LITERATURE REVIEW　　　　　　　　　　　　　　　　　　OPEN ACCESS

Information System Records of Nutritional Status of Stunted Children Aged Under Five: A Literature Review of Stunting Management in Pandemic Era

Sistem Informasi Catat-Lapor Status Gizi Balita Stunting: Analisis Literatur pada Penanganan Stunting di Era Pandemi

Nopi Nur Khasanah[1,2]*, Yeni Rustina[1], Dyah Wiji Puspita Sari[2], Apriliani Yulianti Wuriningsih[2]

[1]Nursing Faculty, Universitas Indonesia, Depok, Indonesia
[2]Nursing Faculty, Sultan Agung Islamic University, Semarang, Indonesia

ABSTRACT

Background: Policies and regulations related to stunting reduction in Indonesia are manifested in both specific and sensitive interventions. Throughout the process, these intervention efforts require cross-sector cooperation while noting that stunting is caused by multi-dimensional factors. Unfortunately, the current Covid-19 pandemic has worsened the target achievement of stunting reduction due to limited human resources at the primary service level and various Covid-19 prevention protocols that must be adhered to; both are considered as factors leading to the declining of services at the community level.

Objectives: This research was conducted to analyze the implementation of stunting prevention policy by reviewing the literature that doing a research to prevent stunting in pandemic era.

Discussion: The results showed that the lack of human resources, which results in inadequate health services, may be one of the indirect causes of ineffective of stunting prevention policy.

Conclusions: The development of an information system for recording the nutritional status of children under five with stunting can be an alternative to prevent the impact of stunting through a multilevel approach by involving health cadres and health professionals who are responsible for public health within the community health center scope.

ABSTRAK

Latar Belakang: *Kebijakan dan regulasi yang berkaitan dengan penanggulangan kejadian stunting di Indonesia diwujudkan baik dalam intervensi spesifik maupun sensitif. Upaya intervensi tersebut dalam perjalanannya membutuhkan kerjasama lintas sektor karena faktor penyebab stunting sendiri bersifat multi dimensi. Sayangnya, pandemic Covid-19 saat ini telah memperburuk target pencapaian penurunan stunting karena keterbatasan sumber daya manusia di tingkat pelayanan primer serta berbgaai protokol pencegahan Covid-19 yang harus dipatuhi; keduanya dianggap sebagai faktor yang menyebabkan menurunnya pelayanan di tingkat masyarakat.*

Tujuan: *Penelitian ini dilakukan untuk menganalisis implementasi kebijakan pencegahan stunting dengan mengkaji literatur yang melakukan penelitian terkait pencegahan stunting di era pandemi*

Ulasan: *Hasil penelitian menunjukkan bahwa kurangnya sumber daya manusia, yang mengakibatkan layanan kesehatan tidak memadai, menjadi salah satu penyebab tidak langsung dari tidak efektifnya kebijakan pencegahan stunting.*

Kesimpulan: *Pengembangan sistem informasi pencatatan status gizi anak balita penderita stunting dapat menjadi alternatif untuk mencegah dampak stunting melalui pendekatan bertingkat dengan melibatkan kader kesehatan dan tenaga kesehatan yang memiliki tanggung jawab terhadap kesehatan masyarakat di lingkup Puskesmas.*

INTRODUCTION

The high prevalence of stunting, which is inter-generational[1] and is caused by multi-factors[2], prompted the President of RI to issue a target of 14% for the prevalence of stunting that must be achieved by the end of 2024[3]. The target seems difficult to achieve, considering the current incidence of stunting in Indonesia is still around 27.67%[4]. The target set by the President will be realized if the prevalence of stunting decreases by 3% each year. Therefore, it needs cooperation from all stakeholders, both governmental and non-governmental organizations.

