The Immunization Status and Nutritional Knowledge Level of the Mother Influence the Nutritional Status of Toddlers in the Nambo Primary Health Care Working Area, Kendari City

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ABSTRACT

Background*: Due to their golden age of physical development and intelligence, infants nutritional status requires special consideration. Preliminary investigations at the Nambo Primary Health Care found that 19 toddlers suffered from wasted, with four being severely wasted.* ***Purpose****: The purpose of this study is to examine the influence of the toddler's immunization status and the mother's level of nutritional education on the nutritional status of infants in the Nambo Primary Health Care working area.* ***Methods****: This study utilized a case-control design in the Nambo Primary Health Care working area from November to December 2022. This investigation included 69 toddlers as participants (23 toddlers in the case group and 46 toddlers in the control group). We gathered data by administering a questionnaire and measuring the toddler's weight and height, which we analyzed using the chi-square test and Fisher's Exact test.* ***Results:*** *Results indicated that immunization status significantly influences the nutritional status of infants (OR = 4.594; p = 0.034; 95% CI: 1.183–17.840). The mother's nutritional knowledge has a significant effect on the nutritional status of toddlers (OR = 10.587; p = 0.000; 95% CI = 3.118–37.818).* ***Conclusions:*** *The nutritional status of toddlers in the Nambo Primary Health Care Working Area, Kendari City, is influenced by the nutritional knowledge and vaccination status of their mothers.*

Keywords: *immunization status; nutritional knowledge level; toddler nutritional status*

INTRODUCTION

In order for the body to function correctly, there must be a balance between the nutrients it consumes through food and the nutrients it needs for metabolism. 2017 (Par'i et al.). Since toddlerhood is a "golden era" for the development of both physical growth and intelligence, the nutritional health of toddlers requires special attention (Putri et al., 2015).

The results of the Indonesian Nutrition Status Study from 2021 showed that 17% of infants in Indonesia were underweight and 7.1% were wasting (Kemenkes RI, 2021). As of 2021, 4,306 infants in Southeast Sulawesi Province had malnutrition episodes, according to data from the Indonesian Statistic Center (Badan Pusat Statistik, 2021). In Kendari City, 0.72 percent of infants were

malnourished in 2019 according to the Body Weight/Age rating, while 2.9% were underweight according to the Body Weight/height index.

Nambo Primary Health Care in Kendari City is home to 27% of the city's underweight kids (Dinkes Kota Kendari, 2019). Preliminary examinations at the Nambo Primary Health Care in August 2022 showed that 19 kids had wasted, and four of them had severe wasted. Anthropometric approaches can be utilized to assess nutritional status, and nutritional status categories based on the Body Weigth/Body length or Body Wight/height index can be used (Par'i et al., 2017). This measure can be used to identify children who are severely underweight, wasted, or at risk of becoming overweight (Permenkes RI, 2020).

Many factors affect nutritional status, both directly and indirectly. Direct influences include food intake and infectious diseases, while indirect influences include immunization status and a mother's nutritional education (Putri et al., 2016).

Immunization can boost a person's illness resistance. If it is exposed, the recepient will either not get sick or have a mild ailment. (Permenkes RI, 2017). One dosage of BCG, three doses of DPT-HB-Hib, four doses of polio, one dose of hepatitis B, and one dose of measles make up a complete fundamental immunization. (Kemenkes RI, 2015).

Southeast Sulawesi has an 83.4% coverage rate for all essential immunizations in 2021. The strategic plan's 2021 objective of 93.6% was not achieved with this result. (Kemenkes RI, 2022). According to Hanifah and Sari's research, there is a connection between toddlers' nutritional status and the fundamental immunizations they have received. This is because when a child's body is healthy, food can be ingested effectively and the nutrients they absorb can be used for their body's growth, resulting to a good nutritional status.

One of the main elements that can affect the nutritional condition of children is the mother's level of nutritional understanding. Mothers who are knowledgeable about nutrition select and give their kids a variety of high-quality, nutrient-dense foods. This will provide toddlers with the nutritionally adequate cadence they need. As a consequence, children whose mothers have a strong understanding of nutrition will have a decent nutritional status (Puspasari and Andriani, 2017).

Based on the preceding description, it is necessary to conduct research to determine whether toddler immunization status and the level of mother's nutritional knowledge have an effect on toddler nutritional status in the service area of the Nambo Health Center in Kendari City.

