusive breastfeeding should be done until the child reaches 6 months because his/her stomach is still soft, and we cannot not give anything other than breastmilk. Giving meal before 6 months of age will make children get sick. Doctors said that breastfeeding is healthy, and I have learnt from the experience. I thought breastfeeding is good for child’s health.”* However, some participants were unsure of the adequate duration. A mother said *“I don’t know when should I stop breastfeeding my child. I breastfed my child until he was 4 months old. After 4 months we gave him a meal or BMS, because 4 months is considered as grown enough to stop breastfeeding”*

#### B. Attitude towards breastfeeding and EBF

All mothers have positive attitude towards breastfeeding. Among those who could not give breastfeeding, most of them get sick and have insufficient breastmilk. They perceived that breastmilk is always good despite lack of knowledge about its benefits. The good attitude towards breastfeeding was also found among fathers regardless of their education and economic level. The positive attitude towards breastfeeding was clearly revealed in mothers who tried their best to feed their child with breastmilk by bringing their child with them to the farm, returning home in the afternoon and immediately giving breastmilk when they arrived home.

*A mother from IDI said, “Breastmilk is good and best for children, but I don’t know how I can exclusively breastfeed my child. I would like to practice exclusive breastfeeding and continue as long as possible, but I have to go to the farm to help my husband.”*

Beyond health benefit, some participants noted that breastfeeding permits mothers and their children to be close to each other. It creates feelings of warmth and it may improve maternal-infant bonding because of the large amount of skin-to-skin contact. *“Breastmilk is the best. A child will get a lot of benefits, and furthermore, mother and child receive warmth from each other,”* said a mother in Donmoun village.

Many people mentioned that breastfeeding is also convenient. Breastmilk can be given any time whenever children are hungry, there is no need to worry about preparing and cleaning the bottles. *“Breastmilk is convenient, whenever our child is hungry, we just feed him, but if it is the formula milk, when there is no electricity, we have no warm water, so the child is hungry,”* said a man in Tinsan village.

Regarding the cost for the family, some participants stated that breastfeeding practices can save money. Breastfeeding cost saving is a significantly positive impact for most families as most of them are farmers and have low income. *“Breastfeeding might be tiring for the mother, but it helps to save money because there is no need to buy milk,”* said a mother in Donngeng village.

#### **4.5.4 Barriers and constraints of EBF within the first 6 months of life**

##### **A. Sociocultural, economic context**

###### ***Income and education level***

Education level and economic status are the fundamental factors influencing the practice of the population. These two factors are correlated. Higher education provides an opportunity to earn higher income, and vice versa.

Mothers with lower education and economic status tend to have less power to decide on how to feed the child or to have good knowledge and practice toward breastfeeding.

Father’s education level also plays a role because the husband needs to understand and help his wife to care for the infant and do the housework. In our study participants, a mother had more time to take care of her child and to learn about breastfeeding and other information when her husband has a good job and let her be a housewife or when her husband helps her out with family work.

More educated mothers are more likely to practice appropriate feeding recommendations for their children. A healthcare worker in Long district stated the following: *“They start giving complementary food at 4-5 months of age. Among educated people, they might start at 6 months of age. Some family might practice the common nutritional behavior because they raised their children by giving meal since they were 3 months. So, they thought that it would be ok to start at 3 months of age. Some family might help each other, so that mother could feed their child with breastmilk, particularly in high educated family who are usually aware of new information. It’s opposite to low educated family. They don’t listen and believe what we tell them. Therefore, the education and family income are the main factor. Higher income family would have better access to health and receive better information.”*

However, there are some exceptions. For example, some women with secondary education level struggle to make the right decision for herself and her child. A mother from Hmong ethnic group who completed secondary school told that her child feeding depends on her parents, her sister and her parents-in law who have had experiences of breastfeeding. She also struggled to resolve the problem of insufficient breastmilk, which is very common for first time mothers.

###### ***Traditional belief***

Some beliefs remain dominant in rural setting regardless of ethnicity. One of these practices is feeding their children with meal before 6 months of age due to the fact that they believe that breastfeeding is not sufficient for their children. Instead, they believe that feeding them with meal will help them to grow and become healthy. This is what their parents have practiced and what they have experienced themselves. A VHV of Chakhamtarn village, who belongs to the Akha ethnic group, stated, *“People thought that they have to feed them with rice and vegetable, so that their children would have enough food and get healthy.... Even though healthcare workers from health center came to provide them education on how to feed their children, local people hardly understand. First, because they do not understand Lao language well, particularly women who are the target of education and attend the meeting. Moreover, mothers do not trust what healthcare workers say even though VHV tell them in their language because they still have traditional belief in which people commonly feed their children with meal at 4 months of age. They are afraid that their children would not have enough food and suffer from malnutrition. We have to try another way by visiting them at home, but some people still do not understand well because they cannot imagine the benefits of breastfeeding and still follow what they used to practice traditionally.”*

### **Work/employment**

Work is the most common constraint affecting EBF practice regardless of ethnicity, belief and residency. In our study, nearly all participants work in farms such as sugar cane tree farm, rubber tree farm and banana farm. Many of these farms are invested by Chinese companies and require people to work for a specific time and meet a specified amount of production. Both mother and father of child have to work and cannot take leaves, except if they find someone to replace them. Due to this working condition, many mothers have no choice but to simply leave their child with anyone available at home. The child is then commonly fed with meal and BMS, and for low-income families, the child is often fed with condensed milk as it is cheaper.

This is also confirmed by healthcare workers. A healthcare worker of Long district health office said, *“They mostly feed their children with breastmilk. But it’s difficult when they have to go the farm, for example, because it is the season of collecting sugar canes, and they have to stop giving breastmilk. Some people might feed their children after work. Among ethnic groups, they usually go to work after a month of delivery. When they have to go to work, they use BMS. In rural setting, they use condensed milk because powdered milk is expensive. Powdered milk is used only in the city.”*

However, work is not a constraint on EBF for all mothers, particularly in urban setting and those working with government as they are provided with maternal leave – four months for natural delivery and six months for cesarean. Secondly, some mothers can bring their child with them to the farm or ask their peers who have infants to give breastmilk for her child. This is commonly practiced in Khmou ethnic villages in rural setting.

Meanwhile, even though pumping breastmilk and keeping in the fridge are recommended, they are rarely practiced regardless of the education level and ethnicity. People remain skeptical of this method of breastfeeding. Many believe that the breastmilk would become harmful to their child’s health if it is pumped out of the breast, whether it is in the fridge or not.

The same healthcare worker from Long district mentioned above said, *“Many people don’t practice breastmilk pumping because they think that it would be harmful to the child. They think that it might cause diarrhea or a cold if it is kept in the fridge.”*

## **B. Physical factors**

### ***Insufficient breastmilk***

Insufficient breastmilk is common determinant for first time mothers and cesarean case regardless of setting and ethnicity. Most of the respondents could not explain the cause of breastmilk insufficiency. Most of them also knew how to solve this problem and how to put child on the right position for breastmilk production stimulation. Postpartum food taboo might also be responsible for insufficient breastmilk cases, particularly in Khmou ethnic groups regardless of where they live. The postpartum depression might also play a role in insufficient and small amount of breastmilk even though this condition was not explored in our study.

