The Analysis of Risk Factors Associated with Nutritional Status of Toddler in Posyandu of Beringin Village, Alalak Sub-District, Barito Kuala District

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ABSTRACT

Barito Kuala is one of the regencies in South Kalimantan with the highest prevalence of underweight with a percentage of 20.7%. In 2017, malnutrition occurred in Alalak District as many as 374 children under five (30.6%) with the highest nutritional status, namely in Beringin Village as many as 57 toddlers (16%). Research aim to explain the relationship between risk factors and nutritional status of children in the Posyandu of Beringin Village, Alalak Sub-District, Barito Kuala District. This study used an observational method with cross-sectional design. The sample was 98 respondents with proportional random sampling. Data were analyzed using chi square and Fisher exact test for bivariate, and logistic regression test for multivariate. The results showed that there was a relationship between maternal nutritional knowledge (p-value 0.043) and feeding practices (p-value 0.0001) with the nutritional status of children, while the gender factor (p-value 0.873), the age of the toddler (p-value 0.570), infectious disease (p-value 0.105), the last education of the mother (p-value 0.182), father’s last education (p-value 0.290), family income (p-value 0.790), and number of children (p-value 1.000) showed no relationship with nutritional status of children under five. Multivariate results showed that the most dominant feeding practice was related to p-value 0.001 and the PR value is 5.875 times the impact on nutritional status.

Keywords: Nutritional Status, Malnutrition, Risk Factors, Toddler.

INTRODUCTION

Problem nutrition in infants remains a challenge that must be addressed seriously, among which malnutrition.¹ The global prevalence of undernutrition in 2014 was 2.4%.² In 2013, the prevalence of malnutrition in children under five increased to 19.6%.³ South Kalimantan ranks 5th the highest malnutrition in Indonesia with a prevalence of 27.4%. Barito Kuala District is one of the contributors to the malnutrition (W/A<2DS) highest.⁴ A report from the Barito Kuala Health Office, the highest incidence of malnutrition in Alalak Sub-District was 30.6%. The villages with the highest nutritional status in under five children are in the village of Beringin as much as 16%.

The causes of malnutrition in children under five are directly include inadequate intake of food as well as their accompanying infectious diseases. The indirect causes include family income, number of children, parenting, maternal education, and individual health services and environmental sanitation. The factors associated with under-five nutritional status are children’s characteristics (including food intake, age, and sex), parenting style and family characteristics (including maternal knowledge about nutrition and feeding practices), as well as community characteristics, demographics and social.⁶ ⁷

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MATERIALS AND METHOD

The research design was quantitative research with cross sectional. The population is all children under five in the Posyandu area in Beringin Village, Alalak Sub-District, Barito Kuala District. While the sample of 98 respondents obtained from the calculation using the lemeshow proportion difference test formula. The sampling technique uses proportional random sampling. Data were analyzed using chi square and Fisher exact test for bivariate, and logistic regression test for multivariate with 95% significance level.

