

MENTAL, SOCIAL-PSYCHOLOGICAL STIMULATION AND NUTRITIONAL SUPPLEMENTATION AFFECTING STUNTING INCIDENCE AMONG CHILDREN IN INDONESIA

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ABSTRACT

Stunting is a public health problem regarding nutritional status that is diagnosed through a long body based on a standard deviation of minus two. One effort that can be done by families in overcoming the problem of stunting is through optimization of Mental Stimulation, Nutrition Supplementation and Social Psychological Stimulation (MeNu SoP). The purpose of this study was to determine the effectiveness of Mental Stimulation, Nutritional Supplementation and Social Psychological Stimulation on the incidence of stunting in children. The study design used quasi pre and post test experiments without control groups. The number of research samples as many as 40 respondents were selected using cluster sampling techniques. The results showed significant changes in the variable Mental Stimulation before and after the intervention (p value = 0,000), Nutritional Supplementation before and after the intervention (p value = 0,000), Social Psychological Stimulation (p value = 0,000), and anthropometric status before and After the intervention (p value = 0,000). The application of MeNu SoP can be used by families, nurses and other health workers to improve the status of anthropometric toddlers with stunting.

Keywords: Mental; Nutrition; Psychosocial; Stunting; Toddler.

ABSTRAK

Stunting adalah permasalahan kesehatan masyarakat mengenai status gizi yang didiagnosis melalui penilaian panjang/tinggi badan per usia dibawah nilai standar deviasi minus dua. Salah satu upaya yang dapat dilakukan keluarga dalam mengatasi permasalahan stunting adalah melalui optimalisasi Mental Stimulation, Nutritional Supplementation dan Sosial Psychological Stimulation (MeNu SoP). Tujuan penelitian ini adalah untuk mengetahui efektifitas Mental Stimulation, Nutritional Supplementation dan Sosial Psychological Stimulation terhadap kejadian stunting pada balita. Desain penelitian menggunakan quasi eksperimen pre dan post test tanpa kelompok kontrol. Jumlah sampel penelitian sebanyak 40 responden yang dipilih menggunakan teknik cluster sampling. Hasil penelitian menunjukkan terjadi perubahan yang signifikan pada variabel Mental Stimulation sebelum dan sesudah intervensi (p value = 0,000), Nutritional Supplementation sebelum dan sesudah intervensi (p value = 0,000), Sosial Psychological Stimulation (p value = 0,000), dan status antropometri sebelum dan sesudah intervensi (p value = 0,000). Penerapan MeNu Sop diharapkan dapat digunakan oleh keluarga, perawat dan petugas kesehatan untuk memperbaiki status antropometri balita dengan stunting.

Kata Kunci: Balita; Mental; Nutrisi; Psikososial; Stunting

INTRODUCTION

Indonesia faces a double nutritional burden which means that currently it is trying to overcome malnutrition problems such as thinness and stunting but at the same time has to face the problem of over nutrition or obesity (Sandra, Ahmad, & Arinda, 2018). Stunting is a condition of failure to grow normally in children under five due to chronic malnutrition, so the child grows too short (Eni, 2019). Stunting is determined through anthropometric calculations that refer to WHO, which is height or weight divided by age. Stunting is a health problem that is more difficult to solve compared to nutritional deficiencies (wasting), this is related to micronutrient deficiencies and transitions of health hazards experienced so stunting management must collaborate between sectors (El Taguri et al., 2009).

Facts in Indonesia stunting on children under five are at 35.6 percent, which means that it has exceeded the WHO tolerance limit of 20%. The Indonesian Ministry of Health recorded 7.8

million out of 23 million children under five were stunted . Meanwhile, from 35.6 percent of people with stunting in Indonesia, as many as 18.5 percent of children under five are in the very short category and 17.1 percent are in the short category. So WHO in countries with poor nutritional status and ranked 5th highest in the world and ranked first in Southeast Asia. Data from the Republic of Indonesia Ministry of Health in 2013 showed data from basic health research results that DKI Jakarta as the Capital City of Indonesia has a percentage of short toddlers of 15.4 and very short toddlers of 7.6 (Kementrian Kesehatan RI, 2010).

