Predictive Factors of Growth Among Preterm Migrant Children in Kanchanaburi Province, Thailand

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Abstract

This research sought to study the predictive factors of the duration of exclusive breastfeeding, mother's feeding behaviors, and health service accessibility on the growth of preterm migrant children in Kanchanaburi Province, Thailand. The subjects were 156 Burmese migrant mothers with preterm children 18-24 months old who received health check-ups at well-baby clinics in Kanchanaburi Province. The data analysis was performed utilizing descriptive and multiple logistic regression statistics. The results revealed that although premature infants should reach normal growth the same as full-term children at 2 years old, 41% of the child subjects were underweight, and 46.8% had stunted growth. Also, 53.2% of the mothers exclusively breastfed for less than 6 months due to the mothers having to return to work. Upon performing multiple logistic regression analysis, it was found that exclusive breastfeeding from birth to the age of 6 months old and the feeding behaviors of the mothers were the most significant predictors influencing the growth of premature migrant children. In comparison, health service accessibility did not affect the growth of premature migrant children since the majority of migrant mothers (88.5%) regularly brought their preterm children for health check-ups. Our findings strongly suggested that the education of migrant mothers should be continuously promoted to emphasize the importance of exclusive breastfeeding of their preterm children, including in their workplace, and to encourage migrant mothers to recognize the importance of providing complementary foods to suit their migrant Burmese lifestyle.

Keywords

Growth; migrant children; premature birth

Introduction

Growth is an indicator of a child's future wellbeing. The growth of children is considered crucial during the first 2 years of their lives (Mohsuwan, 2012). According to a 2018 survey concerning children in Thailand, 8.2% of 2-year-old children were underweight (UNICEF, 2016). The most common cause of underweight children is preterm birth (Phyo et al., 2014). Babies born prematurely must reach 18-24 months before they have the same growth as those from full-term births (Ong et al., 2015; Rugolo, 2005; Thamniamdee, 2013). A study by Liu et al. (2019) found that of 309 premature babies, only 4.5% were underweight at 12 months old. However, numerous studies reviewed an association between poor growth in preterm infants and neurocognitive outcomes (Ong et al., 2015). Underweight children have an increased risk of illness from infection (World Health Organization, 2017). Undernutrition in children is associated with shorter adult height, less schooling, and reduced adult income (Victoria et al., 2008). Therefore, it is essential to take care of premature babies to enable them to catch up with growth appropriate for their ages.

Children with a history of preterm birth should receive special care from birth since preterm children have an undeveloped immunity system, and are more likely than full-term children to develop infections (Blackburn, 1995). Also, when illness occurs in preterm children, there is an increase in the metabolic rate and breathing problems caused by their underdeveloped lungs. Children who receive only a small amount of breastfeeding from birth, and who are born prematurely, will not receive enough Immunoglobulin A (IgA) and iron, which is vital to help produce red blood cells, and which will tremendously affect their growth (Suwantawakup, 2012).

Preterm children may have problems with various body systems and must continue baby health check-ups for the first 6 months. An Austrian observational study of the risk of infection in the first year of life in preterm children found that children born prematurely had a higher chance of getting more than one infection in their first year of life, which was nine times higher than in full-term babies. Respiratory tract infections such as colds and bronchitis were the most common infections, accounting for 42%, followed by gastric and intestine infections, accounting for 33%. Due to their lower immunity, premature babies are more likely to be hospitalized (Steiner et al., 2019).

The ages of 6 months old to 2 years old involve a period of rapid growth for children, and this is when the growth of premature children can catch up with full-term children (Ong et al., 2015; Rugolo, 2005; Thamniamdee, 2013). Children who were born prematurely should receive exclusive breastfeeding, which is defined as receiving no food or drink except other than breast milk for the first 6 months of life. Then they should start supplementary food at the age of 6 months old, and then three meals a day at the age of 1 year old (World Health Organization, 2003). However, this represents the standard for adequately nourished children. Children born from migrant mothers tend to receive less nourishment. These children tend not to receive quality care from the parent or lack healthcare personnel to promote good health advice to migrant mothers in the country of origin. In a study of the health and growth status of immigrant and refugee children in Toronto, Ontario, Canada, it was found that 5% of migrant healthy children <6 years old were underweight, and 8.4% showed stunted growth. Most of the migrant children were from Afghanistan and Myanmar. Among preterm children born to migrants who did not have access to health services, up to

53.3% had low ferritin levels (an iron-containing blood protein), and 33.6% had a parasitic intestinal infection (Salehi et al., 2015).

