IMMUNIZATION STATUS WITH CHILDREN NUTRITION STATUS IN THE WORKING AREA OF PUSKESMAS KEDAMEAN, GRESIK

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ABSTRACT

Introduction: Immunization in the national health system is one form of health protection that is very effective in preventing infant and under-five mortality rates. Children who are not immunized do not have immunity against the disease, so they will fall ill, possibly causing a decline in nutritional status. Infectious diseases and immune functions are interconnected and will ultimately affect the nutritional status in children.
Purpose: To determine the correlation between immunization status and nutritional status of children under five in the Health Center Community or Pusat Kesehatan Masyarakat in Indonesian (Puskesmas) in Gresik Regency, East Java.
Method: This study used an observational analytic research method with a cross-sectional research design. The samples of this research are toddlers aged 1-5 years old and mothers who have MCH books. The study was conducted by collecting data using a questionnaire to be filled out by mothers of children under five. Then, the researchers collected data by recording the immunization status of children under five by looking at the MCH book. Then, we measured the body weight and height of the toddler.
Results: Based on the results of statistical calculations using the chi-square test regarding the analysis of the relationship between immunization status and nutritional status of children under five obtained a significance value of $p = 0.220$: $p \geq 0.05$ (value α).
Conclusion: There was no significant relationship between immunization status and nutritional status of children under five years old in the Puskesmas Kedamean in Gresik Regency

Keywords: Immunization status, nutritional status, children

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INTRODUCTION

Immunization in the national health system is one form of health intervention that is very effective in efforts to reduce infant and under-five mortality rates. The primary basis of preventive health services is a top priority by immunizing a child or toddler, not only providing protection to other children but also increasing public immunity and reducing the spread of infection [1]. The government requires every child to get necessary immunizations that are included in the Immunization Development Program (PPI), including Hepatitis B, BCG, DPT-HB-HiB (pentavalent), Polio, and Measles [2]. What is also meant by complete primary immunization is that every infant (0-11 months old) must get complete primary immunization consisting of 4x Hepatitis B, 1x BCG, 4x Polio, 3x Pentavalent (DPT-HepB-Hib), and 1x Measles / MR [4,5,6].

The incidence of disease in children under five is very closely related to the child's nutritional status. Nutritional status is a significant health indicator because children under five are a group that is vulnerable to health and nutrition. Children who are not immunized do not have immunity against infectious diseases, so the child will fall ill, possibly causing a decline in nutritional status. Infectious diseases and immune functions are closely related to each other and will ultimately affect nutritional status in the form of a decrease in nutritional status in children [3]. This study aimed to determine the relationship between immunization status and nutritional status of children under five years old in the Health Center Community, or Pusat Kesehatan Masyarakat in Indonesian (Puskesmas), in Gresik Regency, East Java.

Based on data from Puskesmas Kedamean regarding the achievement of nutrition programs covering eight villages in the Kedamean area, there were cases of malnutrition in children under five years old and had received supplementary feeding (PMT). Underweight children under five years old got PMT with a target of 60%, and malnutrition received 100% care. In Puskesmas Kedamean, most children have received complete basic immunizations. A small number of children who have incomplete immunizations are due to illness during the routine schedule of complete basic immunization [7,8].

In this study, in addition to examining the history of complete primary immunization status and nutritional status of children under five years old, we also want to know about the essential characteristics of mothers and children under five years old in the working area of the Puskesmas Kedamean, especially in

Turirejo, Sukorejo, Bunton, Pesemen, and Belahanrejo. Among them are the age and sex of children under five years old, status of daily food intake, snacks, breast milk, milk, and MP-ASI consumed now, and history of infectious diseases, maternal age, socioeconomic status, maternal knowledge, mother's education, and family income.

METHOD

This study used observational analytic research methods with a cross-sectional research design. This cross-sectional study design was used to determine the relationship between immunization status and nutritional status of children under five years old in the Puskesmas Kedamean, Gresik.

The total population measured in this study was 114 pairs of mothers and children under five. However, there were 27 research respondents whose data could not be used because respondents did not complete the questionnaire, thus could not be included in the study. The sample data used in this study were 87 respondents. The immunization status sampling technique in this study was purposive sampling; this method uses criteria that have been selected by researchers in selecting samples. The sample selection criteria are divided into inclusion and exclusion criteria.