The development of health efforts for the 2015-2019 period focuses on 4 (four) priority programs, namely the reduction in maternal and infant mortality rates, the reduction in the prevalence of short children (stunting), control of infectious diseases and control of non-communicable diseases. Stunting is a priority program of the Indonesian government at this time because the impact of these nutritional

problems greatly affects the quality of life of future generations. Another problem that will arise is the size of a country's economic burden caused by health problems that arise so that this will prevent Indonesia from becoming a developed country (Eni, 2019). The UNICEF report explains that stunting will have an impact on intelligence, vulnerability to disease, reduce productivity and hamper economic growth and labor market productivity. The results of the assessment (Kementrian Kesehatan RI, 2010) the level of intelligence of Indonesian children ranked 64 and resulted in a loss of GDP by 11% and reduced 10% of total lifetime income and caused intergenerational poverty.

Growth and development in children/toddlers occur simultaneously. Growth is an increase in the size of the body, cells and tissues while development is the result of perfect interaction between the central nervous system and the organs of the body it affects. If a toddler experiences stunting where growth is stunted, he has a tendency for stunted development. Many studies

have revealed that stunting can be caused by genetic factors, maternal age, history of preterm birth, water and food sanitation, family income levels, patterns of nutrition, breastfeeding is not optimal, diseases experienced by children, lack of information about preventing stunting in children. So interventions must be arranged to prevent stunting in children starting from preconception to the age of five (Kementrian Kesehatan Republik Indonesia, 2019). Government efforts that have been made so far have been to compile various policies for each sector related to stunting, including the implementation of specific interventions by the health sector, sensitive nutrition interventions carried out by the non-health sector such as agriculture, social protection programs in poverty eradication, supply programs clean water and sanitation, women's empowerment program (Eni, 2019).

Specific interventions that can be developed by nurses are mental, social and psychological stimulation as well as nutritional supplementation in

families of toddlers with stunting. Mental stimulation is an effort made by developing independence, creativity, productivity, personality, and so forth. Social and psychological stimulation is designed in order to improve the ability of families and toddlers to deal with stunting problems. Nutritional supplementation is a formula applied by toddlers' families with stunting ranging from nutrition when pregnant, breastfeeding, exclusive breastfeeding, complementary feeding (MPASI) (Kementrian Kesehatan RI, 2010).

Based on these facts, serious attention is needed from various elements to solve stunting problems in toddlers, including academics. The situation prompted researchers to conduct research to identify factors that influence the incidence of stunting in children under five in Central Jakarta as the capital of DKI Jakarta which still accounts for 15.4% of stunting in Indonesia . The purpose of this study is to find out how the influence of the application of mental stimulation, nutritional supplementation and social-

psychological stimulation in toddlers with stunting in DKI Jakarta Province. This research is important to know the activities of Mental Stimulation, Nutritional Supplementation and Social Psychological Stimulation on the incidence of stunting in children, in this study more operational studies regarding interventions that must be optimized by families in dealing with stunting problems in children.

METHODS

This research was a quantitative method, with a descriptive approach. This research method used quasi experiments design pre-post test quasi-control without control group. Data collection techniques using cluster sampling and statistical tests using paired t-test . The intervention was carried out for six months for toddlers with stunting.

The first stage was carried out a literature study and identification of research problems. The second stage was a pre-test to see the pattern of applying "MeNu-SoP" and continued action research in the form of

implementing nutritional supplementation, social-psychological stimulation and mental stimulation to toddlers with stunting . The third step was to conduct a post test for the "MeNu-SoP" pattern after the intervention. At this stage the researcher will distribute a questionnaire about "MeNu-SoP" to 40 families who have toddlers with stunting in DKI Jakarta. The criteria for respondents are families who have toddlers with stunting (TB / U <-2 elementary school) (WHO, 2011). The sampling technique uses probability sampling by means of cluster sampling.