### ***Mother's illness***

The mother's illness was identified as a determinant of not practicing breastfeeding in two of twelve IDIs. For these two mothers, a healthcare worker from health center suggested them not to feed their children with breastmilk due to its danger to the children.

Another case is a mother who was affected by breast inflammation noted that she could not receive treatment at the hospital due to unaffordability. The mothers may have chosen not to practice breastfeeding as they lacked knowledge and experience to look after themselves and could not receive formal healthcare.

*A Hmong mother living in a rural village said, "I felt pain in my breasts, and it looks solid and has yellow liquid. I don't have money to see a doctor, and was treated with traditional medicine. I had less and less breastmilk and was afraid to give to my child. Therefore, I bought BMS to feed him/her".*

### **C. Perception of insufficient milk**

The majority of the mothers knew that EBF should be practiced during the first 6 months of the infant's life. However, in some ethnic groups and culture, complementary food given before 6 months of age is a common practice. People from Khmou ethnic group still believe that breast milk alone is not enough for the infant's growth and that masticated rice and vegetables are necessary.

Evidence of this belief was found among the respondent's experiences. A mother in Donmoun village said, *"For my first child, I gave the masticated rice at 4 months old. Because he was crying, my mother said that he was hungry. She told me to masticate sticky rice, wrap it in leaves and then roast it before giving it to the baby. I masticated the sticky rice, roasted it, and gave it to the baby. He stopped crying..."*

Some mothers believe that feeding child with growing-up milk would help him/her to grow up, and give this to the child at an early stage, even before the child reaches one year old. This practice is common regardless of education level of mother. The advertisement from Thai TV or through other social medias might be responsible for this issue.

### **D. Other factors**

#### ***Misleading advertising of BMS***

People misunderstand about BMS due to advertisements from television, especially those found in Thai TV, which is the most common TV channel people watch. The promotion tells that BMS will help children grow up faster and become smart and healthy. The advertisements exert a greater influence on low educated mothers, especially those living in the city or near the city and are able to access TV. These mothers may lack the capacity to assess the information adequately.

#### ***Lack of knowledge towards solution for breastfeeding***

As stated above, the majority of participants in FGD and IDI do not have sufficient knowledge about breastfeeding. They were most informed about colostrum, which was mentioned in nearly every interviewed case. Moreover, almost all participants did not know that they could pump breastmilk and store it in the fridge for their children.

#### **4.5.5 Constraints of breastfeeding practice until at least 2 years**

Overall, the mean duration of breastfeeding was 12.7 months of age with minimum of 10.5 and maximum of 14 months, regardless of location or ethnicity. In some cases, the duration of breastfeeding could be as short as 7-8 months in mothers with sufficient breastmilk.

##### **A. Misunderstanding of breastmilk**

Some mothers misunderstand about the benefits of providing breastmilk until 2 years of age. They believe that breastmilk becomes worthless, and some even believe that breastfeeding until 2 years of age may be harmful for both children and mothers. This might be because it's very rare to continue breastfeeding until 2 years of age in the community, regardless of setting and ethnicity, and mothers may feel uncomfortable to breastfeed when their infants teeth have grown stronger and sharper.

*A mother from FGD in the semi-urban setting of Namtha district said, "Continuing breastfeeding until 2 years of age is not appropriate because it is not good for my child's health. At this age, the breastmilk becomes worthless and not rich of nutrition. Mother could not go to work either. Mother will get sick and become thin. Children aged 2 years old is considered as a big baby, and the baby would bite the breast if breastfed. I think my husband also agrees with this idea. He might even ask me to stop breastfeeding, so that I could go to work. I think he will also be concerned about my health. Breastmilk becomes worthless - it is like a blood – when the child is 2 years old".*

##### **B. Employment**

Work is the most common reason for stopping breastfeeding before 2 years of age regardless of setting or ethnicity. As a result, none of the respondents continued breastfeeding until 2 years of age. Lack of experience in long-term breastfeeding in the community might also influence the decision when mothers have to go to work, either at the farm or at the office. Bringing their child with them was not normally practiced among the mothers. They commonly leave their child at home and allow their parents and other family members to feed the child. Even though mothers are allowed to return home for breastfeeding in the semi-urban or urban setting, it is rare for mothers to do so when the child is older than one year and a half.

*A statement of a mother from FGD in rural village of Sing district: "For me, I continued to give breastfeeding to my child until a little over one year of age because I had difficulty practicing breastfeeding. Practicing breastfeeding made me lose time to work in the farm and he/she could have a meal instead."*

##### **C. Low level of family support**

In many families, there were varying degrees of domination on mothers by husband and the family. Many female respondents needed to seek approval from others members of the family to breastfeed their child. Family members, particularly parents-in law, hold a lot of decision-making power especially in rural settings. The IDE allowed mothers to explore family and traditional issues affecting their breastfeeding practice, and some noted that they faced criticism in their practice from their family, peers or neighbors when they behaved differently or did not obey their senior's advice.

*An Akha mother living in rural village said, “The difficulty of breastfeeding is that I have to go to the farm. If I had to continue breastfeeding until 2 years of age, I would not be able to help my husband to work and find income. Moreover, if I only stayed at home to look after my child, my husband would complain and judge me to be a lazy person. Parents-in law also did not understand and did not help me.”*

Most of the interviews revealed that parents or parents-in-law were rarely involved in the decision of breastfeeding practice. But this may not be the case for some ethnic groups and those living in rural settings, where daughters-in-law are expected to listen and obey their parents-in-law. The difficult relationship between daughter-in-law and parents-in law is often considered to be a taboo subject in some settings. Family issues are silenced to preserve the current relationship dynamic. This is particularly true among the Akha ethnic group in rural setting. Woman of Akha ethnic group are responsible for work both inside and outside the house. Many of them have to even go to work within the first month after delivery. Otherwise, they would be criticized by parents-in law as a lazy mother and might be punished. Some might bring their child with them, but others might have to leave their child with their parents-in law, who have no choice but to give regular meal.

A mother in FGD at Chakhamtarn village stated, *“For me, my parents-in law asked me to stop breastfeeding. They told me how long I should practice breastfeeding. I am daughter-in law and come from another village. My parents-in law asked me to stop breastfeeding when my child was at 9 months of age, and used Dido milk to feed him/her. But I decided not to give that to my child because he/she got diarrhea. So, I decided to use powered milk instead.”*

A statement of a mother from FGD, Akha ethnic in rural setting: *“I want doctors to come to explain to my family and educate my parents-in law because they always criticized me that I am lazy and prefer only to stay at home to look after my child.”*

#### **D. Physical factors**

##### ***Insufficient milk***

Small amount of breastmilk in the later long-term breastfeeding makes mothers hesitate to continue breastfeeding. They worry that the child would not have sufficient nutrients with breastmilk at late stages. Moreover, the smaller frequency of breastfeeding leads to small amount of breastmilk, and subsequently mothers may struggle with lack of breastmilk. Mothers then have no choice but to stop breastfeeding and focus on other choice of child feeding. Child feeding becomes centered around meal and complementary food including growing-up milk rather than breastmilk.

