Jurnal Kesehatan Ibu dan Anak
Vol.15, No.2, November 2021, pp. 139~147
: 10.29238/kia.v15i2.1053

ISSN: 2599-3224 (Online)
ISSN: 2302-6014 (Print)

Factors affecting incident of stunting in children under five years

Siti Zullaiha[1], Yuliasti Eka Purnamaningrum[2], Mina Yumei Santi[3]

[1]Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Indonesia, sitizullaiha25@gmail.com
[2]Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Indonesia, yuliasti.ekap@poltekkesjogja.ac.id
[3]Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Indonesia, yumeisanti@gmail.com

ARTICLE INFO

Article history:

Received: June 25th, 2021
Revised : Oct 30th, 2021
Accepted: Nov 3rd, 2021

Keyword:

Exclusive breastfeeding;
Low birth weight;
Complementary feeding;
Stunting.

ABSTRACT

Many children under five in Indonesia still suffer from stunting. Infant birth weight, exclusive breastfeeding, complementary feeding, and history of diarrheal disease/ARI are the factors that influence the incidence of stunting. The purpose of this study was to determine the factors that influence the occurrence of stunting in children in the work area of the Patuk I Public Health Center Gunungkidul. Research design using case control. The population was children aged 25-59 months using a sample of 78 cases, and 78 control groups, by purposive sampling method. Data were collected from the Patuk I Public Health Center report and interviews which were analyzed by chi-square and logistical regression. The proportion of stunting children was 23.9%. Chi-square analysis showed the baby's birth weight (p=0.010 OR=2,800), exclusive breastfeeding (p=0,000 OR=4,237), and complementary feeding (p=0,000 OR=5,223). While the history of diarrheal disease/ARI (p= 0.398 OR=1.572) was not a risk factor for stunting. The factor that most influenced the incidence of stunting was complementary feeding (p-value 0.000) with a risk of stunting 6.1 times. There are relationships between birth weight, exclusive breastfeeding, complementary feeding, and history of diarrheal disease/ARI with the incidence of stunting. Complementary feeding was the most influential factor in the stunting presence.

Corresponding Author:

Siti Zullaiha
Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Indonesia
Mangkuyudan Street MJ 3/304 Yogyakarta, 55143, Telp/Fax: (0274) 374331
Email: sitizullaiha25@gmail.com

INTRODUCTION

According to the World Health Organization (WHO) in 2019, 144 million children under five are estimated to be stunted (too short for age), 47 million are estimated to be underweight (too thin for height), and 38.3 million are overweight or obese.(1) Around 45% of deaths among children under 5 years of age are related to malnutrition.(2) Globally, about 1 in 4 children under five is stunted. In 2011 more than 25% of the number of children under the age of five years, which is around 165 million children experienced stunting, while for the Asian level, in 2005-2011, Indonesia ranked fifth highest stunting.(3)

Based on the 2018 Basic Health Research (Riskesdas), the problem of malnutrition in Indonesia is a health problem that has not been fully addressed by the government. This is evident from survey and research data which states that the prevalence of severe (very short) stunting in Indonesia is 19.3%. This figure is higher than in 2013 (19.2%) and 2007 (18%). The overall prevalence of stunting, both mild and severe (short and very short) is

ISSN: 2599-3224 (Online), ISSN: 2302-6014 (Print)

30.8% which indicates that many children under five in Indonesia are still suffering from chronic malnutrition.(4)

Childhood malnutrition is linked to delayed neurodevelopment, poor academic performance, cognitive impairment, and behavioral issues, however, the research on potential effects on mental health is ambiguous. Future studies should examine how these outcomes are impacted by early and later-life adversity interactions. The best method to avoid long-term neurocognitive damage is probably to prevent and eliminate child malnutrition, however, evidence for improving nutritional and therapeutic therapies to lower long-term hazards is also required.(5)