In Thailand, most Burmese migrant workers tend to live in Kanchanaburi Province near the Thai border. In a 2016-2017 report of childbirth in Kanchanaburi province, it was found that the percentage of preterm infants from migrant mothers rose slightly from 7.16% to 8.11% (Kanchanaburi Public Health Office, 2019). From conversations with the mothers of immigrant children in Kanchanaburi Province, it was observed that most migrant mothers lived in a crowded community of rental rooms near the factory where they worked. Thus, if any child becomes ill, it can cause an outbreak in their habitat, thereby affecting the whole community. The most common infections are colds and bronchitis. When illness occurs, the mother usually buys medicine herself. If symptoms do not improve, the sick children will be taken to a nearby hospital. There is limited data in Thailand on the growth of premature migrant children and the factors related to their delayed growth. Therefore, understanding the factors involved in delayed growth among premature migrant children can help healthcare professionals provide specific care and education to promote the importance of such children receiving adequate nutrition. Additional information about the factors involved in stunted growth can help formulate guidelines for promoting normal growth among preterm migrant children. At the same time, preventing potential illnesses that might arise due to the delayed growth of the children, all of which should help reduce hospital and other natural expenses for these children in the future.

Literature review

From the literature review, it was found that the significant factors that can impact the growth of migrant preterm children are maternal factors and the sources of social support (Joshi et al., 2012; Nielsen et al., 1998; Prathipchaikul et al., 2000; Thamniamdee, 2013; Thet et al., 2016). Premature babies should receive exclusive breastfeeding from birth to 6 months old because breast milk contains IgA, protecting against pathogens, especially those in the digestive tract and the respiratory system (World Health Organization, 2005). Breast milk is full of nutrients that can help protect a child from serious illness (Kramer & Kakuma, 2012). According to a study on the factors affecting the growth status of children 0-5 years of age in Thailand, it was found that the period of exclusive breastfeeding from birth to 6 months old was a statistically significant factor that influenced the weight and length of newborns up to 2 years old (Petcharapun et al., 2013). However, the duration of exclusive breastfeeding may differ for migrant mothers depending on parenting duration after delivery, and beliefs and cultural differences. According to the survey in Myanmar, the exclusive breastfeeding rate of Myanmar women was 52.3% (Yadanar et al., 2020). Burmese mothers with healthy infants tend to breastfeed them and give the infants water and rice before 6 months of age to keep them full, hydrated, and prevent colic (Hashmi et al., 2019; Thet et al., 2016). Therefore, it might be expected that the difference in the duration of exclusive breastfeeding could predict the growth of preterm migrant children.

Many studies have been performed on the maternal factors related to mother's feeding behavior (Aguayo et al., 2016; Chien, 2010; Joshi et al., 2012; Lwin & Geater, 2019; Phyo et al., 2014; Prathipchaikul et al., 2000; Soe et al., 2016). Infants from 6 months old should be given dietary supplements and fed three meals a day and snacks, such as fruit and milk, then twice a day from the age of 1 year old. The amount of food that children should receive per day

consists of 3–5 scoops of rice, 3 tablespoons of meat or eggs, 2 scoops of vegetables, 400–600 cc. of milk, and plenty of clean water. The children should avoid soft drinks or sweetened beverages (Ministry of Public Health, 2015). A study concerning the health status of foreign migrant workers' children in Ranong Province found that 46.8% of the children suffered from malnutrition, and most lived in the rural areas of Thailand. The Burmese migrant mothers in that study usually fed their children rice and easily found local vegetables, and gave their children unfiltered or unboiled underground water. These conditions caused many migrant children to develop chronic diarrhea and, in many cases, malnutrition (Prathipchaikul et al., 2000). However, that study concerning the feeding behaviors of migrant children was conducted over 20 years ago. In contrast, today, the cultural practices and attitudes of migrant mothers may differ because information about raising children is more accessible. Therefore, in this study, the researcher is interested in studying the current feeding behavior of mothers.

