



Mothers' Participation and Compliance toward the Improvement of the Infants' Nutritional in Community Feeding Center Lagarutu Palu

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Abstract

Nutrition is one of the indicators in building the qualified human resources. Nationally, the prevalence of malnutrition is 19,6%. This shows that the problem of malnutrition in Indonesia is still a public health problem. In Palu Province, malnutrition is also a health problem that continues to be handled. Community Feeding Center is a program of the government in tackling the cases of malnutrition through the supplementary feeding and education in the mothers. This study was aimed to determine the relationship between the mothers' participation and compliance in giving supplementary feeding with improved nutritional status of infants in CFC Lagarutu. The type of this research is in the form of analytic survey with cross sectional approach with 31 samples taken by purposive sampling technique. The data were analyzed using Chi-square test with α 5%. The research was conducted in April-June 2015. The results show that no relationship between the participation ($p=0,001$) and the improvement of the infants' nutritional status, where the more active of the mothers in the CFC program, the more improvement of the infants' nutritional status. There is a relationship between the compliance and the improved nutritional status ($p=0,000$), where the more obedient of the mothers in giving supplementary feeding, the more improvement of the infants' nutritional status. It is recommended to the mothers to always be active in the CFC program and dutifully provide supplementary food to their children in order to improve the nutritional status of infants.

Keywords: Participation; Compliance; nutritional status; Community Feeding Center.

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1. Introduction

Nutrition is one indicator to assess the health of a country's development success in building the qualified human resources. The height problem caused by malnutrition in a country indicates that human development in the country did not go well.

Nutritional disorder is one of the problems that often occur among the children under five (infants). Globally in 2013, about 17% or 98 million infants in developing countries are underweight (weight/age according to WHO standards) [1].

Nationally, the prevalence of malnutrition and less nutrition is 18,4% in 2007, 17,9% in 2010, and 19,6% in 2013 consisting of 5,7% malnutrition and 13,9% less nutrition. This shows a decrease of cases in 2010, but the increase cases happened again in 2013 [2]. To achieve the MDG targets by 2015, that is 15,5%, the prevalence of malnutrition and less nutrition nationally should be decreased by 4,1% in the period 2013 to 2015 [2].

In Central Sulawesi, the prevalence of malnutrition in 2013 is amounted to 17,5%. In Palu, the prevalence of malnutrition in 2012 is amounted to 63 cases, the highest number is in Pantoloan region with 15 cases, and the lowest is in Talisere region with no cases of malnutrition being found. In 2013, cases of malnutrition increased to 861, the highest number of cases is found in Birobuli PHC with 183 cases, in Talise PHC with 127 cases, and Tawaeli PHC as the lowest [3].

Along with the development of science and technology, the management of malnutrition and less nutrition shows that this case can be handled by two approaches. Malnutrition and less nutrition with complications (anorexia, severe pneumonia, severe anemia, severe dehydration, high fever, and decreased consciousness) must be treated in the hospital, public health center with treatment, Recovery Center Nutrition (RCN) or Therapeutic Feeding Center (TFC). To the malnutrition and less nutrition without complications, it is handled on an outpatient basis in the public health center that organizes Community Feeding Center (CFC) [4].

Handling cases of malnutrition in Palu is centered on four points. They are Pantoloan PHC with Treatment, Bulili PHC, Sangurara PHC, and Lagarutu PHC. From the four places handling malnutrition cases in Palu, Lagarutu PHC is a treatment place located in Palu that includes Singgani PHC, Kawatuna PHC, and Talise PHC with the second highest number of cases of malnutrition after Birobuli PHC; and is a treatment place of malnutrition with the lowest success rate of 24 infants whose nutritional status were not improved after getting treatment in the period 2013 [5].

Community Feeding Center (CFC) is a form of supplementary feeding activities in the form of complementary mothers' milk based local community. Through the CFC, the learning process for the community and families is expected to occur, especially for the mothers about the good parenting by processing and delivering food to the babies and the infants with the aim to improve the nutritional status [6].

This study uses the mothers' participation and compliance in giving supplementary feeding as independent variables and nutritional status of the infants as a dependent variable. Assessment of nutritional status in this

study uses the anthropometric indices W/A to find out how much the relationship of the mothers' participation and compliance and the improvement of infants' nutritional status. The purpose of this study was to determine the relationship of the mothers' participation and compliance in supplementary feeding and the improvement of infants' nutritional status in CFC Lagarutu Palu.

2. Materials and Methods

The type of this research is in the form of analytic survey with cross sectional approach. Cross sectional is a research studying the dynamics of the correlation between the risk factors and the effects, with the approach, observation, or the collection of the observed data at the same time [7].

