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## Control Model Analysis of Stunting Risk Determinants in Children

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### ABSTRACT

**Background:** Stunting in Batola district from the results of monitoring nutritional status from 2013 - 2017 was 47.23% (Info Banua co.id) and Gampa Asahi village was the highest at 50%

**Aims:** This study aims to analyze the risk factors related to the determinants of children under five, mothers and the environment on stunting so that an analysis of the control model can be developed

**Methods:** conducted in 2019 in Sungai Gampa Village, Rantau Badauh District, Materials used Questionnaire, Microtoise, Food Model, Food sample, Food Picture Book Case control, population of all children under five, the technique of sampling the case is the total population, while the control is done by simple random sampling. cases of 50 stunting toddlers and control of 50 normal toddlers. Data analysis, bivariate Chi Square and then with multivariate multiple logistic regression test. Risk factors for stunting Energy intake, protein, infectious diseases, immunization status, history of exclusive breastfeeding, complementary feeding, maternal knowledge, family income, availability of energy and protein foods, parenting, and health services, and environmental health

**Result:** showed that there were 6 variables related to the incidence of stunting, namely energy and protein intake, history of infectious disease, history of immunization, exclusive breastfeeding, and maternal knowledge with  $p < 0.05$ . The results of logistic regression showed that there was an effect of exclusive breastfeeding and protein consumption on the incidence of stunting in children under five.

**Conclusion:** There is a relationship between the incidence of stunting with energy and protein intake, history of infectious diseases, history of immunization, exclusive breastfeeding, and maternal knowledge with  $p < 0.05$ . Based on the results of logistic regression, it shows that there is an effect of exclusive breastfeeding and protein consumption on the incidence of stunting in toddlers.

**Keywords:** Determinants of risk, children under five and mothers, stunting

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## Analisis Model Kontrol Determinan Risiko Stunting Pada Anak

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### Abstract

**Latar Belakang** Stunting di kabupaten Batola dari hasil pemantauan status gizi tahun 2013 – 2017 sebesar 47,23% (Info Banua co.id) dan Desa Gampa Asahi paling tinggi sebesar 50%

**Tujuan:** untuk menganalisis faktor risiko yang berhubungan dengan determinan balita lima, ibu dan lingkungan tentang stunting sehingga dapat dikembangkan analisis model pengendalian

**Bahan dan Metode:** yang dilakukan pada tahun 2019 di Desa Sungai Gampa Kecamatan Rantau Badauh, Bahan yang digunakan Kuesioner, Microtoise, Model Makanan, Sampel Makanan, Food Picture Book Case kontrol, populasi semua balita, teknik pengambilan sampel kasus adalah populasi total, sedangkan kontrol dilakukan dengan simple random sampling. kasus 50 balita stunting dan kontrol 50 balita normal. Analisis data, bivariat Chi Square kemudian dengan uji regresi logistik berganda multivariat. Faktor ripeer gorup siko stunting Asupan energi, protein, penyakit menular, status imunisasi, riwayat ASI eksklusif, MPASI, pengetahuan ibu, pendapatan keluarga, ketersediaan makanan berenergi dan protein, pola asuh, dan pelayanan kesehatan, serta kesehatan lingkungan

**Hasil :** menunjukkan bahwa terdapat 6 variabel yang berhubungan dengan kejadian stunting yaitu asupan energi dan protein, riwayat penyakit menular, riwayat imunisasi, ASI eksklusif, dan pengetahuan ibu dengan  $p < 0,05$ . Hasil regresi logistik menunjukkan bahwa ada pengaruh pemberian ASI eksklusif dan konsumsi protein terhadap kejadian stunting pada balita.

**Simpulan:** Promosi ASI Eksklusif sejak dini pada ibu hamil dan pemberian asupan protein berkualitas pada anak balita.

**Kata kunci:** Balita dan ibu, Determinan risiko, stunting

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## INTRODUCTION

Stunting is an expression of growth failure resulting from the accumulation of inadequate nutritional intake that lasts for a long time from conception to 24 months of age Hoffman et al, 2000; Bloem et al, 2013). This period is a very vulnerable period. Because the impact on the baby at this time will be permanent and cannot be rehabilitated.

Many factors trigger the high prevalence of stunting in children under five. The direct trigger is a lack of food intake and the presence of infectious diseases ( Umeta, 2003). Other factors are the mother's lack of knowledge, wrong parenting, poor sanitation and hygiene and low health services. Based on Riskesdas in 2013, the prevalence of stunting under five in Indonesia was 37.8% consisting of 18% short and very short prevalence 19.7%, Stunting prevalence in South Kalimantan Province based on Riskesdas 2013 was 44.20%, decreased by 11.12% to 33.08% in 2018. Stunting in Batola district from the results of monitoring nutritional status from 2013 – 2017 was 47.23% (Ditzi Depkes, 2016) Promotion

of exclusive breastfeeding from an early age to pregnant women and provision of quality protein intake to children under five (Ditzi, Depkes 2016) and Gampa Asahi village is the highest at 50% (Nutritional status survey Banjarmasin Nutrition Health Polytechnic 2018).

However, this figure is still above the national average of 30.80%. Three districts experienced a decline in stunting prevalence for 3 consecutive years, namely Banjar District, Hulu Sungai Utara, and Tanah Bumbu. The purpose of this study was to analyze the risk factors related to the determinants of children under five, mothers and the environment on stunting in order to develop an analysis of the control model.

