LACTATION MANAGEMENT AGAINST NUTRITIONAL STATUS IN INFANT IN SUNGAI RAYA DALAM PRIMARY HEALTHCARE CENTER, KUBU RAYA REGENCY, WEST KALIMANTAN

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ABSTRACT

During the covid19 pandemic, malnutrition should be prevented. Nutritional status in infants may weaken their immunity, intelligence and productivity and arises their vulnerability to diseases and stunting during their development. The initial survey showed that in the working area of Sungai Raya Dalam Primary Healthcare Center, Kubu Raya District, West Kalimantan 60% of mothers have infants with malnutrition. This study aims to determine the relationship between lactation management (techniques, duration and frequency of breastfeeding) and the nutritional status of infants (0-12) months. This study used a case-control design. The research sample was 98 respondents (49 cases and 49 controls) selected by purposive sampling technique. The results showed that there was a significant relationship between mother's breastfeeding technique (p = 0.001; OR = 4.471; 95% CI = 1.882-10.620), duration of breastfeeding (p = 0.004; OR = 3.692; 95% CI = 1.578-8.638), and the frequency of breastfeeding (p = 0.009; OR = 3.257, OR = 1.422-7.459) with nutritional status of infants aged 0-12 months in the working area of Sungai Raya Dalam Primary Healthcare Center. Reflecting on the study, it is recommended for the health workers to provide counseling materials related to the techniques, duration and frequency of breastfeeding, and encourage mothers to get the required knowledge about them using Kartu Menuju Sehat (KMS) or Health Cards.

Keywords: lactation management, malnutrition, breastfeeding technique, duration, frequency

INTRODUCTION

Malnutrition prevalence increases among children between six months and two years and is strongly influenced by non-optimal growth and development. Therefore, children should be raised well by getting their basic needs and rights as humans, including food, clothing, housing, protection, and respect (Indonesian Ministry of Health,2014).

In 2018, Global Nutrition Report showed malnutrition as a high-rate global issue. Malnutrition is considered a serious problem for the next generations which will eventually affect the future of countries around the world. To avoid the consequences of malnutrition, nations should work urgently to get rid of it unless time will be late to interfere. Indonesia is considered one of twenty-six countries suffering from malnutrition, especially in stunting and anemia forms (Aubrun and Nechita, 2012).

According to the nutritional status indicator, weight for age index, malnutrition prevalence of toddlers aged (0-23) months in Indonesia in 2016 was 3.12%, while undernutrition was 11.76%. In 2017, the prevalence was increased to 3.50% for malnutrition and dropped to 11.30% for undernutrition. In 2018, the prevalence was raised to 3.90% for malnutrition and 13.80% for undernutrition. However, in 2016, the highest reported malnutrition prevalence of toddlers aged (0-23) months in West Kalimantan was 6.59% (Muchinsky, 2012).

Malnutrition cases in West Kalimantan increased to 401 cases in 2016. Meanwhile, in 2017 the cases decreased to 392 cases where most cases were in Kapuas Hulu District(89 cases), followed by other districts including Ketapang District(55

cases), Mempawah District (50 cases), Sanggau District (48 cases), and Pontianak City (41 cases) (West Kalimantan Provincial Health Office, 2018). Furthermore, other districts reported less than 30 cases on average, including Kubu Raya District (22 cases) (West Kalimantan Provincial Health Office, 2018).

According to the results of the Nutrition Status Monitoring conducted by the West Kalimantan Provincial Health Office in the last three years, the prevalence of stunting under five (Height for Age indicator) was increasing with a percentage of 19.1% in 2015, 29.3% in 2016 and reached 34.8% in 2017. However, the highest prevalences were in Batu Ampar Primary Healthcare Center (35.6%) followed by Air Putih Primary Healthcare Center (34.4%), Padang Mat Primary Healthcare Center (32.1%), Sungai Raya Dalam Primary Healthcare Center (31.3%), and expanded ones (29.7%).

Data from Sungai Raya Dalam Primary Healthcare Center showed that malnutrition prevalence is rising with a percentage of 11.9% in 2015, 13.6% in 2016, and 15.7% in 2017. However, the highest prevalence was in Parit Baru Village (37.1%), Kapur Village (25.8%), and Sungai Raya Village (19.4%).