This research was conducted in one of the infants' malnutrition handling points of Community Feeding Center (CFC). It is in Lagarutu PHC, which includes three working areas of public health centers; Talise PHC, Singgani PHC, and Kawatuna PHC. The research was conducted on April 26th until June 4th, 2015. This relates to the implementation of the CFC for 30 days.

Population is the whole object of the study or the object under the study by Notoadmojo, 2012. The populations in this study were all children under five and the mothers who follow the CFC program, as many as 37 people. A sample is an object being researched and considered to represent the entire population [8]. Taking sample in this study uses purposive sampling method, where the sample has fulfilled the inclusion and exclusion criteria. Inclusion criteria are all the malnutrition infants without infectious diseases and willing to be treated in the CFC.

In this study, the numbers of the respondent in the inclusion criteria for the measurement index BB/U are 31 people. The exclusion criteria are the infants who are not willing to become respondents for 6 people. The research instrument is a list of food waste assessment and attendance of the infants. In addition, the data were also obtained by observing the food waste.

The data were analyzed using Chi-Square test to look at the relationship between independent and dependent variables, then analyzed again using Estimate Risk Test to find out how much the risk of occurrence of malnutrition.

3. Results

a. Analysis of Univariate

The data in Table 1 shows that the distribution of the respondents based on the mothers' participation in the CFC is mostly categorized as active. There are 25 mothers (80,6%). While in the inactive category, there are 6 mothers (19,4%). The distribution of the respondents based on the mothers' compliance in giving supplementary feeding in CFC is mostly categorized as obedient. There are 21 mothers (67,7%). While in disobedient category, there are 10 mothers (32,3%).

Table 1: Distribution of the Respondents including Sex, Age of the Infants and the Mothers, the Number of Infants, Birth Space, Occupation, Family Income, Participation and Compliance

No	Respondents' Characteristics	Frequency (f)	Percentage (%)
1	Sex		
	Male	18	58.1
	Female	13	41.9
	Total	31	100
2	Age of the Infants (month)		
	6-11	8	25.8
	12-23	11	35.5
	24-59	12	38.7
	Total	31	100
3	Age of the Mothers (year)		
	< 20	2	6,5
	20-29	23	74,2
	30-40	6	19,4
	Total	31	100
4	Number of Infants		
	in a Family		
	1	25	80,6
	>1	6	19,4
5	Birth Space		
	< 2 years	6	19,4
	>2 years	25	80,6
	Total	31	100
6	Occupation		
	House Wife	27	87,1
	Laborer	4	19,9
	Total	31	100
7	Family Income		
	Rp. ≤ 1.675.000	22	71,0
	Rp. > 1.675.000	9	29,0
	Total	31	100
8	Participation		
	Inactive	6	19,4
	Active	25	80,6
	Total	31	100
9	Compliance		

Disobedient	10	32,3
Obedient	21	67,7
Total	31	100

Source: Primary Data 2015

b. Analysis of Bivariate

Table 2: The Relationship between the Mothers' Participation and Compliance and the Infants' Nutritional Status in CFC Lagarutu

Mothers' Participation	Nutritional Status				Total		X2 (p)	OR (95% CI)
	Less Nutrition		Good Nutrition		n	%		
	n	%	n	%				
Inactive	6	100	0	0	6	100	12,061	6.250
Active	4	16	21	84	25	100	(0,001)	(2.546-15.344)
Total	10	32	21	68	31	100		
Mothers' Compliance							26,593	∞
Disobedient	10	100	0	0	10	100	(0,000)	
Obedient	0	0	21	100	21	100		
Total	10	32,2	21	67,7	31	100		

The data in Table 2 above shows that all women, who are inactive (100%), had infants with malnutrition status, while the active mothers have more infants with good nutritional status, as many as 21 (84,0%), and others have infants with malnutrition status, as many as four (16,0%). Activeness in the participation was assessed when the mothers visit the CFC ≥ 26 days. On the contrary, inactiveness was assessed when the mothers' visiting is < 26 days.

The ρ value = 0,001 ($\rho < 0,05$) was gained from the Chi Square test results or the value of X count (12,061) > X2 Table (3,841) so that Ho in this study is rejected, which means that there is a relationship between the mothers' participation in the activities of the CFC with improved nutritional status of the infants. Based on the calculation of the risk estimate, OR = 6.250 (2.546-15.344) was obtained, which means that the mothers, who did not actively participate in the activities of the CFC, have potentially 6,250 times infants with less nutritional status than the mothers who actively participate.