The prevalence of stunting toddlers in DI Yogyakarta in 2018 was 12.37% and this figure fell to 10.69%. In 2019 the highest prevalence of stunting was in Gunungkidul Regency (17.94%) and the lowest was in Bantul Regency (7.73%). (6) The highest stunting status in Gunungkidul Regency was in Patuk 1 Public Health Center with a prevalence of 26.3%.(7)

Stunting (short) or chronic malnutrition is another form of growth failure. Chronic malnutrition is a condition that has occurred for a long time, not like acute malnutrition. Children who experience stunting are often seen as having a normal body that is proportional, but in fact, their height is shorter than the normal height of children their age. Stunting is a cumulative process and is caused by inadequate intake of nutrients or recurrent infectious diseases, or both. Stunting can also occur before birth and is caused by very poor nutritional intake during pregnancy, very poor food parenting patterns, and low food quality in line with the frequency of infection so it can inhibit growth.(8)

Factors that influence the incidence of stunting are parenting patterns. not exclusive breastfeeding, the health status of infectious diseases of acute respiratory infection (ARI) and diarrhea, mother's education, sanitation, clean water, complementary feeding, immunization, low birth weight (LBW), food intake, health service facilities, family economy, energy intake, protein intake. In general, children's nutritional problems are the impact of an imbalance between nutrient intake and output (nutritional imbalance), namely intake that exceeds output or vice versa, in addition to errors in choosing food ingredients to eat.(9)(10) This study aimed to determine the factors that influence the occurrence of stunting in children in the work area of the Patuk I Public Health Center Gunungkidul.

METHODS

This study was conducted with a case-control design. The population is children aged 25-59 months. The sample size in this study was 156 with a ratio of 1: 1, 78 case groups, and 78 control groups. The sampling technique used is the purposive sampling technique. Data were collected from reports from Patuk I Public Health Center and interviews, and analyzed by bivariate test (chi-square) and multivariate test (logistical regression). This research was carried out from July 2020 to February 2021. In this study, research ethics were met with ethical approval from the Ethics Commission of the Poltekkes Kemenkes Yogyakarta with the number: No. e-KEPK/Polkesyo/0095/I/2021 dated January 26, 2021.

RESULTS

The proportion of stunting in children under five

Table 1. The proportion of incidents stunting children

Stunting Incidence	Frequency	Percentage (%)
Stunting	107	23.9
Not Stunting	340	76.1
Total	447	100

Based on Table 1, the proportion of stunting in the work area of the Patuk I Public Health Center Gunungkidul in 2020 was 23.9%, this figure increased from 2019 which was 19.6%.

Characteristics of birth weight, exclusive breastfeeding, complementary feeding, history of diarrheal disease/ARI in children

Table 2. Distribution of Toddler Frequency Based on the Characteristics of Birth Weight, Exclusive Breastfeeding, Complementary Feeding, and History of Diarrhea/ARI

Characteristics of Respondents	Frequency	Presentation(%)
Birth Weight		
- Abnormal	41	26.3
- Normal	115	73.7
Total	156	100
Exclusive Breastfeeding		
- Not Exclusive Breastfeeding	43	27.6
- Exclusive Breastfeeding	113	72.4
Total	156	100
Complementary Feeding		
- Not Appropriate	50	32.1
- Appropriate	106	67.9
Total	156	100
History of Diarrhea/ARI		
- Ever	27	17.3
- Never	129	82.7
Total	156	100

Based on Table 2 above, it can be seen that the majority of respondents, toddlers with normal birth weight (73.7%), getting exclusive breastfeeding (72.4%), toddlers receiving appropriate complementary feeding (67.9%) never had a history of diarrhea/ARI (82.7%).

