

DETERMINANTS OF WASTING AMONG UNDER 5 YEARS IN TIMOR LESTE (DHS PROGRAM ANALYSIS 2016)

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Published by Fakultas Kesehatan Masyarakat Universitas Airlangga

ABSTRACT

Keywords:

wasting,
children 15-49 months,
Low Birth Weight,
Timor-Leste

One of the countries in Asia that has a high prevalence of wasting is Timor-Leste. The prevalence of wasting in Timor-Leste is 24% in children aged 15-49 months. The purpose of this study is to identify the factors that influence the incidence of wasting in children aged 15-49 months in Timor-Leste. This research is an analysis of secondary data from the 2016 Demographic and Health Survey (DHS) in Timor-Leste using a cross-sectional approach. Informants in this study were mothers of toddlers aged 15-49 years and had toddlers aged 15-49 months. The number of samples in this study was 1,207 mothers. Bivariate analysis was performed by Chi-Square test and multivariate test by logistic regression test. The results showed that the factors that influence wasting are low birth weight, history of breastfeeding and mother's education level. Meanwhile, after being analyzed using logistic regression, the most influencing variables were low birth weight babies with a significance value of 0.028 and an OR value of 0.620.

ABSTRAK

Kata Kunci:

wasting,
anak usia 15-49 bulan,
Berat Badan Lahir
Rendah,
Timor-Leste

Salah satu negara di Asia yang memiliki prevalensi wasting tinggi adalah negara Timor-Leste. Prevalensi wasting di Timor-Leste adalah sebesar 24% pada anak usia 15-49 bulan. Tujuan penelitian ini guna mengidentifikasi faktor-faktor yang mempengaruhi kejadian wasting pada anak usia 15-49 bulan di Timor Leste. Penelitian ini merupakan analisis data sekunder Demographic and Health Survey (DHS) tahun 2016 di Timor-Leste dengan pendekatan cross sectional. Informan pada penelitian ini adalah ibu balita berusia 15-49 tahun dan memiliki balita dengan usia 15-49 bulan. jumlah sampel dalam penelitian ini adalah 1.207 ibu. Analisis bivariat dilakukan dengan uji Chi-Square dan uji multivariat dengan uji regresi logistik. Hasil penelitian menunjukkan bahwa faktor-faktor yang berpengaruh terhadap wasting adalah berat badan lahir rendah, riwayat menyusui dan tingkat pendidikan ibu. Sedangkan setelah dianalisis menggunakan regresi logistik variabel yang paling mempengaruhi adalah berat badan bayi lahir rendah dengan nilai signifikan 0.028 dan nilai OR sebesar 0.620.

INTRODUCTION

Wasting is a condition where a toddler has a lower body weight compared to his height (1). One of the causes of wasting is rapid and acute weight loss in toddlers caused by hunger or infection with serious illnesses(2). A toddler is said to be wasting if the value (z score <-2 standard deviation) is based on the results of measuring BB/PB or BB/TB (3).

Wasting is a crucial public health problem that needs to be addressed immediately because it has a major influence on children's

growth. Wasting can also increase the risk of morbidity and mortality in children. Children who experience wasting are very susceptible to disease infections. If the incidence of wasting in toddlers continues, it can result in lower intellectual abilities, affecting future work capacity and the child's health condition (4).

According to data from UNICEF, WHO, and the World Bank in 2015, the majority of wasting and acute wasting sufferers are Asian residents with the prevalence of wasting sufferers reaching 33.9 million children under

five who experience wasting and 11.9 million children experience acute wasting (5). The number of wasting sufferers in Asia in 2019 was 32.6 million children (6).

It is estimated that 52 million children in the world experience wasting (16 million experience acute wasting) (7). The prevalence of wasting on the Asian continent in 2020 is 31.4 million people suffering from wasting in children under 5 years. This makes the Asian continent the highest prevalence of wasting globally and home to three-quarters of acute wasting sufferers, so this is an unresolved health problem for children under five in Asia (8).

