

The Association between Household Food Security with Stunting Incidence in Children Aged 6-23 Months in Sukaluyu and Srikamulyan Village Karawang Regency

Alfi Fairuz Asna¹, Praudya Denisa Ramadhanty², Tri Marta Fadhilah²

¹ Public Health Faculty, Universitas Diponegoro, Semarang, Indonesia

² Nutrition Program, STIKES Mitra Keluarga, Bekasi, Indonesia

Keywords: Household Food Security, Stunting, Children Aged 6-23 months.

Abstract: Stunting is the impact of malnutrition in a long period of time which ultimately causes linear growth retardation in children under two years old. A number of the causes of stunting is that access and affordability to food are still low. This study aims to determine the relationship between household food security and stunting in children aged 6-23 months in Sukaluyu and Srikamulyan Village, Karawang Regency. This study used an observational study with a cross-sectional design. The sample of this research were 144 children aged 6-23 months. Data were analyzed by using univariate and bivariate. Statistic test in bivariate analysis used spearman correlation. Bivariate analysis showed that food security of the household had no correlation with stunting incidence children aged 6-23 months ($p = 0.457$). There was no significant correlation between household food security and stunting incidence in children aged 6-23 months in Sukaluyu and Srikamulyan Village, Karawang Regency.

1 INTRODUCTION

Stunting is the impact of malnutrition, occurring over a long period of time which ultimately causes linear growth retardation (Schmidt, 2014). One of the assessments of nutritional status based on the WHO classification is to use indicators of PB/U (body length according to age) or TB/U (height according to age). TB/U indicator with cut-off point z-score in the short category of $-3SD$ to $\leq -2SD$ and very short, it is $< -3SD$. This indicate of chronic nutritional problems as a result of long-lasting conditions that result in children becoming short. Based on basic health research data (Balitbangkes, 2013) the prevalence of stunting in Indonesia nationally in 2007 (36.8%) and 2010 (35.6%) and an increase again in 2013 (37.2%). Basic health research data shows that there was a decline in stunting in 2018 to 30.8%. According to the results of Riskesdas (2013), the prevalence of stunting in West Java is 30-40%. According to the National Team for the Acceleration of Poverty Reduction (TNP2K) the prevalence of stunting in 2013 in the Karawang area was 34.87%. Factors related to the incidence of stunting such as low maternal education, low maternal knowledge, so that

the parenting pattern of mothers to infants and toddlers becomes less precise. In addition, low family economic factors can lead to low family nutritional adequacy, especially infants and toddlers (Beal, Tumilowicz, Sutrisna, Izwardy, & Neufeld, 2018)

Household food security is one of the factors for fulfilling the nutrition of family members. The emergence of various malnutrition problems is caused by not achieving nutritional security as a result of unfulfilled household food security. The novelty element of this research is that the researcher collects data on the stunting locus area set by the government. This study aims to analyze the relationship between food security and the incidence of stunting in children aged 6-23 in Sukaluyu and Srikamulyan Villages, Karawang Regency.

2 METHODS

This study used a cross-sectional design. The study population was all children aged 6-23 months in Sukaluyu Village and Srikamulyan Village, Karawang Regency. The sample size of the study was 144 children 6-23 months, consisting of 48 children

who were stunted and 96 were not stunted. The sample was selected by simple random sampling technique. The dependent variable in this study was stunting, while the independent variable was household food security.

Data collected by interview using a questionnaire includes data on the characteristics of children under two such as age and gender, and data on family characteristics such as education of the head of the household, education of housewives, age of head of household, number of family members, occupation of head of household, income of head of household. Data on maternal nutritional knowledge, and nutritional intake were also taken.

The Household Food Insecurity Access Scale questionnaire used to measure household food security which consists of 9 questions is also taken. Each question in the questionnaire was given a score of 1. Categorization of family food security, namely food security was given a score of 0-1, slightly food insecure 2-7, moderate food insecurity 8-14. Stunting and non-stunting children were assessed using the PB/U index and anthropometric measurements of body length were carried out using a length board with an accuracy of 0.1 cm. The statistical analysis used the Spearman test to analyze the correlation between household food security and stunting.