Inclusion Criteria are:

1) Children under the age of 1 - 5 years old in the Puskesmas Kedamean.
2) Mother has an MCH book.
3) Mothers are willing to take part in the research.

Exclusion Criteria are:

1) Children under five who are sick
2) Children under five with congenital abnormalities. Whereas, the sampling technique for nutritional status in this study was non-probability sampling that is using consecutive sampling.

RESULTS

Table 1. Distribution of Children by Age on September 7 - September 14, 2019

No.	Age	*n*	%
1.	< 2 year	37	42,5
2.	> 2 year	50	57,5
Total		87	100

Based on Table 1, the highest number based on the age of children under five years old who were respondents of this study were aged > 2 years old, 50 respondents or 57.5%.

Table 2. Distribution of Children by Gender on September 7 - September 14 2019

No.	Gender	*n*	%
1.	Male	39	44,8
2.	Female	48	55,2

Total	87	100

Based on Table 2, the sex data of children under five who participated in this study were 48 females or 55.2% and 50 males or 44.8%.

Table 3. Distribution of Mothers by Age on 7 September - 14 September 2019

No.	Age	n
1.	< 20 years old	3
2.	21-35 years old	74
3	> 35 years old	10
Total		87

Based on Table 3, the highest number based on the age of mothers who participated in this study was 21-35 years old as many as 74 respondents or 85.1%.

Table 4. Distribution of Samples by Mother's Level of Education on September 7 - September 14 2019

No.	Level of Education	n	%
1.	Primary School	6	6,9
2.	Junior High School	29	33,3
3.	Senior High School	45	51,7
4.	Bachelor	7	8,1
Total		87	100

Based on Table 4, the most number based on the education level of mothers of children under five years old who were respondents of this study were mothers with high school education levels of 45 respondents or 51.7%.

Table 5. Distribution of Samples by Occupational Mother of Children on 7 September - 14 September 2019

No.	Profession	n	%
1.	Housewife	78	89,7
2.	Private	6	6,9
3.	Entrepreneur	2	2,3
4.	The Trader	1	1,1
Total		87	100

Based on Table 5, the highest number based on the work of mothers of children under five years old who became respondents of this study were mothers with occupations of housewives numbering 78 respondents or 89.7%.

Table 6. Distribution of Samples Based on Family Income of children under five years old on 7 September - 14 September 2019

No.	Family Income	n	%
1.	< Rp. 3.000.000	69	79,3
2.	> Rp. 3.000.000	18	20,7
Total		87	100

Based on Table 6, the most number based on family income of children under five who become respondents of this study are families with income < Rp3,000,000 totaling 69 respondents or 79.3%.

Table 7. Distribution of Children by Basic Immunization Status from 7 September to 14 September 2019

No.	Immunization Status	n	%
1.	Complete	71	81,6
2.	Incomplete	16	18,4
Total		87	100

Based on Table 7. , the basic immunization status data of children under five who participated in this study were children under five with complete immunization status,71 respondents or 81.6% and with incomplete immunization status,16 or 18.4% caused by children who got sick when they were going to be be given basic immunizations according to the basic immunization schedule, so they must be postponed until they are healthy, which results in the incompleteness of basic immunization in these toddlers.

Table 8. Distribution of Children by Nutrition Status on September 7 - September 14 2019

No.	Z-scores	Nutritional Status	n	%
1.	<-3 SD	Very Thin	2	2,3
2.	-3 SD to <-2 SD	Thin	4	4,6
3	-2 SD to 2 SD	Normal	71	81,6
4	>3SD	Fat	10	11,5
Total			87	100

Based on Table 8, the highest number based on the nutritional status of children under five years old who were respondents of this study were children under five years old with normal nutritional status as many as 71 respondents or 81.6% and the least number of children under five years old with very thin nutritional status,two respondents or 2.3 %.