Analysis of the relationship between the characteristics of birth weight, exclusive breastfeeding, complementary feeding, and history of diarrheal disease/ARI in Toddlers with stunting

Table 3. Relationship Characteristics Birth Weight Infants, Exclusive Breastfeeding, Complementary Feeding, History Diarrhea/ARI in Toddlers with Stunting

Risk factor	Incident of Stunting				p-value	OR	CI 95%	
	Stunting		Not Stunting					
	n	%	n	%			Lower	Upper
Birth Weight								
Abnormal	28	35.9	13	16.7	0.010	2.800	1.317	5.952
Normal	50	64.1	65	83.3				
Exclusive Breastfeeding								
Not Exclusive Breastfeeding	32	41.0	11	14.1	0.000	4.237	1.940	9.253
Exclusive Breastfeeding	46	59.0	67	86.9				
Complementary Feeding								
Not Appropriate	38	48.7	12	15.4	0.000	5.225	2.447	11.157
Appropriate	40	51.3	66	84.6				

ISSN: 2599-3224 (Online), ISSN: 2302-6014 (Print)

Risk factor	Incident of Stunting				p-value	OR	CI 95%	
	Stunting		Not Stunting					
	n	%	n	%			Lower	Upper
History of Diarrhea/ARI								
Ever	16	20.5	11	14.1	0.398	1.572	0.667	3.647
Never	62	79.5	67	85.9				

From Table 3, it is known that there is a significant relationship (p<0.05) between birth weight, exclusive breastfeeding, and complementary feeding. Meanwhile, a history of diarrheal disease/ARI is known to have no significant relationship with the incidence of stunting (p>0.05).

To find out the joint influence (birth weight, exclusive breastfeeding, complementary feeding, history of diarrheal disease/ARI) on the incidence of stunting in children under five

Table 4. The Most Influential Factors on incidence Stunting

Variable	B	Df	Sig.	Exp (B)	CI 95%	
					Lower	Upper
Complementary Feeding	1,816	1	0,000	6,147	2,690	14,047
Exclusive Breastfeeding	1,519	1	0,001	4,568	1,973	10,775
Birth Weight	1,315	1	0,002	3,725	1,590	1,590
Constant	-1,289	1	0,000	0,275	-	-

Based on Table 4, the results obtained from the multivariate analysis show that complementary feeding has the most effect on the incidence of stunting. The results of the statistical test obtained an OR value of 6.147, which means that toddlers who received complementary feeding that were not appropriate according to age had 6 times the risk of experiencing stunting compared to toddlers who received complementary feeding according to age.

DISCUSSION

The proportion of stunting in children under five

Based on Table 1, the proportion of stunting in the work area of the Patuk I Public Health Center of Gunungkidul in 2020 was 23.9%, this figure increased from 2019 which was 19.6%. Based on Febriani's research (2018) the proportion of events stunting (20.1%). Researchers believe that the high prevalence of stunting in Lampung is caused by delays in early breastfeeding initiation, non-exclusive breastfeeding, and early weaning of breast milk.(11)

Characteristics of birth weight, exclusive breastfeeding, complementary feeding, history of diarrheal disease/ARI in toddlers.

Based on Table 2, the majority of respondents under five have a normal birth weight baby (73.7%). Body weight is the most important measurement in newborns. Body weight is used as the best indicator to determine the nutritional status and growth and development of children. (12) This is following Oktavianisya's research (2021) which states that most toddlers have a history of normal birth weight (73.2%) compared to toddlers who have a normal birth weight. have a history of abnormal birth weight. The high influence of birth weight on the incidence of stunting occurs at the age of the initial 6 months, then decreases until the age of 24 months. If in the early 6 months, a toddler can catch up with growth, the toddler can likely grow normally. (13)

The characteristics of the research subjects based on exclusive breastfeeding were found in that most of the toddlers received exclusive breastfeeding. Breastfeeding is a mother's behavior of always giving breast milk to babies until the age of 6 months without other food or drinks. The low level of exclusive breastfeeding is one of the triggers for stunting in children under five caused by past events and will have an impact on the future, on the contrary, adequate breastfeeding by mothers will help maintain a child's nutritional balance so that optimal child growth is achieved.(14) (15) These results are following the research of Fikadu, et al. (2014) in Southern Ethiopia which showed that insufficient breastfeeding and feeding or formula feeding too early could increase the risk of stunting because babies tend to be more susceptible to infectious diseases such as diarrhea and respiratory disease.(16)