The questionnaire was filled by families who have toddlers with stunting. Mental Stimulation, Nutrition Supplementation and Social-Psychology Stimulation instruments were developed from The Extended Model of Care theory (Engle et.al, 1997). The contents of the questionnaire included behaviors regarding nutrition parenting which consisted of stimulation of nutrition through feeding (during pregnancy,

exclusive breastfeeding and MPASI), food preparation and storage practices, hygiene/ hygiene practices and food sanitation, practice of caring for sick children, and psychosocial stimulation and toddler mentality. The hypothesis in this study was Mental Stimulation, Nutrition Supplementation and Social-Psychology Stimulation ("MeNu-SoP") effect on reducing the incidence of stunting in children. This research was conducted in the DKI Jakarta Province. The population in this study was under five suffering from stunting that are in the Jakarta .

The instrument was tested for validity conducted on a sample taken from a population of about 30 people, it was found that 30 statements on the questionnaire had r tables with a significance level of 5% > 0.361. The validity test results in this study indicated that 30 question items have a calculated value of $r > 0.361$, so that all statements are declared valid and can be used. The Cronbach alpha value in this study was 0.967 so the ideal reliability was stated because it was upper 0.9. Normality Test in this

study was conducted using Kolmogorof Smirnov (One sample Kolmogorov Smirnov Test).

Ethical principles in this study includes respect, beneficence, non maleficence and justice (Polit, Beck & Hungler, 2001). The ethical clearance test was carried out by the Ethics Research Committee of Husada Hospital College of Health Sciences . This study has passed the expert validity test "MeNu SoP" and the administrative licensing procedure for the use of the research location has been obtained from the National Unity and Politics Agency of the DKI Jakarta Province and the DKI Jakarta Provincial Health Office . Researchers have taken competency tests by experts to ensure researchers are able to provide "MeNu SoP" in accordance with procedures.

RESULTS AND DISCUSSION

Homogeneity test showed that there was a significance value (Sig) Based on Mean variables "MeNu SoP" was equal to 0, 537 > 0.05 thus concluded that variances are homogenous, which

means group variance homogeneous group and qualify absolute test independent sample t test is performed.. If the significance value is greater than 0.05, the research data is normally distributed asymp. Sig. 2 tailed or p value 0,000 indicates that the data are not normally distributed so that the analysis of the effects of the two variables can use non-parametric analysis, the Wilcoxon Test.

Research Mental Stimulation, Nutrition and Social-Psychology Supplementation Stimulation ("Menu-SoP") generates data in the form of the results of univariate and bivariate. Univariate analysis results in this study obtained a description of the demographics of respondents which included 55% of respondents were male sex, 42.5% of high school fathers education, 57.5% of mothers under five were junior high school, 47.5% of fathers' occupations were self-employed, 32.5% of mothers working under five are private employees, 70% of family income below the minimum wage and 23% of family types are large families.

Table 1
Distributed the demographic characteristics
(n = 40)

Variable	Amount (n)	Percentage (%)
Toddler sex		
Man	22	55
Girl	18	45
Total	40	100
Toddler father education		
Elementary school	4	10
Middle School	12	30
High school	17	42.5
College	7	17.5
Total	40	100
Toddler Mother's Education		
Elementary school	2	5
Middle School	23	57.5
High school	23	32.5
College	2	5
Total	40	100
Father's occupation		
Labor	8	20
entrepreneur	19	47.5
Private employees	10	25
Civil servants	3	7.5
Total	40	100
Mother's job		
Does not work	6	15
Labor	6	15
entrepreneur	12	30
Private employees	13	32.5
Civil servants	3	7.5
Total	40	100
Family income		
Under the UMR	28	70
Above UMR	12	30
Total	40	100
Family type		
Main family	17	42.5
Extended family	23	57.5
Total	40	100

The results of univariate analysis on the description of Mental Stimulation, Nutritional Supplementation and Social Psychological Stimulation

before and after the intervention obtained data on Table 2 showed that in the mental stimulation variable, there was an increase in good behavior before and after the intervention from 45% to 67.5% (22.5% difference). In the nutritional supplementation variable good behavior increased from 47.5 to 67.5% (20% difference). Social and psychological stimulation variables also showed an increase in good behavior from 42.5 to 72.5% (30% difference).