Non-government intervention as well as cross-sector cooperation can be implemented in the form of various researches and existing policy analyses. Besides, various direct practical efforts in the community are needed to prevent stunting as well as the active role of the community itself[5–8]. Aside from increasing stunting rates, such intervention is needed while noting that there is a problem of anemia in pregnant women which reaches 48.9% and decreases in immunization coverage[9,10]. Anemia in pregnant women and completeness of immunization are predisposing factors for stunting[11]. Meanwhile, the precipitating factors for stunting include inadequate nutritious food intake and exposure to infectious diseases that causes mothers and babies to be malnourished for a long period[12].

It is worth noting that stunting problems have serious consequences. Short-term consequences are associated with morbidity and mortality in children[13]. The long-term and inter-generational consequences include a decrease in cognitive abilities[14] and economic productivity, as well as the problem of degenerative diseases during adulthood[15]. Nugent et al. (2020) stated that the incidence of stunting in Indonesia has the potential to cause economic losses of 2-3% of the total Gross Domestic Product (GDP). That consequence will certainly endanger the survival of a country[17]. Therefore, the stunting reduction program must continue even in the current Covid-19 pandemic.

The various efforts made to decrease the stunting prevalence may face some considerable challenges during this pandemic[18] including: 1) the reduction and reallocation of funds at the central, regional and village government levels at the beginning of the pandemic; 2) social distancing, which hampers integrated healthcare center activities; 3) reduced income and job losses of society due to the pandemic, which resulted in weakened purchasing power; and 4) increasing poverty rate, which is a factor of stunting prevalence. All related stakeholders need to commit to tackle the challenges in order to prevent stunting. The integration of budget use and implemented programs as well as increased information technology (IT) utilization, in order to keep physical distancing, is a necessary intervention in this pandemic, starting from identifying babies who are at risk of stunting, providing education and counseling to mothers who have babies at risk of stunting, and supporting parents or families so that they can be independent in carrying out stunting prevention.

One of the stunting prevention programs can be done by observing every expectant mother and baby who may experience stunting. A term birth but low birth weight is considered as the main indicator of stunting[19]. Other factors causing stunting include preterm birth and low birth weight, parents' low educational level, low income, infectious disease history, complementary feeding practice, and sanitation[20]. The number of factors causing stunting indicates that stunting is indeed triggered by multi-dimensional factors, but it is worth noting that inadequate nutrition is a direct factor which causes stunting[21,22]. The results of those studies can be used as a reference to control babies at risk of stunting especially in the first year of life. Furthermore, education and stimulation activities can be conducted by all health sectors in order to build the independence of parents/mothers to nurture their babies which will lead to stunting prevention.

Stunting prevention using Android applications can be used by health cadres and health professionals at the village, regional, and central levels to collect real-time data and furthermore can be used as a basis for providing counseling regarding problems faced by mothers and babies who are at risk of stunting[8,23–25]. It is suggested that every policy should have an accurate database so that the programs provided can be more effective, efficient and right on target.

This is a quantitative research with literature study methods. Researcher try to understanding a topic about how stunting prevention policy works in Indonesia when pandemic covid-19. We reviewing some literature that has been studied, researched by others and found the key issues. According to Hart (1998) a literature review was done by selecting an existing documentation; good published or unpublished. In this study the author only studied document published and supported by interviewing the implementer program such as cadres and nutritionist at the health center. Some literature that reviewing were contains information, ideas, data and evidence written from certain point of view.

This study was conducted in March 2021 by reviewing articles journal. The articles that included in this study were done during the pandemic era. Author used the keyword 'stunting prevention policy' AND 'pandemic era' AND 'Indonesia' for reviewing the implementation of the stunting prevention. There are only four articles that focuses on stunting prevention in pandemic era. We leading the discussion by National strategy for the acceleration of stunting prevention 2018-2024.