As for the factors related to social support sources, it was found that health services accessibility was also an essential factor. Burmese migrant mothers who have recently given birth can have their children protected under health insurance for foreign workers (Ministry of Labour, 2018). However, despite the children being covered under health insurance for foreign workers, they may still experience problems in accessing health care services. From a study on accessibility to health service among migrant labor in Sanpranet Health Center, San Sai District, Chiang Mai Province, it was found that migrant workers had moderate access to health service because the hospital staff had difficulty communicating with them. Most migrant workers did not have money to get health insurance cards to pay for all treatment costs (Nunthawattanakorn, 2009). It was also found that less than 50% of migrant mothers took their children to health care facilities (Markkula et al., 2018), resulting in migrant children being deprived of monitoring to check their growth. This causes the children to lack the opportunity to access health services, which are fundamental to all children and, notably, can cause delays in the growth of the preterm children of migrant workers.

As a result, in the present study, the researcher was interested in studying the duration of exclusive breastfeeding, mother's feeding behaviors, and health service accessibility to determine the predictive power of these factors in the growth of preterm migrant children in Thailand.

Materials and methods

A cross-sectional survey design was used to study the factors influencing the growth of preterm migrant children. The population was Burmese migrant mothers with preterm migrant children 18-24 months old, who came for health check-ups at the well-baby clinic at three sub-district health promoting hospitals and two hospitals in Kanchanaburi Province from February to March 2020. In total, 156 people were selected by convenience sampling.

The sampling size for this study was calculated using the G *Power program by looking at previous research that had similar variables to the feeding behavior variables used in this study. P_1 and P_0 were set at 0.340 and 0.146, respectively, and an obtained odds ratio of 3.01. The test confidence at alpha level equals 0.05, and the power of the test was equal to 0.80 for 156 people.

The Institute Review Board (IRB) with the Faculty of Nursing, Mahidol University, Research Ethics Committee of Makarak Hospital, Phahonphonphayuhasena Hospital, Kanchanaburi, and the directors of each hospital approved the data collection procedures. In addition, the researcher met with the head nurses and staff nurses at each of the well-baby clinics. At these meetings, the researcher clarified the objectives, date, time, and method of the research. The researcher also requested permission to use the sample interview location, following these steps: 1) Preparation of three research assistants. The researcher prepared the research assistants, who worked as translators in the hospital and were fluent in Thai and Burmese languages. These translators regularly communicated with migrant workers. The researcher clarified the objectives, procedures, and how to answer the interview questions in detail so that the research assistants understood the process and could follow it and explain what was needed to the subjects. 2) When the nurses at the well-baby clinics introduced the subjects to the research assistants, the research assistants explained the objectives and how to answer the interview questions as well as allowed them to ask questions, and also asked the subjects to sign the data collection statement and data collection consent form. After completing the forms, the research assistants started to interview the subject using interview form 1, which comprised 47 items and took around 20-25 minutes to complete. 3) If their relatives accompanied the subjects while the subjects answered the interview questions, the research assistants would ask for cooperation from the relatives to take care of their children. In case the subjects were not accompanied by any relatives, and if the subjects were worried about their children, the subjects could end the interview at any time. 4) The research assistants asked for data concerning the children's current weight and height from the nurses who were stationed at well-baby clinics and then filled in interview form 2, which comprises the growth record of the preterm migrant children at 18-24 months old.

Study variables

The tools in this research were validated by five experts, consisting of one pediatrician, two pediatric nursing instructors, one nursing instructor with specialization in migrant workers, and one nurse from the well-baby clinic. The content validity of the mother's feeding behavior interview form and health service accessibility interview form and the content validity index (CVI) of each tool was greater than 0.80. The researcher then took suggestions from the experts to improve the interview forms in terms of the best functional language. The interview forms were then back-translated into the Burmese language. They were then tested for the reliability of tools with ten migrant mother workers who shared similar backgrounds at the well-baby clinic in two sub-district health promoting hospitals in Kanchanaburi Province in January 2020. The reliability of the mother's feeding behavior interview form was 0.838, and the health service accessibility interview form was 0.862. The reliability was reassessed at 0.820 and 0.909 for both forms, respectively, at the end of the research for all 156 subjects. The research tools were as follows:

The personal information interview form for migrant children comprised seven items: gender, birth weight, current age, number of siblings, congenital disease, medical history such as flu, colds, or diarrhea, and health service coverage.