The data in the table above also shows that all mothers (100%), who are disobedient, have infants with malnutrition status, while all the obedient mothers (100%) have infants with good nutritional status. The

compliance was assessed when the waste food of the respondents is less than 20% from the food served by the CFC officials. In contrast, non-compliance was assessed if the waste food of the respondents is more or the same as 20% from the food served by the CFC officials.

The value $\rho = 0,001$ ($\rho < 0,05$) was gained from the Chi Square test results or the value of X^2 count (26,593) > X^2 Table (3,841) so that H_0 in this study is rejected, which means that there is a relationship between the mothers' compliance in supplementary feeding and the increased nutritional status of the infants who had been treated in the CFC. Based on the calculation of risk estimate, $OR = \infty$ was obtained. It means that the women, who are not obedient in giving supplementary feeding to the infants, have a great chance to have children with malnutrition status compared to the mothers who obediently give supplementary food for their infants.

4. Discussion

Nutritional problem is one determinant of the quality of human resources. Malnutrition will cause the failure of the physical growth and intellectual development and lowered the immune system which results in increased morbidity and mortality. Toddler nutrition problems closely related to consumption patterns. They need to get care in feeding [9].

Community Feeding Center is a government program intended in combating the malnutrition infant based society by providing the supplementary food to the infants and counseling to the mothers.

In this study, the respondents or the research subjects are the infants who experience malnutrition based on the anthropometric index of weight/age with Z score value -3 SD to -2 SD, not suffering from an infectious disease, and willing to become the respondents. Based on the number of the population for 37 infants who had been treated in the CFC, six infants are included in the exclusion criteria, one of them is malnutrition, and five other infants experienced an infectious disease during the treatment.

Based on Table 2, it is known that there is a significant correlation between the mothers' participation and the improved nutritional status of the infants based on the measurement index of weight/age with the ρ value = 0,001. This means that the mothers, who are active in the CFC, have infants with a better nutritional status than those mothers who are not active in the CFC. From the analysis, the value of $OR = 6,250$ (2.546-15.344) was also obtained, which means that the mothers, who do not actively participate in the activities of the CFC, have potentially 6,250 times infants with less nutritional status than the mothers who actively participate.

The findings of this research are in line with the studies showing a significant relationship between the activeness of the family variable in integrated health center activities and the nutritional status of the infants. The family, who are not active in integrated health center, has 6,857 times greater risk to be affected the nutritional status of PEM compared to the families who are not active [10]. The mothers' participation is show seen a significant correlation between the level of the mothers' participation in integrated health center and the TB incidence, the past nutritional status of the kindergarten students, and the level of knowledge and behavior of the mothers. The better the mothers' level of participation in integrated health center, the greater the possibility for the infants to not suffer from TB [11].

Based on Table 2, from 6 mothers who are not active in the CFC, 100% their infants are not improved in terms of nutritional status. In other words, their infants remain in a state of malnutrition status. This happens due to the lack of the mothers' participation in the activities of the CFC so that the infants, who are supposed to increase the nutritional status, are still experiencing malnutrition because they do not get supplementary food to meet their nutritional needs in order to sustain growth. The inactiveness of mothers can be caused by various factors, such as age, education, and occupation of the mother.

In this study, it is known that young adults (20-29 years) participate actively than mothers in young age (<20 years) and middle age (30-40 years). Mother becomes active to join the CFC in young adults (20-29 years) because at that age, the mother has the cognitive abilities and more complex moral judgments so that it encourages the mother to take a decision in actively visit the CFC greater than in the young age. Mother in young adulthood is more open-minded to advance and very worry about the development of their infants [12].

In addition, education can affect a person's level of participation. The results show that the mothers, who have higher education, are more active than those mothers with low education. A person with a higher education is easier to accept and understand the information about the good parenting and maintaining the health of their families [13].

Mothers' participation is also influenced by the occupation of the mother. The type of a person's occupation will affect the amount of free time that they have to participate in various activities in the community [14]. Working parents, especially mothers, also do not have the available free time to their children, especially in the morning so the mothers cannot bring their infants to the CFC in the working hours. It is also due to the absence of other family members, such as a husband or grandmother who drove their infants to the CFC. Mothers, who do not work, have more spare time to give attention to their infants by bringing them to the CFC.

Participation is also seen in the results of a research conducted by Anwar *et al* (2010) with the title of "High Participation in the Posyandu Nutrition Program Improved Children Nutritional Status" showing that the activities in integrated health center have a positive impact on the nutritional status of the children under five years, measured in terms of weight to age (W/A) and weight for height (W/H) [15]. The more frequent the mother visits to the integrated health center, the better the nutritional status of their infants will be. A similar study is also found by Asdhany, *et al* (2012) that shows that there is a relationship between the participation rate of the mothers in integrated health center activities and the nutritional status of their infants by weight/age ($p=0,030$; $r=0,651$), where the higher the participation rate of mothers in the activities of Integrated health center, the better the nutritional status of their infants will be by weight/age [16].

