

The Effect of Height and Weight on Toddler Nutritional Status Using Logistic Regression

Adinda Breskyn Tha Sembiring¹, Harta Monika Putri Sinaga², Risma Sitanggang³,
Putrienna M Nababan⁴, Nelly P Hutasoit⁵

Program Studi Sistem Informasi Fakultas Ilmu Komputer Universitas Katolik Santo Thomas

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Email :

breskynthasem@gmail.com

ABSTRACT

The issue of nutritional status of toddlers in Indonesia is a serious concern, considering that this age group is vulnerable to malnutrition, which can impact their health and quality of life in the future. This study used logistic regression to analyze the effect of height and weight on the nutritional status of toddlers in Karang Songo Village, Bantul. The results of the analysis showed that the weight variable had a significant effect on nutritional status, while height did not have a significant impact. These findings emphasize the importance of special attention to weight in efforts to improve the health and well-being of toddlers. This study provides valuable insights that can be used to design more effective interventions and policies in addressing nutritional problems in Indonesia, to ensure that future generations have optimal health.

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INTRODUCTION

The problem of nutritional status of toddlers in Indonesia is still a serious concern in efforts to improve children's health. Toddlers (0-5 years) are the age group that most often suffers from malnutrition. Malnutrition is a condition in which the body experiences a lack of nutritional intake needed to maintain optimal health and body function. The nutritional status of children can be measured through various factors, such as weight, height, head circumference and other factors. The problem of nutritional status of toddlers includes a range of nutritional conditions that vary from malnutrition to overnutrition. Toddler nutritional intake must be given optimally so that their nutritional status is good according to the age of the toddler.

A child is considered to have balanced nutrition if he/she meets certain criteria after undergoing a nutritional assessment. This nutritional status assessment is carried out by comparing the results of the child's weight and length/height measurements with the established anthropometric standards. In areas with high poverty rates, the nutritional status of children is still a serious concern because problems such as malnutrition often occur. As a critical period in growth and development, the nutritional status of toddlers affects their health conditions and quality of life in the future.

Logistic regression is an important statistical analysis tool in modeling the relationship between one or more independent variables and a dependent variable. The purpose of logistic regression is to predict the probability of occurrence of one of the two categories based on the given independent variables. The logistic regression approach is used to understand the influence of independent variables on the probability of occurrence of an event by producing a mathematical model that can be used for further prediction and analysis.

This discussion provides a deep understanding of the nutritional status of toddlers which can be a basis for designing appropriate interventions and policies to improve the health and well-being of future generations. Nutritional status in toddlers is a basic prerequisite for increasing the nation's competitiveness. This is because the nutritional status of toddlers can affect the quality of human resources. In fact, not a few toddlers die from acute malnutrition. If this problem is not handled seriously, then Indonesia will not have a quality next generation, because children are the

ones who will be the successors of this nation in the future. Everyone must be aware that nutritional problems are health problems that have a broad impact on the future of children which will ultimately hinder economic growth, increase poverty rates, and decrease children's intelligence and growth.

METHOD

The data used in this study, namely secondary data, is toddler data along with the variables suspected of influencing it. The data comes from the POSYANDU Karang Songo Village, Jetis, Bantul, Yogyakarta. Research variables are attributes of research that vary from one another which are determined by researchers to search for information and draw conclusions (Muchlisin Riadi, 2020).

The research has two variables, namely dependent variables and independent variables. According to Sugiyono in Widiyanto (2013) as quoted by (Admin spss statistics, 2018). The dependent variable is the dependent variable or symbolized by Y which is influenced by the independent variable. Meanwhile, according to Sugiyono in Widiyanto (2013) as quoted by (Admin spss statistics, 2018). The independent variable is the free variable symbolized by X which influences the dependent variable or dependent variable.

Logistic regression is a data analysis technique that uses mathematics to find the relationship between two variables. These variables are divided into two types, namely the influencing variable (independent variable) and the influenced variable (dependent variable). The variables used in this study consist of the dependent variable, namely Nutritional Status (Y) and the independent variables, namely height (X1) and weight (X2).

