

## Faktor yang Berhubungan dengan Kejadian Stunting pada Baduta di Wilayah Kerja Puskesmas Wonokusumo

### *Factors that Associated with Stunting Cases in Children Under Two at The Working Area of Wonokusumo Health Center*

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#### ABSTRAK

**Latar Belakang:** Stunting merupakan salah satu masalah gizi yang dialami oleh balita di dunia saat ini. Berdasarkan data Global Nutrition Report, setiap tahunnya tiga juta balita di dunia mengalami kekurangan gizi dan secara global angka burden of disease dari kekurangan gizi mencapai milyaran dolar. Keadaan tersebut sebenarnya dapat dicegah, yaitu melalui perbaikan gizi pada seribu Hari Pertama Kehidupan (1000 HPK) mulai dari kehamilan sampai anak berusia dua tahun. Saat ini kejadian stunting di Kota Surabaya mengalami peningkatan, berdasarkan data riskesdas kejadian stunting pada tahun 2013 sebesar 21% dan menjadi 29% pada tahun 2018.

**Tujuan:** Penelitian ini bertujuan untuk mengidentifikasi faktor-faktor yang berhubungan dengan kejadian stunting pada baduta di wilayah kerja Puskesmas Wonokusumo Kota Surabaya.

**Metode:** Jenis penelitian ini merupakan penelitian observasional analitik dengan desain cross sectional. Teknik sampling yang digunakan yaitu non-probability sampling dengan metode consecutive sampling. Data primer diperoleh dengan mengukur tinggi badan baduta menggunakan microtoise serta wawancara terhadap ibu baduta menggunakan kuesioner. Analisis data dilakukan menggunakan uji chi-square melalui aplikasi Epi Info 7.0.

**Hasil:** Terdapat hubungan signifikan antara tidak aktif datang ke Posyandu dengan kejadian stunting ( $p=0,03$ ;  $PR=0,21$ ). Sementara tidak terdapat hubungan yang signifikan antara jumlah anak, tingkat pengetahuan ibu, status pekerjaan ibu, status pemberian ASI Eksklusif, status kelengkapan imunisasi dasar, dan riwayat penyakit infeksi ( $p>0,05$ ) dengan kejadian stunting.

**Kesimpulan:** Tidak aktif datang ke Posyandu adalah faktor yang berhubungan signifikan dengan kejadian stunting pada baduta di wilayah kerja Puskesmas Wonokusumo.

**Kata kunci:** anak, posyandu, faktor risiko, stunting

#### ABSTRACT

**Background:** Stunting is one of the nutritional problems experienced by toddlers nowadays. Based on data from Global Nutrition Reports in 2014, three million children under five in the world are malnourished every year, and globally, the harmful impact of diseases caused by malnutrition reaches billions of dollars. This situation can prevent improving nutrition in the first thousand days of life, which begins during mothers pregnancy until the children age two years. Currently, According to data from RISKESDAS, Stunting in Surabaya increases rapidly. In 2013, the number of children diagnosed with stunting was 21 % and got its peak by 29% in 2018.

**Objective:** The study aims to identify the risk factors of stunting in children, especially in their two-year age or under, in a working area of Wonokusumo Health Center.

**Methods:** This research is an analytic observational study with a cross-sectional design. The sampling technique used a non-probability sampling technique with a consecutive sampling method, totalling 56 children. Primary data were obtained by measuring the children's height using microtoise and interviewing the mothers using a questionnaire. Data analysis performed using the chi-square test through the Epi Info 7.0 application.

**Results:** The obtained-result of the research was a significant relationship between the inactivity of attending an integrated service post (Posyandu: Pos Pelayanan Terpadu) with the stunting ( $p=0.03$ ;  $PR=0.21$ ). There was also no significant relationship between the number of children, the level of maternal knowledge, the state of the mother's employment, the conditions of exclusive breastfeeding, the complete state of basic immunizations, and the history of infectious diseases ( $p>0.05$ ) with stunting.