METHODS

Through observational and analysis research, this study used a case-control method to compare the case group to the control group. This study was done in November and December 2022 in the area where Nambo Primary Health Care works.

The whole group of the study was made up of the 748 toddlers who were part of the Nambo Primary Health Care

working population. This study used samples from both the case group and the control group. Using the full sampling process, 23 samples were taken for the test sample. The control samples were chosen on purpose, and their age and gender were matched to those of the case group. In this study, a case-control ratio of 1:2 was used.

Nutritional Status

A brass hanging scale is used to measure the weight of children between the ages of 6 months and 2 years. Analog weight devices can be used by kids over the age of two. The weight is read off the scale and written down. The infantometer was used to measure the height of a child younger than two years old. For babies over 2 years old, a microtoe is used to measure their height. The number on the infantometer is read and written down.

The Anthropometric Standards for Assessing Child Nutrition in Indonesian Secretary of Health Regulations Number 2 of 2020 are cited in this evaluation. To determine the health status of toddlers, the z-score curve was constructed using the ratio of body weight to length for toddlers lesser than 2 years of age and weight to height for toddlers older than 2 years of age.

Immunization Status

The mother and child card was used to obtain information about immunization status. Hepatitis B, BCG, polio 1, polio 2, polio 3, and polio 4 vaccinations are among the most prevalent immunizations given to toddlers between the ages of 6 and 8 months. It consists of injections for hepatitis B, BCG, polio 1, polio 2, polio 3, polio 4, polio 2, DPT-HB-Hib 1, polio 3, and measles for children 9 months and older.

Mother's Nutritional Knowledge

The mother's awareness of the nutritional status of infants was the subject of questionnaires and interviews, which included 30 multiple-choice questions. Previously, the respondent may write in the information about the mother and child on the provided form.

Data Analysis

The statistical test used in this study was Chi-Square with the Fisher Exact Test as an alternative. To determine the intensity of the influence between the dependent variable and independent variable, the statistical test used is the Odd Ratio (OR) (OR).

Ethics

This study was approved by the Health Research Ethics Committee of Halu Oleo University's Faculty of Medicine under the number 061/UN29.17.1.3/ETIK/2022.

RESULTS

The distribution of respondent characteristics is seen in Table 1. There were 13 patients (56.5%) in the case group who were between the ages of 31 and 40. There were 23 individuals (50%) in the control group, who ranged in age from 21 to 30. For as many as 9 persons (39.1%) in the case group, their most recent schooling was in elementary school, and for as many as 9 people (39.1%), it was in high school. The preponderance of the control group,

as many as 23 participants (50%), were high school students.

The preponderance of respondents in both the case and control groups were housewives: 23 (100%) and 43 (93.5%), respectively. Similarly, there were 22 respondents (95.7%) in the case group and 38 respondents (82.6%) in the control group for households with incomes less than IDR 2,823,315.

The matching variables in this study were toddler gender and age, with a case/control group ratio of 1:2. There were 14 toddlers (60.9%) in the case group who infrequently visited the integrated healthcare post. In the control group, 24 children (52.2%) always adhered to the integrated healthcare plan.

In the case group, three toddlers (13%) had low birth weight and twenty toddlers (87%) had normal birth weight. All of the infants in the control group (100%) had normal birth weight. The proportion of infants in the control group who obtained exclusive breastfeeding was 33 (71.7%), which was higher than the proportion in the case group of 11 (478.8%).

In the case group, there were 7 toddlers with an incomplete immunization status (30.4%) and 16 toddlers with a complete immunization status (68.6%) in the immunization status variable. There were 4 toddlers in the control group with an incomplete immunization status (8.7%) and 42 toddlers with a complete immunization status (91.3%).

The variable of mother's nutritional knowledge in the case group obtained 19 respondents with inadequate knowledge (82.6%) and 4 respondents with good knowledge (17.4%). Meanwhile, in the control group, 14 respondents with inadequate knowledge (30.4%) and 32 respondents with good knowledge (69.6%) were obtained.

The p-value for the relationship between vaccination status and infant nutritional status was 0.034. The odds ratio is 4.594 (OR> 1), with a minimum of 1.183 and a maximum of 17,840 (Table 2).

A p-value of 0.000 indicated in Table 3 that maternal nutritional knowledge influenced the nutritional status of infants. The OR value was 10.587 (OR > 1), with a lower limit of 3.118 and an upper limit of 37.812.