## Methods

This Research Conducted in 2019 in Sungai Gampa Village, Rantau Badauh District, Materials used Questionnaire, Microtoise, Food Model, Food sample, Food Picture Book The method that we use is Case control, population of all children under five, the technique of sampling the case is the total

population, while the control is done by simple random sampling. cases of 50 stunting toddlers and control of 50 normal toddlers. Data analysis was carried out univariately, bivariate Chi Square test and then with multivariate multiple logistic regression test. Risk factors for stunting Energy intake, protein, infectious diseases, immunization status, history of exclusive breastfeeding, complementary feeding, maternal knowledge, family income, availability of energy and protein foods, parenting, and health services, and environmental health

## Result

**Table 1. The Relationship between Risk Determinants of Toddlers And Stunting**

Variable	Sub Variable	Control		Case		P. Value	OR
		N	%	N	%		
Energy intake	Good	37	74	22	44	0.009	3.299
	Not good	13	26	28	56		
Protein Intake	Good	30	60	20	40	0.046	2,250
	Not Good	20	40	30	60		
History of Infectious Diseases	Yes	37	74	22	44	0.002	3.622
	No	13	26	28	56		
Imunization	Yes	34	68	24	48	0.043	2.302
	No	16	32	26	52		

**Table 2. The Relationship between Risk Determinants of Mother's And Stunting**

Variable	Sub Variable	Control		Case		P. Value	OR
		N	%	N	%		
Mother's Education	High	17	74	21	42	0.410	0.711.
	Low	33	26	29	58		
Family Income	Highi	24	60	28	56	0.423	0,725
	Low	26	40	22	42		
Mother's Knowledge	High	15	74	34	68	0.000	0.220
	Low	35	26	16	32		
Environmental Health	Good	19	68	26	52	0.159	0.566
	Not Good	31	32	24	48		
Energy Food Availability	Good	36	74	14	62	0.288	1.578
	Not good	14	26	31	38		
Protein Food Availability	Good	31	50	19	68	0.529	0.768
	Not Good	19	50	34	32		
Parenting	Good	16	50	16	32	0.768	1.000
	Not Good	34	50	34	68		
Eksklusif breastfeeding	Yes	27	74	14	28	0.000	7.312
	No	13	26	36	72		
MP_ASI	Yes	25	50	20	40	0.315	1.500
	No	25	50	30	60		

The results of the bivariate test showed that there were 4 significant risk determinants ( $p < 0.05$ ) associated with stunting, namely energy intake (OR: 3.23), protein intake (2.23), history of infectious disease (3.62), Basic immunization history (OR: 2.30), While there were 2 significant determinants of maternal risk ( $p < 0.05$ ), namely maternal knowledge (OR: 0.202), exclusive breastfeeding (7.32) with stunting.

Based on the results of multivariate analysis of 6 variables that determine risk of stunting in children under five and mothers on

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stunting, 2 significant variables are obtained and form a control model analysis of determinants of stunting risk in children under five, namely  $Y: -1.288 (x1) + 1.834 (x)$ . (Toddlers who do not receive exclusive breastfeeding and adequate protein intake that the body needs according to their age, have a 60% chance of experiencing stunting. Of all the determinant variables studied, the exclusive breastfeeding variable shows the greatest value affecting stunting and this is in line with the framework the 1997 UNICEF concept is one of the indirect factors of the risk determinant variables studied, the risk determinants for infants and mothers, namely protein intake and exclusive breastfeeding, show the greatest odds ratio for stunting.

Several studies, such as those reported by Rahayu & Nadhiroh (2015) in Surabaya and Kuchenbecker Di Melawi (2015) show that children with non-exclusive breastfeeding patterns have a greater chance of experiencing stunting than children who are exclusively breastfed. stated that the risk of becoming stunted was 3.7 times in non-exclusive

breastfeeding infants. Basically, most of the low-income countries need breast milk for growth and it cannot be denied that for toddlers to survive because breast milk is a source of good quality protein and is easily available (Berg, A Muscat, 1985). by Stephensen et.al 2010 stated that research in Kenya and Nigeria that inadequate protein intake affects stunting that protein is important for normal function and almost all cells and metabolic processes require protein thus protein deficit has various clinical effects. In Sub-Saharan Africa 38% of children are stunted and 9% wasted, although the etiology and anthropometric abnormalities are multi-determining, some toddlers in the area live with protein deficiency. (Annisa P, 2012)

**Conclusion:** There is a relationship between the incidence of stunting with energy and protein intake, history of infectious diseases, history of immunization, exclusive breastfeeding, and maternal knowledge with  $p < 0.05$ . Based on the results of logistic regression, it shows that there is an effect of exclusive breastfeeding and protein

consumption on the incidence of stunting in toddlers.

**Suggestions** Promotion of exclusive breastfeeding from an early age to pregnant women and provision of quality protein intake to children under five.

Ditzi, Depkes, 2016 Monitoring of Nutritional Status and Nutrition Performance Indicators in 2015

Rahayu, Nadhiroh, 2015 Factors related to the incidence of stunting in toddlers, e-Journal .uNair. Ac,ide

Health Polytechnic Department of Nutrition 2018, Survey of Nutritional Status of Banjarmasin Health Polytechnic

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### **Reference**

Anisa P. Factors Associated with Stunting Incidence in Toddlers Age 25-60 months in Kalibaru Village, Depok in 2012

Berg, A, Muscat, Nutritional Factor, Eagle Indonesia

UNICEF, 1997 The Care Initiative Assessment Analyst and Action to Improve care for Nutrition, New York, UNICEF

Umata M, West CE, Verhoef H, Haidar J, Hautvast J, 2003. Factors Associated with Stunting in Infants Aged 5–11 Months in the Dodota Sire District, Rural Ethiopia. *Journal of Nutrition*. 133 :1064 –106