Basically, the role or participation of the mother in the family is very determinate to the nutritional status of their infants. This can be seen clearly in the research conducted by Diallo FB, *et al* (2014) with the title "Participation of Parents in a Nutritional Education Program in Schools and Development of Eating Behaviors of Children". The study shows the importance of the parents' participation in the nutrition education interventions at school [17].

Participation is not the only one factor affecting the nutritional status, but rather a variety of factors, such as the amount of intake of nutrients consumed. Energy consumption and less protein for a certain period will lead to the malnutrition. The level of consumption is determined by the quality and quantity of the dishes. Good nutritional status can be achieved when the body gets enough of substances to be used so that the physical growth and brain development can work optimally [18].

Thus, some researches, which is not in line with the findings of this research, show no correlation between the mothers' participation and the infants' nutritional status. It can be seen in the results of the study Rarastiti indicates that there is no correlation between the participation of the mothers carrying their children to the integrated health center and the nutritional status of their children aged 1-2 years with $p=0,238$ [19]. This finding is consistent with the research done in Purworejo and Bone stating that there is no correlation between the levels of the mothers' participation in integrated health center activities and the nutritional status of the children under two years old. Other studies are also found inconsistently done by Wahyuningtyas (2015) with the title of the study "The Relationship between the Mothers' Perception and the Infants' Participation to the Integrated Health Center and the Incidence of Stunting to the Children Aged 36-59 Months in the Working Area of Public Health Center in Surakarta" with the research finding that there is no correlation between the participation of the infants going to the integrated health center and the incidence of stunting ($p=0,183$) [20].

Based on Table 2, it is known that there is a significant correlation between the maternal compliance in giving supplementary feeding and the improvement of the nutritional status of the infants based on the measurement index of weight/age with the value $\rho=0,000$. This shows that the mothers, who obediently give supplementary food, have infants with better nutritional status than those mothers who do not. From the analysis, the value of $OR = \infty$ is also available, which means that the mother, who are not obedient in giving supplementary feeding to their infants, have a tremendous opportunity to have children with malnutrition status compared to those mothers who obediently give supplementary food to their infants.

These findings are consistent with the studies in Gorontalo Province which show that there is a significant relationship between the maternal compliance and the nutrition status practically and statistically ($OR=2,44;95\% CI=1,16-5,12$). This means that the mothers, who are not compliance, risk 2,44 times greater in the group of malnutrition, where the contribution of the mothers, who are not compliance, can predict the nutritional status and the malnutrition of the infants for 3% [21].

Talking about the compliance, it also can be seen in the findings of the research conducted by Noviket *al* (2015) with the title "The Relationship between the Compliance in Drinking Iron Tablet and the Nutritional Status of the Pregnant Women and the Weight of the Infants Born in Gondosari PHC Gebog District Kudus Regency" indicating that there is a relationship between the iron tablets compliance and the nutritional status of the pregnant women with the babies' birth weight [22]. The research, which is also relevant for the compliance, can be seen in a study conducted by Syifik and Nana (2010), which indicates that there is a significant relationship between the attitude of the obedience consumption of iron tablet and the hemoglobin levels in the pregnant women in public health center District of Palmerah, West Jakarta Administration Town [23].

Compliance can also be seen in a study conducted by Rohgunanto (2003) ⁽²⁴⁾ entitled "The Effect of the Compliance in Drinking Anti Tuberculosis and the Levels of Consumption of Energy Protein toward the Nutritional Status Changes of the Infants' Malnutrition with TB Lung (Study in District of Kesambi, Cirebon)" which shows the results that there is an effect of the compliance in Drinking Anti Tuberculosis toward the nutritional status changes of the infants ($p=0,003$) [24]. Similar studies can be seen in the title of the research "The Compliance of the Mothers in Giving Nutrition as instructed by the Officers and the Infants' Nutritional Status as Malnutrition in the Therapeutic Feeding Center in Gorontalo Regency 2008-2010" conducted by Nancy (2014) with the proportion of the research findings. The mothers, who do not comply with the instructions to provide the nutrition to their children, are greater in the group of malnourished than in the group of normal nutrition, where the compliance mother have a significant relationship with the lower nutritional status (OR=2,44, 95% CI=1,09-5,48) [25].