RESULTS AND DISCUSSION

Bivariate Analysis

Table 1. The Bivariate Analysis of Variables

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>Category</th>
<th>Nutritional Status</th>
<th>Total</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Malnutrition</td>
<td>Normal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Gender</td>
<td>Male</td>
<td>16 (41.01%)</td>
<td>23 (59.0%)</td>
<td>39 (100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>22 (37.3%)</td>
<td>37 (62.7%)</td>
<td>59 (100%)</td>
</tr>
<tr>
<td>2</td>
<td>Age</td>
<td>12-36 month</td>
<td>30 (41.1%)</td>
<td>43 (58.9%)</td>
<td>73 (100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>37-60 month</td>
<td>8 (32.0%)</td>
<td>17 (68.0%)</td>
<td>25 (100%)</td>
</tr>
<tr>
<td>3</td>
<td>Infectious disease</td>
<td>Chronic</td>
<td>5 (71.4%)</td>
<td>2 (28.6%)</td>
<td>7 (100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute</td>
<td>33 (36.3%)</td>
<td>58 (63.7%)</td>
<td>91 (100%)</td>
</tr>
<tr>
<td>4</td>
<td>Last education of mother</td>
<td>Low</td>
<td>33 (42.9%)</td>
<td>44 (57.1%)</td>
<td>77 (100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>5 (23.8%)</td>
<td>16 (76.2%)</td>
<td>21 (100%)</td>
</tr>
<tr>
<td>5</td>
<td>Last education of father</td>
<td>Low</td>
<td>26 (35.1%)</td>
<td>48 (64.9%)</td>
<td>74 (100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>12 (50.0%)</td>
<td>12 (50.0%)</td>
<td>24 (100%)</td>
</tr>
<tr>
<td>6</td>
<td>Mother’s knowledge on nutrition</td>
<td>Lack</td>
<td>20 (52.6%)</td>
<td>18 (47.4%)</td>
<td>38 (100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Good</td>
<td>18 (30.0%)</td>
<td>42 (70.0%)</td>
<td>60 (100%)</td>
</tr>
<tr>
<td>7</td>
<td>Feeding practice</td>
<td>Lack</td>
<td>30 (57.7%)</td>
<td>22 (42.3%)</td>
<td>52 (100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Good</td>
<td>8 (17.4%)</td>
<td>38 (82.6%)</td>
<td>46 (100%)</td>
</tr>
<tr>
<td>8</td>
<td>Family income</td>
<td>Low</td>
<td>32 (40.0%)</td>
<td>48 (60.0%)</td>
<td>80 (100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>6 (33.3%)</td>
<td>12 (66.7%)</td>
<td>18 (100%)</td>
</tr>
<tr>
<td>9</td>
<td>Number of children</td>
<td>Not Ideal</td>
<td>8 (38.1%)</td>
<td>13 (61.9%)</td>
<td>21 (100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ideal</td>
<td>30 (39.0%)</td>
<td>47 (61.0%)</td>
<td>77 (100%)</td>
</tr>
</tbody>
</table>
Based on table 1, the variables of gender with the nutritional status of children using the Chi-Square test obtained p-value of 0.873. This indicates no relationship between gender and nutritional status of children, it caused that between the sexes men and women at the age of five depend on feeding practice given by the mother. If the mother did good feeding practice, the nutritional status of children will be good and vice versa. So that the sex factor influences are controlled, the practice of feeding from mothers in determining the nutritional status of children. There was no significant relationship between gender and nutritional status of children (p-value=1.557). Although the nutritional status is influenced by biological determinants which include sex, but it is not significant if the presence of other factors such as practical on controlling feeding in influencing the nutritional status of children.7,8

Analysis of age variables with nutritional status of children using Chi-Square test obtained p-value of 0.570 which means there is no relationship between age and nutritional status of children. This occurs because other factors such as feeding practice. Children aged 37-60 months can convey their wishes to parents about what foods they want to consume so that the practice of feeding parents determines the nutritional status of children. Likewise with a group of children aged 12-36 months, the role of maternal nutrition knowledge is needed in feeding the toddlers. Children under five with ages 12-36 months are passive groups so that the role of parents is needed in fulfilling the nutritional status of children under five. There is no relationship between age and nutritional status of children under five p-value=0.05 (sig 0.068).9,10

Analysis of infectious disease variables with nutritional status of children using the Fisher’s Exact Test obtained p-value of 0.105. This means there is no relationship between infectious diseases and nutritional status of children. Because only found toddlers with the most infectious diseases are acute types of diseases, such as acute respiratory infection (ARI) and diarrhea. This type of acute disease does not last long (not chronic). In addition, if children under five are given good feeding practices, infectious diseases tend not to affect the nutritional status of children under five. The effects of infectious diseases on nutritional status in children vary, depending on the consumption patterns from parents, the kind of food that is able to consume the child and treatment efforts when the period of the disease. In line with there was no significant relationship between chronic infectious diseases and nutritional status in children under five, with a p-value of 0.289 (p>0.05).11,12

Analysis of the variables of the last education level of mothers with nutritional status of children using the Chi-Square test obtained p-value of 0.182. This means that there is no relationship between the last level of education of the mother and the nutritional status of Bali, because mothers with the last low education level still have the same opportunity like the last educated mother to access information about her nutritional status through counseling activities at the Posyandu. This proved that mothers with low education found some who had good knowledge and pre-feeding skills to keep the nutritional status of children well. A high education does not necessarily guarantee good behavior related to maternal health and nutritional status of children. Mothers who have high or low education have an opportunity to get good information and knowledge to support their health behavior and nutritional status. Between education and nutritional status obtained p-value of 0.471 which means that there is no relationship between maternal education and nutritional status of children under five.13,14

Variable analysis of the father’s last education level with nutritional status of children using the Chi-Square test p-value obtained 0.290. This means there is no relationship between the level of education of the father and the nutritional status of children under five. The fact shows that the role of fathers is more work than related to the nutritional continuity of toddlers. Although the level of education of fathers determines the family income generated, not all families with fathers with low education have children with low nutritional status. The nutritional status of toddlers is determined more by mothers who have direct contact with toddlers in providing feeding practices according to their nutritional needs. The results of the study showed that father’s education was found to be the most with the basic category, namely 62 people (73.8%).15