**Conclusion:** the absence of attending an integrated service post (Posyandu: Pos Pelayanan Terpadu) is a factor that has a significant relationship with stunting among children under two in the working area of The Wonokusumo Health Center.

**Keyword:** children, integrated service post, risk factor, stunting.

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## INTRODUCTION

Stunting is a condition of child failures of thriving due to chronic malnutrition, thus, the children's age is shortened. The lack of nutrition occurs when the infant is still living in their mother's womb to the baby's early stages after born, however, the condition of stunting only appears after the baby is approximately two years old. According to the Ministry of Health, stunting is the condition of children, five old years or under, who have a result of their health report with a z-score of less than -2SD (stunted) and less than -3SD (severely stunted) (Regulation of the Minister of Health of the Republic of Indonesia Number 2, 2020). Currently, stunting is one of the nutrition issues experienced by children globally. According to the 2014 Global Nutrition Report, globally, three children are undernourished every year, and the impact of malnutrition reaches billions of dollars (International Food Policy Research Institute, 2014). The actual situation can be prevented through improving nutrition in the baby's first thousand days (1000 *HPK*) starting from when they are still an infant until they age two years old so that it can help the child's growth and development optimally (Zahraini, 2018).

Their first thousand days which has been mentioned above is a crucial period to improve children's physical and cognitive abilities. The nutrition and health of pregnant women and breastfeeding mothers are the major factors, not only for the growth of children but also for the development of children physically and cognitively. Hence, it can reduce the risk of illness in infants and mothers. Undernutrition status in pregnant women can cause growth disorders in infants. Besides, it becomes the main cause of stunting, and it increases the risk of obesity and degenerative diseases in adulthood (Djauhari, 2017).

Stunting can harm social life, education, economy, and productivity in the future, as a detrimental risk in a long-term health problem. For instance, increasing the risk of obesity can lead to metabolic syndrome including coronary heart disease, stroke, hypertension, and type 2 diabetes mellitus. Stunting children, especially toddlers, tend to find it difficult to achieve optimal growth and development potential both physically and psychomotor (Djauhari, 2017).

Stunting (short) toddlers are still a major nutritional problem in Indonesia. Based on Nutritional Status Monitoring data for the period 2016-2017, short toddlers have the highest prevalence compared to other nutritional problems such as malnutrition, thinness, and obesity. The prevalence of stunting under five in Indonesia has increased from 27.5% in 2016 to 29.6% in 2017 (Directorate of Community Nutrition, 2018).

Based on data from Riskesdas East Java in 2018, The proportion of short decreased. It was mentioned that the state of the toddlers' nutrition was very low. In 2013, the proportion of the short and shorter height of toddlers was 35.8% and it decreased to 32.1% in 2018. Meanwhile, the stunting problems in Surabaya had increased by 21% in 2013 to 29% in 2018 (Kementerian Kesehatan RI, 2018).

In this case, mothers hold the main role to overcome nutritional problems for children, namely in terms of nutritional intake such as food preparation and selection of food ingredients and menus. The results of the literature review show that the risk factors for stunting including low maternal education (OR=1.67), not immunization (OR=6.38), and not exclusive breastfeeding (OR=4.0). Hence, those are are risk factors for stunting in developing countries (Rachmi *et al.*, 2016; Apriluana and Fikawati, 2018; Budiastutik and Rahfiludin, 2019). Therefore, this study aims to identify the factors associated with stunting in children under two in the working area of The Wonokusumo Health Center, Surabaya City. With this study, it is hoped that problem strategies can be found so that the incidence of stunting in Surabaya, especially in the working area of Wonokusumo Public Health Center, can be reduced.

## METHOD

This research was an analytic observational study with a cross-sectional method. The research was taken in 16<sup>th</sup> hamlet, Wonokusumo Sub-village during the Field Work Practice Program which was carried out by the Faculty of Public Health, Airlangga University from 27 December until 31 January 2020. This research also has received approval from the ethics commission from the Faculty of Nursing, Airlangga University with number 1769-KEPK. The variables used are the independent variable (stunting incident) and the dependent variable (the number of children, the mother's background education, the mother's occupation, the circumstance of exclusive breastfeeding, basic immunization status, the history of infectious diseases, the active attendance to integrated service post).