The state of malnutrition to the babies, infants, and children may occur due to the intake nutrient needed is not met, as well as the custom gift of weaning improper. This situation requires the handling not only by the provision of food, but also by more communicative approach based on the mothers' level of education and knowledge about the complementary feeding [26].

Several other studies also explain that there is a positive relationship between the patient compliance in taking supplements and an increase in body weight of the patient. Patients, who obediently follow the doctor's advice, can promote weight loss of 0,5 kg compared to those who are disobedient, the weight loss of 0,7 kg [27].

The patients who are obedient in consuming the supplements regularly as instructed by the personnel, the energy and protein entering to their body will be greater. The research conducted by Dada, *et al* (2012) with the title "Relationship between the Mothers' Behavior in Feeding and the Parenting with the Infants' Nutritional Status in Sukaresmi District, Garut" shows result that there is no correlation between the behavior of the mother in caring for children and the nutritional status of the children, ($p=0,021$) [28].

This finding is contrast with the research showing that 63,6% of the subjects obediently consume food according to the recommended amounts that have uncontrolled blood glucose. $P=0,063$ ($>0,05$) was obtained from the analysis using Spearman Rank. It means that H_0 is accepted, meaning no correlation accuracy of foods and the blood glucose status of the patients with Type 2 DM outpatients [29].

Based on Table 2, the mothers, who are not obedient to give supplementary food, have 100% malnutrition infants. The disobedient of the mothers is due to not know how to feed their babies and infants, as well as the habits that are detrimental to the health, directly and indirectly become the main cause of the malnutrition to their infants, especially to the children under 2 years old. In addition, the consumption of food, which is not enough energy, is usually lacking in one or more other essential nutrients. Energy consumption and less protein for a certain period will lead to the malnutrition so to ensure the growth, the development, and health of the infants, nutrient intake is quite necessary [30].

Mothers, who actively participate, are not necessarily obedient in giving extra food. The same case happened

when doing the research. It was found that some mothers do not feed the food to their infants until the food runs out. In addition, the mothers' participation is not the only one factor affecting the maternal compliance, but there are a number of factors.

The mothers' age and education can affect the mothers' level of compliance. Mothers with young adults and mothers with higher education are more obedient than the mothers' in young age and middle age, and mothers with low education. This is because the young adult age is the age of maturity to think in making decisions. At this age, the women are more receptive to the guidance and input from the health workers compared to the younger age or older. This is consistent with the theory that the low compliance of the mothers is affected by the low level of education and the age, which is too young or too old [31].

Knowledge or cognitive domain is very important to the formation of a person's behavior because knowledge will stimulate a change in attitude or action of an individual [32]. Compliance based on the knowledge, awareness, and a positive attitude will be lasting. Conversely, if the compliance is not based on the knowledge and awareness, then it will not last long [33].

Based on Table 2, the obedient mothers have 100% children with good nutritional status. The improved nutritional status of the infants is due to the fulfillment of the nutrition used to grow. This is consistent with the literature that says that the consumption of food affects the nutritional status of a person. The good condition of nutritional status can be achieved when the body gets enough substances to be used efficiently so to enable the physical growth, brain development, and the ability to work to achieve the optimal health levels are possible [34].

Basically, the infants should get nutrition based on their needs in order to sustain the growth since the age of five. Children play a lot and the energy or all nutrients needed are only from the outside. While at this time, the more energy is required for the growing process with the increasing age. A research conducted by Titih, *et al* entitled "Improving the Nutritional Status of the Acute Malnutrition Infants through Home Care Program" shows that after the home care program, a significant improvement on the nutritional status of children was happened ($p < 0.05$) [35].

Children under five are the group that shows the rapid growth of the body so it requires sufficient nutrients for each kilogram of body weight. Food provides some nutrients needed for the growth at each level of the development and the age, namely to the babies, infants, and preschool years. The right and appropriate selection of foods can be useful in the nutritional adequacy used in the physical, social, psychological, and emotional development [36].

The nutritional status problem of the infants is also determined by the frequency of eating of the infants. As the finding of a research conducted by Indah, *et al*, it is indicated that there is a relationship between the frequency of eating of the infants and their nutritional status ($p < 0,05$) [37].

Eating pattern for the infants is very important in the infants' growth process because inside the food, there are a lot of nutrients. Nutrition becomes a very important part in the growth. Nutrition has a very close relationship

with the health and intelligence. If the eating pattern is not achieved well in young children, the growth of the infants will be disturbed, thin body, short, even malnutrition occurs among them [38].