Characteristics based on complementary feeding are obtained by most of the toddlers who get complementary feeding according to age. Since the age of 6 months, breastfeeding alone cannot meet the baby's nutritional needs, so additional sources of nutrients from complementary foods are needed. Impaired growth at the beginning of a baby's life, among others, is caused by malnutrition since infancy, giving complementary feeding too early or too late, complementary feeding not having enough nutrition according to the baby's needs, or poor feeding patterns according to age, and inadequate baby care.(16) This is following research by Dwi (2016) which states that the first time giving complementary feeding affects the incidence of stunting. The first time giving complementary feeding had a 2.8 times greater effect on the incidence of stunting.(18)

Characteristics based on a history of diarrheal disease/ARI, the majority of respondents had never had a history of diarrhea/ARI. ARI is a disease that is very common and is the highest cause of death in children under five. This is following Himawati's research (2020) which states that children with ARI will experience metabolic disorders in their bodies due to inflammation that occurs. The pro-inflammatory cytokine regulatory system can affect chondrocytes directly. The toddler is a phase of growth and development that is very important and takes place quickly. Thus, if the child has a history of ARI disease, the process of growth and development will be disrupted.(19)

Analysis of the relationship between the characteristics of birth weight, exclusive breastfeeding, complementary feeding, and history of diarrheal disease/ARI in children under five with stunting

Relationship between birth weight and stunting

Based on Table 3, it can be seen that the majority of toddlers who have normal birth weights are toddlers who do not experience stunting, namely (83.3%). Based on the chi-square test, a p-value of 0.010 was obtained (< = 0.05) with OR = 2,800 (95% CI 1.317 – 5.952). This states that there is a relationship between birth weight and the incidence of stunting. Toddlers born with abnormal birth weights have a 2.8 times risk of experiencing stunting compared to toddlers born with normal birth weights.

The results of this study are in line with the research of Fitri L (2018) and Paudel, et al., (2012) that there is a relationship between birth weight and the incidence with a stunting p-value of 0.000. Low birth weight babies have a risk of stunting 4.47 times greater than toddlers with normal birth weight. (20)(21) This is also following the results of Nadia's research (2017) which states that there is a relationship between birth weight and the incidence of stunting in toddlers aged 25-59 months at the Posyandu in the Wonosari II Health Center area with statistical test results obtained p-value 0.019 means it can be concluded that there is a relationship between the birth weight of children under five and the incidence of stunting. (22) This is following research conducted by Akombi (2017) which states that infants born with low birth weight are significantly more likely to suffer from stunting.(23) Other studies also stated that babies born with a body weight of less than 2500

grams will experience obstacles in their growth and development and may experience a decline in intellectual function and are more susceptible to infection and hypothermia.(24)

Relationship between exclusive breastfeeding and the incidence of stunting

Based on Table 3, it can be seen that most of the toddlers who were given exclusive breastfeeding were toddlers who did not experience stunting (86.9%). Based on the chi-square test, the p-value was 0.000 (< = 0.05) OR = 4.237 (95% CI 1.940 – 9.253). This indicates that there is a relationship between exclusive breastfeeding and the incidence of stunting. Toddlers who do not get exclusive breastfeeding have a 4.2 times risk of experiencing stunting compared to toddlers who get exclusive breastfeeding.

This is contrary to research conducted by Anisa (2012) which states that exclusive breastfeeding is not significantly related to the incidence of stunting. However, in line with research conducted by Fitri (2018), out of 55 children under five who were not exclusively breastfed, 23 people (41.8%) were stunted. The chi-square results obtained a p-value of 0.021 <0.05, it can be concluded that there is a significant relationship between exclusive breastfeeding and the incidence of stunting in children under five at the Lima Puluh Health Center.(20)(25)

Relationship between the provision of complementary feeding and the incidence of stunting.