##### ***Delivering a baby***

Some mothers were pregnant and stopped breastfeeding before 2 years of age or even earlier because they had to deliver a new baby. Some noted it would be difficult for them to continue breastfeeding two babies and were concerned how that may affect breastmilk sufficiency and quality.

*An Akha mother living in rural village said, “I have no idea how long breastfeeding should be practiced, but I had to stop giving breastmilk when my second child was 1 years old because I delivered my third child.”*

Other factors also influence the continuation of breastfeeding, but these factors are closely connected to factors that influence BMS use. These factors are explained in detail below in the BMS use section.

#### **E. Baby’s desire**

Some infants get used to consuming sweet food and milk, so that they have less desire to have breastmilk. Mothers commonly provide tasty food and cow milk to the children after one year of age in the belief that it will help their children grow up healthily.

*A mother from semi-urban setting in Namtha district said, “I leave my child free to eat and play around with nature. I bought him/her sweet candies. He/she likes them a lot, but doesn’t like having meal and breastmilk.”*

#### **4.5.6 Factors that influence the increase of BMS use in Luang Namtha province**

##### **A. Lack of knowledge and misconception towards BMS use**

The interviews revealed that most of our participants had quite low degrees of understanding on BMS. Many people thought that it provides similar benefit as breastmilk. A mother from Moun village said, “I think Lactoyen is good, so I told my husband to buy it for me ... I think both breast milk and BMS contain the same nutritional benefits for the baby...”

Several people even considered that BMS is better than breastfeeding, because breast milk can cause diarrhea to their children, so they decided to shift to BMS. In FGD, a father said, “Powdered milk is good like breast milk. But when it comes to breastmilk, when a mother comes back from work like a farm or a garden and has been exposed to the sun, the breast milk will become hot. If you feed the breastmilk to the baby, it will cause diarrhea. So breastmilk is different from powdered milk. Powdered milk is easier to drink, doesn’t get hot like breast milk, and doesn’t cause diarrhea. So powdered milk has no disadvantages, only advantages...”

The most common types of BMS used are infant formula and growing-up milk (Omega milk and Thai-Denmark). Some still use condensed milk particularly when they have to leave their child with parents or parents-in law at home.

Many lack knowledge on the impact and side-effect of BMS use and did not report any experiences of ill impact from BMS. Some side-effect of BMS use are 1) *milk bottle and powdered infant formula contamination, which increase infection risk* and 2) *reducing breastfeeding practice, leading to suboptimal feeding*. Only contamination was reported as a negative side-effect.

*A statement from mother in Leu ethnic: “I think Lactogen (Infant formula) is good, so I asked my husband to buy it when I don’t have sufficient breastmilk for my child. My family agreed. I have no idea about advantage and disadvantage of BMS use. I just know that I am afraid that my child would get hungry when I don’t have enough breastmilk, so I feed him/her with BMS.”* She also added, *“I think BMS provides the same benefit as breastmilk. The side-effect is from the contamination, not from BMS itself. I have to spend a lot of money for BMS, which is quite expensive. But, I think there is no negative health impact from BMS use because I fed him/her for a week. Then, he/she looked fine”.*

Lack of knowledge on BMS effects was not unique to Leu ethnic groups. Other ethnic groups, regardless of location, had similar knowledge. Many people gathered their information through real experiences of BMS use and information displayed on the products. This explains why condensed milk are still used in Lao PDR. Condensed milk has a name of milk which might lead to misunderstanding of its benefit. In Lao PDR, the most common condense milk brand is “bear milk”, reflecting to being healthy and physically strong. This may be particularly true for people with low education and less access to the right information.

A statement from a mother in FGD of Akha ethnic in rural village: *“I think the illness of our child was not related to substitute milk, because breastmilk could also make children get sick or diarrhea. For “Omega milk”, there is both benefits and disadvantages. The problem is that we don’t sometimes have money to buy it for our child.”* In the same FGD, another mother



stated, *“My child got diarrhea regardless of what kind of milk we fed including breastmilk and breastmilk substitute”*.

### **B. Belief and attitude that favors BMS**

The majority of participants had a good attitude towards BMS. They believe that BMS is an important sources of nutrient and vitamins and will help their child grow up and be intelligent. A mother said *“It’s good for health and brain of the children... It makes them healthier and grow up faster.”*

The majority of mothers in the interview including in FGD believe that feeding their child with BMS would help them to grow up and become healthy. People understand that breastmilk is the main milk for the child, but use BMS as a complementary food to strengthen the child.

*A mother from IDI said “After birth, the child should be fed with breastmilk until 6 months. After that, we should feed child with meal or celerac until he/she is 8 months old. After that, we should give him/her with Omega milk in order to nourish the children in addition to breastmilk”. She also added, “In addition, we have to give BMS to nourish him/her more. I need her/him to be healthy and intelligent and to grow up.”*

*A statement from FGD: “Feeding child with BMS is good because it nourishes their brain. Breastfeeding is difficult particularly when we have to go to the farm. We then have to prepare BMS for our child”*.

This was also reported and well known among healthcare workers. A healthcare worker said that *“Other reasons of BMS use might be because they found that children are too thin with breastfeeding, so they tried powdered milk. And they found that their children were healthier and grew up faster”*.

Some people believe that breastmilk might not provide sufficient nutrients in case the mother practices food taboo or does not have good food. This was discussed by a mother in Huaykhua village, *“The advantages of powdered milk is that it has more benefits than breast milk. When the mother doesn’t eat all 5 food groups, the baby will not receive complete nutrients the way powdered milk does. In powdered milk, they put a lot of vitamins and nutrients”*.

Many families choose to give the children BMS in addition to breastfeeding for the reason that children need to get supplements to receive all the necessary nutrients. *“... We should give him/her Omega milk in order to nourish the child in addition to breastmilk...I give this milk in addition to breastfeeding to make him/her get healthy,”* said a mother from Huaykhau Village.

Some of our participant perceived that giving BMS to children make them fuller for longer, and you don’t need to feed your children more often. *“BMS makes children full and they don’t cry often,”* said a father.

In some cases, giving the children BMS is convenient. Our IDI and FGD revealed that many mothers give their children BMS as this allows mothers to go anywhere they want especially going to work to earn income for the family. The other members in the family can take part in feeding. *“Powdered milk is convenient when a mother goes to work, she can leave a baby at home with the grandparent. They can take care of baby and they can prepare milk for the baby,”* said a father from Tinsan Village.

