

Proximal Factors on Stunting Incidence in Toddlers in Indonesia and Developing Countries: Scoping Review

Arief Khoerul Ummah¹, Henny Suzana Mediani¹

¹ Universitas Padjadjaran, Indonesia.

Received: May 23, 2023

Revised: July 1, 2023

Accepted: July 25, 2023

Published: July 31, 2023

Corresponding Author:

Arief Khoerul Ummah

arief20006@unpad.mail.ac.id

DOI: [10.29303/jppipa.v9i7.3984](https://doi.org/10.29303/jppipa.v9i7.3984)

© 2023 The Authors. This open access article is distributed under a (CC-BY License)



Abstract: Stunting is a problem for health and can hinder the future of a nation. It indicated from height the prevalence of stunting as well as the impact of what happened. Article reviews This aim is to identify factors proximal to the incidence of stunting in children under five in developing countries, including Indonesia. Search for the article scientific this is done through electronic databases. Criteria for inclusion in the article explain factors proximal to the incidence of stunting in children under five in developing countries, with cross-sectional and case-control studies from the years of publication 2018–2023. Study results from 15 articles show factors proximal, including LBW, body length, prematurity, sequence of birth, immunization status, ARI, and disease infection, relate to the incidence of stunting in children under five in developing countries. Study conclusion This discloses a factor proximal to the incidence of toddler stunting in developing countries. Effort promotion, health, and program control oversight nutrition for mothers at 1000 days First life to prevent stunting occurring.

Keywords: Child; Developing countries; Proximal factors; Stunting

Introduction

Stunting is lateness in growth in toddlers as a consequence of chronic lack of nutrition that makes a child appear short for his age (Mbuya & Humphrey, 2016). Globally, there are 155 million children who have experienced toddler stunting incidents (Vonaesch et al., 2018). Based on data from the Ministry of Health of the Republic of Indonesia (2021), Indonesia is in the order of 2nd in Southeast Asia, reaching 30.8%, or 153,228 children.

The problem of stunting in this toddlers will impact vulnerability. Power stand body, level cognitive disorder mental development, power motor, as well as can result in death (Vonaesch et al., 2018). This stunting problem is caused by multifactors where factors relate to each other and factors can be different in each area (Saputri & Tumangger, 2019). Related factors with many stunting incidents explained in the literature, among others, include politics, economics, service health, education, social culture, as well as water and sanitation. Besides that, there are intermediate factors in the matter. This factor of the house ladder covers amount as well as quality food that isn't adequate, source low family, number family, as well as maintenance health that is not

totally adequate. Factor proximal covers prematurity, weight of the baby born low, birth length, order of birth, history of disease infection, and history of immunization (Boah et al., 2019). Of the three factors, the currently done effort handling and acceleration decline globally as well as nationally. In scoping reviews in Indonesia and abroad, already someone has researched related factors with stunting events; however, there is not yet a study in a manner special to researching related factors proximal, especially order birth, because that study has become important to do in developing countries, including Indonesia.

Method

Study Design

This study uses a design scoping review as a methodology study. For answer question researcher: "How is the factor process proximal in influencing stunting in children and toddlers in developing countries?" Development question study follow guidelines Formulated PEO is Population Mother with stunted children aged 0–60 months and children ages 0–60 months. Exposure of interest explains factor proximal stunting in children aged 0–60 months by stunting.

How to Cite:

Ummah, A. K., & Mediani, H. S. (2023). Proximal Factors on Stunting Incidence in Toddlers in Indonesia and Developing Countries: Scoping Review. *Jurnal Penelitian Pendidikan IPA*, 9(7), 219–225. <https://doi.org/10.29303/jppipa.v9i7.3984>

Overcome factor proximal stunting in children and toddlers with the method of quantitative Key words used were proximal factors, stunting, children, and developing countries.

Selection Criteria

Criteria for inclusion in this research is published research from 2018–2023. Source information used for looking for and identifying various studies published as cross-sectional and case-control originals in English and Indonesian As for the criteria, exclusion covers studies conducted outside developing countries, factors outside of WHO and UNICEF guidelines, randomized controlled trials (RCTs), qualitative reviews, and mixed methods. Based on studies sorting material results obtained, 88,140 publications were retrieved from database searches. From publication duplicates as well as articles that do not conform to the title, 1,282 articles were issued, so 580 articles were obtained, leaving the remaining 702 articles. Then, based on abstracts, 667 articles were issued, with 35 articles remaining. Furthermore, the selection stage is complete, and there are 20 published articles. Because no article is in accordance with criteria, there are 15 articles that fulfill criteria. This review focuses on proximal factors that can contribute to stunting in children and toddlers in developing countries.