Basic information interview form of Burmese migrant mothers comprised 12 items: age, marital status, number of members in the family, years of schooling, occupation, median family income, communication language, duration of staying in Thailand, health service coverage, distance from accommodation to hospital, time of staying with children per day, and supplements that they had begun to feed to the child.

The interview form for the duration of exclusive breastfeeding, which the researcher developed from a review of previous literature, comprised only one item: mothers who exclusively breastfed from birth to 6 months received 1 point, and if breastfeeding for more or less than 6 months, they received 0 points.

Mother's feeding behavior interview form, which the researcher developed from a review of previous literature (Ministry of Public Health, 2015), comprised 16 items: two questions for the number of meals that the child receives, six questions for the amount of food that the child receives, six questions for the type of food that the child receives, and two questions for the drinking water that the child receives. The scales are divided into four rating gradations: practice regularly, practice sometimes, practice once in a while, and do not practice. The overall score ranged from 0 to 48 and was classified into two levels: good (25 to 48) and needs improvement (0 to 24). A good level indicated that the migrant mother has appropriate child-feeding behavior regarding the number of meals provided and the amount and quality of food and drinking water.

Health service accessibility interview form, which the researcher developed from a review of the previous literature (Phochai, 2017), comprised 11 items: three questions for hospital staff, four items for access to health services, and four questions concerning health service coverage. The Likert scale was divided into three levels: strongly agree, moderately agree, and disagree. The overall score ranged from 11 to 33 and was classified into two levels: good (23 to 33) and needs improvement (11 to 22), and a good level also indicated that a migrant mother could access essential health care services.

Preterm migrant children growth record form, assessed the children's weight and height according to the weight-for-age criteria (WA) and height-for-age criteria (HA) standard of the children with the same gender and age in the growth chart (Ministry of Public Health, 2015). This chart consisted of a series of curves that illustrate the distribution of weight and height measurement in children, and allows health professionals to identify a child's growth status. The child's weight and height represented the data on the day that the mother took the child to the service for measurements. For any given age, the children are generally classified as 'abnormal growth' (overweight/underweight/higher than the threshold/stunted) if their weight or height is above or below 1.5 SD of the median; otherwise, they are classified as 'normal.' In the present study, the score of '1' point is assigned for the normal children and '0' point for stunted or underweight.

Data analysis

Data analysis was performed using SPSS software version 25. The statistical significance was defined at the 0.05 level. The descriptive statistic calculations included frequency distribution, percentage, mean, and standard deviation of variables. A Chi-square test was used to examine the association between each independent variable and dependent variable. Logistic regression analysis was used to analyze the effects of the duration of exclusive breastfeeding, mother's feeding behavior, and health service accessibility on the weight for age and height for age of the preterm migrant children. The researcher also tested multicollinearity between independent variables with a correlation coefficient. It was found that the correlation was in the range of 0.027- 0.493, which was not greater than 0.80, and thus showed that there was not a significant relationship between the independent variables (Plichta & Kelvin, 2005).

Findings

General characteristics of preterm migrant children and migrant mothers in Kanchanaburi Province

About 54.5% of the preterm migrant children were males. Most of them (55.1%) had a birth weight greater than 2,500 grams. More than half (62.2%) had 35-36 weeks gestation. Less than half (39.7%) were 24 months old, while around 53.2% were first children and had a medical condition, such as asthma (1.3%). Also, most (87.8%) had support from Foreign Health Security Funds.

Most of the mothers (95.5%) of preterm migrant children were in their late 20s. They lived with their husbands and between 4-5 other family members, and their husbands worked as laborers, in which the family income was insufficient for daily living. Most migrant mothers used the Thai language to communicate with the public health officers (96.8%). Most mothers lived in Thailand for 11-20 years and spent more than 13 hours caring for their children daily. The variable analysis results showed that most mothers exclusively breastfed from birth to 6 months old (33.2%), and 53.2% of the mothers exclusively breastfed for less than 6 months. Most migrant mothers started to give mashed rice (44.2%) to their children as the first meal, followed by bananas (24.4%). These feedings began at the age of 2 months. The mothers' feeding behaviors were at a suitable level (73.7%), and health service accessibility was also appropriate (88.5%).