Timor-Leste is a country on the Asian continent. The prevalence of wasting in Timor-Leste was 24% in 2016 with the prevalence of wasting sufferers in men at 25.6% and women at 22.4% (9).

The large number of wasting incidents is caused by various risk factors, for example, inadequate food intake or a high incidence of infections, especially diarrhea (10). Wasting can occur due to lack of access to health services, inadequate nutritional requirements (for example, inadequate provision of exclusive breast milk or *Air Susu Ibu* (ASI), or nutritional intake that does not meet the quality and quantity standards of nutritious food for toddlers), lack of maternal knowledge regarding storage and food processing and poor cleanliness of the environment around where children live (11). Wasting can also be caused by low birth weight, child's age, child's gender, mother's age, mother's education level, mother's employment status, family residence, marital status, and family economic status.

Research conducted in six countries, one of which was conducted in Timor-Leste in 2020, strengthens the statement that Timor-Leste has a prevalence of wasting that is at the upper limit. The peak prevalence of wasting in Timor-Leste is between the ages of 6-11 months and 12-23 months, while for acute wasting or severe wasting the peak is in the 6-11 month group. Wasting in Timor-Leste is caused by the availability of drinking water sources, wealth index per head of family, urban residence, age and history of illness of the child, and the mother's body mass index during pregnancy (12).

This study aims to identify the determinants of wasting in children aged 15-49 months in Timor-Leste.

METHODS

This research is an observational study with secondary data. The source of data collection in this research was the 2016 Demographic and Health Survey (DHS) in Timor-Leste with 12 municipalities consisting of rural and urban areas.

There were 7,221 respondents in this study, consisting of mothers of toddlers aged 15-49 years and children aged 15-49 months. Data processing was using the select cases tool in the SPSS 24.0 application; there were some missing data which were then deleted. After carrying out the process of deleting missing data, the number of research subjects was 1,207 mothers of toddlers.

The dependent variable for this research is the incidence of wasting in toddlers which is divided into two categories, namely wasting and not wasting. Meanwhile, the independent variable is the child's characteristics consisting of age, divided into seven categories with an age range of 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49 months. History of diarrhea was divided into two categories, namely diarrhea and no diarrhea. Breastfeeding history was divided into two categories, namely breastfeeding and not breastfeeding. The gender of toddlers is divided into two groups, namely boys and girls. Birth weight is divided into two, namely LBW and normal. The maternal characteristics variable which includes maternal age is divided into seven categories with age ranges 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49 years. Employment status is divided into three categories, namely permanent, seasonal, and part-time. Marital status is divided into three categories, namely not married, married, and divorced. The area of residence consists of rural and urban areas. The mother's economic status is divided into five categories, namely lowest, lower middle, middle, upper middle, and top.

Bivariate analysis was carried out using the Chi-Square test with a confidence interval (CI) of 80% and a significance level of $p < 0.20$, multiple logistic regression test analysis using (CI) 95%, and a significance level of $p < 0.05$.

RESULT

Based on 2016 DHS data, 1,207 respondents were obtained for analysis. The frequency distribution of children's characteristics is shown in Table 1, while the characteristics of mothers are depicted in Table 2. The results of the study show that 81.6% more respondents experienced wasting than respondents who did not experience wasting, namely 18.4%.

Bivariate Analysis

Bivariate analysis using Chi-Square is depicted in Table 3. The results of data analysis prove that breastfeeding history (0.000), mother's education level (0.048), and birth weight (0.032) are associated with the incidence of wasting in toddlers aged 15-49 months in Timor-Leste. The results of the prevalence of wasting in toddlers based on maternal characteristics are presented in Table 3 and those based on child characteristics are presented in Table 4.