This research used a non-probability sampling technique with a consecutive sampling method. The sampling technique was sample selection by determining subjects who meet the research criteria included in the study until the period, totaling 56 children. This is based on the inclusion criteria, which is that the respondents are permanent residence in 16<sup>th</sup> hamlet Wonokusumo Sub-village and have lived in 16<sup>th</sup> hamlet Wonokusumo Sub-village for more than 2 years and also willing to become a respondent. Meanwhile, the exclusion criteria are toddler's mother has a mental illness, toddlers who are sick or in a situation where it is not possible to collect data, and toddlers and parents of toddlers are not permanent residents of 16<sup>th</sup> hamlet Wonokusumo. The choice of the area because the data shows that Wonokusumo Sub-village is one of the areas with a high number of stunting (Dinkes Surabaya, 2020) and based on the recommendation from the Wonokusumo Health Center that 16<sup>th</sup> hamlet has many cases of stunting.

The data were obtained by measuring the height of the toddlers using a microtoise and interviewing their mothers using a questionnaire. The results of the height measurement were processed using WHO-2005 standards to determine the nutrition status for children, namely the Z-score index of Height/Age. The data in this research, including the history of infectious diseases, healthcare attendance list, immunization, exclusive breastfeeding, number of children, mother's background education, and maternal occupation, was obtained by interview using a questionnaire. All items in the questionnaire were declared valid and the invalid items were eliminated.

Data were analyzed by univariable and bivariable. Univariable analysis was carried out to see an overview of the frequency distribution of variables, while bivariable analysis was carried out using the chi-square test through the Epi Info 7.0 application to see the relationship between variables.

## RESULTS AND DISCUSSION

Family characteristics consist of the number of children, mother's education, and mother's occupation. Family characteristics are shown in the following table below (see table 1).

**Table 1.** Frequency Distribution of Number of Children, Mother's Background Education, and Job

Variable	f	%
<b>Number of Children</b>		
> 2 Child	16	28.57
≤ 2 Child	40	71.43
<b>Mother's Education Background</b>		
Low	53	94.64
High	3	5.36
<b>Mother's Occupation</b>		
Working	12	21.43
Not Working	44	78.57

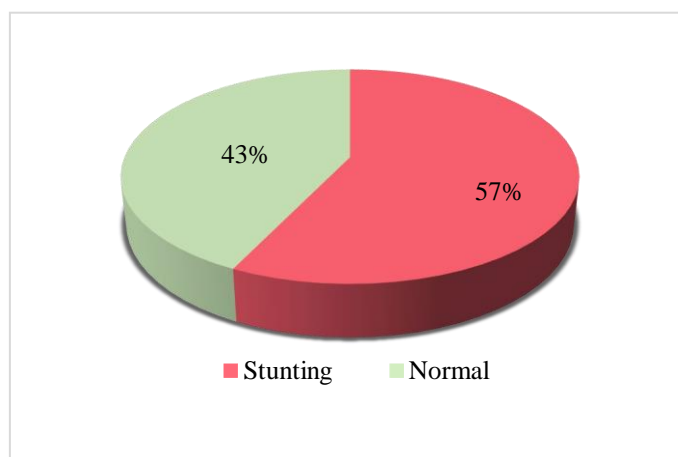
Based on the chart above, it can be seen that more than half (71.43%) of child families have children ≤ 2. The majority of the children's mother (94.64%) has low education, and some mothers (78.57%) are not working or housewives. The children's characteristics consist of gender, exclusive breastfeeding circumstances, and completeness of basic immunization, health history, and activeness of attending an integrated service post (See table 2).