Nutritional status of preterm migrant children in Kanchanaburi Province

Regarding the preterm migrant children, 57.1% were a normal range of weight for age, while 41% were underweight and 1.9% were overweight. Simultaneously, 51.9% were normal height for age, 46.8% were stunted, and 1.3% were taller than the threshold (Table 1).

Table 1: Nutritional Status of Preterm Migrant Children (*N*=156)

Nutritional status	Interpretation	Frequency	Percentage
Weight-for-age	Overweight	3	1.9
	Normal weight	89	57.1
	Underweight	54	41
Height-for-age	Higher than the threshold	2	1.3
	Normal height	81	51.9
	Stunted	73	46.8

Relationship between normal weight-for-age and normal height-for-age status of the preterm migrant children and immediate factors of the respondents

Analysis of the relationship between the studied variables showed that a history of flu and colds with the children, the duration of exclusive breastfeeding, and mother's feeding

behaviors significantly correlated with the migrant's weight-for-age for preterm migrant children. A history of colds with the children, the duration of exclusive breastfeeding, and the mother's feeding behaviors were also significantly correlated ($p<0.05$) with the height-for-age of the preterm migrant children, with statistical significance (Table 2).

Table 2: Relationship between the general information of the preterm migrant children and mothers, the duration of exclusive breastfeeding, the mother's feeding behaviors, health service accessibility, and weight-for-age (N=153) and height-for-age criteria (N=154) of the preterm migrant children.

Variables	Weight-for-Age				Height-for-Age			
	Under weight	Normal weight	χ^2	p-value	Stunted	Normal height	χ^2	p-value
History of flu			11.530	.003*			.640	.780
Do not have	22 (34.4)	54 (60.7)			28 (38.4)	49 (70.5)		
Have	42 (65.6)	35 (39.3)			45 (61.6)	32 (39.5)		
History of colds			6.320	.012*			4.186	.041*
Do not have	41 (64.1)	73 (82.0)			49 (67.1)	66 (81.5)		
Have	23 (35.9)	16 (18.0)			24 (32.9)	15 (18.5)		
History of diarrhea			.560	.454			.238	.626
Do not have	55 (85.9)	80 (89.9)			63 (86.3)	72 (88.9)		
Have	9 (14.1)	9 (10.1)			10 (13.7)	9 (11.1)		
Occupation of mother			1.360	.7121			1.042	.307
Employed	45 (70.3)	65 (73.0)			55 (75.3)	55 (67.9)		
Housewife	19 (29.7)	24 (27.0)			18 (24.7)	26 (32.1)		
Duration of exclusive breastfeeding			18.530	.000*			23.97	.000*
Less than 6 months	46 (71.9)	36 (40.4)			49 (67.1)	33 (40.7)		
6 months	9 (14.1)	41 (46.1)			10 (13.7)	41 (50.6)		
More than 6 months	9 (14.1)	12 (13.5)			14 (19.2)	7 (8.6)		
Mother's feeding			49.510	.000*			40.41	.000*
Need improvement	40 (62.5)	8 (9.0)			41 (56.2)	7 (8.6)		
Good	24 (37.5)	81 (91.0)			32 (43.8)	74 (91.4)		
Health service			1.570	.209			3.034	.082
Needs improvement	10 (15.6)	8 (9.0)			12 (16.4)	6 (7.4)		
Good	54 (84.4)	81 (91.0)			61 (83.6)	75 (92.6)		

*$p < 0.05$

The predictors of normal weight-for-age and normal height-for-age status of the preterm migrant children

The multinominal multivariate logistic regression analysis results for predicting the growth of the premature migrant children are presented in Tables 3 (N=153) and 4 (N=154). The statistic showed a 48.2% variance in the weight and a 45.4% variance in the height of the premature migrant children as predicted by the variables. The body weight of the children was higher when they were exclusively breastfed from birth to 6 months when compared with those receiving breastfeeding for less or more than 6 months (OR=3.545; 95% CI 1.310–9.593) and with good mother's feeding behavior when compared with the 'needs improvement'

mother's feeding behavior (OR=13.967; 95% CI 5.264–37.057) (Table 3). Moreover, the children's height was greater when they were exclusively breastfed from birth to 6 months old when compared with those receiving breastfeeding for less and more than 6 months (OR=4.631; 95% CI 1.817–11.801) and with good mother's feeding behavior when compared with the 'needs improvement' mother's feeding behavior (OR=10.588; 95% CI 3.910–28.676) (Table 4). However, a history of flu or colds, and health service accessibility could not predict the growth of premature migrant children.