DISCUSSION

The Indonesian Government's policy framework regarding Stunting Management, among others, is Law no. 36/2009 on Health and Law no. 18/2012 concerning Food. In addition, Indonesia joined the Global Scaling Up Nutrition (SUN) movement in 2011. Furthermore, Presidential Regulation No. 42/2013 concerning the National Movement for the Acceleration of Nutrition Improvement (Gernas PPG) and PP 17/2015 regarding Food Security and Nutrition are also

government policies in regards to handling stunting. The most recent government policy is Presidential Regulation No. 18/2020 where the policy direction is to improve health services towards universal health coverage, especially strengthening primary health care by encouraging increased promotional and preventive efforts, supported by innovation and the use of technology.

One of the PP No. 18/2020, which is related to stunting, is the Accelerated Nutrition Improvement Program. The efforts made by the Government in the National Strategy for the Acceleration of Stunting Prevention 2018-2024 consists of 5 strategic pillars involving multi-sectors, namely: 1) Commitment and Leadership Vision (Setwapres / TNP2K); 2) National Campaign and Behavioral Change (Ministry of Communication and Information and Ministry of Health); 3) Convergence of Central, Regional and Village Programs (Bappenas and Ministry of Home Affairs); 4) Food and Nutrition Security (Ministry of Agriculture and Ministry of Health); 5) Monitoring and Evaluation (Setwapres / TNP2K).

For Pillar 1, the President has given a target of 14% for the prevalence of stunting in Indonesia by the end of 2024. This target is in accordance with WHO which encourages the prevalence of stunting to be below 20%. The role of high-level leadership to reduce the prevalence of stunting is very crucial because it will encourage all sectors to seriously tackle stunting. However, the main authority over nutrition issues is still only the Ministry of Health. According to Azwar et al. (2021) the health center is the main pioneer in advancing public health; however the Ministry of Health's attention has mainly only been focused on the Covid-19 pandemic.

For pillar 2, related to Campaigns and Behavior Change (KPP), various efforts have been made by the Government aimed at increasing awareness and changing people's behavior to prevent stunting in the first 1000 days of life. However, data, as of January 30, 2020, showed that the achievements of campaign activities have not met the predetermined targets[28]. A systematic national campaign, including communication on behavioral change in preventing stunting, still needs to be developed considering the diverse cultural and educational backgrounds of the Indonesian people. Efforts to promote public awareness about stunting are challenging bearing in mind that many people in Indonesian society assume that stunting is normal and hereditary.

For Pillar 3, related to the Convergence of the Central-Regional-Village Program, the focus of efforts to accelerate stunting reduction for this pillar are carried out by implementing nutrition intervention for the direct causes of stunting and sensitive nutrition interventions focusing on indirect causes of stunting prevention. These various efforts require multi-sector convergence for planning, budgeting, actuating-implementing, monitoring and controlling. However, coordination of the implementation has not been optimal thus far. A study by the World Bank and the Ministry of Health (2017) found that only 28.7% of babies under two years old had access to four basic services simultaneously (namely: birth certificates, drinking water, sanitation, and exclusive breastfeeding). Meanwhile, those who had access to all eight services are less than 0.1%. In addition, the active role of the village is needed to see data of the program targets to help implement both specific and sensitive nutrition interventions.

Pillar 4, which is related to Food Security and Nutrition in Indonesia, is still very limited, especially during the Covid-19 pandemic where there is an increase in the number of unemployed people and an increasingly heavy economic burden. The current national situation illustrates, among others, the limited access of the poor to nutritious food, limited regulations regarding food labeling and advertising, as well as limitations in the scope of food fortification interventions while there is a Non-Cash Food Assistance Program (BPNT), which provides rice and eggs for poor families. Meanwhile, Nutritious Food Security is an important thing that must be fulfilled by children to avoid stunting. The results of the analysis show that 1 in 7 cases of stunting are caused by the risk factors of child nutrition and infection[19]. Therefore, nutritious food security is very important in reducing the prevalence of stunting. In addition, The incidence of stunting in Indonesia is not caused by food security, indicators of availability and accessibility, but rather by utilization[30]. Self help group program and family education could be a solution[31,32].