Quality of the BMS is also important; several participants reported many brands of BMS were often used. The similar benefit of BMS to breastmilk was also mentioned as factors for choosing the BMS for the children. Some of them interpreted that higher price means higher quality and lower price signifies inferior quality. A mother from Donemoon village said, *“There are Lectoyen, Durex, HiQ and each of them are different in term of quality depending*

*on the price. The one that is more expensive is of higher quality and the one with lower price is of lower quality. I personally think that what is more expensive is better for health.”*

The mixed use of breastmilk and BMS is also prohibited in Hmong ethnic. They believe that feeding child with both of them will make child get sick. Therefore, only BMS was used instead of breastmilk in case of insufficient breastmilk.

The discussion in the FGD revealed that villagers select their method of feeding their children based on their personal experiences or village custom. Respondents experiment with different methods of child feeding (breastmilk, BMS or any other complementary food). This reflects that their perception was not affected by the education received from the campaigns.

### **C. Returning to work**

Work was the most common determinant of BMS use mentioned in the individual interviews and FGD. Respondents noted that they would like to provide their child with breastmilk, but work forces them to give their child BMS. The type of BMS use depends on family income. As stated above in the discussion about how work prevents family from practicing EBF, BMS use is the first choice particularly in case of good attitude towards BMS. In fact, people misunderstand EBF as not giving meal and that BMS does not go against EBF.

*A mother from IDI said, “I have to go to the farm and could not bring my child with me because it is too far from home and not convenient. So I have to leave my child with my parents-in law who usually feed my child with BMS”.*

Going back to work after maternity leave is another factor of using BMS. There is a lack of workplace support for lactating mothers, such as short duration of maternity leave and strict regulation in the workplace. One of the respondents, who work as a teacher at private school in Donemoon village said, *“My 3<sup>rd</sup> child is fed by Durex powdered milk since he was born, because based on actual situation, I’m a teacher at private school and at my work place, they don’t allow me to take the baby to school with me and the policy for the maternity leave allows for only 3 months of leave. I don’t want my baby to be confused when switched from breast milk to powdered milk, and I was afraid that he might not drink it when we change the milk, so I decided to feed him with powdered milk, since the beginning.”*

### **D. Insufficient breastmilk**

This is the same determinant as not EBF practice. Many first-time mothers struggle from insufficient breastmilk, and have to prepare or buy formula for their child even at birth. The lifestyle change, food scarcity, food taboo and food consumption behavior might be contributors of insufficient breastmilk. This was also affirmed by healthcare workers.

*A mother in FGD said, “Many mothers have to buy BMS for their child because they don’t have enough breastmilk particularly in the first few days. The child gets used to having BMS even while breastfeeding is practiced. Feeding child with BMS is also good because it is rich in nutrients and vitamins even though it is not the same as breastmilk.”*

### **E. Social factors**

#### ***Advertisement***

Advertisement from Thai TV is the main source of BMS advertisement regardless of the type of BMS including growing-up milk. The banning of BMS advertisement in Lao PDR have no effect on advertisement in Thai TV which is the most common media Lao people receive information from. Moreover, Lao people might be more likely to trust information from Thai TV than information from local advocacy. The key informants affirmed that local advertisement of BMS do not exist.

Many people thought that BMS provides similar benefit as breastmilk. This might be because of advertisement and labels on BMS regarding its benefit, energy, vitamins and mineral provided by formula.

*A statement from healthcare worker: “Among healthcare workers, they usually practice exclusive breastfeeding until 6 months, and then use powdered milk because they believe that powdered milk would help their children to be healthy and grow up quickly. They watch from TV of BMS advertisement”.*

Influenced by advertisement from Thai television and friends was reported. Among people living in remote areas, they learned about the BMS from their neighboring villagers. Villagers often communicate within the village and between the village particularly during traditional village festivals. The word-of-mouth is the most common source of information among rural villages.

*A mother stated, “I bought a BMS for a trial with my child. I would keep feeding him/her with this BMS if he/she does not get sick or get diarrhea. For the second child, I fed him/her with cow milk only.”*

### ***Healthcare workers***

The advice from healthcare workers to use BMS exist in the study sites. This occurs in the case of insufficient breastmilk at birth. This was found to be the case for two of the twelve IDIs, one was a Hmong ethnic mother and the other was Akha. However, both of them had delivery in provincial hospital. This reflects a violation of BMS advertisement in the health facilities where law enforcement is less strict. A mother even told that infant formula shop exists in the hospital.

*An Akha mother told us, “....For my third child, I had delivery at provincial hospital. When I did not have enough breastmilk, a doctor told me to buy infant formula for my child since at birth. Therefore, my third child was fed with infant formula earlier.” She also stated, “When I brought my child with diarrhea to the hospital due to BMS use, doctor told me that it was because of changing the type of formula. Doctors suggested to follow for few days. The child is still able to have formula if he/she is fine. Doctor provided good advice. He/she advised that we should pay attention to the expire date when we buy a formula”.*

### ***Peers’ influence***

Peers’ influence was mentioned in some mother of IDI as the main reason why mother decided to feed their child with BMS. The experience seen in the real case influences the BMS use. The word-to-mouth is the common source of information and ancient approach of learning in the community. Many mothers reported that they have seen their peers feed their children with BMS, and found that their children looked healthy without any problem.

*An Akha mother of IDI living in semi-urban said that “I have no idea about BMS use and complementary food. I just saw what my friends have done for their child, so that I did the same thing for my child.... I don’t know about advantage and disadvantage of BMS use, but just decide to feed my child because others also use it”.*

### ***Family’s influence***

The decision of BMS use is usually made by related family members, which include parents or parents-in law and husband. People keep practicing what they found is good according to their previous experiences. A mother is traditionally told to obey and listen to parents or parents-in law as a result of previous experiences. It is rare that mothers go against the decision of parents in regards to BMS use.

*A statement from a healthcare worker: “The decision is usually made among the family, not just only one person. When I went to the village, people said that children fed with powdered milk is more intelligent, but less healthy compared to breastmilk.”*

However, gender role disparity remains dominant in Akha ethnic living in remote area. Women were considered as strongest for work, and have to work hard and responsibly for most work in the family, including feeding and finding income for family. Women are the principal caregivers and have to work hard and might be criticized as a lazy person if she does not fulfill her obligation.

*“My husband and my mother-in law helped me only for the first month after delivery, particularly finding and cooking me food. After that I have to do everything by myself. Sometimes, my husband got angry at me when I asked him for help”.*

## **F. Other factors**

### ***Child adoption***

Another case is adopting a child. The child adoption was found both in issue related to cultural belief and fertility. Parents who have difficulty having a child would then adopt child. They would have no choice but to feed their child with BMS. Another case in which parents have to adopt a child is to help him/her from threats based on religious and cultural belief. In the Akha ethnic group, having a twin is considered a taboo, as it which would bring death and sorrow to the family and community. The solution was previously putting one of the children to death. However, the current practice is softer and favors giving one of the twins to someone else.