So many nutrients are needed in the development of the infants. As it is mentioned in the journal of Zhao X, *et al*, in which the study of vitamin D to the infants began limited in China, which later became the background of the authors to examine the issue [39]. The study done by Lopez, *et al* also states that Zinc is an essential nutrient needed for various metabolic functions to the infants [40].

The life of the children as the assets of human resources and the next generation is needed to be considered. In order to achieve the optimal academic achievement, the students are exposed to be able to handle the various problems and obstacles. The nutritional status should be pursued to improve the learning achievement. Adequate nutrition and food is one of the most important factors in the development of the qualified human resources to be more maximal [41].

5. Conclusion

Based on the findings, it can be concluded that there is a relationship between the mothers' participation in the CFC activities and the improvement of the infants' nutritional status in CFC Lagarutu with the statistical test results was obtained the ρ value=0,001 and OR=6,250. It means that the mothers, who do not actively participate, risk 6,250 times to have malnutrition infants than those mothers who actively participate. In addition, it is also known that there is a relationship between the mothers' compliance in giving supplementary feeding and the improvement of the infants' nutritional status in CFC Lagarutu with the statistical test results was obtained the ρ value=0,000 and OR= ∞ . It means that the mothers, who are disobedient, have potentially malnutrition infants with big opportunity than those mothers who are obedient in giving the supplementary feeding. Thus, it is recommended that the mothers of the infants must be active in the CFC program and compliance in providing the supplementary food to their infants in order to improve the nutritional status of the infants.

Reference

- [1]. Margaret, C. Underweight in Children (Serial on the internet). 2015. (Cited on 2015 January 26); Available from http://www.who.int/gho/mdg/poverty_hunger/underweight_text/en/.
- [2]. Kemenkes RI. Riset Kesehatan Dasar (RISKESDAS), Badan Penelitian dan Pengembangan Kesehatan. Jakarta. 2013.
- [3]. Dinas Kesehatan Kota Palu. Kasus Gizi Buruk di Kota Palu Tahun 2014, Seksi Gizi, Palu. 2014.
- [4]. Krisno A. Dasar-Dasar Ilmu Gizi. Malang: UMMPRES. 2004.
- [5]. Dinas Kesehatan Kota Palu. Kasus Gizi Buruk di Kota Palu Tahun 2014, Seksi Gizi, Palu. 2014.
- [6]. Dinas Kesehatan Kota Palu. Petunjuk Teknis Community Feeding Center (CFC). Seksi Gizi, Palu. 2012.
- [7]. Notoadmojo S. Pendidikan Ilmu Perilaku Kesehatan. Rineka Cipta. Jakarta. 2003.
- [8]. Notoadmojo S. Metodologi Penelitian Kesehatan, Rineka Cipta, Jakarta. 2012.