Breastfeeding is considered an obligation and a challenge at the same time for mothers. Incorrect breastfeeding during the first weeks can be painful due to nipples scratching caused by the baby sucking on the nipple instead of the areola. Moreover, mothers who do not breastfeed regularly following their babies need usually experience hardness and pain in their breasts. Nipple pain can be triggered by variant factors mainly improper baby breastfeeding position and poor attachment, which are the key success of breastfeeding. That is why many mothers may stop breastfeeding to avoid that pain (Tiruye *et al.*, 2018; Sari, Dewi and Indriati, 2019). Furthermore, pain may be caused by blisters formation in mothers' nipples, as to why they avoid breastfeeding leading to less milk production and insufficient baby feeding.

Mothers should breastfeed their babies on a non-scheduled basis (on demand) since babies can recognize their own needs. Scheduled breastfeeding is unfavorable because it affects negatively the milk production stimulation process, while nonscheduled breastfeeding can prevent many possible problems (Haryono and Setianingsih, 2014; Walyani, & Purwoastuti, 2017). Another factor related to breastfeeding is maternal nutrition. Food and drinks that mothers consume during lactation influence the milk quantity and quality. However, mothers during lactation should not overeat but consume a more balanced diet (Amir and Sulastri, 2019; Rahmadani *et al.*, 2020) since balanced nutrition is produced higher quality milk. That is why the eating pattern is considered one of the success determinants of breastfeeding. Several studies have shown that well-nourished mothers can breastfeed their babies for 6 months minimally while less nourished mothers can not feed their babies adequately due to the low milk quantity which can not fulfill the babys' nutritional need.

Mothers as well should have good breastfeeding skills, including correct baby breastfeeding position and attachment, to enhance the milk flow from the breast to the baby. An inappropriate position will result in a poor attachment (Okolo and Ogbonna, 2002).

A previous study showed that there is a relationship between breastfeeding techniques, breastfeeding duration, and breastfeeding frequency with baby's (1-6 months) weight. Correct breastfeeding technique, enough breastfeeding duration (> 10 minutes per time), and good adequate breastfeeding frequency (> 8 times per day) are associated with weight increase for infants (1-6 months) (Sari & Tamtomo, 2017).

As a consequence, the breastfeeding method is considered a crucial factor in breastfeeding success as the proper method

is associated with a high success rate while the wrong technique is accompanied by lactation failure affecting both mother and baby causing nipples pain, lack of sleep, weight baby's body loss, and others. This was affirmed by research showing that correct breastfeeding techniques correlate with the lactation success rate (p-value= 0.000) (Arismawati and Effendy, 2014).

In addition, researchers state that there is a relationship between the frequency and duration of breastfeeding and infant development. Frequent breastfeeding (10-12) times per day for each breast with a duration (5-15) minutes per time enhances baby milk intake to the maximum. Thus, mothers should not limit the breastfeeding frequency and duration and follow their babys' needs instead. More frequent breastfeeding fulfill the babys' nutritional adequacy that will enhance their nutritional status (Grassley *et al.*, 2014)

A preliminary survey conducted on 26 July 2018 in the Sungai Raya Dalam Primary Healthcare Center in Kubu Raya District for ten mothers who had babies (0-12) months showed that mothers with a percentage of 60% had babies with poor nutritional status, 50% use poor breastfeeding techniques, 60% breastfed less than 10 minutes per time and 70% breastfed less than 8 times per day. Incorrect breastfeeding techniques, breastfeeding duration less than 10 minutes per time, and breastfeeding frequency less than 8 times per day are associated with low success breastfeeding rate leading to poor nutritional status for babies.

Malnutrition prevalence in the Sungai Raya Dalam Primary Healthcare Center in (2015-2017) had a rising trend. Moreover, the initial survey reported that many mothers used poor breastfeeding techniques showing incorrect positions or attachments, spent less than 10 minutes each time of breastfeeding, and breastfed their babies less than 8 times per day which eventually led to malnutrition in infants. For these reasons, Sungai Raya Dalam Primary Healthcare Center was chosen in this study.

Based on the abovementioned background, the purpose of this study was to identify the relationship between breastfeeding techniques, duration, and frequency, and associated malnutrition in infants (0-12) months in the working area of Sungai Raya Dalam Primary Healthcare Center.