*A statement from healthcare worker: “BMS is commonly used in the ethnic group. For instance, the parents have to leave their twin children to someone else. Otherwise, they have to kill them. Therefore, some people from the city adopt them, so they have to feed them with powdered milk.”*

### ***Economic status***

Economic status is another determinant affecting BMS use particularly in semi-urban/urban setting. Despite the high price of BMS, high income family are able to afford it. However, this issue was not much explored in our study because our study population are mostly poor and live in semi-urban setting. The unavailability of mothers in the urban (Namtha district) and limited urban setting in LNT province limited our study to explore this further.

### ***Body shape***

Body shape concern is rarely a reason of BMS use, but currently found in some case in urban setting, for instance in Namtha district and Vientiane capital. The information received was from healthcare workers according to their experiences. The details were not explored in regards to mother’s socio-economic characteristics and perception towards child feeding. However, it is supposed that some mothers fear that breastfeeding will result in misshaped breasts. They might also be afraid of being bitten by their child.

### ***Culture***

The religious and culture belief was not described as the determinants of BMS use in the study population. The social belief has more impact to the mother and family’s belief on child feeding behavior. This reflect the community pattern of believing that doing things differently from others is prohibited.

## **4.5.7 Impact of BMS use**

### **A. Impact of BMS use to children health**

Mothers perceive that BMS use was not a cause of child's illness. Instead, they attribute the illness to specific BMS type being unsuitable for the child or contamination of equipment. Therefore, when a child falls ill, mothers change the type of BMS and clean the equipment better, instead of stopping the use of BMS.

A mother in Donyaeng village said, "Powdered milk' match depends on the individual. Someone might be matched with certain type of milk. If not the milk does not match the individual, it can cause bloating. Each type of milk is different."

A father in Huaykhua village said, "*The disadvantages of powdered milk is, when the teat of the bottle and the bottle are not cleaned well, it can cause stomach ache and diarrhea in the baby.*"

### **B. Impact of the BMS use to the economic in the families**

Respondents are often drawn to BMS use because of their belief that there are minimal side-effects. No respondents reported side-effect of BMS use. This might be the reason why mother and family still decide to use BMS despite its price. They perceive that BMS use is necessary and considered as a complementary food for the child's growth and development. In addition, respondents believe that breastfeeding alone is not sufficient for children above 1 years and might lead to malnutrition. However, many still lack knowledge to make a good decision on BMS use. Many people use condensed milk and growing-up milk at an early age. We found that the impact of BMS use was found only among condensed milk use. This included diarrhea and malnutrition. The use of BMS and options was decided based on the respondents' experiences of the side-effect.

Some family reported economic impact due to BMS use. In this case, the mother has to feed her child with infant formula because her breastmilk is not sufficient to feed her child and when she could not afford it, she had to purchase the product by borrowing from her parents. The economic impact was not described by mothers in detail, but the financial burden associated with BMS use might limit their ability to access health care and secure their livelihoods.

*A Hmong mother said, "My breasts are red and swelling. There is yellow liquid flowing from my breasts. But I don't have enough money to see doctor. I could not use the free healthcare service even though my family is poor because I am from another village, and could not use the healthcare service for free at this health center. If I request the certificate from village head, I will have to pay 5000 kips. I used traditional medicine, and keep money to buy formula for my child."*

For the Akha ethnic group in rural setting, all participants of FGD fed their child with condensed milk. They used Mari brand, a well-known brand of condensed milk and have been using it for a long time. This condensed milk is considered as breastmilk replacement in rural setting. However, the reason they decided to feed their child with condensed milk was its price. Powdered milk is only affordable for families of higher income.

A statement of a mother in FGD from Akha village: "*I tried to find money to buy high quality milk for my child. Sometimes, I don't have enough money, I have to feed him/her with condensed milk which is cheaper.*"

However, some people could not afford BMS even though they thought that it would be good for the child's health.

*A statement of mother from semi-urban setting of Sing district: "I have difficulties purchasing BMS. Sometimes, we don't have enough money to afford it, so we feed our child with meal such as meat, fish, depending on what we have at that time. The price of powdered milk is between 65,000 to 150,000 kips per pack. It's too expensive to feed the child with BMS."*

#### **4.5.8 Sources of information about breastfeeding and BMS**

People received the information of breastfeeding from many sources during pregnancy and postpartum period. Some people received the information from healthcare workers and medical book during ANC visit. Some others received from VHV, campaigns, their peers and family. The education activities were implemented throughout several health projects including through routine practice of healthcare workers and at the information education center (IEC) of local governor.

*A statement from healthcare worker in Long district: “Health education was done in the health sector when people came to the hospital. There is also the Scaling Project that help increase understanding of breastfeeding through peer-education. There is also loud speaker in our district, which share information on health education every Tuesday and Friday. For the targeted village, health volunteer is responsible for educating about breastfeeding”.*

Despite the availability of regular education through local medias such as loud speakers in Long district, people rarely mentioned that source. The low frequency of education campaigns in village might explain the lack of knowledge in the study population.

*An Akha ethnic mother in semi-urban setting said, “I learned about breastfeeding with the doctor when they came to the village for education campaign. They said that the breastfeeding should be practiced until the child reached 2 years old. They also said that breastmilk was good for the child, but I don’t remember why and how because they have come to the village long time ago.”*

The most common sources of BMS was word-of-mouth among their peers and family, followed by Thai TV. Word-of-mouth approach is the most common way of spreading information in the community particularly in rural setting. In semi-urban or urban setting, people learn about breastfeeding and BMS from Thai TV. Even though it is prohibited to advertise BMS products in Lao PDR, people still receive the information from different sources, especially Thai TV, which is commonly viewed among Lao people.

*A mother in semi-urban of Sing district said, “I know about BMS from my friends. They suggested me to feed my child with BMS, and I followed their advice. I also received the information about BMS from Thai TV. They said it was good for child. There is no advertisement in the village, but I found the advertisement in the TV. Therefore, I bought it for my child”.*

There is a report of advertisement within the hospital in one in-depth interview case in Namtha district, reflecting the violation of Toddler decree, but the practice is limited in urban hospital setting rather than semi-urban and rural setting according to the interview of healthcare workers.

#### **4.5.9 Proposed interventions**

Mothers requested more education campaigns on breastfeeding especially for first-time mothers who have never had experience in child feeding. The education could be done in the village and at the hospital during ANC, delivery and postpartum. The information should be repeated several time with a clear message.

*A mother from IDI in Leu ethnic said, “I need the village head to come to explain more about breastfeeding. It does not have to be a doctor to explain us about this because people listen to village head. With his explanation, we will understand, and we will follow his advice. I still see many mothers practicing postpartum food taboo due to traditional and religious belief and these mothers may avoid fermented food, wild animal, and papaya.*

However, it is not just the mother who needs to understand the benefit of breastfeeding, but also the husband and family as well due to the fact that decision making power rests on the family or parents-in law. A mother suggested that it is good to educate both the family and the husband because decisions are made together with them.

Majority of male interviewees complained that they were not invited to participate in the breastfeeding campaigns; only their wife joined the meeting. Unfortunately, their wife does not understand Lao language well, and feel shy to ask questions. Majority of female in rural settings have low education level, and hardly understand the information they receive from these campaigns.