**Table 2.** Distribution of Gender, Exclusive Breastfeeding Circumstances, and Completeness of Basic Immunization, The History of Infectious Diseases, and Activeness of Attending Integrated Service Post

Variable	f	%
<b>Gender</b>		
Female	27	48.21
Male	29	51.79
<b>Exclusive Breastfeeding Circumstances</b>		
Exclusive Breastfeeding	29	51.79
Not Exclusive Breastfeeding	27	48.21
<b>Basic Immunization</b>		
Complate	28	50.00
Not Complate	28	50.00
<b>The History of Infectious Diseases</b>		
Yes	28	50.00
No	28	50.00
<b>The Activeness of Attending Integrated Service Post</b>		
Not Active	16	28.57
Active	40	71.43

Based on the table, the sex groups of children were almost evenly distributed, where the frequency of male sex was higher (51.79%) than female. The exclusive breastfeeding circumstances in children showed that more than half (51.79%) children were not exclusively breastfed and half children (50%) did not get complete basic immunization and half children (50%) had a history of infectious diseases, but the majority of children (71.43%) actively weighing in the integrated service post (Posyandu: Pos Pelayanan Terpadu).

The nutritional status of children is obtained based on the Height/Age index, where the classification is based on the z-score so that it can be seen the number of children with stunting nutritional status and children with normal nutritional status. The classification of the nutritional status of children based on height/age is shown in the following diagram.

**Figure 1.** Frequency Distribution of Nutritional Status based on Height/Age

More than half of children (57%) have a Height/Age index due to stunting (see figure 1). The results of the bivariable analysis are shown in the following table. (See table 3).

**Table 3.** Relationship between Stunting with The Number of Children, The Mother's Background Education, The Mother's Occupation, The Circumstance of Exclusive Breastfeeding, Basic Immunization Status, The History of Infectious Diseases, The Active Attendance to Integrated Service Post.

Factor	Stunting Status				PR 95% CI	P
	Stunting		Normal			
	f	%	f	%		
<b>The Number of Children</b>						
> 2 Child	7	43.75	9	56.25	0.47	0.33
≤ 2 Child	25	62.50	15	37.50	(0.14-1.51)	
<b>Mother's Education Background</b>						
Low	30	56.60	23	43.40	0,65	0.60
High	2	66.67	1	33.33	(0.05-7.64)	
<b>Mother's Occupation</b>						
Working	4	33.33	8	66.67	0.28	0.12
Not Working (Housewife)	28	63.64	16	36.36	(0.07-1.10)	
<b>Exclusive Breastfeeding Circumstance</b>						
Not Exclusive Breastfeeding	13	44.83	16	55.17	0.34	0.09
Exclusive Breastfeeding	19	70.37	8	29.63	(0.10-1.03)	
<b>Immunization Status</b>						
Not Complete	14	50.00	14	50.00	0.55	0.41
Complete	18	64.29	10	35.71	(0.19-1.62)	
<b>The History of Infectious Diseases</b>						
Yes	17	60.71	11	39.29	1.34	0.78
No	15	39.29	13	46.43	(0.46-3.87)	
<b>The Activeness of Attending Integrated Service Post</b>						
Not Active	5	31.25	11	68.75	0.21	0.03
Active	27	67.50	13	32.50	(0.06-0.76)	

Based on table 3, it can be seen that there is no significant relationship between stunting with family characteristics consisting of the variable number of children and the mother's educational background, and mother's occupation ( $p > 0.05$ ). Besides, the characteristics of children consisting of exclusive breastfeeding circumstance, completeness of basic immunization status, and their health history of infectious diseases show the same results that there is no significant relationship to stunting, this can be seen from the  $p > 0.05$  and the PR value which includes number 1.0 so that it shows the relationship between variables is not significant. Meanwhile, there is a significant relationship between inactivity attend to the integrated service post (Posyandu: Pos Pelayanan Terpadu) and stunting, this can be seen from the value of  $p = 0.03$  ( $p < 0.05$ ) with a PR value = 0.21 and the interval estimate that does not include the number 1.0 (95% CI = 0.06-0.76). The PR value means that children who are not actively attending the integrated service post (Posyandu: Pos Pelayanan Terpadu) have a 0.21 times greater risk of suffering from stunting than children who actively come to the integrated service post (Posyandu: Pos Pelayanan Terpadu). The PR value  $< 1$  indicates that the major factor is prevention or can protect against the occurrence of a disease, so it can be said that actively coming to the integrated service post (Posyandu: Pos Pelayanan Terpadu) can prevent children from stunting in children at the working area of The Wonokusumo Health Center.