Table 9. Distribution of Daily Food Intake of Toddlers on September 7 - September 14, 2019

No.	Variable	n	%
1.	**Frequency of eating a day**		
	1-2 time	46	52,9
	3-4 time	41	47,1
	Etc	0	0
2.	**Snacks outside the house**		
	Every day	60	69
	1-2 times/week	24	27,6
	never	3	3,4
3.	**Giving snack**		
	Every day	69	79,3
	3-5 times/week	18	20,7
	Never	0	0
4.	**BreastFeeding (<2 year)**		
	Yes	25	28,7
	No	12	13,8
5.	**Type of milk (< 2 year)**		
	ASI	21	24,1
	PASI/Formula	16	18,4
6.	**Amount of milking (< 2 year)**		
	2-4 times/day	3	3,4
	8-12 times/day	34	39,1
7.	**Milk feeding (>2 year)**		
	Yes	45	51,7
	No	5	5,8
8.	**Type of milk (> 2 year)**		
	Formula milk	40	46
	Sweetened condensed milk	10	11,5
9.	**Giving MP-ASI**		
	Yes	33	37,9
	No	4	4,6
10.	**The amount giving MP-ASI**		
	2 times a day	31	35,6
	5 times a day	6	6,9
11.	**Eat regular meals**		
	Yes	84	96,6
	No	3	3,4
12.	**Amount of staple food portions**		
	1 adult plate	12	13,8
	2 Centong	20	23
	Lain-Lain (Setengah Centong)	55	63,2
13.	**Hospitalized**		
	Yes	22	25,3
	No	65	74,7
14.	**Check into a health facility in one year**		
	1-2 times	36	41,4
	>2 times	25	28,7
	Never	26	29,9

Table 9 shows the results of an analysis of the essential characteristics of the research subjects in the form of a questionnaire containing daily food intake and a history of infection of children under five. on the variable frequency of eating a day, the highest number was 1-2 times as many as 46 respondents or 52.9%. on the frequency of snacks outside the home, the highest was every day, 60 or 69%on the variable of breastfeeding for toddlers aged < 2 years old, the most common answer was Yes, as many as 25 respondents or 28.7%. on the variable type of milk given, the most common was breastfeeding as many as 21 respondents or 21%. on the frequency of breastfeeding variable, the highest was 8-12 times/day as many as 34 respondents or 39.1%. on the variable giving milk to children under the age of> 2 years old, most answered Yes,45 respondents or 51.7%. on the variable type of milk given the most common was formula milk, as many as 40 respondents or 46%. on the variable giving of MP-ASI to toddlers aged < 2 years old, the most answered Yes, as many as 33 respondents or 37.9%. Based on the frequency of MP-ASI the highest was two times a day, as many as 31 respondents or 35.6%. Based on the variable portion of regular meals, the most number was others as many as 55 respondents or 63.2%. Based on the variable hospitalization, most answered no, as many as 65 respondents or 74.7%. Based on the variable check into health facilities in a year, the highest number was

1-2 times, as many as 36 respondents or 41.4%.

Table 10. Correlation between Immunization Status and Nutrition Status of Children

Variable	Breastfeeding		Total	p
Nutritional status	Yes	No		
Very Thin	1 (50%)	1 (50%)	2 (100,0%)	
Thin	2 (40%)	3 (60%)	5 (100,0%)	0,179
Normal	11 (55%)	9 (45%)	20 (100,0%)	
Fat	8 (80%)	2 (20%)	10 (100,0%)	
Total	22 (59,46%)	15 (40,54%)	37 (100,0%)	

Based on the analysis of the relationship between immunization status and nutritional status of children under five years old, the significance value of p = 0.220: p≥0.05 (α value) was obtained. This result shows no significant correlation between the history of immunization status and the nutritional status of children under five years old.

Table 11. Correlation between Family Income and Nutritional Status of Children

Variable	Family income		Total	p
Nutritional Status	< Rp. 3.000.000	>Rp. 3.000.000		
Very thin	2 (100,0%)	0 (0%)	2 (100,0%)	
Thin	4 (100,0%)	0 (0%)	4 (100,0%)	0.000
Normal	55 (77,5%)	16 (22,5%)	71 (100,0%)	
Fat	9 (90%)	1 (10%)	10 (100,0%)	
Total	70 (80,46%)	17 (19,54%)	87 (100,0%)	

Based on the analysis of the relationship between family income and nutritional status of children under five years old, the significance value of p = 0,000: p ≤0.05 (α value) was obtained, which shows that family income can affect the nutritional status of children under five years old.