METHOD

This research is an observational analytic study with a case-control approach. This study was conducted from December 2018 to February 2019 to analyze the relationship between lactation management and malnutrition in infants. The research subjects were infants (0-12) months in the working area of the Sungai Raya Dalam Primary Healthcare Center, Kubu Raya Regency, West Kalimantan. Malnutrition in infants was estimated by the height for age index (H/A). Malnourished infants were allocated in the case group, while normal nutritional status infants were placed in the control group. The mothers of infants became respondents after giving their consent. The study excluded infants with chronic infections or illnesses and included babies who have been already or recently breastfed exclusively. Hence, the sampling technique was purposive sampling. The sample number in this study was 98 with a ratio of 1: 1 for the case group and control group; 49 in the case group and 49 in the control group. In brief, the sample was selected using a purposive sampling technique and included case and control groups that have been matched in terms of gender, age and residence area.

The study used the questionnaire to collect data for 10 elements which are mother's age, mother's latest education, type of mother's occupation, mother's income status, mother's children number, baby gender, breastfeeding technique, breastfeeding duration and breastfeeding frequency. The mother's age data were collected using open questions and were arranged in an age range. The mother's

latest education data were obtained by multiple-choice questions: elementary school, junior high school, high school, diploma III, and diploma IV or undergraduate or bachelor. Mother's occupation was identified by multiple-choice questions: housewife, private employees, civil servant, trader, and farmer. Income status was recognized by asking whether the mother had income or not. The mother's children's number and baby gender were also included in the respondents' characteristics.

The dependent variable in this study was the nutritional status of infants, while the independent variables were breastfeeding technique, breastfeeding duration per time, and breastfeeding frequency. The nutritional status of infants was measured by height for age index (H/A). Infant weight was measured by baby scales and carried out by the enumerators' team included the mothers and students. On the other hand, the independent variables were measured using a self-made questionnaire which their validity and reliability were tested. The validity and reliability test were applied for 30 respondents out of the 98 respondents.

Table 1 shows that all independent variables questionnaire were valid where r-count is greater than r-table (n = 30; r-table = 0.361). The Cronbach Alpha reliability test value (0.691) was greater than the r-table (0.361). Therefore, it can be said to be consistent data. Data were analyzed using univariate analysis, bivariate analysis and Odd Ratio (OR).

Chi-square test was used for bivariate analysis, while logistic regression test for multivariate analysis. The software of statistical product and service solution (SPSS) 24.0 for Mac, with a significance of <0.05, was used in this study. The case group and control group were matched in terms of age and sex of infants. The results showed that there was a significant relationship between breastfeeding technique (p = 0.001; OR = 4.471; 95% CI = 1.882-10.620), breastfeeding duration (p = 0.004; OR = 3.692; 95% CI = 1.578-8.638), and breastfeeding frequency (p = 0.009; OR = 3.257; 95% CI = 1.422-7.459) with the nutritional status of infants (0-12)months in the working area of Sungai Raya Dalam Primary Healthcare Center. The study obtained Ethical Clearance with the number: 21/KEPK-FIKES/KET/2018.

RESULTS

Table 1. Frequency Distribution of Respondent Characteristics

Variable	Case		Control	
	n	%	n	%
Age				
20-29 years	16	32.7	20	40.8
30-39 years	25	51.2	24	49.0
40-49 years	8	16.1	5	10.2
Education				
Elementary school	7	14.3	5	10.2
Middle school	17	34.7	14	28.6
High school	19	38.8	24	49.0
DIII	1	2.0	1	2.0
DIV / S1	5	10.2	5	10.2
Work				
Housewife	27	55.1	26	53.1
Private employees	14	28.6	17	34.7
Civil servants	6	12.2	6	12.2
Trader	2	4,1	0	0.0
Income				

Variable	Case		Control	
	n	**%**	**n**	**%**
Have income	27	55.1	26	53.1
No income	22	44.9	23	46.9
Number of children				
1 child	7	14.3	14	28.6
2 children	28	57.1	24	49.0
3 children	13	26.6	10	20.4
4 children	1	2.0	1	2.0
Baby Gender				
Male	21	42.9	21	42.9
Female	28	57.1	28	57.1

In this study, descriptive data of respondents characteristics were obtained from mother's age, latest education, occupation, income and children number in addition to baby's gender. All data on respondent characteristics will be needed to support the results of this study. Table 1 illustrates the frequency distribution of respondent characteristics. The data stated that the majority of respondents were aged (30-39) years with a percentage of 51.2% in the case group and 49.0% in the control group, had a high school education with a percentage of 38.8% in the case group and 49.0% in the control group, were housewives with a percentage of 55.1% in the case and 43.1% in the control group, did not have income with a percentage of 55.1% in the case group and 53.1% in the control group and had 2 children with a percentage of 57.1% in the case group and 49.0% in the control group.