The research has obtained approval from the research ethics commission of the University of Muhammadiyah Prof. DR. HAMKA (KEPK-UHAMKA) Jakarta with number 03/18/12/034. Meanwhile, consent to participate in the study from children 6-23 months was obtained through informed consent signed by the mother or family.

3 RESULTS

Characteristic data taken include the age and gender of children, family characteristics data such as education of the head of the household, education of housewives, age of the head of the household, number of family members, occupation of the head of the household, income of the head of the household, knowledge of maternal nutrition, and nutrient intake.

The most education of the head of household was middle education (46.5%) and the most housewives' education is low education (52.8%). The age of the head of household is mostly at the age of 31-49 years (61.8%), the greatest number of family members is the small households (66%), and the work of the head of household is mostly on employees. The income of head of household in the high category that was 86.1%. Mother's nutritional knowledge on the

question of the definition of nutrition who answered correctly was 53.5%, the definition of nutritious food who answered correctly was 86.1%, and the source of carbohydrates who answered correctly was 74.3%. Most of the respondents (52.5%) were male, and aged 0-12 months (55.6%).

Table 1: Socio-economic characteristics of the family and the characteristics of the respondents

Characteristics	Jumlah	
	n	%
Head of household education		
No school	5	3,5
Low education	65	45,1
Middle education	67	46,5
higher education	7	4,9
Housewife education		
No school	6	4,2
Low education	76	52,8
Middle education	50	34,7
higher education	12	8,3
Age of head of household		
16-18 years old	1	7,0
19-30 years old	51	35,4
31-49 years old	89	61,8
50-64 years old	3	2,1
Number of Family Members		
Small household <4 people	95	66
Medium household 5-6 people	47	32,6
Large household >7 people	2	1,4
Head of household job		
Not Working	4	2,8
Employee	60	41,7
entrepreneur	46	31,9
Farmer/fisherman/labor	27	18,8
Others	7	4,9
Head of household income		
Low	20	13,9
High	124	86,1
Child gender		
Man	75	52,5
Girl	69	47,9
Child's age		
0-12 months	80	55,6
12-24 months	64	44,6

Based on the table 2, it shows that the highest prevalence is in the slightly food insecure category, which is 45.8%. The results of the analysis of the nutritional status of PB/U (stunting) show that there are 33.3% of children aged 6-23 months who are stunted.

Table 2: Distribution of respondents by food security and stunting

Category	Amount	
	n	%
Food Security		
Severe food insecurity	6	4,2
Moderate food insecurity	20	13,9
Slightly food insecure	66	45,8
Food Secure	52	36,1
Stunting		
Stunting	48	33,3
Not-Stunting	96	66,7
Total	144	100

Table 3: Proportion of adequacy level of household nutrient intake based on food security

Nutrient Intake	Food Secure		Slightly food insecurity		Moderate food insecurity		Severe food insecurity	
	n	%	n	%	n	%	n	%
Energy (kkal/hari)								
Good (>80% AKG)	21	14,5	19	13,1	3	2	2	1,3
Poor (<80% AKG)	33	22,9	44	30,5	17	11,8	5	3,4
Protein (g/hari)								
Good (>80% AKG)	39	27	37	25,6	7	4,8	2	1,3
Poor (<80% AKG)	13	9	28	19,4	13	9	5	3,4
Fat (g/hari)								
Good (>80% AKG)	14	9,7	14	9,7	5	3,4	2	1,3
Poor (>80% AKG)	39	27	50	34,7	15	10,4	5	3,4
Carbohydrate (g/hari)								
Good (>80% AKG)	13	9	19	13,1	5	3,4	1	0,6
Poor (<80% AKG)	40	27,7	45	31,2	15	10,4	6	4,2

Table 4: Household food security with stunting

Food Security	Category				Total		P-value
	Stunting		Normal		n	%	
	n	%	n	%			
Severe food insecurity	2	33,3	4	66,6	6	100	0,457
Moderate food insecurity	10	50	10	50	20	100	
Slightly food insecurity	19	28,7	47	71,2	66	100	
Food secure	17	32,6	35	67,3	52	100	

Based on Table 3, it shows that the highest low energy intake, low fat intake, and low carbohydrate intake were in households slightly food insecure (30.5%, 34,7%, and 31,2%). The highest low protein intake is in households' food secure 27%.