Table 1. Frequency Distribution Based on Maternal Characteristics

Mother's Characteristics	Frequency	
	N=1,207	%
Mother's Age (years)		
15-19	16	1.3
20-24	158	13.1
25-29	332	27.5
30-34	386	32.0
35-39	194	16.1
40-44	90	7.5
45-49	31	2.6
Level of Education		
No school	179	14.8
Elementary	173	14.3
Middle School	631	52.3
High School	224	18.6

Mother's Characteristics	Frequency	
	N=1,207	%
Marital Status		
Not Married	4	0.3
Marry	1178	97.6
Divorce	25	2.1
Job Status		
Still	900	74.6
Seasonal	273	22.6
Part-time	34	2.8
Economic Status		
Lowest	97	8.0
Lower Middle	154	12.8
Intermediate	216	17.9
Upper middle	366	30.3
Top	374	31.0
Area of Residence		
Urban	534	44.2
Rural	673	55.8

Table 2. Frequency Distribution Based on Child Characteristics

Child's Characteristics	Frequency	
	N=1,207	%
BB/TB		
Wasting	985	81.6
No Wasting	222	18.4
History of Diarrhea		
Diarrhea	174	14.4
No diarrhea	1033	85.6
Child's Age (Months)		
15-19	16	1.3
20-24	158	13.1
25-29	332	27.5
30-34	386	32.0
35-39	194	16.1
40-44	90	7.5
45-49	31	2.6
Breastfeeding History		
Breast-feed	854	70.8
Not Breastfeeding	353	29.2
Birth Weight		
LBW	227	18.8
Normal	980	81.2
Gender		
Man	621	51.4
Woman	586	48.6

Table 3. Prevalence of Wasting in Toddlers Based on Mother's Characteristics

Mother's Characteristics	Wasting		No Wasting		Amount		<i>p value</i>
	N=1.207	%	N=1.207	%	N=1.207	%	
Age (Years)							0.352
15-19	12	75.0	4	25.0	16	100	
20-24	120	75.9	38	24.1	158	100	
25-29	269	81.0	63	19.0	332	100	
30-34	321	83.2	65	16.8	386	100	
35-39	161	83.0	33	17.0	194	100	
40-44	78	86.7	12	13.3	90	100	
45-49	24	77.4	7	22.6	31	100	
Level of Education							0.048
No school	144	80.4	35	19.6	179	100	
Elementary Middle School	145	83.8	28	16.2	173	100	
High School	527	83.5	104	16.5	631	100	
	169	75.4	55	24.6	224	100	
Marital Status							0.067
Not Married	3	75.0	1	25.0	4	100	
Marry	966	82.0	212	18.0	1178	100	
Divorce	16	64.0	9	36.0	25	100	
Job Status							0.773
Still	736	81.8	164	18.2	900	100	
Seasonal	220	80.6	53	19.4	273	100	
Part-time	29	85.3	5	14.7	34	100	
Economic Status							0.314
Lowest	73	75.3	24	24.7	97	100	
Lower Middle	125	81.2	29	18.8	154	100	
Intermediate	176	81.5	40	18.5	216	100	
Upper-Intermediate	309	84.4	57	15.6	366	100	
Top	302	80.7	72	19.3	374	100	
Area of Residence							0.974
Urban	436	81.6	98	18.4	534	100	
Rural	549	81.6	124	18.4	673	100	

Table 4. Prevalence of Wasting in Toddlers Based on Child Characteristics

Child's Characteristics	Wasting		No Wasting		Amount		<i>p value</i>
	N=1.207	%	N=1.207	%	N=1.207	%	
Age (Months)							0.352
15-19	12	75.0	4	25.0	16	100	
20-24	120	75.9	38	24.1	158	100	
25-29	269	81.0	63	19.0	332	100	
30-34	321	83.2	65	16.8	386	100	
35-39	161	83.0	33	17.0	194	100	
40-44	78	86.7	12	13.3	90	100	
45-49	24	77.4	7	22.6	31	100	
Birth Weight							0.032
LBW	197	86.8	30	13.2	227	100	
Normal	788	80.4	192	19.6	980	100	