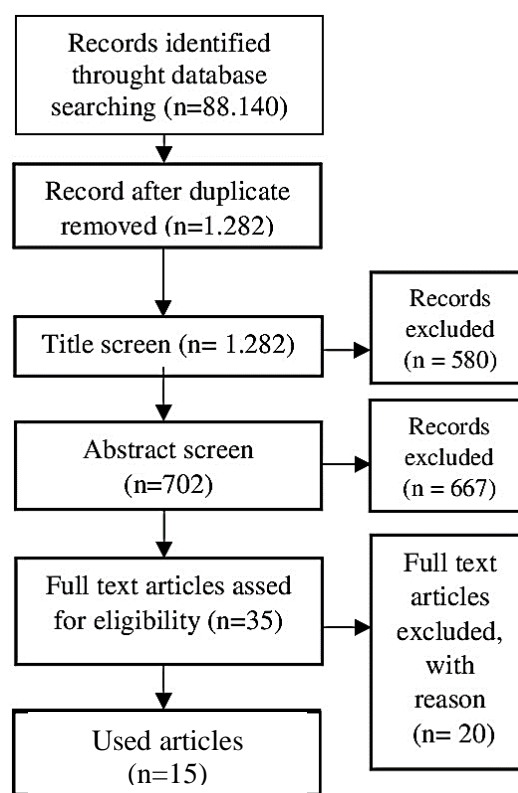


Figure 1. Process flow research

Table 1. Summary of Journal Literature Search Results

Writer	Year	Title	Place	Method	Respondents	Sampling technique	Results
Mistry, Hossain, & Khanam	2019	Individual, maternal and household-level factors associated with stunting among children aged 0-23 months in Bangladesh	Bangladesh	Cross-sectional	Children aged 0-23 months a total of 6539 respondents	Random clusters	Factor happening Stunting events are caused by sequence birth, disease diarrhea and LBW
Kang & Kim	2019	Risk factors for undernutrition among children 0–59 months of age in Myanmar	Myanmar	Cross-sectional	Children aged 0-59 months a number of 4550 respondents	Probability proportional	nutritional status not enough with birth weight not enough showing risk 1.85 times more big experiencing stunting
Amare, Ahmed, & Mehari	2019	Determinants of nutritional status among children under age 5 in Ethiopia: Further analysis of the 2016 Ethiopia demographic and health survey	Ethiopia	Cross-sectional	Age child 0-59 months a total of 9,419 respondents	Random clusters	LBW and order birth is one the resulting factors stunting incident
Abeway, Gebremichael, & Murugan	2018	Stunting and its determinants among children aged 6-59 Months in Northern	Northern Ethiopia	Cross-sectional	6 month old child up to 59 months a number of	Simple random sampling	Children with LBW status have risk 5.95 times more risky