The results of the Spearman correlation test show a p-value of 0.457 which means that there is no significant relationship between household food security and stunting ($p > 0.05$). The data above shows that households with severe food insecurity and experiencing stunting are 33.3%, households with moderate food insecurity and experiencing stunting

are 50%, households are slightly food insecurity and experience stunting 28.7%, and households are food insecure and experienced stunting 32.6%.

4 DISCUSSION

4.1 Respondent Characteristics

This study took data on family characteristics, namely parental education, age of the head of the household,

occupation of the head of the household, monthly income, household size, knowledge of maternal nutrition. The results of the analysis of household social characteristics show that the highest education level for the head of household is SMA/SMK at 46.5%, the mother's education is SMA/SMK 34.7%.

The work of the head of household is mostly owned by the respondents, namely employees by 41.7%. This is in line with the research of Utami and Sisca (2015) in Bogor, West Java, most heads of households have an employee job of 46.2% (Utami & KP, 2015). According to Baliwati et al. (2015) that the economic status of a household is determined by the type of work (Baliwati, Briawan, & Melani, 2015). Heads of poor households who live in urban areas are more likely to have status as laborers/employees/ employees/ others. In addition, the heads of poor households in rural areas tend to work in the agricultural sector (Sugiyarto, Mulyo, & Seleky, 2015).

The variable age of the head of the household is at most 30-49 years old at 61.8%. Most of the age of the head of the household belongs to the middle age group. The characteristics of the monthly income of the head of the household are seen from the Poverty Line. In Karawang Regency the average respondent is included in the non-poor household with a high-income category of 86.1%. According to Rachman and Supriyati (2005), the income level in rural areas is much lower than the income level in urban areas (Rachman & Supriyati, 2005). When a household is in the poor category, it will be constrained in meeting food needs because of limited income which leads to hunger and food insecurity (Damayanti, 2018). Income affects food security (Shisanya & Mafongoya, 2016); (Herawati, Ginting, Asngari, Susanto, & Puspotawati, 2011); (Mohammadi, et al., 2011); (Shoae, Omidvar, & ghazi-tabatabaie, 2007). The characteristic of household size is mostly owned by respondents, namely 3-4 people in one family by 66%. This is in line with Ashari's research (2017), most households fall into the small household category of 82.4%. This is in line with what (Olaniyi A., 2014) stated that household size is related to household income. High-income households tend to have small household sizes and vice versa (Olaniyi A., 2014). The characteristics of the nutritional knowledge of mothers who answered correctly were mostly on the question of the definition of nutritious food, namely 86.1%. According to Yuliana et al. (2013) knowledge of nutrition of housewives has a positive effect on household food security (Yuliana, Zakaria, & Adawiyah, 2013).

4.2 The Relationship between Food Security and Stunting Incidents in 0-23 Months Children

The results of the data show that households with severe food insecurity have 33.3% stunting children, while food insecure households have 32.6% stunting children. Based on statistical tests, there is no significant relationship between household food security and the incidence of stunting as shown by the results of the Spearman correlation test ($p > 0.05$). The results of the study (Saaka et al. 2014) a study conducted in Northern Ghana stated that there was no relationship between the nutritional status index (stunting) and household food security. This study also states that household food security is not a sensitive indicator for children under 2 years of age (Saaka, 2014). Emiyas and Mengistie's research (2017) reveals that there is no relationship between food security and stunting, because malnourished children are children whose nutritional status is poor as a result of inadequate care and poor child health, not only in terms of food. Emiyas and Mengistie's research findings (2017) point to the fact that food security is a necessary but not sufficient condition to ensure good nutritional status (Mulu & Mengistie, 2017).

According to research (Spiro et al. 2010) in Kailali Nepal stated that there is no significant relationship between food security and the incidence of stunting, because not only food access affects stunting but also family socioeconomic welfare, low birth weight, infectious diseases and diarrhea, hygiene and sanitation, mother's education, mother's knowledge about optimal nutrition, non-exclusive breastfeeding parenting, incomplete immunization status (Osei, et al., 2010).

5 CONCLUSION

Based on the results of the research and discussion in the previous chapter, the researcher can conclude that there is no significant relationship between household food security and stunting. The prevalence of stunting under two children was mostly found in food insecure households, namely 33.3%, while stunting children under five in food insecure households was 32.6%. The prevalence of stunting under children aged 0-24 months in Sukaluyu and Srikamulyan Villages, Karawang Regency is 33.3%.