Table 12. Correlation between Mother's Education Level and Nutritional Status of Toddler Children

Variable	Mother's Education Level				Total	p
Nutritional status	Primary School	Junior High School	Senior High School	Bachelor		
Very thin	0 (0%)	2 (100,0%)	0 (0%)	0 (0%)	2 (100,0%)	
Thin	1 (25%)	1 (25%)	2 (50%)	0 (0%)	4 (100,0%)	0.000
Normal	6 (8,11%)	21 (28,38%)	54 (79,97%)	6 (8,11%)	74 (100,0%)	
Fat	0 (0%)	3 (42,86%)	4 (57,14%)	0 (0%)	7 (100,0%)	
Total	7 (8,06%)	27 (31,03%)	60 (68,97%)	6 6,89%)	87 (100,0%)	

Based on the correlation between maternal education level and nutritional status of children under five years old, the significance value of p = 0,000: p ≤0.05 (α value) was obtained, which shows that the mother's education level can affect the nutritional status of children under five years old.

Table 13. Correlation between immunization status with the nutritional status of toddlers

Variable	Immunization Status		Total	p
Nutritional status	Complete	Incomplete		
Very thin	2 (100,0%)	0 (0%)	2 (100,0%)	0,220
Thin	4 (100,0%)	0 (0%)	4 (100,0%)	
Normal	55 (77,5%)	16 (22,5%)	71 (100,0%)	
Fat	10 (100,0%)	0 (0%)	10 (100,0%)	
Total	71 (81,6%)	16 (18,4%)	87 (100,0%)	

Based on the analysis results, the correlation between immunization status in and the nutritional status of children under five obtained no significant relationship between immunization status and nutritional status of children under five years old in the Puskesmas Kedamean in Gresik Regency.

4. DISCUSSION

In this study, the results of the analysis in Table 13 shows that there is no significant correlation between the history of immunization status with nutritional status of children under five. They are supported by research conducted by Barina L. Pusung, Nancy S.H. Malonda, and Nita Momongan regarding the relationship between immunization history and infectious disease with nutritional status in toddlers aged 24-59 months in the Toulagai Health Center working area of Southeast Minahasa Regency. This study uses a correlation method with a cross-sectional approach. Respondents are mothers who have children aged 24 - 59 months as many as 100 people in the work area of the ToulUHAN Health Center. The p-value 0.950 results show that there is no relationship between the history of immunization and nutritional status (BW / U, TB / U, BW / TB) in infants aged 24-59 months . However, this study differs from the results of research conducted by Vindya Vindriana, Abdul Kadir, and M. Askar. They researched the correlation of immunization completeness with nutritional status in children aged 1-5 years in Watonea Village Work Area Katobu Health Center, Muna Regency, on July 12 - 20 July 2012. The population in this study were toddlers aged 1-5 years who were registered in the Watonea village working area of the Katobu Community Health Center in Muna Regency as many as 229 children.Determination of sample size by using the formula obtained 70 respondents according to inclusion criteria. This type of non-experimental research uses a descriptive observational method with a cross-sectional approach; the sampling technique is a simple random sampling; data collection is done by questionnaire and observation sheet. The collected data is processed and analyzed using Microsoft Excel and computer programs (SPSS) version 16.0. Data analysis includes Univariate and Bivariate analysis methods using the Chi-Square test. The results showed that completeness of immunization had a significant

relationship with health status (p = 0.001), health status had a significant relationship with nutritional status (p = 0,000), so completeness of immunization was indirectly related to nutritional status (p = 0,000). The study concludes that there is a significant relationship between immunization completeness, health status, and nutritional status. The more complete the immunization, the better the health status so that nutritional status also tends to be better [9,10,11].

CONCLUSION

Based on the results of research conducted on the correlation between immunization status and nutritional status of children under five years old in the Puskesmas Kedamean, which includes Turirejo, Sukorejo, Bunton, Pesemen, and Belahanrejo on 87 samples of mother and toddlers who meet the inclusion criteria and exclusions from 7 September to 14 September 2019. From this study conclusions can be drawn as follows:

1) Obtained basic immunization status data for children under five years old who participated in this study were children under five with complete immunization status as many as 71 respondents or 81.6% and children under five with incomplete immunization status as many as 16 or 18.4% caused by illness due to infants when the basic immunization schedule will give basic immunization so it must be postponed until the toddler is healthy, which results in the incompleteness of basic immunization in the toddler.

2) Obtained the nutritional status data of children under five who participated in this study most had normal nutritional status of 71 respondents and the least was children with fragile nutritional status of two respondents. The number of children under five who have a fragile nutritional status of 2 respondents nutritional status of obese ten respondents.

3) It was found that there was no significant relationship between immunization status and nutritional status of children under five years old in the Puskesmas Kedamean in Gresik Regency.

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