Writer	Year	Title	Place	Method	Respondents	Sampling technique	Results
Fikri & Komalyana	2023	Ethiopia: A cross-sectional study Factor affecting risk incidence of stunting in toddlers in the village murtajih, district pamekasan	Pamekasa Madura	Case control	410 respondents 20 groups not stunting and 20 stunting groups. Children aged 12-59 months	Random sampling	experiencing stunting Factor risk of stunting in toddlers is birth length (OR= 4.00, p=0.0047), immunization status baseline (OR= 6.00, p=0.028), and history ISPA disease (OR= 0.09, p=0.001)
Mutmainnah, Malka, & Musni	2022	Relationship between mother 's education and birth length Stunting Incidents in Toddlers Age 12-60 Months In The Village Mallusetasi Subdistrict Sibulue	Sibulue	Cross-sectional	Children aged 12-60 months a number of 84 respondents	Purposive proportional random sampling	Birth length own significant relationship to stunting in children age 12-60 months p=0.005
Sari & Sartika	2021	The effect of the physical factors of parents and children on stunting at birth among newborns in Indonesia	Indonesia	Cross-sectional	0 month old child totaling 756	Random clusters	Premature baby own 2 times the probability more tall experienced stunting at the time born with OR = 2.12 p = <0.001
Sumardilah & Rahmadi	2019	Risiko Stunting Anak Baduta (7-24 Bulan)	Lampung	Case control	7 month old child up to 24 months number 298	Random sampling	Have a history of premature birth significant relationship by stunting with p-value = 0.022
Ahishakiye, Abimana, & Beck	2019	Developmental outcomes of preterm and low birth weight toddlers and term peers in Rwanda	Rwanda	Cross-sectional	Children aged 24-36 months as many as 445	Random sampling	Premature birth has significant relationship with incidence of stunting p=0.048
Chungkham, Sahoo, & Marbanian	2020	Birth interval and childhood undernutrition: Evidence from a large scale survey in India	India	Cross-sectional	Children aged 1-5 years as many as 259,627	Stratified cluster sampling	Order birth child own significant relationship to incidence of stunting p=0.001
Agustia, Rahman, & Hermiyanty	2020	Factor Risk Stunting Incidents in Toddlers Age 12-59 Months in the Poboaya Mine Area, Palu City	Hammer	Case control	21 cases and 63 controls, a total of 84 samples. Old child 12 months old up to 59 months	total sampling	Immunization status is factor risk to stunting incident with OR = 3.850
Arini, Nursalam, & Mahmudah	2020	The incidence of stunting, the frequency/duration of diarrhea and Acute Respiratory Infection in toddlers	Surabaya	Cross-sectional	Children aged 12-36 months number 152	Stratified random sampling	ISPA and Diarrhea is factor risk from The incidence of stunting is shown in diarrhea with Frequency diarrhea p=0.005 and ISPA with

Writer	Year	Title	Place	Method	Respondents	Sampling technique	Results
Himawati & Fitria	2020	Connection Infection Channel Upper Breathing with Stunting Incidence in Children Under 5 Years Old in Sampang	Lacquer East Java	Cross-sectional	Children aged under 5 years old as many as 170	total sampling	incidence of stunting p=0.001 ISPA disease has significant relationship with stunting incidence (p=0.029)
Berhe, Seid, & Gebremariam	2019	Risk factors of stunting (chronic undernutrition) of child reared 6 to 24 months in Mekelle City, Tigray Region, North Ethiopia: An unmatched case-control study	North Ethiopia	Case control	220 groups not stunting and 110 groups cases, a total of 330 samples. Old child age 6 months up to 24 months	Consecutive sampling	Incident diarrhea is factor risk experience stunting incident with value OR = 5.3
Tafesse, Joseph, & Mayiso	2021	Factors associated with stunting among children aged 6-59 months in Bensa District, Sidama Region, South Ethiopia: unmatched case-control study	South Ethiopia	Case control	158 groups not stunting and 79 groups cases total sample 237. Children aged 6-59 months	Random sampling	Experienced child diarrhea in 2 weeks final is factor risk happening incidence of stunting p = 0.001

Result and Discussion

Result

Search results for this scientific article was done through databases on the internet, namely ProQuest, Pubmed, Ebscohost, Sciendirect, Taylor and Francis, and Google Scholar. 15 articles were found to fulfill criteria for inclusion that have been determined by the author as well as in accordance with topic discussion in research. Sampling technique and the results that can be seen in Table 1.

Discussion

LBW Factor with Stunting

LBW signifies that the fetus experiences malnutrition in the womb. A newborn baby with a weight of less than 2500 gr has a risk of experiencing stunting (Abeway et al., 2018). Research conducted in Myanmar by Kang et al. (2019) describes nutritional status as not enough with LBW and shows a risk 1.85 times greater of experiencing stunting. According to Mistry et al. (2019), less LBW babies of 2.5 kg are 50% more likely to experience stunting at a young age. Reason for the LBW lack of energy chronically caused by deficiency nutrition at the time of pregnancy (Amare et al., 2019). A baby with a history of LBW inside content potential experiences slow growth and no development in accordance with her age. This is in accordance with a study (Abeway et al., 2018) that says that for a child with LBW status, the risk is 5.95 times greater for failure in growth matters. This is because it lacks nutrition. For

fulfilling needs, body If matter This over time can result in stunting.

Body Length Factor with Stunting

Experienced babies disturbances in growth since age early show a risk for experiencing growth falter and catch up, which reflects an inability to reach optimal growth (Utami et al., 2022). Based on research conducted in Madura by Fikri et al. (2023), a toddler with a short birth length is four times more likely to experience stunting. This is in line with the study by Mutmainnah et al. (2022) in Sibulue, where a newborn toddler with less body length than 46.1 cm is at risk of experiencing stunting. This is because during the content experience lack of intake nutrition has an impact on growth. Besides that, after a child is born, if they have not received adequate nutrition for a long time, they will experience stunting.