REFERENCES

- Balitbangkes. (2013). *Riset Kesehatan Dasar*. Jakarta.
- Baliwati, Y. F., Briawan, D., & Melani, V. (2015). Pengembangan Instrumen Penilaian Konsumsi Pangan Pada Rumah Tangga Miskin di Indonesia. *Gizi Indonesia*, 63-72.
- Beal, T., Tumilowicz, A., Sutrisna, A., Izwardy, D., & Neufeld, L. M. (2018). A review of child stunting determinants in Indonesia. *Maternal & Child Nutrition*, 14(4), 1-10. doi:https://doi.org/10.1111/mcn.12617
- Damayanti, H. O. (2018). Tingkat Ketahanan Pangan Pada Rumah Tangga Miskin di Daerah Rawan Banjir. *Jurnal Litbang*, 15-26.
- Herawati, T., Ginting, B., Asngari, P. S., Susanto, D., & Puspotawati, H. (2011). Ketahanan Pangan Keluarga Peserta Program Pemberdayaan Masyarakat Di Pedesaan. *Jurnal Gizi dan Pangan*, 3(11), 208-216.
- Mohammadi, F., Omidvar, N., Housiar-Rad, A., Khoshfetrat, M. R., Abdollahi, M., & Mehrabi, Y. (2011). Validity of an adapted Household Food Insecurity Access Scale in urban households in Iran. *Public Health Nutrition*, 15(1), 149-167.
- Mulu, E., & Mengistie, B. (2017). Household Food Insecurity and Its Association With Nutritional Status of Under Five Children in Sekela District Ethiopia. *BMC Nutrition*.
- Olaniyi A., O. (2014). Assessment of Households' Food Access and Food Insecurity in. *Global Journal of HUMAN-SOCIAL SCIENCE: E*, 14(1).
- Osei, A., Pandey, P., Spiro, D., Nielson, J., Shrestha, R., Talukder, Z., . . . Haselow, N. (2010). Household Food Insecurity and Nutritional Status of Children Aged 6 to 23 Months in Kailali District of Nepal. *Food and Nutrition Bulletin*, 483-494.
- Rachman, H., & Supriyati. (2005). Struktur dan Distribusi Pendapatan Rumah tangga Petani Lahan Sawah di Jawa dan Luar Jawa. *Soca*.
- Saaka, M. (2014). Relationship Between Mothers Nutritional Knowledge in Childcare Practice and the Growth of Children Living in Impoverished Rural Communities. *Jurnal of Population and Nutrition*, 237-48.
- Schmidt, C. W. (2014). Beyond Malnutrition: The Role of Sanitation in Stunted Growth. *Enviromental Health Perspectives*, 122(11), 298-303. doi:https://doi.org/10.1289/ehp.122-A298
- Shisanya, S., & Mafongoya, P. (2016). Adaptation to climate change and the impacts on household food security among rural farmers in uMzinyathi District of Kwazulu-Natal, South Africa. *Food Security*, 597-608.
- Shoae, N. Z., Omidvar, N., & ghazi-tabatabaie, M. (2007). Is the adapted Radimer/Cornell questionnaire valid to measure food insecurity of urban households in Tehran, Iran? *Public Health Nutrition*, 855-61.
- Sugiyarto, Mulyo, J. H., & Seleky, R. N. (2015). Kemiskinan dan Ketimpangan Pendapatan Rumah Tangga di Kabupaten Bojonegoro. *Agro Ekonomi*, 26(2), 115-120.
- Utami, N. H., & KP, D. S. (2015). Ketahanan Pangan Rumah Tangga Berhubungan dengan Status Gizi Anak Usia Di Bawah Dua Tahun (BADUTA) di Kelurahan Kebon Kelapa, Kecamatan Bogor Tengah, Jawa Barat. *Gizi Indonesia*, 38(2), 105-114. doi:10.36457/gizindo.v38i2.184
- Yuliana, P., Zakaria, W. A., & Adawiyah, R. (2013). Ketahanan Pangan Rumah Tangga Nelayan Di Kecamatan Teluk Betung Selatan Kota Bandar Lampung. *Jurnal Ilmu Agribisnis*, 1(2).