- [9]. Anggraini S. Pengaruh Pemberian Makanan Tambahan Pemulihan (Pmt-P) terhadap Pertumbuhan Balita Bawah Garis Merah (BGM) Di Puskesmas Kota Wilayah Selatan Kediri. *Jurnal Stikes Baptis Kediri*. 2014. Vol 4. No 1.
- [10]. Notoadmojo S. *Metodologi Penelitian Kesehatan*, Rineka Cipta, Jakarta. 2012.
- [11]. Madanijah dan Triana. Hubungan Antara Status Gizi Masa Lalu Anak dan Partisipasi Ibu di Posyandu Dengan Kejadian Tuberkulosis Pada Murid Taman Kanak-Kanak. (Serial on the internet) *Jurnal Gizi dan Pangan*, March 2007 2(1): 29-41. (Cited on 2015 October 12) Available from journal.ipb.ac.id/index.php/jgizipangan/article/download/4400/2967.
- [12]. Maulana A. Hubungan Keaktifan Ibu dalam Posyandu dengan Penurunan Jumlah Balita Bawah Garis Merah (BGM) di Desa Suko Jember Kecamatan Jelbuk Kabupaten Jember. *Skripsi. Nursing Science Study Program. Jember University*. 2013.
- [13]. Nilawati. Pengaruh Karakteristik Kader dan Strategi Revitiasi Posyandu terhadap Keaktifan Kader di Kecamatan Samadua Kabupaten Aceh Selatan. Unpublished. Thesis of Post-Graduated Program of Sumatera Utara University, Medan. 2008.
- [14]. Notoadmojo S. *Pendidikandan Ilmu Perilaku Kesehatan*. Rineka Cipta. Jakarta. 2003.
- [15]. Anwar, et al. High Participation in the Posyandu Nutrition Program Improved Children Nutritional Status. (Serial on the internet) *Nutr Res Pract*. 2010 Jun;4(3):208-14. doi: 10.4162/nrp.2010.4.3.208. Epub 2010 June 28. Department of Community Nutrition, Faculty of Human Ecology Bogor Agricultural University, Darmaga, Bogor 16680, Indonesia. (Cited on 2015 October 12). Available from <http://www.ncbi.nlm.nih.gov/pubmed/20607066>.
- [16]. Asdhandy, et al. Hubungan Tingkat Partisipasi Ibu dalam Kegiatan Posyandu dengan Status Gizi Anak Balita (Studi di Kelurahan Cangkiran Kecamatan Mijen Kota Semarang). 9Serial on the internet). Thesis. Medicine Faculty. Nutrition Science Department. Undip. 2012. (Cited on 2015 October 11). Available from <http://eprints.undip.ac.id/38391/>.
- [17]. Diallo FB, et al. Participation of Parents in A Nutritional Education Program in Schools and Development of Eating Behaviours of Children. (Serial on the internet). *Canadian Journal Public Health*. Universite de Montreal. 2014. (Cited on 2015 October 11). Available from <http://www.ncbi.nlm.nih.gov/pubmed/25560888>.
- [18]. Kemenkes RI. *Panduan Penyelenggaraan Pemberian Makanan Tambahan Pemulihan Bagi Balita Gizi Kurang*, Ditjen Bina Gizi Kesehatan Ibu dan Anak, Jakarta. 2011.
- [19]. Rarastiti C.N. Hubungan Karakteristik Ibu, Frekuensi Kehadiran Anak ke Posyandu, Asupan Energi dan Protein dengan Status Gizi Anak Usia 1-2 Tahun. Unpublish. Thesis of Undergraduated Degree. Semarang. University Diponegoro. 2013.
- [20]. Wahyuningtyas. Hubungan Persepsi Ibu dan Partisipasi Balita ke Posyandu Dengan Kejadian Stunting Pada Balita Usia 36-59 Bulan di Wilayah Kerja Puskesmas Gilingan Surakarta. (Serial on the internet). 2015. Nutrition Science Department. Undergraduate degree. Muhammadiyah Surakarta University. (Cited on 2015 October 12). Available from eprints.ums.ac.id/36634/17/NASKAH%20PUBLIKASIdhina.pdf.
- [21]. Oly N. Kepatuhan Ibu Memberi Asupan Gizi Sesuai Instruksi Petugas dan Status Gizi Balita Gizi Buruk di Therapeutic Feeding Centre Kabupaten Gorontalo. Thesis, Yogyakarta, Gajah Mada

University. 2012.