Factor Prematurity with Stunts

Premature births are births that take place at ages 20 to 37 weeks of gestation and are counted from the first to the last. Based on a study (Ahishakiye et al., 2019) in Rwanda, one of the influencing factors for stunting is premature birth. This same study by Sari et al. (2021) conducted in Indonesia found that twice as many premature babies are experiencing stunting. Besides that, according to a study Sumardilah et al. (2019) conducted in Lampung, premature births had a significant relationship with stunting incidence (p = 0.022), p This happens at the moment of a short

pregnancy, as well as during retrograde linear growth in content. newborn baby Enough month if intake of nutrition is not enough, you will experience growth failure. This will increase greatly if added to exposure to disease and infection. On the contrary, premature babies will experience growth failure if given adequate nutrition, so growth can catch up.

Factor Order Birth with Stunts

Order of birth will influence attention from parents. Born children, first and second, will get attention in a maximum manner. This is in line with the study by Mistry et al. (2019) in Bangladesh, where there is a connection between order birth and stunting incidence ($p = 0.006$). Study next thing to do: Amare et al. (2019) in Ethiopia found a connection between order birth and stunting ($p = 0.001$). This is strengthened by research by Chungkham et al. (2020) in India on the sequence of birth children's significant relationship to stunting incidence ($p = 0.001$), p This happens when a born child with orders first and second usually gets more nutrition compared to orders third and so on because of the economy.

Immunization Status Factor with Stunts

Immunization is an effort to increase immunity to disease in children. Immunization must be administered in a comprehensive manner, as failure to do so will result in immunity in the body, making disease more easily attacked, and failure to do so may result in stunting (Damanik et al., 2018; Krol & Grossmann, 2018). Based on a study by Fikri et al. (2023) in Madura, no complete immunization is basic in toddlers, so they risk being six times more tall and experiencing stunting. According to the study Agustia et al. (2020), toddlers who do not receive immunization are 3,850 times more likely to suffer from stunting.

Factor Disease: ARI Infection with Stunting

ISPA is one of many diseases found in children, with symptoms ranging from mild to severe. ARI incidents can influence system metabolism and the body and can cause lust. Eat child reduce so that intake nutrition is not adequate (Solihati et al., 2022). Based on their study, Fikri et al. (2023) mention that a toddler with a history of ISPA has a 95-times higher risk of experiencing stunting. Besides that, based on the study by Himawati et al. (2020), ISPA events show a significant relationship with stunting (m and the body and can cause lust. Eat child reduce so that intake nutrition is not adequate (Solihati et al., 2022). Based on their study, Fikri et al. (2023) mention that a toddler with a history of ISPA has a 95-times higher risk of experiencing stunting. Besides that, based on the study by Himawati et al. (2020), ISPA events show a significant relationship with stunting ($p = 0.029$). This is because IGF-I levels play a role as a protector against

stunting, which inhibits growth cells in muscle and bone in children.

Factor Diarrhea with Stunts

Diarrhea is a disease where possible infections cause disturbance. Power absorbs even loss substance nutrition, and if not handled and balanced with appropriate intake, it will fail to grow (Desyanti & Nindya, 2018). Based on a study by Berhe et al. (2019) in Ethiopia, they found that children with diarrhea had a 5.3-times greater risk of experiencing stunting. This same study by Mistry et al. (2019) in Bangladesh found that children who experienced child diarrhea in 3 months had their own connection with stunting ($p = 0.006$). In line with their study, Tafesse et al. (2021) in South Ethiopia found that exposed children's diarrhea in 2 weeks had its own connection with stunting ($p = 0.001$). Study This same match with research conducted in Surabaya by Arini et al. (2020) shows that incident diarrhea with frequency over 6 months can result in an incidence of stunting in children. This is caused by lust, which causes a decrease in eating and power, leaving the growing toddler vulnerable to disease, infection, and diarrhea at the same time.

Conclusion

Based on the results and discussion in the scoping review, a number of factors proximal to stunting events were identified, including LBW, length of birth, prematurity, order of birth, immunization status, respiratory disease, and diarrhea. The results of this literature study can be used by nurses as enhancement efforts for promotion of health and program control oversight nutrition for mothers at 1000 days of life to prevent stunting.