Table 2
Distribution of the application of mental stimulation, nutritional supplementation and social psychological stimulation in children with stunting (n = 40).

Variable		Pre intervention		Post Intervention	
		n	%	n	%
Mental Stimulation	Deficient	22	55	13	32.5
	Well	18	45	27	67.5
	Total	40	100	40	100
Nutritional Supplementation	Deficient	21	52.5	13	32.5
	Well	19	47.5	27	67.5
	Total	40	100	40	100
Social Psychological Stimulation	Deficient	23	57.5	11	27.5
	Well	17	42.5	29	72.5
	Total	40	100	40	100

Table 3 showed that from the total number of respondents who experienced stunting, after the MeNu SoP intervention for 6 months the

results obtained 52.5% to be non-stunting or normal.

Table 3
Anthropometric status in children with stunting (n = 40).

Variable		Pre intervention		Post Intervention	
		n	%	n	%
Anthropometric status	Stunting	40	100	19	47.5
	Not stunting	0	0	21	52.5
Total		40	100	40	100

Bivariate analysis was used to state the results of the analysis of the independent variables and the dependent variable.

Bivariate analysis used with regard to data distribution. Paired different test analysis or called two related samples test is used to determine differences before and after the intervention. The purpose of comparing pairs before and after was to make precise estimates (Pagano & Gauvreu, 1993; Susilo, 2015). In this study, a non-parametric test is used, the Wilcoxon test because the data used are ordinal scale and do not require a normal distribution. The results of the paired different test

analysis in this study are in the table below:

Table 4
Results of the analysis of the incidence of Stunting in children before and after Mental stimulation, nutritional supplementation and social psychological stimulation interventions (n = 40).

Variable	R (correlation)	Sig.
Mental Stimulation Before and After Intervention	.201	0.214
Nutritional Supplementation Before and After Intervention	.271	0.091
Social Spiritual Stimulation Before and After Intervention	.177	0.275
Anthropometric status before and after intervention	.102	0.238

The results of this study indicated the correlation value of mental stimulation before and after the intervention is 0.201, which means there is a strong and positive relationship. Variable Nutritional Supplementation has a strong relationship before and after the intervention with a value of 0.271. Variable Social Spiritual Stimulation has a strong relationship before and after the intervention with a value of 0.177. Anthropometric status variables has a strong relationship before and

after the intervention with a value of 0.102.

Table 5
Results of analysis of differences before and after Mental stimulation, nutritional supplementation and social psychological stimulation interventions in children with stunting (n = 40)

Variable	Paired Differences					P value
	The mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
				Lower	Upper	
Mental stimulation before and after the intervention	- 0,350	0.580	0.092	-0,535	- 0,165	0,000
Nutritional Supplementation before and after the intervention	- 0,450	0.504	0.080	-0,611	- 0,289	0,000
Social Psychological Stimulation before and after the intervention	- 0,375	0.586	0.093	-0,562	- 0,188	0,000
Anthropometric status before and after intervention	- 0,525	0.506	0.080	-0,678	- 0,363	0,000

The results of the analysis of Sig. (2-tailed) showed that the probability value / p value of the T paired test on the mental stimulation variable showed the result = 0,000 meaning that there is a difference between before and after treatment because the p value <0.05 (95% confidence) indicated a difference before and after the

intervention. In this mental stimulation variable, a mean value of 0.350 (negative) is obtained, which means that there is a tendency for an increase in mental stimulation in families with stunting toddlers with an average increase of 0.350. Nutritional supplementation variable has a p value of 0,000 which means there was a significant difference before and after the intervention with an average increase of 450. Social spiritual stimulation variable has a p value of 0,000 which means there are significant differences before and after the intervention with an average increase of 375. Anthropometric status variable has p value of 0,000 which means there are significant differences before and after the intervention with an average increase of 525.