Table 2. Univariate Analysis Results

Variable	Nutritional Status of Infants Age 0-12 Months			
	Case		Control	
	n	**%**	n	**%**
Breastfeeding Techniques				
Bad	37	75.5	20	40.8
Good	12	24.5	29	59.2
Duration of Breastfeeding				
Bad	36	73.5	21	42.9
Good	13	26.5	28	57.1
Frequency of Breastfeeding				
Bad	33	67.3	19	38.8
Good	16	32.7	30	61.2
Nutritional Status of Infants Age 0-12 Months				
Less	49	100.0	0	0.0
Normal	0	0.0	49	100.0
Total	**49**	**100**	**49**	**100**

Table 2 shows Univariate analysis results of breastfeeding technique, duration and frequency and the nutritional status in infants (0-12) months.

Table 2 implies that the majority of respondents were as follows: 75.5% of the case group had bad breastfeeding technique and 59.2% of the control group had a good breastfeeding technique, 73.5% of the case group had bad breastfeeding duration and 57.1% of the control group had good breastfeeding duration, as well as 67.3% of the case group, had bad breastfeeding frequency and 61.2% of the control group had good breastfeeding frequency. Moreover, all of the infants aged 0-12

months (100.0%) in the case group had poor nutritional status, whereas all of the infants in the control group (100.0%) had normal nutritional status.

Table 3 illustrated Bivariate analysis results of breastfeeding technique, duration and frequency and the nutritional status in infants (0-12) months. Table 3 showed that most of the respondents had bad breastfeeding techniques in the case group (75.5%) compared to the control group (40.8%). The Chi-Square statistical test showed a p-value of 0.001 (<0.05), thus H0 was rejected. This means that there is a significant relationship between breastfeeding technique and nutritional status of infants (0-12) months in the working area of Sungai Raya Dalam Primary Healthcare Center. Odd Ratio (OR) value was 4.471 (95% CI = 1.882 to 10.620). This reflected that infants (0-12) months who experienced bad breastfeeding techniques by their mothers have a 4.471 times greater risk of experiencing poor nutritional status compared to infants who got good breastfeeding techniques.

The majority of respondents had bad breastfeeding duration in the case group (73.5%) compared to the control group (42.9%). The Chi-Square statistical test showed a p-value of 0.004 (<0.05), thus H0 was rejected. This means that there is a significant relationship between breastfeeding duration and nutritional status of infants (0-12) months in the working area of Sungai Raya Dalam Primary Healthcare Center. Odd Ratio (OR) value was 3.692 (95% CI = 1.578 to 8.638). This reflected that infants (0-12) months who experienced bad breastfeeding duration by their mothers have 3.692 times greater risk of experiencing poor nutritional status compared to infants who got good breastfeeding duration.

Most of the respondents had bad breastfeeding frequency in the case group (67.3%) compared to the control group (38.8%). The Chi-Square statistical test showed a p-value of 0.009 (<0.05), thus H0 was rejected. This means that there is a significant relationship between breastfeeding frequency and nutritional status of infants (0-12) months in the working area of Sungai Raya Dalam Primary Healthcare Center. Odd Ratio (OR) value was 3.257 (95% CI = 1.422 to 7.459). This reflected that infants (0-12) months who experienced bad breastfeeding frequency by their mothers have a 3.257 times greater risk of experiencing poor nutritional status compared to infants who got good breastfeeding frequency.

Table 3. Bivariate Analysis Results

Variable	Nutritional Status of Infants Age 0-12 Months				*p value*	OR (95% CI)
	Case		Control			
	n	%	n	%		
Breastfeeding Techniques						
Bad	37	75.5	20	40.8	**.001**	**4,471 (1,882-10,620)**
Good	12	24.5	29	59.2		
Duration of Breastfeeding						
Bad	36	73.5	21	42.9	**0.004**	**3,692 (1,578-8,638)**
Good	13	26.5	28	57.1		
Frequency of Breastfeeding						
Bad	33	67.3	19	38.8	**0.009**	**3,257 (1,422-7,459)**
Good	16	32.7	30	61.2		

DISCUSSION

The Relationship between Breastfeeding Techniques and Nutritional Status of infants in the Working Area of Sungai Raya Dalam Primary Healthcare Center

The univariate analysis showed that most participants in the case group did not apply breastfeeding techniques correctly since most of them (75.5%) were reported as having bad breastfeeding techniques in a comparison with the control group (40.8%). A study affirmed this result showing that most participants with a percentage of 73.9% had bad breastfeeding techniques compared to mothers (26.1%) who had good breastfeeding techniques (Sari & Tamtomo, 2017).