Acknowledgements

The author is very grateful for all the dedication that has helped complete this article, especially the Chancellor of Padjadjaran University who always motivates all lecturers to conduct scientific research and development.

Author Contributions

To ensure that the article could be submitted to the JPPIPA journal, all writers equally contributed to its completion, sentence structure, and translation.

Funding

No funding organization in the public, private, or nonprofit sectors provided a particular grant for this research endeavor. exclusively a collaboration amongst all writers.

Conflicts of Interest

The author's views and opinions are those of the article and may not represent the official positions or policies of any organizations to which the author is affiliated.

References

- Abeway, S., Gebremichael, B., & Murugan, R. (2018). Stunting and Its Determinants Among Children Aged 6-59 Months in Northern Ethiopia: A Cross-Sectional Study. *Journal of Nutrition and Metabolism*. <https://doi.org/10.1155/2018/1078480>
- Agustia, R., Rahman, N., & Hermiyanty, H. (2020). Risk Factors for Stunting in Toddlers Aged 12-59 Months in the Poboya Mining Area, Palu City. *Ghidza: Journal of Nutrition and Health*, 2(2), 59-62. <https://doi.org/10.22487/ghidza.v2i2.10>
- Ahishakiye, A., Abimana, M. C., & Beck, K. (2019). Developmental Outcomes of Preterm and Low Birth Weight Toddlers and Term Peers in Rwanda. *Annals of Global Health*, 85(1), 1-11. <https://doi.org/10.5334/aogh.2629>
- Amare, Z. Y., Ahmed, M. E., & Mehari, A. B. (2019). Determinants of Nutritional Status Among Children Under Age 5 in Ethiopia: Further Analysis of The 2016 Ethiopia Demographic and Health Survey. *Globalization and Health*, 15(1), 1-11. <https://doi.org/10.1186/s12992-019-0505-7>
- Arini, D., Nursalam, N., & Mahmudah, M. (2020). The Incidence of Stunting, The Frequency/Duration of Diarrhea and Acute Respiratory Infection in Toddlers. *Journal of Public Health Research*, 9(2), 117-120. <https://doi.org/10.4081/jphr.2020.1816>
- Berhe, K., Seid, O., & Gebremariam, Y. (2019). Risk Factors of Stunting (Chronic Undernutrition) of Children Aged 6 to 24 Months in Mekelle City, Tigray Region, North Ethiopia: An Unmatched Case-Control Study. *PLoS ONE*, 14(6), 1-11. <https://doi.org/10.1371/journal.pone.0217736>
- Boah, M., Azupogo, F., Amporfro, D. A., & Abada, L. A. (2019). The Epidemiology of Undernutrition and Its Determinants in Children Under Five Years in Ghana. *PLoS ONE*, 14(7), 1-23. <https://doi.org/10.1371/journal.pone.0219665>
- Chungkham, H. S., Sahoo, H., & Marbaniang, S. P. (2020). Birth Interval and Childhood Undernutrition: Evidence from A Large Scale Survey in India. *Clinical Epidemiology and Global Health*, 8(4), 1189-1194. <https://doi.org/10.1016/j.cegh.2020.04.012>
- Damanik, P., Siregar, M. A., & Aritonang, E. Y. (2018). Correlation between Nutritional Status, Exclusive Breastfeeding, Basic Immunization Status and The Incidence of Acute Respiratory Infection (ARI) in Children Aged 12-24 Months in The Work Area of The Glugur Darat Health Center, Medan City. *Nutrition, Reproductive Health and Epidemiology*, 1(4), 1-7. Retrieved from <https://rb.gy/q7m7s>
- Desyanti, C., & Nindya, T. S. (2018). Correlation between History of Diarrhea and Hygiene Practices with Incidence of Stunting in Toddlers Aged 24-59 Months in the Working Area of The Simolawang Health Center, Surabaya. *Amerta Nutrition*, 1(3), 243-251. <https://doi.org/10.20473/amnt.v1i3.6251>
- Fikri, A. A., & Komalyna, I. N. T. (2023). Risk Factors that Influence The Incidence of Stunting in Toddlers in Murtajih Village, Pamekasan District. *National Nutrition Journal*, 11(4), 251-260. <https://doi.org/10.32583/keperawatan.v11i4.530>
- Himawati, E. H., & Fitria, L. (2020). Relationship between Upper Respiratory Infection and Stunting in Children Under 5 Years in Sampang. *Journal of Indonesian Public Health*, 15(1), 1-5. <https://doi.org/10.26714/jkmi.15.1.2020.1-5>
- Kang, Y., & Kim, J. (2019). Risk Factors for Undernutrition Among Children 0-59 Months of Age in Myanmar. *Maternal and Child Nutrition*, 15(4), 1-13. <https://doi.org/10.1111/mcn.12821>
- Krol, K., & Grossmann, T. (2018). Psychological Effects of Breastfeeding on Children and Mothers. *Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz*, 61. <https://doi.org/10.1007/s00103-018-2769-0>
- Mbuya, M. N. N., & Humphrey, J. H. (2016). Preventing Environmental Enteric Dysfunction through Improved Water, Sanitation and Hygiene: An Opportunity for Stunting Reduction in Developing Countries. *Maternal and Child Nutrition*, 12(1), 106-120. <https://doi.org/10.1111/mcn.12220>
- Ministry of Health of the Republic of Indonesia. (2021). *Ministry of Health Performance Report 2020*. Jakarta: Ministry of Health of the Republic of Indonesia.
- Mistry, S. K., Hossain, M. B., & Khanam, F. (2019). Individual, Maternal and Household-Level Factors Associated with Stunting Among Children Aged 0-23 Months in Bangladesh. *Public Health Nutrition*, 22(1), 85-94. <https://doi.org/10.1017/S1368980018002926>
- Mutmainnah, M., Malka, S., & Musni, M. (2022). The Relationship between Mother's Education and Birth Length on Stunting in Toddlers Aged 12-60 Months in Mallusetasi Village, Kec. Sibulue. *Multidisciplinary Journal of Science*, 1(1), 515-521. <https://doi.org/10.31004/koloni.v1i1.248>
- Saputri, R., & Tumangger, J. (2019). Stunting Management Policy In Indonesia. *Journal of Political Issues*, 1(1), 1-9. <https://doi.org/10.33019/jpi.v1i1.2>
- Sari, K., & Sartika, R. A. D. (2021). The Effect of The Physical Factors of Parents and Children on Stunting at Birth Among Newborns in Indonesia. *Journal of Preventive Medicine and Public Health*, 54(5), 309-316. <https://doi.org/10.3961/jpmph.21.120>
- Solihati, E. N., Suhartono, S., & Sri, W. (2022). Descriptive Epidemiological Study of Pneumonia Incidence in Toddlers in the Working Area of Langensari II Public Health Center, Banjar City, West Java in 2017. *Journal of Public Health*, 5(5), 618-