Some proposed strategies of campaigns on breastfeeding were suggested by villages from FGD and IDIs. This included:

- Informing the activity earlier
- Ensure that both father and mother of child participate together
- Organizing the activity on a day and time that most people are available
- Providing the materials such as poster and brochure in the local language and in a format easy to understand
- Changing the form of education and communication. Educating people by a lecture is no longer considered effective. People are likely to listen without attention and interest. Showing the videos and real pictures that people could understand and see would strengthen the education. People would be able to understand easily.

Alongside with education campaigns in the village, some other interventions need to be improved. Healthcare workers suggested that new education approach at ANC attendance room should be implemented such as having a TV to share breastfeeding information, so that mothers would be able to learn and enjoy while waiting for ANC and child's vaccination. They also added that the information should be about the benefit of breastfeeding, ANC and impact of BMS use. The frequency and form of information spread in a simple form and language were also brought up as key to an effective education campaigns.

### ***Strategies for the best implementation of Decree On FPFE for Infants and Toddler***

In Luang Namtha province, the new version of Decree On FPFE for Infants and Toddler issued in December 2019 was not implemented yet. The provincial health office is waiting for the guideline of implementation, which needs to have concrete agreement with different sectors. However, it is expected to be done by the end of this year and to be disseminated next year. The provincial health office is preparing the team for this to strengthen the breastfeeding promotion and increase enforcement on BMS advertisement.

All interviewees agreed to participate and provide a good collaboration with national team in implementing the decree. The food and drug department of district health office is in charge of monitoring and evaluation. In the previous monitoring of the old version, enforcement of the decree was limited in Long and Sing district.

### ***Summary of information about breastfeeding from healthcare workers***

The information about breastfeeding derived from healthcare workers contradict those provided from IDI and FGD by mothers and fathers in the communities. Healthcare workers tend to report positive outcome of breastfeeding practice in their community and relatively good feedback and good practice of healthcare service in regards to breastfeeding education in health facilities. This was particularly true for interviews with healthcare workers at health center. Some even reported that the rate of EBF is nearly 100% in their community.

*In Long district, healthcare workers from health center reported, “There are small proportion of BMS use. Among mother using BMS, the reasons are insufficient breastmilk and postpartum food taboo.”*

The factors affecting breastfeeding and BMS use reported from healthcare workers were limited. Work is the most common known factor of not practicing EBF and BMS use. Health care workers are waiting for the findings from this research to learn more about the factors.

*A statement from a healthcare worker at health center: “Akha ethnic women practice EBF until 1-2 months only because they have to go to work. They leave their child with parents-in-law who usually feed their child with meal and BMS.”*

#### **4.6 Marketing survey on BMS**

The most common type of shop for BMS are grocery shop (70.8%), followed by outlet (20.8%) and others (8.4). The majority of the shops sell 1) infant formula for children at birth and older, 2) follow up formula for children aged 6 months and older, 3) commercial complementary food or liquid for children aged 6 months and older and 4) feeding bottles, teats or pacifiers. Only half of them has growing up milk for children aged 12 months and older, and 43.5% have similar products (Table 5).

The mean cost of each BMS products is described in table 5. The mean cost of infant formula (0+ months) is 89,934 kips (Min=70,000 and Max=136,000 kips). Infant formula is most expensive BMS products in LNT province. The cost of follow up formula (6+ months) and growing up milk (12 + months) is a bit lower. Meanwhile, the mean cost of commercial complementary food or liquid (6+ months) is about 28,947 kips with min of 16,000 and max of 35,000 kips. The cost of feeding bottles, teats and pacifiers ranges from 1,000 to 55,000 kips.

Nearly half of the shops provide promotion to the clients. Of these, discount was the most common (54.5%), followed by Free gifts or prize (27.3%). More than half of the shops purchased the BMS products from Namtha district (58.3%), and for 29.2% someone came to sell them the products. Age-specific formula was the most common advice for the clients (79.2%), followed by advising clients to read the label of product use (16.7%) (Table 5).

**Table 7: The characteristics and type BMS available at the shops**

<b>Variables</b>	<b>Frequency N=24</b>	<b>Percentage (%)</b>
<b>Type of shop:</b>		
Outlet	5	20.8
Grocery shop	17	70.8
Others	2	8.4
<b>Type of BMS:</b>		
Infant formula (0+ months)	23	95.8
Follow up formula (6+ months)	23	95.8
Growing up milk (12 + months)	12	50
Any other milk for children 0-24 months	3	12.5



Any other food or liquid for children 0-24 months	4	16.7
Commercial complementary food or liquid (6+ months)	19	79.2
Feeding bottles, teats, pacifiers	18	75
Similar Product	10	43.5
<b>Mean cost of BMS products:</b>		
Infant formula (0+ months) (Kips)	89,934	Min=70,000 Max=136,000
Follow up/on formula (6+ months) (Kips)	83,847	Min=68,000 Max=126,000
Growing up milk (12+ months) (Kips)	82166	Min=63,000 Max=129,000
Any other milk for children 0-24 months (Kips)	67,666	Min=65,000 Max=70,000
Any other food or liquid for children 0-24 months (Kips)	196,66	Min=9,000 Max=30,000
Commercial complementary food or liquid (6+ months) (Kips)	28,947	Min=16,000 Max=35,000
Feeding bottles, teats, pacifiers (Kips)	19,450	Min=1,000 Max=55,000
Similar Product (Kips)	12,600	Min=6,000 Max=30,000
Mean number of BMS products sold	55	Min=4 Max=300
BMS promotion	11	45.8
<b>Type of promotion (N=11):</b>		
Discount promotion	6	54.5
Free gifts or prize	3	27.3
Information materials	2	18.2
<b>Place of purchase:</b>		
Thailand	3	12.5
Vientiane capital	3	12.5
Someone come to sell out	7	29.2
Namtha district	14	58.3

<b>Advice to mothers or clients of BMS:</b>		
Each formula is specific for age group	19	79.2
Helping children to grow up	1	4.2
Please read the label of product use	4	16.7

## **V. Key finding**

Mothers lack knowledge about the benefits of breastfeeding and the disadvantages of BMS use. Among some mothers with low education and economic status, condensed milk is considered as safe for the infants. However, most mothers have a positive attitude towards breastfeeding practice. All of them thought that breastmilk is good for the child, and would love to continue breastfeeding as long as possible if there is no constraint from work. The attitudes towards BMS use is also good as a result of their peers' opinions and advertisement from Thai TV. Lack of experiencing any negative health impact of BMS use leads people to trust and believe that BMS use is good for child's health.

The determinants affecting breastfeeding and BMS use are correlated. Mothers will stop breastfeeding when deciding to use BMS, and vice versa.

The rate of EBF was relatively low among the respondents - only 40% were able to practice EBF. The highest rate was found in Sing district where mothers included in the study understand Lao language very well. The determinants affecting EBF included:

- Sociocultural and economic factors: Income and education level, traditional belief and work/employment
- Physical factors: Insufficient breastmilk, mother's illness
- Perception of insufficient milk
- Other factors: misleading advertising of BMS, role of parents and parents-in law, lack of knowledge towards breastfeeding

The mean duration of breastfeeding was 12.7 months. None of the respondents practiced breastfeeding until their child reached 2 years due to difficulties related to work, insufficient breastmilk and baby's desire.