Based on the data of the results of the univariable analysis, it is known that stunting in children was 57% of which 32 children had a Height/Age index for the stunting category. The percentage was higher than the prevalence of stunting in Surabaya in 2018, which was 29%. There was no relationship between family characteristics (number of children, mother's last education, mother's occupation) and stunting children. This is in line with the research of Setiawan et al., (2018) that the number of children in a family is not significantly related to stunting, this shows that stunting is not only influenced by the number of children but also family characteristic factors that can affect stunting, including family finances, adequate income gained by a family that can provide all the primary and secondary needs of children and can consider and pick the nutritious foods. Besides that, families who have stable economic status have better access to health services. Meanwhile, children who are raised in families living in poverty will tend to consume a small amount of less healthy food. so that those children are not guaranteed nutrition intake. A large number of children having adequate nutritional intake will reduce the risk of stunting. This is in line with the research of Wahdah et al., (2016) which shows that on average children who suffer from stunting have a lower family income than normal children's family income, it can be concluded that low family income is the major factor for the phenomenon of stunting.

Mother's background education and job are not significantly related to stunting children. This shows that the mother's background education is not a characteristic that can directly influence stunting since other factors affect stunting children vigorously. However, mothers with higher education are more likely aware of the healthy lifestyle as seen from the adoption of a healthy lifestyle such as the consumption of a nutritious diet. Individuals with higher education levels tend to avoid bad habits such as cigarettes and alcohol, so they have a better health status (Dewi and Widari, 2018).

Besides, the father's education factor affects the decision-making process in the family. This is because in Indonesia the role of fathers is more dominant in determining decisions in the family, including decisions related to health, such as parenting, immunization, and utilization of health services. A father's high education will have a greater chance of getting a better job so that he will be able to meet the needs of his family (Wahdah et al., 2016). There was no significant relationship between exclusive breastfeeding status, completeness status of basic immunization, and the history of infectious diseases with the stunting children at the working area of Wonokusumo Health Center. This is in line with the research of Amelia Halim et al., (2018) dan Yuniastuti (2020) which states that stunting does not have a significant relationship between exclusive breastfeeding status and stunting children. This shows that the state of stunting is not only determined by factors of exclusive breastfeeding, but also by other factors such as quality of complementary food given by mothers, quantity, and quality of nutritional intake given to children every day, and the health status of children, as well as parenting (Yuniastuti, 2020).

Another study showed a similar result that there was no significant relationship between the completeness status of basic immunization and stunting. Children who do not get complete basic immunization at an early age will always suffer from infectious diseases after. The immunity of children is influenced by other factors, such as nutritional status and the presence of pathogens. There is the term "herd immunity", individuals who are not immunized become protected because most individuals in the group or their environment are immune to disease after receiving immunization (Setiawan et al., 2018).

This is in line with research by Yuniastuti (2020) which shows that an incomplete history of basic immunization is not a risk factor for stunting in toddlers with  $p\text{-value}=0.76(>0.05)$ . Basic immunization will not protect 100%, meaning that after immunization children can still get the disease, but the chance is small (5-15%), it is much lighter and less dangerous. So that even though the child has received complete basic immunization, the child is still at risk and susceptible to other infectious diseases. Based on interviews with mothers of children who did not get complete basic immunization due to various reasons, including because parents were worried that their child would get sick after immunization, some forgot the immunization schedule, and because of religious beliefs.