Pillar 5 is related to the monitoring and evaluation that are carried out appropriately to ensure the delivery of quality and targeted services. However, in Indonesia the monitoring still utilizes the results of RISKESDAS and SUSENAS, which cannot be detected in real-time. Therefore, the survey cannot be carried out quickly and on target. As a result, stunting management is not optimal. Currently, online, android, and offline versions of information technology-based nutritional surveillance have been developed as a source of real-time data and information[8,23,33]. However, it has not been fully in national scope.

Efforts to improve innovative policy are crucial to achieve the target of 14% stunting prevalence by 2024. The government has developed an online version of information technology-based nutrition surveillance as a source of real-time data and information. The application, named *Sigizi Terpadu (Sistem Informasi Gizi Terpadu – integrated nutrition information system)* has not been maximally utilized by *posyandu* cadres at the village level, meanwhile its Android version still needs improvements in appearance and performance. The results of an interview with a nutritionist at the Mranggen I Health Center stated that the use of *Sigizi Terpadu* is still hampered by the absence of laptops (for filling out data) for health cadres in each village[34].

Sigizi Terpadu, that has been developed by the government, can be a database of nutrition problems in Indonesia. However, given how nonoptimal its utilization has been so far and the multi-factorial causes of stunting, it is therefore necessary to develop a special application focusing on stunting prevention based on Android, which can be used by anyone via smartphones. The development of electronic-Multilevel Approach to Prevent Stunting (e-MAPS) can be one of the alternative policies in pandemic era so that health cadres can input data of child growth monitoring every month. The

screening of stunted risks can be initiated by looking at study results on risk factors for stunting. It is known that there are five clusters that cause stunting, one of which is the Fetal Growth Restriction (FGR) group and preterm birth – these are the two biggest factors in the occurrence of stunting in developing countries[19]. The second biggest factor causing stunting in Asia Pacific are environmental factors, specifically poor sanitation. In short, stunting prevention is best started from minimizing key risk factors including monitoring babies with a term birth with low birth weight, poor sanitation, and monitoring children with a history of diarrhea. The prevention is also best done before and after pregnancy to prevent the malnutrition of women of childbearing age and even in teenage girls. The results of these related studies to prevent stunting can be used as a reference to monitor babies at risk of stunting particularly in the first year of life.

Early intervention during pregnancy is vital while noting the significant effect of FGR on stunting. Unfortunately, such a prevention is considered difficult to conduct in developing countries because the majority of expectant mothers underwent antenatal examinations in the second or third trimester of pregnancy. A hygiene or sanitation improvement program is also important to focus on infection control in children, improvement in women's health as well as nutritional status during pregnancy. Moreover, the WASH (water, sanitation, and hygiene) program can be maximized for every child and family. It is suggested that the intervention should focus on public and clinical health, especially improving nutritional intake and sanitation among mothers and families.

The development of e-MAPS enables cadres to record and report child growth and development as well as demographic data related to stunting risk factors, which then can be accessed by professional health workers in primary health care. Data related to child growth includes upper arm circumference, body weight, height/length, and age/date of birth. Meanwhile, child development includes analyzing results of child development using KKA (*Kartu Kembang Anak* – a development sheet for babies and toddlers). The results of recording and reporting data by cadres will then determine the risk of children experiencing stunting. Children who are at risk of stunting and categorized into the 'risk group', after being assessed by the early warning system will receive an intervention from health professionals at the local *puskesmas*.

CONCLUSIONS

Stunting is a chronic nutritional problem[35] and the prevalence is currently still quite high in the Republic of Indonesia[10]. Policies and regulations related to stunting reduction in Indonesia are manifested in both specific and sensitive interventions. Throughout the process, these intervention efforts require cross-sector cooperation while noting that stunting is caused by multi-dimensional factors. Unfortunately, the current Covid-19 pandemic has worsened the target achievement of stunting reduction due to limited human resources at the primary service level and various Covid-19 prevention protocols that must be adhered to; both are considered as factors leading to the declining of services at the community level. The lack of human resources, which results in inadequate health services, may be one of the indirect causes of stunting.