The results showed that most respondents in the case group (73.5%) had no idea that they should put a milk smear around nipples and areola to sterilize and moisture them before breastfeeding compared to the case group (12.2%).

The majority of respondents (65.3%) in the case group did not know or practice washing hands with soap before breastfeeding compared to the control group (44.9%). .Similarly, another research presented that the majority of respondents (63.8%) did not wash their hands with soap and running water correctly before breastfeeding (Rahmawati, 2017).

The study also stated that most respondents (63.3%) in the case group did not sit and/or lie down during breastfeeding properly, to not hang but lean feet and shoulders, compared to the control group (16.6%). Another study also reported that the majority of respondents (53.4%) were positioned improperly during breastfeeding.

Most respondents in the case group (61.2%) did not know/ follow the correct method of inserting nipples including most of the areola during breastfeeding compared to the control group (32.7%). However, other research opposed this finding showing that the majority of respondents (89.7%) did it correctly.

In the case group, most respondents (57.2%) did not approximate/attach the baby's abdomen to the mother's compared to the control group (18.4%). Meanwhile, a study stated an opposite result stating that most respondents (87.9%) performed it properly.

Proper breastfeeding technique includes the attachment and the mother and baby position. The correct method is to hold the baby properly inserting the areola into the baby's mouth (Tiruye *et al.*, 2018).

Incorrect breastfeeding techniques affect both the mother and the baby negatively. Improper breastfeeding method triggers the baby to feel uncomfortable and may cry. Subsequently, breast milk production decreases. If the mother shows no response, this can be exaggerated to include the baby's fuss, insomnia, anxiety, and crying spells since the baby's nutritional need has not fulfilled causing loss in their weight. A study confirmed that fact by stating that wrong techniques are associated with insufficient milk secretion by the mother and breastfeeding resistance by the baby (Arismawati and Effendy, 2014).

Moreover, incorrect breastfeeding techniques can cause pain or blister in nipples and hardening in breasts. This leads to discomfort, disruption, and a non-smooth breastfeeding process. Non-fluent breastfeeding can result in nutritional deficiencies in infants (Kuntarti, Wuryanto and Ratnaningsih, 2011). A research confirmed that statement showing that there is a significant relationship between breastfeeding techniques and the malnutrition incidence in infants (1-6) months at the Tasikmadu Primary Healthcare Center in Karanganyar Regency (Sari & Tamtomo, 2017). Thus, it can be concluded that breastfeeding techniques have a crucial impact on the nutritional status of infants (0-12) months. Therefore, the mothers who do it improperly expose their babies at risk of experiencing malnutrition compared to the mothers who do it correctly. Thus, it is recommended for mothers to increase their knowledge of

correct breastfeeding techniques, including the mother and baby position and attachment by asking the health workers at the Primary Healthcare Centers and search for more related information using the available sources like the internet.

The Relationship between Breastfeeding Duration and Nutritional Status of Infants in the Working Area of Sungai Raya Dalam Primary Healthcare Center

The univariate analysis results showed that most respondents in the case group had bad breastfeeding duration; less than eight minutes each time, whereas most of the participants in the control group had good breastfeeding duration; eight minutes or more each time. Similarly, research showed that most participants (32 mothers) had poor breastfeeding duration with a percentage of 69.6% compared to others who had a good one(30.4%). However, this finding has been opposed by another study showing that most participants (25 mothers) with a percentage of 78.1% had sufficient breastfeeding duration (Linda, Endra and Nadhiroh, 2015).

The mean duration of breastfeeding in the case group was 7.27 ± 3.581 minutes (5-15 minutes), whereas in the control group was 8.90 ± 3.793 minutes. This reflects that breastfeeding duration per time in the case group was shorter than duration in the control group for the same breastfeeding duration.

The duration of nursing varies according to the baby's suction pattern. The baby should suckle 10 minutes on the first breast since the suction power is still strong and 20 minutes on the other breast as the baby's suction power starts to weaken. Weak suction can result in inhibition of breastfeeding hormone secretion leading to less milk production. The amount of prolactin hormone and secreted is related to the magnitude, frequency, intensity, and duration of the baby's breastfeeding (Linda, Endra and Nadhiroh, 2015).