The rate of BMS use was 50% for infant formula/follow-up formula, 40% for growing-up milk and 30% for condensed milk. The highest proportion of condensed milk use was found in Long district with no difference between those living in rural and semi-urban setting. Among formula use, the infant formula (Lactogen) is the most common. The information sources are from their peers and Thai TV. The factors influencing BMS use include:

- Knowledge and attitude towards BMS
- Belief and attitude favoring BMS
- Returning to work
- Insufficient breastmilk
- Social factors: advertisement, healthcare workers. Peers' influence, family influence,
- Other factors: child adoption, economic status, body shape. However, the culture is less like to have an impact on BMS use.

Negative health impact of BMS use is rare even though economic impact was reported. Family with low income decide to use growing-up milk rather than formula milk because it is cheaper.

There is a need of further education campaigns with a clearer message and a new approach of communication. The communication should be done in the local language using simple words and clear picture and videos. Moreover, the meeting should be in a convenient time and involve husband and family, so that they would support mother to look after the child and be able to give breastfeeding.

The new version of decree on BMS advertisement and breastfeeding signed in 2019 has not been implemented yet. The guideline will be disseminated next year.

## **VI. Discussion and conclusion**

The practice towards breastfeeding and breastmilk substitute in the study fundamentally depends on education and socio-economic status combined with residency (rural or urban setting). In rural setting, people mostly have low education, and work as a farmer with low wage rate. This minimizes their choice of decision making despite the availability of information and health services. Despite this, nearly all of the mothers use the medical services and delivered a baby at health facilities. Some mothers went to deliver a baby at provincial hospital even though they live in a rural setting. This is reflected in the high rate of delivery care services at health facilities in our study. The national survey reported lower rate of delivery at health facility, about 70% in 2017 in LNT province [9]. This might be because our study population was purposively selected, and only convenient villagers, who expectedly have higher education and awareness of healthcare practice than the rest of the villagers, participated in the interview.

Nevertheless, the rate of EBF is similar to the rate at the national level (40% versus 45%, respectively) with no difference between male and female, and between urban and rural setting [9]. This might indicate that past education campaigns in health or in breastfeeding practice may not have been effective. As shown in our study, the knowledge towards benefit of breastfeeding and impact of BMS use is poor despite the positive attitude of breastfeeding practice. The positive attitude towards BMS use was also reported in the study population, reflecting the lack of knowledge and skills of identifying the difference between the benefits of breastmilk and BMS. A new approach or a better quality education campaigns and communication tool should be developed and adapted to the different needs of the audiences.

Meanwhile, the rate of BMS use before the first 6 months of life is relatively high compared to the survey in 2012 by Barenes et al, which reported that only 25.4% gave BMS [6]. Even though our study had limitation of study design and sample size in comparison to a regular quantitative survey, our study still suggests that BMS use may be increasing even in rural setting along with economic development and lifestyle change. This is similar to the national level reported by the expert on breastfeeding in Lao PDR. This requires an attention from related sectors to prepare the concrete strategies in response to the new era.

None of the respondents continued breastfeeding until 2 years of age. This is dramatically low compared to the report in 2017 by national health survey (27.2%) [9]. The mean duration of breastfeeding practice was about 12.7 months, which is shorter than reported in the LSIS survey in 2017 (18.6 months in LNT province). The shorter duration in our study might be explained by selecting the villagers mostly in rural or semi-urban setting where people work as farmers, and could not return home for breastfeeding. Other factors might be contributors such as socio-cultural factors. Some people still believe that it is shameful to give breastfeeding to a big child and that the small amount of breastmilk in later stage should not be provided to the child.

The determinants affecting EBF within the first 6 months of life and BMS use are similar. This means that people decided to add or replace breastmilk with BMS (formula or growing-up milk or condensed milk) before the child reached 6 months of age. The most common

determinants found in our study was work/employment regardless of the residence, ethnicity and educational economic status. A mother has to go to work at the farm when their baby is 2 months old, and leaves their children with parents or parents-in law who unfortunately do not even know how to make powdered milk. This leads mother to have only one choice of feeding their baby with growing-up milk or condensed milk, which is easy to prepare and much cheaper.

However, this is mostly the case in rural setting where people work as farmers and have to be at their work place on time due to the amount of work required per day. Moreover, Akha ethnic is more likely to add complementary food or BMS use earlier than others because some still believe that breastfeeding is not enough. Employment is also a well-known determinant of EBF practice in developing countries. The last systematic review showed that socio-demographic factors such as education level and employment influence a mother's infant feeding practice in developing countries [5].

Nutritional behavior might be associated with education and economic level rather than knowledge or availability of health information. As our study showed, misuse of BMS was much more common practice in rural setting regardless of ethnicity and district in Luang Namtha province. People focus on feeding their family to survive rather to live healthily. Therefore, exclusive breastfeeding among this population is almost impossible as mothers have to go to back to work soon after deliver, usually after their child reaches 1 or 2 months. Traditional belief also plays a role in this issue. The Akha ethnic group believes that a woman is stronger than man, and has to work harder for the family. A mother who stays at home to feed her children is considered as a lazy mother and criticized by her parents-in law.

The insufficient breastmilk is also another factor influencing BMS use. This factor is common among first-time mothers and mothers who practice postpartum food taboo. Higher risk of insufficient breastmilk was found among the Kamou ethnic group. The Kamou ethnic group strictly prohibits some nutritional food during the food taboo and encourage mothers to eat only ginger and rice and to drink only hot water. On the other hand, Akha and Hmong ethnics are less strict, and provide more liquid food with meat, so mothers struggle less with insufficient breastmilk. The LSIS survey also reported that Hmong ethnic have very high rate of EBF compared to others (62% versus 34% in Lao-tai ethnic) [9]. However, the causes affecting the insufficient breastmilk was not clearly explored in our study. Stress, depression and lack of knowledge on how to correctly and appropriately give breastfeeding might also affect the quantity of breastmilk.

The insufficient breastmilk give mother and her family no choice but to feed their child with BMS. Respondents also considered this to be the best and easiest solution. Physiologically, for breastmilk to flow, mothers must make sure that the milk is pumped regularly and they must also be relaxed. In our study, very few mothers and family took an effort to figure out this issue by consulting the doctor. The insufficient breastmilk was also a common determinant in other developing countries regardless of whether there were any medical barriers related to illness of mothers and/or infants as well as breast problems [5].

High economic status is also related to BMS use. Higher income family tend to use BMS because they perceive that the high-quality infant formula provides similar nutrients to breastmilk. The report of LSIS showed that family with higher economic status was less likely to practice EBF, and fed their children with BMS instead [9].