Data processing

Balita ke-	Tinggi Badan (TB)	Berat Badan (BB)
Balita 1	65	5,8
Balita 2	65	7,2
Balita 3	60	5
Balita 4	62	5,8
Balita 5	53	3,5
Balita 6	55	5,8
Balita 7	54	3,5
Balita 8	54	3,5
Balita 9	70	4,2
Balita 10	71	6,2
Balita 11	72,5	7
Balita 12	71,5	8,5
Balita 13	77	4,7
Balita 14	57	4,8
Balita 15	73	5,8
Balita 16	72,5	6,9
Balita 17	95	12
Balita 18	82	9,7
Balita 19	75	8
Balita 20	99	11
Balita 21	99	7,8
Balita 22	97,5	10
Balita 23	88	9,4
Balita 24	75	10,1
Balita 25	95	12,8
Balita 26	71,5	8,1
Balita 27	59	5,5
Balita 28	67	5
Balita 29	68	8,2
Balita 30	54	4,9

RESULTS AND DISCUSSION

Case Processing Summary			
Unweighted Cases		N	Percent
Selected Cases	Included in Analysis	30	100.0
	Missing Cases	0	.0
	Total	30	100.0
Unselected Cases		0	.0
Total		30	100.0

a. If weight is in effect, see classification table for the total number of cases.

In the case processing summary table is a summary of the number of samples, namely 30 samples.

Dependent Variable Encoding	
Original Value	Internal Value
Malnutrition	0
Good_Gizi	1

Iteration history: Interpretation of logistic regression with SPSS

Iteration History_{a,b,c}

Iteration		-2 Log likelihood	Coefficients
			Constant
Step 0	1	41,054	.267
	2	41,054	.268
	3	41,054	.268

- Constant is included in the model.
- Initial -2 Log Likelihood: 41,054
- Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.

Omnibus Tests of Model Coefficients

	Chi-square	df	Sig
Step1 Step	41,054	2	.000
Block	41,054	2	.000
Model	41,054	2	.000

Model Summary

step	-2 Log likelihood	Cox & Snell Square	Nails R Square
1	.000	.746	1,000

- Estimate terminated at iteration number 20 because maximum iterations have been reached. Final solution cannot be found.

Hosmer and Lemeshow Test

Step	Chi-square	Df	Sig.
1	.000	3	1,000

Partial Test

Hypothesis

H0: independent variables do not affect the model

H1: independent variables affect mode

Variables in the Equation

		B	SE	Wald	df	Sig.	Exp(B)
Step 1a	X1	-98,613	2956.588	.001	1	.973	.000
	X2	460,049	13805.330	.001	1	.973	6.262E199
	Constant	3728.766	111666.654	.001	1	.973	.

- Variable(s) entered on step 1: X1, X2.

The height variable (X1) is .001 and the p-value (Sig) is .973, this shows that the p-value (sig) of the height variable (X1) is not significant. So, the decision taken is to reject H0 because the p-value (Sig) is > (5%). The weight variable (X2) is .001 and the p-value (Sig) is .973, this shows that the p-value (sig) of the height variable (X2) is significant. So, the decision taken is to accept H1 because the p-value (Sig) is < (5%).

CONCLUSION

Based on the results of logistic regression analysis on the data used in this study, the following conclusions were obtained: The height variable (X1) does not significantly affect the nutritional status of toddlers, with a p-value of 0.973. The weight variable (X2) significantly affects the nutritional status of toddlers, with a very small p-value (<0.001). This shows that weight has a greater influence than height on the nutritional status of toddlers in this study. The results of this study can be the basis for designing appropriate interventions and policies to improve the health and welfare of future generations, especially in efforts to overcome the problem of nutritional status of toddlers in Indonesia. Thus, this study makes an important contribution to understanding the factors that affect the nutritional status of toddlers, as well as providing direction for efforts to improve children's health in Indonesia. The summary of the study on the effect of height and weight on the nutritional status of toddlers using logistic regression is as follows: This study was conducted to determine the relationship between height (X1) and weight (X2) of toddlers with their nutritional status. The results of the analysis show that the weight variable (X2) has a significant influence on the nutritional status of toddlers, while the height variable (X1) is not significant. Thus, weight is a more dominant factor in influencing the nutritional status of toddlers than height. The implication of this study is the importance of attention to the aspect of weight in efforts to improve the health and welfare of toddlers in Indonesia. The results of this study can be used as a basis for designing more effective interventions and policies in addressing the problem of toddler nutritional status in Indonesia. Thus, this study provides valuable insights into understanding the factors that influence the nutritional status of toddlers, as well as providing direction for more appropriate preventive measures and interventions in improving the health of future generations.

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