629. Retrieved from <http://ejournal3.undip.ac.id/index.php/jkm>
- Sumardilah, D. S., & Rahmadi, A. (2019). Risiko Stunting Anak Baduta (7-24 Bulan). *Jurnal Kesehatan*, 10(1), 93-104. <https://doi.org/10.26630/jk.v10i1.1245>
- Tafesse, T., Yoseph, A., & Mayiso, K. (2021). Factors Associated with Stunting Among Children Aged 6–59 Months in Bensa District, Sidama Region, South Ethiopia: Unmatched Case-Control Study. *BMC Pediatrics*, 21(1), 1–11. <https://doi.org/10.1186/s12887-021-03029-9>
- Utami, S. N., Arini, T., Juwartini, D., & Murtoyo, E. (2022). The Effect of the Role of The Family in Providing Nutrition for Toddlers with Stunting Family Role in Influencing Nutrition for Stunting Toddlers: Literature Reviews. *Notokusumo Journal of Nursing (JKN)*, 10(2), 11–20. Retrieved from <https://jurnal.stikes-notokusumo.ac.id/index.php/jkn/article/view/211>
- Vonaesch, P., Rendremanana, R., Gody, J. C., Collard, J. M., Giles-Vernick, T., Doria, M., Vigan-Womas, I., Rubbo, P. A., Etienne, A., Andriatahirintsoa, E. J., Chapel, N., Brown, E., Huus, K. E., Duffy, D., Finlay, B. B., Hasan, M., Hunald, F. A., Robinson, A., Manirakiza, A., & Gouandjika-Vassilache, I. (2018). Identifying The Etiology and Pathophysiology Underlying Stunting and Environmental Enteropathy: Study Protocol of The AFRIBIOTA project. *BMC Pediatrics*, 18(1), 1–18. <https://doi.org/10.1186/s12887-018-1189-5>