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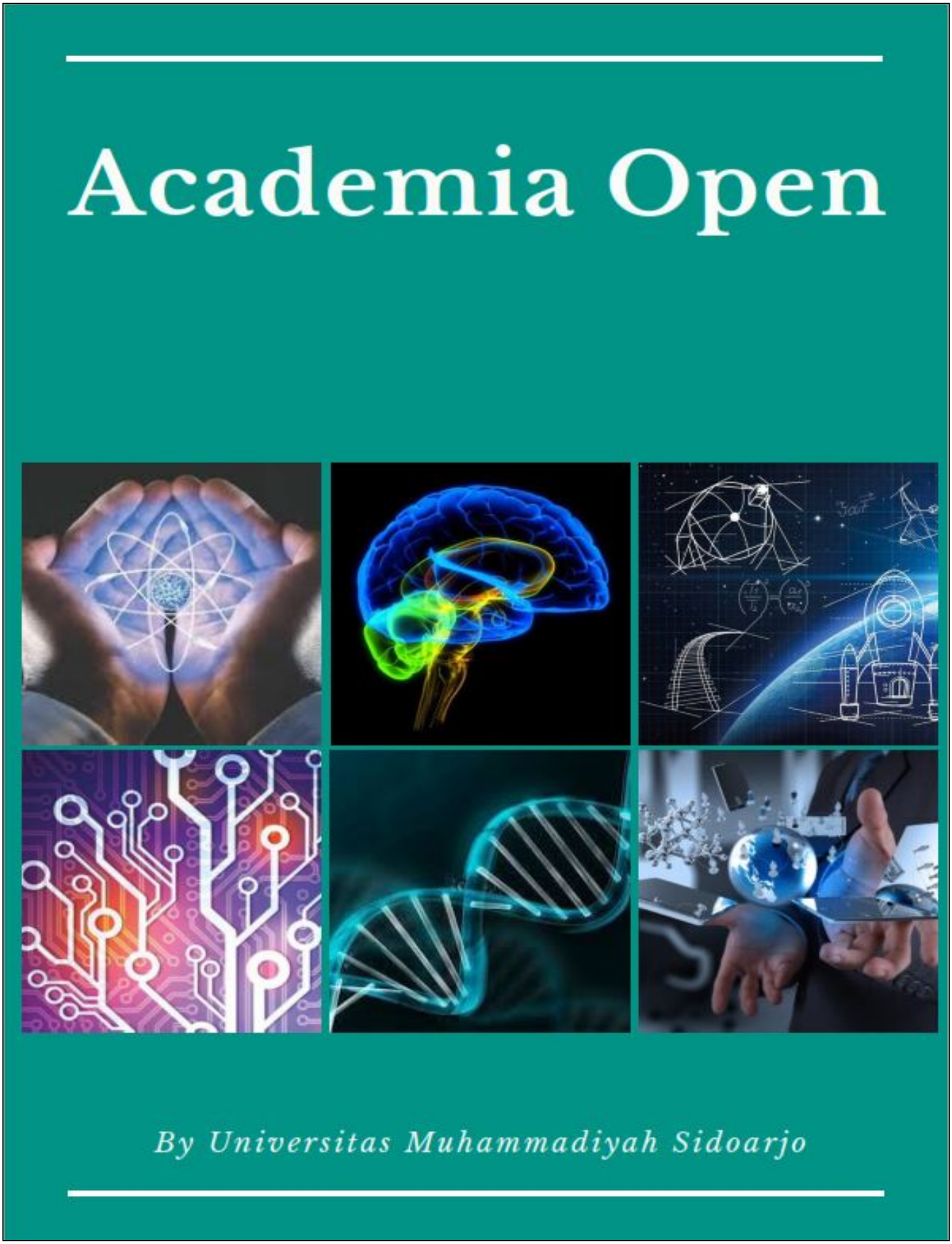

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Maternal Factors on Stunting in Pekanbaru Local Health Center, Indonesia

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Abstract

Stunting is a health problem by multiple factors (Mother factor, socio-economic factor). The growth retardation (stunting) was measure by height for age scale which primarily indicates chronic undernutrition. In 2018, the prevalence of stunting in Riau province was 35%, which was higher than the national prevalence of 30.8%. This was an quanitative with cross sectional analytic deign. The study was conducted in Puskesmas Harapan Raya Pekanbaru, Riau, Indonesia. The population was all children (4000), sampel was 187 children by systematic random sampling. Research was to analyze independents variable (risk of stunting) to the dependent's variable (mother's age, Prity, Mother Parity, Mother's Height, (Lila) / MUAC (Mid Upper Arm Circumference), Maternal Characteristics (hemoglobin), Tension Mother's, ANC Visit, Dietary habit, Mother's child care, Completed immunization, Weight child and Drink for child.) Research results is maternal hemoglobin in pregnancy with a risk category of having a stunting 53.4%, exlusive breastfeeding with a risk category of having a stunting 54.1%, dietary habit with a risk category of having a stunting 51.3%. Independents variable (Maternal Characteristics (hemoglobin), Exclusive Breastfeeding, Dietary Habis), is a significant association to stunting. The findings from this study will be helpful for programmatic intervention to reduce the stunting.