Child's Characteristics	Wasting		No Wasting		Amount		p value
	N=1.207	%	N=1.207	%	N=1.207	%	
Diarrhea Occurrence							0.460
Diarrhea	847	82.0	186	18.0	1033	100	
No diarrhea	138	79.3	36	20.7	174	100	
Breastfeeding History							0,000
Breast-feed	737	86.3	117	13.7	854	100	
Not Breastfeeding	248	70.3	105	29.7	353	100	
Gender							0.082
Man	519	83.6	102	16.4	621	100	
Woman	466	79.5	120	20.5	586	100	

Multivariate Analysis

Multivariate analysis with logistic regression testing using the backward Wald method up to six times the expenditure process ultimately only produces variables that have a significant effect on the incidence of wasting. Using the backward Wald method, the variables of child's age, history of diarrhea, area of residence, economic status, employment status, gender of the child, and area of residence are removed from the final model of the logistic regression test so that the

results of the statistical analysis show the factors that influence wasting in toddlers aged 15 -49 months is a history of breastfeeding (not breastfeeding), Low Birth Weight (LBW), education level (high school, and marital status (married). However, these aspects have the most influence on the incidence of wasting with a significance value of 0. 000 is the non-breastfeeding variable with an OR value of 0.376. The results of multivariate analysis with logistic regression tests are presented in Table 5.

Table 5. Factors Associated with the Incident of Wasting Toddlers Aged 15-49 Months in Timor-Leste in 2016

Variable	p value	OR	95%CI for Exp B	
			Lower	Upper
Breastfeeding History				
Not Breastfeeding	0,000	0.376	0.277	0.510
Birth Weight				
LBW	0.028	0.620	0.405	0.950
Level of Education				
Middle School	0.046	0.588	0.350	0.990
High School	0.005	0.579	0.396	0.847
Marital Status				
Divorce	0.025	0.367	0.153	0.881

DISCUSSION

The results of the study showed that there was an association between not breastfeeding or not getting breast milk and the incidence of wasting in toddlers aged 15-49 months in Timor-Leste because the results of statistical tests and logistic regression were $0.000 < \alpha 0.05$. There is an association between LBW and the incidence of wasting in toddlers

aged 15-49 months in Timor-Leste because the results of statistical tests and logistic regression are $0.028 < \alpha 0.05$. High school education level has an association with the incidence of wasting in toddlers aged 15-49

months in Timor-Leste because the results of statistical tests and logistic regression are $0.005 < \alpha 0.05$. Marital status (divorced) is related to the incidence of wasting in toddlers aged 15-49

months in Timor-Leste because the results of statistical tests and logistic regression are $0.025 < \alpha < 0.05$.

Based on the results of statistical tests using the Chi-Square test and logistic regression test, it was revealed that there was a significant association between not breastfeeding and the incidence of wasting in toddlers aged 15-49 months in Timor-Leste with a p value < 0.05) and was the variable that had the most influence on the incidence of wasting due to the significance value of 0.000 with an OR value of 0.376. Research in Afghanistan in 2020 also stated that exclusive breastfeeding can prevent the risk of wasting in toddlers aged under 6 months (13). Exclusive breastfeeding is associated with wasting, which is also supported by the results of research in Chennai, India, in 2021, which states that toddlers who are not breastfed are 36.4% more susceptible to wasting (14). Similar research conducted in Pontianak in 2013 said that babies who were not exclusively breastfed had a 3,946 times greater risk than toddlers who were exclusively breastfed (15).