CONFLICT OF INTEREST

All authors have no conflict of interest in this study.

REFERENCES

1. Chakravarty, N., Tatwadi, K. & Ravi, K. Intergenerational Effects of Stunting on Human Capital: Where Does the Compass Point? *Int. J. Med. Public Heal.* **9**, 105–111 (2019).
2. Sulung, N. Causing Factors of Stunting in Toddler Aged 24-59 Months at Padang Gelugur Health Center in Pasaman Regency. *J. Pembang. Nagari* **5**, 1 (2020).
3. Bappenas. Turunkan Stunting di Angka 14 Persen di 2024, Menteri Suharso Dorong Kerja Sama Lintas Sektoral. *Kementerian PPN* (2019).
4. Izwardy, D. *Studi Status Gizi Balita Terintegrasi Susenas 2019*. *Rakerkesnas* (2020).
5. Muharyani, P. W., Rahmawati, F. & Andhini, D. Aplikasi Strategi Intervensi Simulation Game Dalam Upaya Pencegahan Stunting Pada Anak. *J. Pengabdi. Sriwij.* 789–794 (2018).
6. Nisa, L. S. Kebijakan Penanggulangan Stunting Di Indonesia. *J. Kebijak. Pembang.* **13**, 173–179 (2018).
7. Surtiningsih, L. Y. Minimalisasi Stunting dan Deteksi Dini Masalah. *J. Pengabdi. UntukMu NegeRI* **3**, 140–145 (2019).
8. Susanti, W. I., Widodo, A. P. & Nugraheni, S. A. Pengembangan Sistem Informasi Pencatatan dan Pelaporan Status Gizi Balita Stunting di Kelurahan Gajah Mungkur. *J. Manaj. Kesehat. Indones.* **7**, 67–74 (2019).
9. Balitbangkes. *Laporan Nasional Riskesdas 2018*. (Lembaga Penerbit Badan Penelitian dan Pengembangan Kesehatan, 2019).
10. Health Research and Development Agency. *Key Results Basic Health Research 2018*. (2018) doi:1 Desember 2013.
11. Manggala, A. K., Kenwa, K. W. M., Kenwa, M. M. L., Sakti, A. A. G. D. P. J. & Sawitri, A. A. S. Risk factors of stunting in children aged 24-59 months. *Paediatr. Indones.* **58**, 205–212 (2018).
12. Harmadi, S. H. B. Permasalahan dan Strategi Penanganan Stunting di Indonesia. *Buletin Ringkas: Statistical & Policy Brief* 1–20 (2017).
13. Habimana, S. & Biracyaza, E. Risk Factors Of Stunting Among Children Under 5 Years Of Age In The Eastern And Western Provinces Of Rwanda: Analysis Of Rwanda Demographic And Health Survey 2014/2015. *Pediatr. Heal. Med. Ther.* **10**, 115–130 (2019).

14. Alam, M. A. *et al.* Erratum: Impact of early-onset persistent stunting on cognitive development at 5 years of age: Results from a multi-country cohort study (PLoS One (2020) 15:1 (e0227839) DOI: 10.1371/journal.pone.0227839). *PLoS One* **15**, 1–16 (2020).

15. Budiastutik, I. & Rahfiludin, M. Z. Faktor Risiko Stunting pada anak di Negara Berkembang. *Amerta Nutr.* **3**, 122–129 (2019).

16. Nugent, R., Levin, C., Hale, J. & Hutchinson, B. Double Burden of Malnutrition 4 Economic effects of the double burden of malnutrition. *Lancet* **395**, 156–164 (2020).

17. Bukusuba, J., Kaaya, A. N. & Atukwase, A. Modelling the impact of stunting on child survival in a rural Ugandan setting. *BMC Nutr.* **4**, 1–10 (2018).