- [22]. Novik, et al. Hubungan Kepatuhan Minum Tablet Besidan Status Gizi Ibu Hamil dengan Berat Badan Bayi Lahir di UPT Puskesmas Gondosari Kecamatan Gebog Kabupaten Kudus. (Serial on the internet). Nutrition Study Program. Health and Nursing Faculty. Muhammadiyah University. Semarang. 2015. (Cited on 2015 October 10). Available from jurnal.unimus.ac.id/index.php/jgizi/article/download/1410/1463.
- [23]. Syifik dan Nanang. Sikap Kepatuhan Konsumsi Tablet Fe Terhadap Kadar Hb Ibu Hamil Yang Berkunjung ke Puskesmas Kecamatan Palmerah Kota Administrasi Jakarta Barat. (Serial on the internet). 2010. (Cited on 2015 Oktober 10). Jurnal gizi Vol.2 No.2. Available from www.esaunggul.ac.id > Esa Unggul.
- [24]. Rohgunanto. Pengaruh Kepatuhan Minum Obat Anti Tuberkulosis dan Tingkat Konsumsi Energi Protein terhadap Perubahan Status Gizi Balita Gizi Buruk Penderita Tb Paru (Studi di Kecamatan Kesambi Kota Cirebon. Jurnal Gizi dan Pangan. (Serial on the internet) Maret 2007 2(1): 29-41. (Cited on 2015 Oktober 12) journal.ipb.ac.id/index.php/jgizipangan/article/download/4400/2967.
- [25]. Oly N. Kepatuhan Ibu Memberi Asupan Gizi Sesuai Instruksi Petugas Dan Status Gizi Balita Gizi Buruk Di Therapeutic Feeding Centre Kabupaten Gorontalo. Thesis, Yogyakarta, Universtas Gajah Mada. 2012
- [26]. Supriyanti E. Studi Pola Pemberian MP-ASI Pada Baduta (6-24 Bulan) Di wilayah Kerja Puskesmas Semeru Kecamatan Benowo Kota Surabaya. Skripsi. 2009
- [27]. Panggaribuan J, Erhardi J, Scherbaun V, Biesalski HK. Vitamin A capsule distribution to control vitamin A deficiency in Indonesia: effect of supplementation in pre-school children and compliance with the programme. Public health Nutrition. 2002
- [28]. Dadang, dkk. Hubungan Perilaku Ibu dalam Pemberian Makan dan Pola Asuh dengan Status Gizi Balita Di Kecamatan Sukaresmi Kabupaten Garut. (Serial on the internet). 2012. Available from pustaka.unpad.ac.id/.../The-Correlation-Between-Maternal-Behavior.pdf. Dikases 12 Oktober 2015
- [29]. Ardyana D. Hubungan Pola Makan Dengan Status Glukosa Darah Puasa Pasien Diabetes Mellitus Tipe 2 Rawat Jalan Di Rumah Sakit Muhammadiyah Surakarta. Skripsi. Surakarta. Universitas Muhammadiyah Surakarta. 2014
- [30]. Krisno A. Dasar-dasar ilmu gizi. Malang: UMMPRES. 2004
- [31]. Schoetzau A, Gehring U, Franke K, Grübl A, Koletzko S. Maternal compliance with nutritional recommendations in an allergy preventive programme. Arch Dis Child. 2002
- [32]. Oly N. Kepatuhan Ibu Memberi Asupan Gizi Sesuai Instruksi Petugas Dan Status Gizi Balita Gizi Buruk Di Therapeutic Feeding Centre Kabupaten Gorontalo. Thesis, Yogyakarta, Universtas Gajah Mada. 2012
- [33]. Oly N. Kepatuhan Ibu Memberi Asupan Gizi Sesuai Instruksi Petugas Dan Status Gizi Balita Gizi Buruk Di Therapeutic Feeding Centre Kabupaten Gorontalo. Thesis, Yogyakarta, Universtas Gajah Mada., 2012.
- [34]. Dinas Kesehatan Kota Palu. Petunjuk Teknis Community Feeding Center (CFC). Seksi Gizi, Palu. 2012
- [35]. Titih, dkk. Upaya Peningkatan Status Gizi Balita Malnutrisi Akut Berat Melalui Program Home Care. (serial on the internet). 2012. (Cited on 2015 Oktober 12) Jurnal Kesehatan Masyarakat Nasional. Vol 9

- No. 2 .Available from jurnalkesmas.ui.ac.id/index.php/kesmas/article/view/507.
- [36]. Suhendri, U. Faktor-Faktor yang Berhubungan dengan Status Gizi Anak di Bawah Lima Tahun (Balita) di Puskesmas Sepatan Kecamatan Sepatan Kabupaten Tangerang. 2009.
- [37]. Indah, dkk. Status Gizi Berdasarkan Pola Makan Anak Sekolah Dasar di Kecamatan Rajeg Tangerang. (serial on the internet). Desember 2014. (cited on 2015 November 4). Indonesian Journal of Human Nutrition, Vol. 1 No.2 : 135 – 148. Available from ijhn.ub.ac.id/index.php/ijhn/article/download/109/115
- [38]. Purwani, E. Pola Pemberian Makan Dengan Status Gizi Anak Usia 1sampai 5 Tahun di Kabunan Taman Pemalang. (serial on the internet). 2013. (Cited on 2015 November 4). Jurnal Keperawatan Anak . Volume 1, No. 1, Mei 2013; 30-36. 30. Available from download.portalgaruda.org/article.php?article=98477&val=5091
- [39]. Zhao X, dkk. Vitamin D Status among Young Children Aged 1-3 Years: A Cross-Sectional Study in Wuxi, China. (serial on the internet). Oktober 2015. (Cited on 2015 November 4). PLoS One. 2015 Oct 27;10(10):e0141595. doi: 10.1371/journal.pone.0141595. Available from <http://www.ncbi.nlm.nih.gov/pubmed/26505743>
- [40]. Lopez, dkk. Nutritional assessment methods for zinc supplementation in prepubertal non-zinc-deficient children. (serial on the internet). Oktober 2015. (Cited on 2015 November 4). Food Nutr Res. 2015 Oct 26;59:29733. doi: 10.3402/fnr.v59.29733. Available from <http://www.ncbi.nlm.nih.gov/pubmed/?term=nutritional+status+of+children>
- [41]. Syatywati R. Hubungan Antara Status Gizi dengan Prestasi Belajar Anak Sekolah Dasar di Desa Grenggeng Kecamatan Karanganyar Kebumen. (serial on the internet). 2013. (Cited on 2015 November 4). Available from eprints.ums.ac.id/24354/12/NASKAH_PUBLIKASI.pdf