Based on Table 3, it can be seen that most of the toddlers who were given complementary feeding according to age were toddlers who did not experience stunting (84.6%). Based on the chi-square test, the p-value was 0.000 (< = 0.05) OR = 5.225 (95% CI 2.447 – 11.157). This states that there is a relationship between the provision of complementary feeding and the incidence of stunting. Toddlers who received complementary feeding that were not appropriate according to age had a 5.2 times risk of experiencing stunting compared to toddlers who received complementary feeding according to age.

This study is following research conducted by Kendari Janirah (2016). The chi-square results obtained a p-value of 0.004 <0.05 which indicates that the provision of complementary feeding has a relationship with the incidence of stunting. (26) This is also following Khasanah's research (2016) which states that first-time complementary feeding is associated with a significant incidence of stunting (OR = 2.867, 95% CI: 1.453-5.656). (27)

Relationship history of diarrheal disease/ARI with an incident of stunting

ARI and diarrhea are one of the main causes of mortality and mortality in children under five years old worldwide. Diarrhea is an unusual condition of defecating more than three times a day, with or without blood in the stool. Symptoms of diarrhea include restlessness, fussiness, sunken eyes, weakness, vomiting, fever, decreased appetite, laziness to drink or thirst, and lips and skin becoming dry and pale. The frequency of diarrheal disease and ARI in children under five in Indonesia is estimated at 3 to 6 times per year, this means that an average toddler experiences diarrhea and ARI 3 to 6 times a year.(28)(29)(30)

The results of this study indicate p-value 0.388 (> = 0.05) OR = 1.572 (95% CI 0.667 – 3.647) so it can be concluded that a history of diarrheal disease/ARI is not associated with stunting. The results of this study are in line with research conducted by Nasikhah (2012) which showed that acute upper respiratory tract infection was a risk factor for stunting which was not significant (p-value 0.297 OR = 1.73) and multivariate analysis showed that acute diarrhea had no effect so that in this study diarrhea was not proven as a risk factor for stunting. (31)

Joint influence (birth weight, exclusive breastfeeding, complementary feeding, history of diarrheal disease/ARI)

Of the three factors that have a relevant relationship to the incidence of stunting, complementary feeding is the factor with the greatest risk of stunting. This can be seen from

the results of multivariate analysis, namely p-value 0.000 (< = 0.05) (95% CI 2.690-14.047). The results showed that toddlers who received complementary feeding that were not appropriate according to age had a 6.147 times chance of experiencing stunting compared to toddlers who received complementary feeding according to age. This is supported by research conducted by Maria (2018) which shows that the provision of complementary feeding with the incidence of stunting in toddlers aged 24-59 months has a significant relationship (p-value 0.001).(9)

CONCLUSION

Toddlers who experienced stunting in the Working Area of the Patuk I Public Health Center Gunungkidul were 23.9%. The majority of respondents under five who have normal birth weight babies mostly get exclusive breastfeeding, most toddlers get appropriate complementary feeding, and the majority of toddlers never have a history of diarrhea/ARI. There is a relationship between birth weight and the incidence of stunting in toddlers in the working area of the Patuk I Health Center in 2021. There is a relationship between exclusive breastfeeding and the incidence of stunting in toddlers in the work area of the Patuk I Health Center. There is a relationship between complementary feeding and the incidence of stunting in toddlers in the area There is no relationship between the history of infection with diarrheal disease/ARI with stunting in children under five in the working area of Patuk I Health Center. Together (birth weight, exclusive breastfeeding, complementary feeding, history of diarrheal disease/ARI) have a relationship with the incidence of stunting in toddlers in the work area of the Patuk I Public Health Center Gunungkidul. The most influential factor in the incidence of stunting is complementary feeding which has the opportunity to experience stunting 6.1 times.