DISCUSSION

Immunization Outcomes

In the Nambo Primary Health Care service area, 84.1% of infants were fully immunized against preventable diseases. At each integrated healthcare post, officers will observe every routine weighing activity, from heath access to immunization. However, some mothers are still hesitant to immunize their infants. This may be due to a number of factors, such as mothers' fear of post-immunization side effects and their spouses' refusal to enable them. There are also mothers whose children become ill each time they are immunized, causing them to miss multiple vaccine regimens, and who are unaware that their children can still receive catch-up immunizations to meet

the minimal immunization status requirements.

Mother's Nutritional Knowledge Level

Mothers with adequate nutritional awareness in the Nambo Primary Health Care working area account for 52.2% of the total. The remaining 47.8% had limited nutritional understanding. Poor mothers' knowledge is nevertheless extremely high. Several factors, including a mother's education, can have an impact on this. Lack of dietary awareness is determined by a low degree of education.

Apart from educational aspects, a mother's nutritional comprehension is influenced by her willingness and awareness of the necessity of balanced nutrition. Nutrition information can be received through print and electronic media.

Influence of Immunization Status on the Nutritional Status of Infants

The p-value for the bivariate analysis using Fisher's Exact Test is 0.034, indicating that there is a relationship between immunization status and nutritional status of preschoolers in the Nambo Primary Health Care working area.

Furthermore, the odds ratio (95% confidence interval) yielded an OR value of 4.594 (OR > 1) with a lower limit value of 1.183 and an upper limit value of 17.840. The OR result is more than 1 (OR>1), indicating that an incomplete immunization history is a risk factor for wasted in toddlers in Kendari City's Nambo Primary Health Care operating area. Toddlers with partial immunization had a 4.594 times increased risk of being wasted than toddlers with complete immunization.

Using a p-value of 0.004, this research is consistent with a study by Jamil and Subiyatin (2020) regarding the relationship between immunization history and nutritional status of toddlers, which included 105 respondents. This study indicates that there is a significant relationship between incomplete immunization status and the nutritional status of infants. The OR value of 0.173 (CI: 0.051-0.59) indicates that immunization is a protective factor or a factor that prevents undernutrition.

In contrast to research conducted on 135 participants by Sutriyawan et al. (2020), which found no significant relationship between immunization status and nutritional status of toddlers with a p-value of 0.056 (>0.05), the case group with incomplete immunization is due to a variety of factors, including toddlers who were not immunized because of a fever. In addition, 29.9% of infants in the case cohort had received all recommended vaccinations. Even if the child has received all of its immunizations, this does not mean that he or she is immune from malnutrition, as there are numerous other factors to consider, such as knowledge, exclusive breastfeeding, poor sanitation, and parental education.

Immunizations are administered to impart immunological substances in order to reduce the risk of infectious diseases in children. When neonates have infectious disorders such as Upper Respiratory Tract Infections (URTI) and

diarrhea, their appetite decreases because their bodies are unable to completely digest and absorb food. To combat illness, however, the body will require more energy. As the infected body develops immunity and repairs damaged cells, its energy requirements will increase. Infectious diseases can also cause children to lose nutrition, which is defined as a reduction in food intake. Malnutrition can result from inadequate energy intake and malabsorption (Pebrianti et al., 2022).

Influence of Mothers Nutritional Knowledge Level on the Nutritional Status of Toddlers

T The chi-square test yields a p-value of 0.000 and an OR value of 10.587 within a 95% confidence interval of 3.118-37.812; both the lower and upper limits exceed one. This result demonstrated that the mother's dietary knowledge affects the nutritional status of her infants and suggests that individuals with inadequate nutritional awareness are 10.58 times more likely to be underweight than those with a strong understanding of nutrition.

This study's findings are consistent with those of Oktavianis (2016), who conducted research on Factors Related to the Nutritional Status of Infants at the Lubuk Kilangan Primary Health Care and obtained a significance level of p = 0.000 (p 0.05). (p 0.05). According to the results of this study, there is a significant correlation between toddlers' knowledge and nutritional status in the Lubuk Kilangan Primary Health Care working area. In addition, an odds ratio of 9.941 was calculated, indicating that respondents with limited knowledge are 9 times more likely to produce malnourished infants than those with extensive knowledge.