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Introduction

Maternal and child health (MCH) has been globally recognized as one of the key indicators in measuring health system performance.[1] Stunting is linear growth failure due to poor nutrition and infections in the pre- and postnatal periods,[2] Stunting is highly prevalent in developing countries and is associated with greater morbidity and mortality.[3,4] During adolescent human body demands for more nutrients to cope with rapid growth. In case of girls adolescent period nutrition is very much important as they are the future mother. A well-nourished mother after adolescent period can give birth of a health baby. Nutrition during adolescent can improve the nutritional status of the community,[5] For the optimal nutrition of children under 2 years of age, it is considered important that they be exclusively breastfed for the first 6 months before being given complementary food.[6] The growth retardation (stunting) was measure by height for age scale which primarily indicates chronic undernutrition.[7]

The causes of child stunting are complex and reflects long term under nutrition due to many factors including, low quality diet, poor breastfeeding practices, and infections combined with environmental determinants.[8] The growth retardation (stunting) was measure by height for age scale which primarily indicates chronic undernutrition. The height-for-age under the 3rd percentile of the National Centre of Health Statistics (NCHS) reference values were classified as stunting.[20]

In 2018, the prevalence of stunting in Riau province was 35%, which was higher than the national prevalence of 30.8%,[10] this is still a serious health problem in Riau province and national. Among the puskesmas (primary health centers) of Pekanbaru, Puskesmas Harapan raya has the relatively high prevalence of stunting of 42,79% (2018).

Methods

This was an quanitative with cross sectional analytic deign. The study was conducted in Puskesmas Harapan Raya Pekanbaru, Riau, Indonesia. The population was all children (4000), sampel was 187 children by systematic random sampling.

Statistically analyzed use SPSS (version. 15.0) for Windows. Chi-square analysis was utilized to assess the mother factor of stunting for child. The differences were considered to be statistically significant at $p < 0.05$ level and the odds ratio (OR). Multivariate analysis by means of multiple logistic regression was used to determine the most dominant factors for stunting.

Results

Table 1 shows frequecys of stunting factors was extracted from the data: stunting for child, mother's age, Prity, Mother Parity, Mother's Height, (Lila) / MUAC (Mid Upper Arm Circumference), Maternal Characteristics (hemoglobin), Tension Mother's, ANC Visit, Dietary habit, Mother's child care, Completed immunization, Weight child and Drink for child.

No	Dependent Variable	Frequency	%
1	Risk of stunting		
Stunting	98	52,4	
Normal	89	47,6	
Jumlah	187	100,0	
Independent variable	Frequency	%	
2	Mother's age		
Risk	21	11,2	
No Risk	166	88,8	
Total	187	100,0	
3	Parity		
Risk	108	57,8	
No Risk	79	42,2	
Total	187	100,0	
4	Mothers Parity		
Risk	140	74,9	
No Risk	47	25,1	
Total	187	100,0	

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5	Mother's Height	
Risk	78	41,7
No Risk	109	58,3
Total	187	100,0
6	(Lila) / MUAC (Mid Upper Arm Circumference)	
Risk	84	44,9
No Risk	103	55,1
Total	187	100,0
7	Maternal Characteristics (hemoglobin)	
Risk	118	63,1
No Risk	69	36,9
Total	187	100,0
8	Tension Mother's	
Risk	14	7,5
No Risk	173	92,5
Total	187	100,0
9	ANC Visit	
Risk	79	42,2
No Risk	108	57,8
Total	187	100,0
10	Dietary habit	
Risk	113	60,4
No Risk	74	39,6
Total	187	100,0
11	Mother's child care	
Risk	28	15,0
No Risk	159	85,0
Total	187	100,0
12	Exclusive breastfeeding	
Risk	74	39,6
No Risk	113	60,4
Total	187	100,0
13	Completed immunization	
Risk	64	34,2
No Risk	123	65,8
Total	187	100,0
14	Weight child	
Risk	51	27,3
No Risk	136	72,7
Total	187	100,0
15	Drink for child	
Risk	101	54,0
No Risk	86	46,0
Total	187	100,0

Table 1. *Frequency of Independent Variable and Dependent Variable*

There are several variables that are homogeneous (one of the categories has a value < 15%), it's maternal age, Tension Mother's. Risk variables (one category > 50%) are variables of parity, maternal parity, Maternal Characteristics (hemoglobin), Dietary habit, and drinking for children risk of having stunting toddlers.