REFERENCES

1. World Health Organization (WHO). 2019. Infant and young child feeding.https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding. Diakses pada tanggal 11/09/2020.
2. UNICEF. Improving Child Nutrition The achievable imperative for global progress. New York. WHO. 2013.
3. Aridiyah, F. O., Rohmawati, N., & Ririanty, M. (2015). Faktor-faktor yang Mempengaruhi Kejadian *Stunting* pada Anak B alita di Wilayah Pedesaan dan Perkotaan (The Factors Affecting *Stunting* on Toddlers in Rural and Urban Areas). Pustaka Kesehatan, 3(1), 163-170.
4. Badan Penelitian dan Pengembangan Kesehatan. Riset Kesehatan Dasar (RISKESDAS) 2018. Departemen Kesehatan Republik Indonesia; 2018
5. Kirolos A, Goyheneix M, Kalmus Eliasz M,et al. Neurodevelopmental, cognitive, behavioural and mental health impairments following childhood malnutrition: a systematic review. BMJ Global Health 2022;7:e009330. doi:10.1136/bmjgh-2022-009330
6. Dinas Kesehatan DIY. Profil Kesehatan D.I Yogyakarta Tahun 2019.
7. Dinas Kesehatan Gunungkidul. Profil Dinas Kesehatan Kabupaten Gunung Kidul Tahun 2019.
8. UNICEF. 2009. Tracking Progress on Child and Maternal Nutrition a Survival and Development Priority. New York. USA www.unicef.org/publications. Diakses 20 April 2017.
9. Maria Nova & Olivia Afriyanti. (2018) Hubungan Berat Badan, ASI Eksklusif, MP-ASI dan Asupan Energi dengan *Stunting* pada Balita Usia 24-59 Bulan di Public Health Center Lubuk Buaya. Jurnal Kesehatan Perintis. Vol. (1) Tahun 2018.
10. Hendraswari, C. A., Purnamaningrum, Y. E., Maryani, T., Widyastuti, Y., & Harith, S. (2021). The Determinants of *Stunting* in 24-59 Month-Old Children in Kulon Progo