This research contradicts the findings of Lamia et al. (2019), who examined the relationship between mothers' nutritional awareness and the nutritional status of infants aged 24 to 59 months in Kima Bajo Village, Wori District, North Minahasa Regency. Research on 63 samples revealed, with a p-value of 0.236 (>0.05), that there is no correlation between mothers' nutritional awareness and children's nutritional status. While mothers with a high level of expertise do not always have infants with adequate nutritional status, this is because some mothers disregard vital nutrition-related issues, which are genuinely willful absences when there is an integrated healthcare position.

A mother's nutritional knowledge has a substantial effect on her child's growth. Knowledge can influence attitudes, which can then influence behavior (Hapsari, 2018). To provide toddlers with adequate nutrition, mothers must be knowledgeable about diet, nourishment, and health care (Fadare et al., 2019). Knowledge will influence the preparation of family meals and the provision of care, ensuring that nutritional needs are met and that infants receive a balanced diet (Ekawaty et al., 2015).

CONCLUSIONS

Based on the findings of this study, it can be stated that immunization status and mother's nutritional

awareness have an effect on the nutritional status of toddlers in the Nambo Primary Health Care working area of Kendari City, with an OR value of 4.594 and 10.587, respectively.

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Table 1. Distribution of Respondent Characteristics

Sample Characteristics		Case		Control		Total	
		n	(%)	n	(%)	n	(%)
Mother's age	21-30 years old	9	39.1	23	50	32	46.37
	31-40 years old	13	56.5	20	43.5	33	47.82
	41-50 years old	1	4.3	3	6.5	4	5.79
Mother's Education	Elementary school	9	39.1	6	13	15	21.73
	Junior High School	5	21.7	11	23.9	16	23.18
	Senior High School	9	39.1	23	50	32	46.37
	Bachelor	0	0	6	13	6	8.69
Mother's Occupation	Housewife	23	100	43	93.5	66	95.66
	Teacher	0	0	2	4.3	2	2.89
	Merchant	0	0	1	2.2	1	1.45
Family Income	< IDR 2,823,315	22	95.7	38	82.6	60	86.95
	≥ IDR 2,823,315	1	4.3	8	17.4	9	13.05
Gender od Toddlers	Male	14	60.9	28	60.9	42	60.87
	Female	9	39.1	18	39.1	27	39.13
Toddlers Age	6-24 months	6	26.1	12	26.1	18	26.08
	25-36 months	8	34.7	16	34.7	24	34.78
	37-60 months	9	39.1	18	39.1	27	39.13
Integrated healthcare post activeness	Rare	14	60.9	5	10.9	19	27.5
	Often	6	26.1	17	37	23	33.3
	Always	3	13	24	52.2	27	39.1
Low Birth Weight	Yes	3	13	0	0	3	4.3
	No	20	87	46	100	66	95.7
exclusive Breast milk	No	12	52.2	13	28.3	25	36.23
	Yes	11	47.8	33	71.7	44	63.76
Immunization Status	Incomplete	7	30.4	4	8.7	11	15.9
	Complete	16	68.6	42	91.3	58	84.1
Mother's Knowledge	Less	19	82.6	14	30.4	33	47.8
	Good	4	17.4	32	69.6	36	52.2
Total		23	100	46	100	69	100

(Source: Primary Data, 2022)

Table 2. The Influence of Immunization Status on Toddler Nutritional Status in the Nambo Primary Health Care Working Area

Immunization Status	Subject						P	Odd Ratio (OR)	95% CI	
	Case		Control		Total					
	n	%	n	%	n	%			Lower	Upper
Incomplete	7	30.4	4	8.7	11	15.9				
Complete	16	69.6	42	91.3	58	84.1	0.034	4.594	1.183	17.840
Total	23	100	46	100	69	100				

(Fisher's Exact Test)

Table 3. Analysis of the effect of Mother's Nutritional Knowledge Level on the Nutritional Status of Toddlers in the Nambo Primary Health Care Working Area

Mother's Knowledge	Subject						*p*	Odd Ratio (OR)	95% CI	
	Case		Control		Total					
	n	%	n	%	n	%			Lower	Upper
Less	19	82.6	14	30.4	33	47.8				
Good	4	17.4	32	69.6	36	52.2	0.000	10.587	3.118	37.812
Total	23	100	46	100	69	100				

(Chi-Square Test)