Table 2 shows relation's of independents variable (risk of stunting) to the dependent's variable (Mother's Age,

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Prity, Mother Parity, Mother's Height, (Lila) / MUAC (Mid Upper Arm Circumference), Maternal Characteristics (hemoglobin), Tension Mother's, ANC Visit, Dietary habit, Mother's child care, Completed immunization, Weight child and Drink for child.)

Variabel	Risk Of Stunting		
Stunting n (%)	Normal n (%)	Total n (%)	P Value
Mother's age			
Risk	58 (53,7)	50 (46,3)	108 (100,0)
No Risk	40 (50,6)	39 (49,4)	79 (100,0)
Total	98 (52,4)	89 (47,6)	187 (100,0)
Parity			
Risk	77 (55,0)	63 (45,0)	140 (100,0)
No Risk	21 (44,7)	26 (55,3)	47 (100,0)
Total	98 (52,4)	89 (47,6)	187 (100,0)
Mother's Height			
Risk	37 (45,7)	41 (38,7)	78 (100,0)
No Risk	44 (54,3)	65 (61,3)	109 (100,0)
Total	98 (52,4)	89 (47,6)	187 (100,0)
(Lila) / MUAC (Mid Upper Arm Circumference)			
Risk	43 (51,2)	41 (48,8)	84 (100,0)
No Risk	55 (53,4)	48 (46,6)	103 (100,0)
Total	98(52,4)	89 (47,6)	187 (100,0)
Maternal Characteristics (hemoglobin)			
Risk	63(53,4)	55(46,6)	118(100,0)
No Risk	35(50,7)	34(49,3)	69 (100,0)
Total	98(52,4)	89 (47,6)	187 (100,0)
ANC Visit			
Risk	40 (50,6)	39 (49,4)	79 (100,0)
No Risk	58 (53,7)	50 (46,3)	108 (100,0)
Total	98(52,4)	89 (47,6)	187 (100,0)
Dietary habit			
Risk	58 (51,3)	55 (48,7)	113 (100,0)
No Risk	40 (54,1)	34 (45,9)	74 (100,0)

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Total	98 (52,4)	89 (47,6)	187 (100,0)
Mother's child care			
Risk	15 (53,6)	13 (46,4)	28 (100.0)
No Risk	83 (52,2)	76 (47,8)	159 (100,0)
Total	98 (52,4)	89(47,6)	187(100,0)
Exclusive breastfeeding			
Risk	40 (54,1)	34 (45,9)	74 (100,0)
No Risk	58(51,3)	55(48,7)	113 (100,0)
Total	98 (52,4)	89 (47,6)	187 (100,0)
Completed immunization			
Risk	36 (56,3)	28 (43,7)	64 (100,0)
No Risk	62 (50,4)	61 (49,6)	123 (100,0)
Total	98 (52,4)	89 (47,6)	187 (100,0)
Weight child			
Risk	24 (47,1)	27 (52,9)	51 (100,0)
No Risk	74 (54,4)	62 (45,6)	136 (100,0)
Total	98 (52,4)	89 (47,6)	187 (100,0)
Drink for child			
Risk	55 (54,5)	46 (45,5)	101 (100,0)
No Risk	43 (50,0)	43 (50,0)	86 (100,0)
Total	98 (52,4)	89 (47,6)	187 (100,0)

Table 2. *Relation's Of Independents Variable To The Dependent's Variable*

Variable's that are significantly related to the risk of stunting:

1. Parity factor is significantly related to the risk of stunting (p value = 0.008), it's parity at risk more at 3.9 having stunting child (C.I 95%, POR = 3.884 (1,495-6,581)).
2. Mother parity factor is significantly related to the risk of stunting (p value = 0.003), it's parity of mothers at risk 5.7 having stunting child (C.I 95%, POR = 5.661 (2,340-9,284)).
3. Mother's Height factor is significantly related to the risk of stunting (p value = 0.028), it's Mother height at risk 4.8 more stunting children (C.I 95%, POR = 4,829 (1,463-7,485)).
4. (Lila) / MUAC (Mid Upper Arm Circumference) is significantly related to the risk of stunting (p value = 0.014), it's (Lila) / MUAC (Mid Upper Arm Circumference) at risk 4.1 more having stuntng child (C.I 95%. POR = 4.093 (1,614-8.945))
5. Maternal Characteristics (hemoglobin) is significantly related to the risk of stunting (p value = 0,005), it's Maternal Characteristics (hemoglobin) at Risk 5.9 more having stunting child (C.I 95%, POR = 5.899 (1.496-9.629)).
6. ANC Visit is significantly related to the risk of stunting (p value = 0.016), it's ANC Visit at risk 3.1 more having stunting child (C.I 95%, POR = 3.131 (1.633-7.022)).
7. Dietary habit is significantly related to the risk of stunting (p value = 0.035), it's Dietary habit at risk 6.1 more having stunting child (C.I 95%, POR = 6.116 (1.620-10.007)).
8. Exclusive breastfeeding is significantly related to the risk of stunting (p value = 0.001), it's Exclusive breastfeeding at risk 7.9 more having stunting child (C.I 95%, POR = 7.896 (1.498-9.613))