Breastfeeding is very useful for children aged 0-6 months because it is the main intake for children aged 0-6 months as exclusive breast milk has complete and balanced food substances (4). Breast milk also consists of colostrum or golden liquid, a protective substance that contains many antibiotics and high protein and which is abundant in the first and second days after the baby is born and contains 10-17 times more complete content than mature breast milk, which is at 14 days old. The golden liquid has a yellow or clear color and looks more like blood than milk, this is because breast milk exclusively has cells similar to leukocytes which can kill disease germs so it is important for the growth of the baby and reduces the risk of wasting in children (16).

Based on the results of the Chi-Square test, it was concluded that a significant association was found between LBW and the incidence of wasting in toddlers aged 15-49 months in Timor-Leste with p value < 0.05). This is confirmed by an analysis conducted in Bangladesh in 2016, which stated that babies with LBW had a 25% higher risk of experiencing wasting compared to babies with normal birth weight (17). This is because babies born with LBW have an underdeveloped immune system, as a result, they will be more susceptible to disease and infection. Apart from

that, it will be difficult to achieve a normal weight according to their age if it is not supported by environmental factors that are associated with eating patterns and nutritional intake, the nutritional needs required by babies, which can cause children to suffer from wasting (18).

Based on the test results using the Chi-Square test, it was revealed that there was a significant association between the mother's junior high school and high school education level and the incidence of wasting in toddlers aged 15-49 months in Timor-Leste, p value < 0.05). This condition is similar to the analysis carried out in Bojonegoro Regency. The research stated that toddler wasting often occurs in toddlers born to mothers with a middle school education level (14.8%) and a high school education level (20%) (19). However, in this case, mothers who have a low level of education do not always give birth to wasting toddlers compared to mothers with a higher level of education. This is because the mother's educational level is not a fundamental trigger for malnutrition in children; other causal factors can influence the occurrence of malnutrition problems, especially wasting. So it can be concluded that the mother's education level is not the primary factor causing wasting in toddlers.

Based on the results of the Chi-Square test, it was revealed that there was a significant association between parental divorce and the incidence of wasting in toddlers aged 15-49 months in Timor-Leste with a p value < 0.05). Based on the results of an analysis carried out in 31 countries in Sub-Saharan Africa using Demographic and Health Surveys (DHS) in 2021, it is said that children born into divorced families or living with their mother alone and cooking in an unclean kitchen are more susceptible to suffering. wasting compared to toddlers who live with both parents and cook in a clean kitchen (20). This happens because one of the social factors that influence the nutritional status of toddlers is divorce, which occurs in women who have many children and whose husband is the breadwinner. Parents' divorce status can result in reduced nutritional supplements in children. Marital disharmony can result in children not receiving full parental love, receiving less attention from the family, as a result of which the child's needs and nutritional status are not paid enough attention (21).

There are several reasons for wasting in toddlers aged 15-49 months, including breastfeeding history, birth weight, mother's education level which influences the mother's knowledge of the child's nutritional needs, and marital status which has an impact on diverting parental attention to the child's condition and nutritional needs.

CONCLUSIONS AND SUGGESTIONS

Conclusion

Factors associated with the incidence of wasting, after analysis using Chi-Square, were the variables birth weight, breastfeeding history, and mother's education level. Meanwhile, after being analyzed using logistic regression, the most influencing variable was the breastfeeding history variable (not breastfeeding) with a significance value of 0.000 with an odds ratio value of 0.376.

Suggestion

All policymakers, especially in the health sector, need to provide knowledge and support to breastfeeding mothers regarding the benefits of exclusive breastfeeding for toddlers which, apart from supporting the child's perfect development, will also increase the child's immune system. But not only policymakers, it is also important for mothers of toddlers to carry out IMD or Inisiasi Menyusui Dini (Early Breastfeeding Initiation), Health workers and health cadres need to provide education on the importance of IMD with exclusive breastfeeding.

ACKNOWLEDGMENT

The author would like to thank the DHS (Demographic Health Survey) program which has granted permission to access wasting data in Timor-Leste 2016 so that this research can be carried out. The author also gives his appreciation to all parties who have been involved in the achievement of this research.

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