The infant formula could contribute to growth faltering and malnutrition, and can be unsafe if offered in a contaminated material. This is likely to happen in remote areas that do not have access to safe water and hygiene. In addition, preparation in the home could also cause a

problem and illness as food adulteration or other contamination can affect unaware consumers [10]. However, no one in our study revealed and recognized this issue. It might be because this side-effect is rare in the community. Our study population stated that diarrhea following BMS feeding might be related to type of BMS, and commonly switch to other BMS rather than stopping the use of BMS completely.

Lack of negative experiences around BMS use and the positive image of BMS by advertisement are leading factors of increase in BMS use. People in our study make their decisions based on previous experiences or their parents' experiences. This may indicate lack of available information on health or the weakness of education campaigns.

Cultural factor is not a contributor of BMS use in our study. People have good attitude towards BMS because of advertisement and peers' advice. This factor also affects the EBF practice, which is similar to other developing countries [5]. However, some family, particularly older generations, still believe that feeding child with meal is important and should be started with a child as early as one years old. Some others also believe that baby's crying is due to the fact that they are hungry and that rice is needed to be given. Rice is the main consumption of Lao traditional food. People would remain feeling hungry without eating rice. This might be the reason why this practice remains common in some ethnic groups and setting.

Lack of knowledge among the villagers might be improved through education campaigns. Peer education might be a good approach of intervention to improve the knowledge, attitude and awareness of breastfeeding practice and BMS use reduction in the community, particularly in rural setting where people mostly learn within the village. The previous intervention, such as the village volunteer to educate mothers in the village, is likely to be ineffective as many mothers remain having low knowledge of breastfeeding. Further investigation is needed to explore and evaluate the program.

The IDI conducted in mothers who also participated in FGD explored further the sensitive issue that mothers are less likely to speak out during the FGD.

The decree for toddlers and infants continues to face challenges in effective implementation. As mentioned by national expert of breastfeeding and an evidence from mother's IDI in Namtha district, the violation continues despite the decree. This requires further work with more effective implementation and punishment.

### **Limitation of the study**

Even though our study is able to identify the determinant affecting breastfeeding and BMS use in LNT province, we could not make definite conclusions due to small sample size. The number of included participants is not representative of the population. Further quantitative survey is needed to inform the policy maker about the magnitude of the problem and population at risk of not practicing exclusive breastfeeding and BMS use.

## **VII. Conclusion and recommendation**

The rate of BMS in infant feeding use is high in Luang Namtha province. The rate is correlated with socio-economic status, with higher rate found among family with higher incomes. Work, insufficient breastmilk and family and social support are determinants affecting EBF, breastfeeding until 2 years old and BMS use. People replace breastfeeding with BMS when 1) they have to go to work, and leave their child with parents or parents-in law at home, 2) when they do not have sufficient breastmilk for first-time mothers or in long-term breastmilk feeding, and 3) when they receive the information from family and their peers.

The common replacement of breastfeeding was BMS. The type of BMS selected depends on the belief and attitude of mother and her family. However, the most common BMS use was

formula, followed by growing-up milk. The condensed milk remains common in low economic and education status family. Other factors are less common in BMS use, but necessary to take into account. This includes lack of knowledge and misconception on BMS use, belief and attitude favoring BMS, social factors (advertisement, healthcare workers, peers' and family influence), child adoption, economic status and body shape. The lack of negative BMS impact or side-effect experienced among BMS users might contribute to the increase of BMS. Some economic impact was reported. In fact, low price BMS such as growing-up milk was used in low income family. Meanwhile, culture and religion are less likely to have an effect on BMS use. There is no such traditional belief of BMS use.

## **Recommendation**

- Urgent need of guidance and service improvement for insufficient breastmilk particularly for first-time mothers. This could be solved throughout the health service and health education. Nutritional health sectors should conduct an effective strategy to deal with this challenge.
- Healthcare workers should be informed about determinants affecting EBF and BMS use, so that relevant strategies and activities will be prepared earlier and more effectively. The guidance of breastfeeding practice should be developed and distributed nationwide. Moreover, the healthcare workers could also improve their work with better communication or better environment of ANC, so that mother could receive concrete information and understand better during their visits.
- A more effective communication for breastfeeding education campaigns should be implemented with better preparedness and organization. This includes brochure and videos in local languages, using local people to educate villagers rather than healthcare workers because the translation is commonly incorrect, and a public engagement approach through more engaging events that are easier to understand. Not only mothers but her husband and family should be invited to the meeting and education events.
- Better enforcement and monitoring and evaluation should be focused for the new Decree On Food Products and Feeding Equipment for Infants and Toddlers in order to regular BMS advertisements. It requires the collaboration within and between the ministry and related sectors.
- There is a need of assessing the health literacy in this population, and help them to increase the capacity of information identification and the awareness of health service utilization.
- International Non-government Organization and related sectors should find more funding, so that the Scaling project could move on. Otherwise, what has been doing might risk at getting null benefit.
- District and provincial health department should create the project and apply the government funding, so that the sustainability of the project is quarantined.

## VIII. Reference

1. Kramer MS, Kakuma R: Optimal duration of exclusive breastfeeding. *Cochrane database of systematic reviews* 2012(8).
2. Actions EN: Improving Maternal, Newborn. *Infant and Young Child Health and Nutrition* 2013.
3. Victora CG, Bahl R, Barros AJ, França GV, Horton S, Krasevec J, Murch S, Sankar MJ, Walker N, Rollins NC: Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *The Lancet* 2016, 387(10017):475-490.
4. Infant and young child feeding [<https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding>]
5. Balogun OO, Dagvadorj A, Anigo KM, Ota E, Sasaki S: Factors influencing breastfeeding exclusivity during the first 6 months of life in developing countries: a quantitative and qualitative systematic review. *Maternal & child nutrition* 2015, 11(4):433-451.
6. Barennes H, Empis G, Quang TD, Sengkhamyong K, Phasavath P, Harimanana A, Sambany EM, Koffi PN: Breast-Milk Substitutes: A New Old-Threat for Breastfeeding Policy in Developing Countries. A Case Study in a Traditionally High Breastfeeding Country. *PloS one* 2012, 7(2):e30634.
7. Lee HMH, Durham J, Booth J, Sychareun V: A qualitative study on the breastfeeding experiences of first-time mothers in Vientiane, Lao PDR. *BMC pregnancy and childbirth* 2013, 13(1):1-9.
8. Barennes H, Slesak G, Goyet S, Aaron P, Srour LM: Enforcing the international code of marketing of breast-milk substitutes for better promotion of exclusive breastfeeding: Can lessons be learned? *Journal of Human Lactation* 2016, 32(1):20-27.
9. Bureau LS: The Lao Social Indicator Survey II 2017, Survey Findings Report. In. Vientiane, Lao PDR; 2018.
10. Gossner CM-E, Schlundt J, Ben Embarek P, Hird S, Lo-Fo-Wong D, Beltran JJO, Teoh KN, Tritscher A: The melamine incident: implications for international food and feed safety. *Environmental health perspectives* 2009, 117(12):1803-1808.