Table 3 shows Multivariate Analysis that describles the variables that most of stunting.

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Variable	P Value	POR	95% CI for Exp(B) Lower	Upper
Maternal Characteristics (hemoglobin)	0.002	9,805	2,407	18,592
Dietary Habit	0.016	6,076	2.190	12,119
Exclusive breastfeeding	0.001	9,121	2,735	18,987

Table 3. *Multivariate Analysis Omnibus Test = < 0,000 Nagelkerke R Square = 0,283*

The final of multivariate analysis:

1. Maternal Characteristics (Hemoglobin), Dietary Habit and exclusive breastfeeding are independent variables that are significantly related to the risk of stunting.
2. Confounding variable on the risk of stunting, that is the distance of parity and maternal parity. Obtained changes in POR (Prevalence Oods Ratio) > 10%, it's means that parity and maternal parity are confounding variables.
3. The multivariate model that was formed was feasible to use, the significance of the model was significant (p-value Omnimbus Test 0,000 <0.001).
4. Nagelkerke R Square value = 0.283, it's means that of the 14 independent variables of power to influence the dependent variable (the risk of having a stunting toddler) the strength value of 28.3% is explained by other variables.

The primary focus of this study was to investigate maternal Hemoglobin of childhood stunting. Maternal characteristics was extracted from the data: mother's age, number of children , maternal parity and height of the mother. Research results is maternal hemoglobin in pregnancy with a risk category of having a stunting 53.4%. Several fatty acid (FA) supplementation trials in Ghana reported increases in hemoglobin (Hb) levels of pregnant women and may support growth spurts in children.[11]

Research results is exlusive breastfeeding with a risk category of having a stunting 54.1%. Initiation to breastfeeding as a form of maternal care and the best giving of nutrients early in life that can reduce the risk of stunting.[12] Breast milk was a nutritional intake that was suitable to the needs that would help the growth and development of children.[13] Despite growing evidence in support of exclusive breastfeeding (EBF) among infants in the first 6 months of birth, the debate over the optimal duration of EBF continues.[14] The immunological properties of breast milk contribute to ensuring adequate nutritional status, proper growth and develop morbidity prevention capacity in child body.[15,16] However, impact of duration of breastfeeding on the linear growth of the child is debatable as both negative and positive associations between breastfeeding and linear growth in infants and children had been observed. A study of survey data from nineteen demographic health surveys has shown that there were nutritional differences among children depending on whether they were breastfed or not and that breastfed children were lighter and shorter than weaned children and these differences were apparent between 12-18 months of age.[8] The magnitude of the protective effect wanes with age: highest in the first 3–6 months and diminishing thereafter when complementary foods are introduced in addition to breast milk, but continuing into the second year of life.[17] There are some polemics the goodness of substitute breastfeeding.

Research of Aminath Adeela, Dr. Kay Seur (2018) The rate of stunting was highest among children who had been breastfed for more than 24 months. Children who were not given tinned/powdered milk were more likely to be stunted than those children who were.[8] Breastfeeding promotion is regarded as one of the most effective interventions to improve child health, and could reduce under-5-mortality by 8 % globally.[18]

Research results is dietary habit with a risk category of having a stunting 51.3%. The final logistic regression model for children aged 6 to 23 months includes variables measuring fetal health and growth, child nutritional status, and child health status but does not include dietary intake or feeding variables.[19] The low adequacy level for energy was more frequent in children with stunting than in normal children.[20]

Conclusion

In conclusion, this research has successfuly to be analyze stunting factors in Puskesmas Harapan Raya Pekanbaru, Riau, Indonesia. Independents variable (Maternal Characteristics (hemoglobin), Exclusive Breastfeeding, dietary Habis), is a significant association to stunting. The findings from this study will be helpful for programmatic intervention to reduce the stunting.

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