Univariate analysis results in this study obtained a description of the demographics of respondents which included 55% of respondents were male sex, 42.5% of high school fathers education, 57.5% of mothers under five were junior high school, 47.5% of

fathers' occupations were self-employed, 32.5% of mothers work under-fives are private employees and 23% of family types are large families. This is in line with previous studies conducted by (Utami, Setiawan, & Fitriyani, 2019) which showed that working mothers and low levels of maternal education tended to increase the incidence of stunting in children. Working mothers have limited time to optimize children's growth and development so as to increase the incidence of stunting in children. Mothers who have a low level of knowledge can also cause mothers to lack information about preventing stunting from the womb. The results of other studies show that both in Indonesia and Bangladesh both show that maternal education significantly influences the incidence of stunting in children (Kumar & Modi, 2008). Other studies reveal that k ontribusi mother's education on the incidence of stunting is 70%, which is almost double that of family income (Emamian, Fateh, Gorgani, & Fotouhi, 2014).

The results of this study also showed 42.5% of mothers did not breastfeed until the age of 2 years of age, 40% of mothers did not give exclusive breastfeeding to children, 42.5% of toddlers did not consume meat and fish, 40% of toddlers did not consume vegetables and fruits each day. This suggests that mothers lack understanding of the importance of improving the health status of toddlers through breastfeeding, compulsory immunization, consumption of fruits, vegetables and fish. A study revealed the fact that babies are very vulnerable to malnutrition during the transition from breast milk (as the only source of food) to solid food. The results of the study were carried out in the Kilosa district in Tanzania to determine the relationship of feeding practices and levels of malnutrition , stunting, and iron deficiency anemia. In this study data were obtained that supplementary food alone was insufficient for only meeting 18.6% of the total body needs so that until the age of 2 years of age children were still given ASI (Motbainor, Worku, & Kumie, 2015a).

Mothers who had initiated breastfeeding after one hour after the birth of a child were about 5 times higher preventing stunting in children (AOR = 5.16, 95% CI; 2.24-15.90) compared to mothers who did not have the initiation (Batiro, Demissie, Halala, & Anjulo, 2017) .

Univariate analysis showed that 70% of family income below the minimum wage , this also affects the fulfillment of family needs in buying and providing healthy and balanced food. Economic determinants influenced the incidence of stunting in children because low income results in the distribution of funding allocations for nutrition and health was reduced or absent among families (Milman, Frongillo, De Onis, & Hwang, 2005). Findings obtained from other studies indicate that a high prevalence of stunting increases in families with lower middle income (Senbanjo, Oshikoya, Odusanya, & Njokanma, 2011).

The majority of toddler family types with stunting were extended families . This was in line with research (Rah et al., 2010) which states that 85% of children with stunting in Bangladesh are experienced by families with large family types. This is because toddlers will share nutrition with relatives and members of other families that happen to the inadequate nutrition in children that affects inhibition of growth and development in children.

Mental stimulation is an important thing to do by families in order to prevent the occurrence of stunting in children (Leroy, Habicht, Gonzalez de Cossio, & Ruel, 2014). In this study it has been proven that families who rarely do mental stimulation have a chance of toddlers experiencing stunting 214 times. Mental stimulation can be done by way of family / father to help feed / breastfeeding / toddlers, teach children to wash their hands with soap, stimulate child development by doing activities, allow children to play in the home environment, do not provide a gadget to play or while eating, no scold children if they do not

want to eat or suckle, let children eat alone, stimulate children by jumping, stimulate children by stimulating to achieve higher objects, stimulate children to initiative to ask for their own food / drink when hungry or thirsty.