The long duration of breastfeeding covers the baby's nutritional needs since the baby can get full breast milk starting from early milk until the secretion of the whole milk. If the breastfeeding duration is short, the baby only gets the early milk. This will not fulfill their nutritional needs and thus is associated with slow weight gain. This may eventually cause the baby's malnutrition (Dewi Kartika Sari, Didik Gunawan Tamtomo, 2017).

This study presented similar findings with other studies showing that there is a significant relationship between breastfeeding duration and malnutrition incidence. Respondents with a poor duration of breastfeeding (less than 10 minutes every time) tend to be at risk of experiencing poor nutritional status 3.05 times more compared to others who have a good duration of breastfeeding (equal / more than 10 minutes every time). Therefore, it can be concluded that short breastfeeding duration is considered a causing factor of underweight and malnutrition; babies who breastfed less than eight minutes per time are more vulnerable to undernutrition than others who get breastfeeding for eight minutes or more. That is why it is highly recommended for mothers to learn the right breastfeeding technique related to position and attachment and to increase the breastfeeding duration.

The Relationship Between Breastfeeding Frequency and Nutritional Status in Infant in the Working Area of Sungai Raya Dalam Primary Healthcare Center

The results of the bivariate analysis using the chi-square test showed that breastfeeding frequency affects the nutritional status with a p-value of 0.009 (<0.05). Thus, H0 was rejected. This means that there is a significant relationship between the breastfeeding frequency in infants with their nutritional status in the working area of Sungai Raya Dalam Primary Healthcare Center. Infants who received bad breastfeeding frequency tend to be at risk of malnutrition 3.257 times more than those with good breastfeeding frequency.

The univariate analysis showed that the most of case group participants (67.3%), experienced bad breastfeeding frequency (less than eight times per day). Meanwhile, most of the control group respondents (61.2 %) had a good breastfeeding frequency (equal/more than eight times per day). This is similar to the results of a study showing that most participants (244 mothers) with a percentage of 82.2% applied a breastfeeding frequency less than eight times per day. However, this is against the findings of another study stating that the majority of respondents (27 mothers) with a percentage of 84.4% breastfed their babies eight times per day or more (Linda, Endra and Nadhiroh, 2015).

The average frequency of breastfeeding in the case group was 7.45 ± 2.433 times per day (5-12 times per day) which is less than the average frequency of the control group which was 8.86 ± 2.598 times per day (5-15 times per day).

Exclusive breastfeeding along with adequate frequency enables the infant to get the maximum of their nutrition as to why they become healthier, more resistant to infections, less prone to allergies, and less vulnerable to diseases. This will ultimately ensure optimal growth and development for infants in the future.

Moreover, the breastfeeding frequency influences the baby's weight gain since more breastfeeding times provide the baby the optimal nutritional needs and thus his weight increases. Breastfeeding on-demand, whenever the baby asks, also is a necessity to keep the baby full and prevent other problems during the breastfeeding process. In brief, more frequent breastfeeding ensures that the baby's stomach is not full to get the required nutrients for his growth at any time (Sari & Tamtomo, 2017).

This study confirms the other studies' findings showing that there is a significant relationship between breastfeeding frequency and the incidence of malnutrition. Infants breastfed less frequently (> eight times per day) tend to have worse nutritional status compared to those breastfed frequently (equal / more than eight times per day) (Sari & Tamtomo, 2017).

It can be concluded that infants (0-12) months who get less breastfeeding frequency (<8 times per day) are at greater risk of experiencing poor nutritional status compared to infants who have good breastfeeding frequency (≥ 8 times per day). Thus. it is recommended for mothers to breastfeed their babies in sufficient frequency and on a non-scheduled basis (on demand), as the babies can determine their own need, to prevent their babies from being malnourished.

CONCLUSION

It is expected that nursing mothers will enhance their knowledge about the correct breastfeeding process whether from health workers or other sources as the internet and so on. Mothers should breastfeed their babies on a non-scheduled basis (on demand) minimally 2 hours. Breastfeeding should be done interchangeably each 5-15 minutes for both breasts each time to keep the breasts' size in balance.

In the Sungai Raya Dalam Primary Healthcare Center, the expertise of health workers in providing nutritional counseling should be improved to conduct breastfeeding training, especially for midwives by educating them about the correct technique, frequency and duration of breastfeeding to decrease the risk of infant morbidity in the area. Furthermore, health workers should encourage exclusive breastfeeding for toddlers to enhance their nutritional status.

The study findings can be used as a basis for further researches related to the relationship between breastfeeding techniques, frequency and duration of breastfeeding and the nutritional status of infants whether by direct observation or intervention to obtain more accurate results.

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