Variable analysis of maternal nutrition knowledge with nutritional status of children using the Chi-Square test obtained p-value of 0.043. This means that there is a relationship between maternal nutritional knowledge and nutritional status of children. The facts show that knowledge underlies mothers to behave in providing food to their children. Mothers who have good knowledge about nutritional status, tend to be
more selective in feeding toddlers so that the nutritional status of children is well maintained. On the contrary, mothers who have less knowledge tend not to pay attention to how the practice of feeding on toddlers in accordance with nutritional requirements so that children are vulnerable to experiencing nutritional problems such as malnutrition. Knowledge about nutrition is needed to overcome problems arising from nutritional consumption. Mother as the person responsible for responsible for food consumption for families, mothers must have knowledge about nutrition through both formal and informal education. The results of Pearson chi-square statistical test showed that there was a relationship between maternal knowledge about child nutrition and nutritional status of children under five years of age in the working area of Rejosari Community Health Center in Sari Village, Tenayan Raya City, Pekalongan (p value of 0.004 < α 0.05). 7, 16

Analysis of the variables of feeding practices with nutritional status of children using Chi-Square test obtained p-value of 0.0001. This means that there is a relationship between the practice of feeding and the nutritional status of children in the Posyandu of Beringin Village, Alak Sub-District, Barito Kuala District. Because, there is feeding practice given by mothers determining the nutritional status of children. Mother giving good feeding practices have a chance to have a child with a normal nutritional status than mothers who are not good in feeding. Food consumed by children under five depends on the feeding practices carried out by people old, especially mother. 8, 17

Analysis of family income variable with nutritional status of children under five using the Chi-Square test obtained p-value of 0.790. This means that there is no relationship between family income and nutritional status of children. The fact shows that family income in the study area has more temporary employment and has income below the Barito Kuala District Minimum Wage, which is < 2,454,671. However, this is not a factor related to the nutritional status of children. There is no relationship between the economic level and nutritional status in the Air Tawar Barut Urban Village in Padang with p-value of 0.868. 18

Variable analysis of the number of children with nutritional status of children under five using the Chi Square test obtained p-value of 1.000. This means there is no relationship between the number of children with nutritional status of children under five. Facts show that there is a person’s ability old meets food needs along with the increasing number of children in the family. Families who have a number of children are not ideal, on average from families who have high income so that they are able to meet the nutritional adequacy of their family members. Poor families will more easily meet their food needs if their family members are small. There was no significant relationship between the number of children in the family and the nutritional status of children. 19, 20

**Multivariate Analysis**

![Multivariate Analysis Diagram]

**Figure 1. The Multivariate Analysis of Variables**

Based on Figure 1, it is known that the practice of feeding with a p-value of 0.001 and the prevalence ratio (PR) value is the highest, namely 5.875 times the effect on the nutritional status of children. This means practical feeding is the most dominant factor associated with the nutritional status of children in Posyandu Beringin, Alak Sub-District, Barito Kuala District.

Maternal nutritional knowledge on multivariate analysis showed a non-significant relationship with nutritional status of children although the bivariate analysis showed a significant relationship. This is due to the influence of other variables that are stronger, considering the influential variables are analyzed all at once so that the possibility of being controlled by variables has a greater influence on the practice of feeding.

Despite the knowledge of good maternal nutrition but do not carry out daily feeding practice good for babies it will lead to nutritional problems such as lack of nutrition. Conversely, if the knowledge of maternal nutrition is under-fives, the practice of feeding the toddlers is used done well in the family will support a good nutritional status. This is because behavioral sharing in enabling good feeding is not only based on good nutrition knowledge but other factors as support such as habits applied in the family. 21
CONCLUSION

Based on the research that has been done at the Posyandu of Beringin Village, Alalak Sub-District, Barito Kuala District, it can be concluded that there is a relationship between maternal nutritional knowledge (p-value 0.043) and feeding practices (p-value 0.0001) with nutritional status of children, while gender factors (p-value 0.873), toddler age (p-value 0.570), infectious disease (p-value 0.105), mother’s last education (p-value 0.182), father’s last education (p-value 0.290), family income (p-value 0.790) and the number of children (p-value 1.000) showed no correlation with the nutritional status of children, and the most dominant factor of feeding practice was related (p-value 0.001) and the PR value was 5.875 times the effect on the nutritional status of children.

Ethical Clearance: This study approved and received ethical clearance from the Committee of Public Health Research Ethics of Medical Faculty, Lambung Mangkurat University, Indonesia. In this study, we followed the guidelines from the Committee of Public Health Research Ethics of Medical Faculty, Lambung Mangkurat University, Indonesia for ethical clearance and informed consent. The informed consent included the research title, purpose, participants’ right, confidentiality, and signature.

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Conflict of Interest: The authors declare that they have no conflict interests.

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