District 2019. Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal), 16(2).
11. Febriani, C. A., Perdana, A. A., & Humairoh, H. (2018). Faktor kejadian *stunting* balita berusia 6-23 bulan di Provinsi Lampung. Jurnal Dunia Kesmas, 7(3).
12. Winowatan, G., Malonda, N. S., & Punuh, M. I. (2017). Hubungan Antara Berat Badan Lahir Anak Dengan Kejadian *Stunting* Pada Anak Batita Di Wilayah Kerja Public Health Center Sonder Kabupaten Minahasa. KESMAS, 6(3).
13. Oktavianisya, N., Sumarni, S., & Aliftitah, S. (2021). Faktor Yang Mempengaruhi Kejadian *Stunting* Pada Anak Usia 2-5 Tahun Di Kepulauan Mandangin. Care: Jurnal Ilmiah Ilmu Kesehatan, 9(1), 11-25.
14. WHO. (2018). Exclusive breastfeedingfor optimal growth, development, and health of infant. Diperoleh dari http://www.who.int/elena/titles/exclusi ve_breastfeeding/en/
15. Kementerian Kesehatan RI. Pusat Data dan Informasi. Jakarta: Kemenkes RI; 2010.
16. Fikadu, T., Assegid, S. & Dube, L. (2014). Factor associated with *stunting* among children age 24 to 59 months in Meskan District, Gurage Zone, South Ethiopia: A case-control study. BMC Public Health, 14(800). Diakses dari http:// www.biomedcentral.com/1471 2458/14/800.
17. Hendra A, Miko A dan Hadi A. Kajian *Stunting* Pada Anak Balita Ditinjau dari Pemberian ASI Eksklusif, MP-ASI, Status Imunisasi dan Karakteristik Keluarga di Kota Banda Aceh. JKIN. November 2010:Vol (6): 169-184.
18. Dewi, I. A. K. C., & Adhi, K. T. (2016). Pengaruh konsumsi protein dan seng serta riwayat penyakit infeksi terhadap kejadian *stunting* pada anak balita umur 24-59 bulan di wilayah kerja Public Health Center Nusa Penida III. Arc Com Health, 3, 36-46.
19. Himawati, E. H., & Fitria, L. (2020). Hubungan Infeksi Saluran Pernapasan Atas dengan Kejadian *Stunting* pada Anak Usia di Bawah 5 Tahun di Sampang. Jurnal Kesehatan Masyarakat Indonesia, 15(1), 1-5.
20. Fitri, L. (2018). Hubungan BBLR dan ASI eksklusif dengan kejadian *stunting* di Public Health Center Lima Puluh Pekanbaru. Jurnal Endurance. (Volume.3, No.1), 131-137.
http://ejournal.kopertis10.or.id/index.php/endurance/article/viewFile/1767/93 0
21. Paudel, R., Pradhan, B., Wagle, R. R., Pahari, D.P., & amp; Onta S. R. (2012). Risk factors for *stunting* among children: A community based case control study in Nepal. Kathmandu University Medical Journal, 10(3), 18-24.
22. Nadia Nabila Larasati, and Heni Puji Wahyuningsih, and Margono, (2018) Faktor-Faktor Yang Berhubungan Dengan Kejadian *Stunting* Pada Balita Usia 25-59 Bulan Di Posyandu Wilayah Public Health Center Wonosari Ii Tahun 2017. skripsi thesis, Poltekkes Kemenkes Yogyakarta.
23. Akombi, Blessing Jaka. Agho Kingsley E, Hall John J, Merom Dafna, Astel-Burt Thomas, and Renzaho Andre M.N. 2017. *Stunting* and severe *stunting* among children under-5 years in Nigeria: A multilevel analysis. Nigeria: BMC Pediatrics
24. Direktorat Bina Kesehatan Ibu . 2012. Direktorat Bina Kesehatan Ibu Akan Lakukan Assessment Kualitas Pelayanan Kesehatan Ibu di 20 Kabupaten/Kota. Diunduh 20 April 2017, dari Kesehatan Ibu:http://www.depkes.go.id
25. Anisa, Paramitha. 2012. Faktor-Faktor Yang Berhubungan Dengan Kejadian *Stunting* Pada Balita Usia 25-60 Bulan Di Kelurahan Kalibiru Depok Tahun 2012. Jakarta: Universitas Indonesia.
26. Jihad, Janirah., Ode Ali Imran Ahmad, Ainurafiq. 2016. Analisis determinan kejadian *stunting* pada balita usia 12-24 bulan Di wilayah kerja Public Health Center puuwatu kota kendari tahun 2016. Fakultas Kesehatan Masyarakat Universitas Halu Oleo.
27. Khasanah, D. P., Hadi, H., & Paramashanti, B. A. (2016). Waktu pemberian makanan pendamping ASI (MP-ASI) berhubungan dengan kejadian *stunting* anak

usia 6-23 bulan di Kecamatan Sedayu. Jurnal Gizi dan Dietetik Indonesia (Indonesian Journal of Nutrition and Dietetics), 4(2), 105-111.
28. Badan Penelitian dan Pengembangan Kesehatan. Riset Kesehatan Dasar (RISKESDAS) 2018. Departemen Kesehatan Republik Indonesia; 2018
29. Departemen Kesehatan RI. (2010). Buku Saku Petugas Kesehatan Lima Langkah Tuntaskan Diare. Direktorat Jenderal Pengendalian Penyakit Dan Penyehatan Lingkungan
30. Mongkholchati, (2010). —Prevalence and Incidence of Child *Stunting* from Birth to Two Years of Life in Thai Children. Jurnal Medical Association Thai 2010; 93 (12): 1368 78.
31. Nasikhah, R., & Margawati, A. (2012). Faktor risiko kejadian *stunting* pada balita usia 24–36 bulan di Kecamatan Semarang Timur (Doctoral dissertation, Diponegoro University).