Other risk factors, such as a history of infectious disease, showed the same thing that there was no significant relationship between infectious diseases and the incidence of stunting ( $p > 0.05$ ). This is similar to the research of (Venuz et al., 2019) which states that there is no significant relationship between the history of infectious diseases and the incidence of stunting in children under five in the work area of the Oepoi Health Center in Kupang with a  $p\text{-value}=0.334$ . However, the results of this study are not in line with the research of Solin et al. (2019) and Agustia et al. (2020) which state that a history of diarrheal infection and acute respiratory infection has a significant relationship with the incidence of stunting ( $p < 0.05$ ).

Increased duration of diarrhea infection, fever, and acute respiratory infection in children can be associated with a decrease in their body Weight/Age index which is a sign of acute malnutrition. Also, it can cause long-term effects associated with a decrease in the Height/Age index or stunting which indicates the occurrence of chronic malnutrition. Growth inhibition caused by diarrhea is associated with impaired nutrient absorption during and after diarrhea. Meanwhile, growth inhibition caused by acute respiratory infection is associated with increased metabolic needs and disruption of food intake during the disease period (Amelia Halim et al., 2018; Setiawan et al, 2018).

The risk factor that had a significant relationship with stunting children at the working area of the Wonokusumo Health Center is the activeness of attending the integrated service post (Posyandu: Pos Pelayanan Terpadu) ( $p=0.03$ ;  $PR=0.21$ ). This is in line with the research by Destiadi et al. (2015) which states that the low frequency of integrated service post visits is the most dominant factor in the incidence of stunting in children 3-5 years old with an  $OR=3.1$  (95%  $CI= 1.268- 7,623$ ) which means that children who less actively come to integrated service post have a 3.1 times risk of experiencing stunting compared to children who actively come to integrated service post. Being active in integrated service post (Posyandu: Pos Pelayanan Terpadu) has a big influence on monitoring the nutritional status of children, this is because mothers who come to integrated service post (Posyandu: Pos Pelayanan Terpadu) will get information about children's health which is useful in determining the child's healthy lifestyle so that it can be applied in daily life. Children who regularly come to integrated service post (Posyandu: Pos Pelayanan Terpadu) and weigh their weight and measure height will always monitor their nutritional status and health (Pramudita, 2018).

Parents should concern about their children's health. They should use health services for their children when they raise them, monitoring mothers' pregnancy, visiting integrated service post (Posyandu: Pos Pelayanan

Terpadu) constantly, or seeing other health services. Parents should be aware that good health services will not only reduce morbidity in children but also giving more knowledge on how to prevent their children from experiencing infectious diseases and malnutrition that cause stunting in children (Kullu et al., 2018).

Improving nutrition problems in children can be achieved with cross-sectoral participation and community participation. The level of community participation in children's nutrition improvement programs can be reflected in the indicator of the number of children under five weighted divided by the target number of children under five (W/T). Based on the health profile of Surabaya City in 2018, the number of W/T had met the target, which was 85.95% where the target of Surabaya City was 81.40%. The percentage of this achievement increased compared to 2017, which was 84.12%. Almost all health centers in Surabaya had the number of W/T above 80%, but Wonokusumo Health Center still had the number of W/T below 80%, which was 74.4% with the number of children under the red line was 3.56%. This condition will cause children to lose the opportunity to be monitored for their body weight because, with regular weighing, early signs of growth delayed will be detected immediately, so that solutions can be taken immediately to overcome potential hazardous situations that can harm children's growth. This can be overcome by increasing collaboration between health workers and stakeholders in the community, especially the member of empowering family welfare, cadre, and cross-sector mobilizing team (Wahdah et al., 2016; Surabaya City Health Office, 2018).

## CONCLUSION

There is a significant relationship between actively attending the integrated service post (Posyandu: Pos Pelayanan Terpadu) with stunting children, meanwhile, the number of children, mother's background education and occupation, exclusive breastfeeding, completeness of basic immunization status, and the history of infectious diseases don't have a significant relationship with stunting children under two at a working area of the Wonokusumo Health Center. Research is needed with other variables such as birth weight, level of energy intake, and level of protein intake to determine other risk factors for stunting

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