18. Candarmaweni & Rahayu, A. Y. S. Tantangan Pencegahan Stunting Pada Era Adaptasi Baru 'New Normal' Melalui Pemberdayaan Masyarakat Di Kabupaten Pandeglang the Challenges of Preventing Stunting in Indonesia in the New Normal Era Through Community Engagement. *J. Kebijak. Kesehat. Indones. JKKI* **9**, 136–146 (2020).

19. Danaei, G. *et al.* Risk factors for childhood stunting in 137 developing countries: A comparative risk assessment analysis at global, regional, and country levels. *PLoS Med.* **13**, 1–18 (2016).

20. Pratiwi, I. G. & Wahyuningsih, R. Risk Factors of Stunting Among Children in Some Areas in Indonesia: A Literature Review. *Int. J. Stud. Nurs.* **3**, 41 (2018).

21. Dhami, M. V., Ogbo, F. A., Osuagwu, U. L., Ugboma, Z. & Agho, K. E. Stunting and severe stunting among infants in India: the role of delayed introduction of complementary foods and community and household factors. *Glob. Health Action* **12**, (2019).

22. Pratama, B., Angraini, D. I. & Nisa, K. Penyebab Langsung yang Mempengaruhi Kejadian Stunting pada Anak. *J. Ilm. Kesehat. Sandi Husada* **10**, 299–303 (2019).

23. Permana, A. A., Perdana, A. T., Handayani, N. & Destriana, R. A Stunting Prevention Application 'nutrimo' (Nutrition Monitoring). *J. Phys. Conf. Ser.* **1844**, (2021).

24. Patel, A. B. *et al.* M-SAKHI—Mobile health solutions to help community providers promote maternal and infant nutrition and health using a community-based cluster randomized controlled trial in rural India: A study protocol. *Matern. Child Nutr.* **15**, (2019).

25. Gertner, G., Johannsen, J. & Martinez, S. Effects of Nutrition Promotion on Child Growth in El Alto, Bolivia: *Economía* **17**, 131–165 (2016).

26. Hart, C. Doing a Literature Review: Releas_ing the Social Science Research Imagination. *Sage Publ. Inc* (1998).

27. Azwar, Sudarman & Samsualam. Quality of Primary Health Services during the COVID- 19 Pandemic : A Literature Review. *Str. J. Ilm. Kesehat.* **10**, 197–205 (2021).

28. Pritasari, K. *Arah kebijakan dan rencana aksi program kesehatan masyarakat tahun 2020 - 2024.* (2020).

29. Bank Dunia & Kemenkes RI. *Operationalizing a Multi-Sectoral Approach for the Reduction of Stunting in Indonesia. Operationalizing a Multi-Sectoral Approach for the Reduction of Stunting in Indonesia: An Application using the 2007 and 2013 Riskesdas* (2017) doi:10.1596/26409.

30. Susilastuti, D. & Marhaeni, L. S. Functional Food Support Government Policies To Prevent Stunting. in *International Conference of Innovation, Science, Technology, Education, Children and Health (ICISTECH)* vol. 1 122–129 (2021).

31. Wuriningsih, A. Y., Wiji, D., Sari, P. & Khasanah, N. N. Optimalisasi Pencegahan Stunting Melalui Kelompok Pendamping Siaga Risiko Stunting (KP-Skoring) berbasis Self Help Group. *J. Community Engagem. Heal.* **4**, 58–65 (2021).

32. Rahmat, A. & Isa, A. B. D. H. Family Education For Early Stunting The Pandemic Era. *IJIERT* **7**, 115–119 (2020).

33. Amraeni, Y., Surianto, T. & Nirwan, M. The Implementation And Human Right Law Of Policy About Stunting Preventionin Covid -19 Era In Kendari. *IJHSRD* **3**, 176–182 (2021).

34. Anton, L. Kendala penggunaan aplikasi sigizi terpadu. (2020).

35. Sasmita, L. C. Prevention of Childhood Stunting Problems with the Mayang-Wati Program. *J. Public Serv.* **5**, 140–150 (2021).