Nutritional Supplementation Factors also had a significant influence in preventing stunting in children. Nutritional supplementation can be done by giving my baby exclusive breastfeeding for 6 (six) months, giving self-made foods (MPASI) of children, giving breast milk until the age of 2 years, consuming folic acid and iron when pregnant, giving formula milk in addition to toddlers, buy instant or ready-made side dishes to eat children, consume fresh vegetables and fruits, toddlers and mothers consume fish and meat, toddlers and mothers consume vegetables and fruit, consume foods that contain calcium and protein.

It is also linear with the results of research that has been done (Utami, 2017) ; (El Taguri et al., 2009); (Utami

et al., 2019); (Motbainor, Worku, & Kumie, 2015b) ; (Mamiro et al., 2005); (Modjadji & Madiba, 2019) ; (Fenske, Burns, Hothorn, & Rehfuess, 2013) which showed that nutritional factors play an important role in handling stunting problems in toddlers. Contributions of food and micronutrient poor essential closely related to stunting. A period of intermittent nutritional deficiencies without forced improvement coupled with decreased ability to regulate good nutrition is seen in families with stunted children (Fernald & Neufeld, 2007).

Other findings obtained data that that nutrient intake in children during infancy must be in accordance with the requirements for growth, otherwise there will be growth and development obstacles (Senbanjo et al., 2011). Percentage of energy from carbohydrates, fat and protein were significantly lower are found in children were stunted compared to normal children ($p < 0.05$) (Yasmin, Kustiyah, & Dwiriani, 2014). Research in South Aftika showed the incidence

of stunting in children occur in mothers and children who live in socioeconomic status were low, as indicated by a high unemployment rate without income (82.3%) and dependence on social grants (86, 8%) (Modjadji & Madiba, 2019).

Another important thing that plays a role in restoring toddler anthropometric status was Social Psychological Stimulation. This aspect can be done by families by way of taking children to eat with the family at the dinner table, preventing child buy snacks outside the home, taking children to eat while walking around in the environment outside the home when it is difficult invited to eat, preventing children to eat while watching television/ gadgets, determine menu food for the whole family, every month check their children to neighborhood health center, ensuring a kid get complete immunization, feeding uses an interesting method for example by singing, serving food with forms varied for example by forming a pattern cartoon form, serving foods

with food that is not monotonous. Social and psychological stimulation is important because the results of this study show that 92.5% of children with stunting buy snacks outside the home, 50% of families do not provide attractive feeding methods when children do not want to eat, 82.5% of families do not try to serve food interesting for toddlers, 85% of families do not include toddlers eating at the same table with the family. Other research also reveals that it is important to stimulate the social and psychological aspects of toddlers in handling stunting. This is consistent with research that has been done (Amanda, 2014).

Stunting is an irreversible nutritional problem so it is important for families to optimize health as early as possible. It was important things to prevent stunting in a period of intra-uterine and postnatal, from the time of conception to 24 months, so that needs to be given to the public intervention is not only in the baby/ toddler alone but also on the mother. Significant reductions related to stunting problems can be achieved

through a series of comprehensive priority interventions to reduce the burden of global disease and encourage economic development in low-income countries.

Family or community often times do not recognize the signs and symptoms of stunting that occurs in children of her as if normal like other children so that cadres Posyandu which is spearheading the executor poor living conditions public health need to make an informal approach to the family with a toddler stunting. The issue of stunting in toddlers in a family is negative and can create negative sentiments. Parents who are told that their children have stunted tend to be unable to accept the reality so the approach that must be taken by health workers must be good and right. If not done properly and correctly, it will cause feelings of inferiority, shame and mistrust in health workers so that intervention in toddler stunting should not only focus on toddlers but also on parents or family. The results of other studies state that policy makers should not only measure length or weight but

must develop indicators of overall health and nutritional status (De Onis, Blössner, & Borghi, 2012) .