Table 3. Analysis of the Factors Influencing the Weight-for-Age Criteria of the Preterm Migrant Children (N=153)

Studied factors (y = control)	B	*p*-value	OR	95% CI
History of flu				
Do not have	Reference			
Have	.729	.129	.482	[0.188-1.235]
History of cold				
Do not have	Reference			
Have	.530	.328	.589	[0.204-1.701]
Duration of exclusive breastfeeding				
Less than 6 months	Reference			
6 months	1.266	.013*	3.545	[1.310-9.593]
Mother's feeding behaviors				
Needs improvement	Reference			
Good	2.637	.000*	13.967	[5.264-37.057]
Health service accessibility				
Needs improvement	Reference			
Good	.232	.727	1.261	[0.343-4.632]
Constant	-1.160	.170	.313	

*$p < 0.05$, $R^2 = 0.482$

Table 4: Analysis of the Factors Influencing Height-for-Age Criteria of the Migrant Premature Children (N=154)

Studied factors (y = control)	B	*p*-value	OR	95% CI
History of cold				
Do not have	Reference			
Have	.245	.642	.783	[0.278-2.202]
Duration of exclusive breastfeeding				
Less than 6 months	Reference			
6 months	1.533	.001*	4.631	[1.817-11.801]
Mother's feeding behaviors				
Needs improvement	Reference			
Good	2.360	.000*	10.588	[3.910-28.67]
Health service accessibility				
Needs improvement	Reference			
Good	.823	.214	2.277	[0.623-8.311]
Constant	-1.804	.039	0.165	

*$p < 0.05$, $R^2 = 0.454$

Discussion

The growth of preterm migrant children in Kanchanaburi Province

More than half of the preterm migrant children were in the normal range of weight-for-age and height-for-age. Children with growth delays were also found, both underweight (41%) and stunted growth (46.8%), even though these children should be in the same range of weight for age and height for age as full-term children when they reach 2 years old. These may stem from many factors, such as childhood illnesses. It was found that these migrant children had a history of illness, and many had to be hospitalized within the previous year. Further analysis of this group of children found that the illnesses were mainly flu and colds were statistically significant and were found to be correlated with being underweight ($\chi^2 = 11.53$ and $\chi^2 = 6.32$, $p<0.05$) and stunted growth ($\chi^2 = 4.18$, $p<0.05$). However, the findings showed that the number of underweight children was more than in other research studies of migrant children. In a study of immigrant and refugee children's health and growth status in Toronto, Ontario, Canada, a retrospective chart review showed that 5% of migrant children were underweight and 8.4% were stunted (Salehi et al., 2015). It can be seen that the preterm children who did not receive proper care in the early stages of life may develop illnesses, and as a result, malnutrition may follow.

Duration of exclusive breastfeeding

A duration of exclusive breastfeeding from birth to 6 months could predict the growth of preterm migrant children. This study confirmed the World Health Organization's (2003) recommendations to promote exclusive breastfeeding for the first six months of life to achieve optimal growth. This is in accordance with a study by Petcharapun et al. (2013) of the growth status of children 0-5 years of age and factors related to accessing public health service in Thailand. That study found that breastfeeding was positively correlated with the weight and height of newborns up to 2 years, with statistical significance at 0.05. However, from this study, it was found that 53.2% of migrant mothers exclusively breastfed for less than 6 months. This may be due to the migrant workers having lower income, and 67.9% of the migrant mothers worked as employees and needed to return to work after 90 days of maternity leave (Department of Employment, 2019). Although maternity leave is a legal right in Thailand, returning to work is a crucial factor preventing migrant mothers from breastfeeding. Most establishments might not have breastfeeding facilities, such as a daycare or nursery, or allow rest periods for breastfeeding or milk collecting (Pitikultang et al., 2017).