Intervention Mental stimulation, nutritional and social supplementation pshicological stimulation (Menu SoP) on parents of toddlers with stunting is essential as the impact of stunting not only lose the function of organs, but also have an impact on the future of the young generation of Indonesia. The impact of stunting is the disruption of mental and brain function so that future effects can reduce the level of welfare and increase poverty due to the unproductive stunting. Therefore this research is expected to provide input for families, governments, stakeholders to jointly reduce the stunting rate in Indonesia through cross-sectoral collaboration.

CONCLUSION

This study provides a conclusion that there is a significant influence on changes in the anthropometric status of children with stunting before and after the intervention of the application of Mental stimulation, nutritional

supplementation and social psychological stimulation (MeNu SoP). Other results obtained were significant effects on the application of mental stimulation, nutritional supplementation and social-psychosocial stimulation before and after the intervention was given. This research can be used by nurses and other health professionals in supporting stunting alleviation programs both at posyandu, puskesmas, hospitals and related agencies.

REFERENCES

- Amanda, A. (2014). Hubungan Asupan Zat Gizi (Energi, Protein, Besi, Dan Seng), Stunting Dan Stimulasi Psikososial Dengan Status Motorik Anak Usia 3-6 Tahun Di PAUD Wilayah Binaan Puskesmas Kecamatan Kebayoran Lama Tahun 2014. *Skripsi Universitas Islam Negeri Syarif Hidayatullah Jakarta*.
- Batiro, B., Demissie, T., Halala, Y., & Anjulo, A. A. (2017). Determinants of stunting among children aged 6-59 months at Kindo Didaye woreda, Wolaita Zone, Southern Ethiopia: Unmatched case control study. *PLoS ONE*, *12*(12), 1–16. <https://doi.org/10.1371/journal.pone.0189106>
- El Taguri, A., Betimal, I., Mahmud, S. M., Monem Ahmed, A., Goulet, O., Galan, P., & Hercberg, S. (2009). Risk factors for stunting among under-fives in Libya. *Public Health Nutrition*. <https://doi.org/10.1017/S1368980008003716>
- Emamian, M. H., Fateh, M., Gorgani, N., & Fotouhi, A. (2014). Mother's education is the most important factor in socioeconomic inequality of child stunting in Iran. *Public Health Nutrition*. <https://doi.org/10.1017/S1368980013002280>
- Eni, G. (2019). Gizi Seimbang Prestasi Gemilang. *Kementerian Kesehatan RI*.
- Fenske, N., Burns, J., Hothorn, T., & Rehfuess, E. A. (2013). *Understanding Child Stunting in*

- India: A Comprehensive Analysis of Socio-Economic, Nutritional and Environmental Determinants Using Additive Quantile Regression.* Retrieved from www.plosone.org
- Fernald, L. C., & Neufeld, L. M. (2007). Overweight with concurrent stunting in very young children from rural Mexico: Prevalence and associated factors. *European Journal of Clinical Nutrition*. <https://doi.org/10.1038/sj.ejcn.1602558>
- Kementerian Kesehatan Republik Indonesia. (2019). Riset Kesehatan Dasar 2018. *Kementerian Kesehatan RI*, 53(9), 1689–1699. <https://doi.org/10.1017/CBO9781107415324.004>
- Kementrian Kesehatan RI. (2010). Riset Kesehatan Dasar 2010. *Badan Penelitian Dan Pengembangan Kesehatan*, 78. Retrieved from <http://www.riskesdas.litbang.depkes.go.id/download/TabelRiskesda2010.pdf>
- Kumar, H. K., & Modi, K. (2008). Effect of parental education on child stunting. *The Lancet*, 371(9627), 1836–1837. [https://doi.org/10.1016/S0140-6736\(08\)60792-8](https://doi.org/10.1016/S0140-6736(08)60792-8)
- Leroy, J. L., Habicht, J.-P., Gonzalez de Cossio, T., & Ruel, M. T. (2014). Maternal Education Mitigates the Negative Effects of Higher Income on the Double Burden of Child Stunting and Maternal Overweight in Rural Mexico. *Journal of Nutrition*. <https://doi.org/10.3945/jn.113.188474>
- Mamiro, P. S., Kolsteren, P., Roberfroid, D., Tatala, S., Opsomer, A. S., & Van Camp, J. H. (2005). Feeding Practices and Factors Contributing to Wasting, Stunting, and Iron-deficiency Anaemia among 3-23-month Old Children in Kilosa District, Rural Tanzania Infant-feeding practices in Tanzania. *J HEALTH POPUL NUTR*, 23(3), 222–230.
- Milman, A. ;, Frongillo, E. A. ;, De Onis, M. ;, & Hwang, J.-Y. (2005). *ProQuest Nursing &*

- Allied Health Source* pg. *The Journal of Nutrition* (Vol. 135).
- Modjadji, P., & Madiba, S. (2019). Childhood Undernutrition and Its Predictors in a Rural Health and Demographic Surveillance System Site in South Africa. *International Journal of Environmental Research and Public Health*, 16(17), 3021. <https://doi.org/10.3390/ijerph16173021>
- Motbainor, A., Worku, A., & Kumie, A. (2015a). Stunting is associated with food diversity while wasting with food insecurity among underfive children in East and West Gojjam Zones of Amhara Region, Ethiopia. *PLoS ONE*. <https://doi.org/10.1371/journal.pone.0133542>
- Motbainor, A., Worku, A., & Kumie, A. (2015b). Stunting is associated with food diversity while wasting with food insecurity among underfive children in East and West Gojjam Zones of Amhara Region, Ethiopia. *PLoS ONE*, 10(8), 1–15. <https://doi.org/10.1371/journal.pone.0133542>
- Rah, J. H., Akhter, N., Semba, R. D., Pee, S. D., Bloem, M. W., Campbell, A. A., ... Kraemer, K. (2010). Low dietary diversity is a predictor of child stunting in rural Bangladesh. *European Journal of Clinical Nutrition*. <https://doi.org/10.1038/ejcn.2010.171>
- Sandra, F., Ahmad, S., & Arinda, V. (2018). Cegah Stunting itu Penting. *Kementerian Kesehatan RI*, 1–27.
- Senbanjo, I. O., Oshikoya, K. A., Odusanya, O. O., & Njokanma, O. F. (2011). Prevalence of and Risk factors for Stunting among School Children and Adolescents in Abeokuta, Southwest Nigeria. *J HEALTH POPUL NUTR*, 29(4), 364–370.
- Utami, R. A. (2017). HUBUNGAN PEMBERIAN NUTRISI DENGAN KEJADIAN STUNTING PADA BALITA DI KELURAHAN KARANG ANYAR Ressa Andriyani Utami*) *)Dosen Akademi Keperawatan RS Husada, Jakarta,

- 10730, Indonesia. *Jurnal Kesehatan Holistic*, 1(2), 22–31. <https://doi.org/https://doi.org/10.33377/jkh.v1i2.36>
- Utami, R. A., Setiawan, A., & Fitriyani, P. (2019). Identifying causal risk factors for stunting in children under five years of age in South Jakarta, Indonesia. *Enfermeria Clinica*, 29, 606–611. <https://doi.org/10.1016/j.enfcli.2019.04.093>
- WHO. (2011). Global health and aging, [Online]. *National Institute of Aging*, 1(1), 86. Retrieved from www.nia.nih.gov/sites/default/files/global_health_and_aging.pdf
- Yasmin, G., Kustiyah, L., & Dwiriani, C. M. (2014). Basic Health Research 2010 of the Health Research and Development Agency of the Ministry of Health. *Pakistan Journal of Nutrition*, 13(10), 557–566.