Moreover, the mothers may not receive a nutritious diet, which would result in producing insufficient milk for their children (Thet et al., 2016). These conditions may be why some migrant mothers were only able to exclusively breastfeed for about 2 months. After that, the mothers began to give mashed rice as the first meal supplement to their children (44.2 %). The result was consistent with a systematic review and meta-analysis in breastfeeding rates in migrant and non-migrant women (Dennis et al., 2019). This study showed, close to the number of exclusive breastfeeding of migrant mothers from this study, that migrant women continued breastfeeding from 3 to 4 months postpartum, and were only 33% more likely to breastfeed beyond 6 months.

Moreover, in a study of the factors related to stunting status of children aged under two years in Magway township, Myanmar, it was found that being breastfed for less than 6 months and

have started receiving complementary foods were statistically significantly correlated with the baby's growth being stunted (χ^2 = 2.08, $p<0.05$). This might be because the mothers had to return to work to generate income to subsidize family expenses, resulting in the children not being breastfed throughout the first 6 months of their lives. Thus, the children might not get enough nutritional energy to meet their growing bodies' needs.

Mother's feeding behavior

It was revealed that almost 40% of the mothers needed to improve their child's feeding behavior. Mothers reported that they prepared the same meals and types of food for their children as that of the adults. This result is in line with Prathipchaikul et al. (2000), who found that most of the children's food was rice and local vegetables. The mothers did not have enough money to buy foods high in protein that are healthy for the children, such as meat and milk. This is also in accordance with a study about migrant farmworker mothers' views about the meaning of food, which found that 53% of low-income migrant mothers tended to choose to buy unhealthy food. Mothers would cook food that was easy and quick to prepare (Kilanowski, 2010). In a mixed-methods study of pregnant women and their feeding practices and risk factors for chronic infant undernutrition among refugees and migrants along the Thailand–Myanmar border, focus groups revealed how the poverty of migrant worker families was an obstacle to being able to buy healthy food for the children. The mothers gave the children mostly eggs and potatoes because they had to save money where possible (Hashmi et al., 2019). However, it was found that for mothers with good feeding behaviors, their children were 13 times the normal range of weight-for-age compared with mothers who needed to improve feeding behaviors (OR 13.05; 95% CI: 4.82-35.37, $p<0.05$) and 10.87 times the normal range of height-for-age compared with mothers who needed to improve their feeding behavior (OR 10.87; CI: 3.78–31.23, $p<0.05$). Thus, health care providers should help migrant mothers become more aware of the importance of good nutrition for the children to have appropriate growth.

Health service accessibility

The results of this study did not prove that the heath service accessibility can affect the growth of the preterm migrant since the majority of migrant mothers (88.5%) brought their preterm children to health check-up regularly, and so health services accessibility was at a good level (X = 26.26, S.D. = 5.74). This may be due to the migrant mothers being aware of their preterm children's health needs and the need to purchase health insurance cards for their children. The results found that 87.8% of migrant children had support from Foreign Health Security Funds. It was also found that the majority of the migrant mothers were able to communicate in Thai (96.8%), thus enabling comprehensible communication between mothers and public health officers, helping improve access to health services and leading to a good understanding upon receiving the services (Nunthawattanakorn, 2009). This accord with the study by Kamwan and Kessomboon (2016) concerning access to health service among migrant labor in Sanpranet Health Center, San Sai District, Chiang Mai Province, which found that the majority of migrant workers purchased a health insurance card (90.5%) and had access to health services in the event of illness (97.6%). The migrant mothers were keen to purchase a health insurance card for their children because they thought their children would receive good service at no additional cost. Health care services that the preterm migrant children received include health screening, developmental screening, vaccinations, and health-promoting services, which is an

essential service that Thai children receive. Therefore, it can be said that most migrant mothers were aware of the benefits of receiving health services.

Conclusion

In summary, the results of the study of the growth of the migrant preterm child during the ages of 18-24 months old found that the duration of exclusive breastfeeding from birth to 6 months and the mother's feeding behavior together were able to predict the growth of the preterm migrant children. This research should prompt future research concerning developing a growth promotion program for preterm babies, especially in migrant children. The program should support migrant mothers to recognize the importance of continuing breastfeeding from birth for a full 6 months, including in the workplace, and encourage mothers to recognize the importance of providing complementary food that is in line with the lifestyle of Burmese migrant mothers.

Acknowledgments

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