

Determinant Analysis and Policy Recommendations for Stunting Prevention in West Sulawesi Province

Febriana Andiani Putri¹, Dine Meigawati²

^{1,2}. Universitas Gadjah Mada, Indonesia

Email : febrianaandianiputri@mail.ugm.ac.id ^{1*}

ABSTRACT

The aim of this research is to analyze root causes and policy recommendations of stunting in West Sulawesi. Stunting is growth failure in children due to inadequate nutrition. Until 2022, West Sulawesi still holds the second highest stunting prevalence rate in Indonesia at 35%. The high rate of stunting becomes a reason to find solutions towards this problem. This research used qualitative research with classification analysis to determine formal problems and used the non-dominated alternative method with effective, efficient and responsiveness criteria to determine policy alternatives. Data sources are secondary data obtained from journals, reports, local government documents and various online information related to the research topic. The results found the high stunting in West Sulawesi caused by various factors including health, economy, education and culture. It was found that cultural factors such as early marriage, contribute to the high stunting prevalence in West Sulawesi. Policy recommendations chosen are microfinance and training programs to increase the income of adolescent girls. This policy aimed at adolescent girls who are vulnerable to early marriage. The hope is through this policy, adolescents are well-informed about the negative impacts of early marriage and by doing so, they would be able to increase their income.

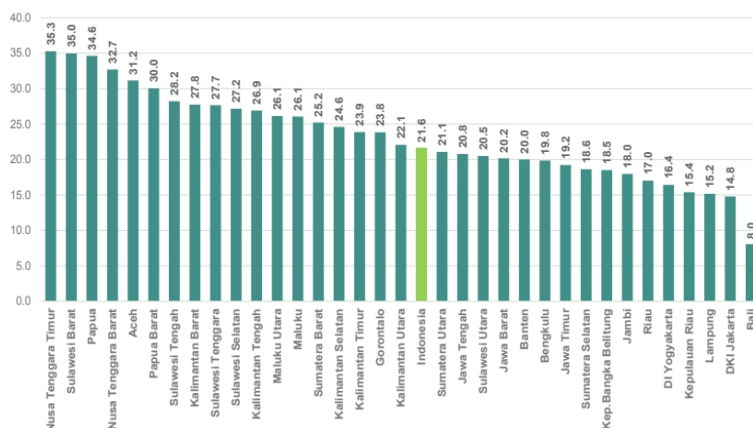
Keywords: *Stunting; non-dominated alternatif; classification; child marriage*

INTRODUCTION

Stunting refers to conditions where children's height by age is more than two standard deviations below the World Health Organization (WHO) standard median for child growth (Syafrawati et al., 2023). Stunting becomes priority for Indonesian government, seen through President Regulation of the Republic of Indonesia Number 72 of 2021 concerning Acceleration Reduction of Stunting. Growth failure causes disruption of toddler linear growth due to insufficient nutrition and lasts longer, i.e. first 1000 birth days (HPK) or from fetus to two years old (Nurbaya, Irwan, & Najdah, 2022). Stunting caused by factors such as malnutrition, repeated infections, and inadequate psychosocial stimulation (Syafrawati et al., 2023). Stunting can affect long-term health and personal performance including reduced intelligence, productivity loss and decreased wage employment which could impact Indonesia's economic growth, due to annual losses in gross domestic product (GDP) (Bappenas, 2018).

Indonesia's government prioritizes this problem through a multi-sectoral approach and integrated data system (Candarmaweni & Yayuk Sri Rahayu, 2020). Government focuses on

implementing the eight integrated action programs to reduce stunting, which include situation analysis, activity plans, stunting meetings, Regent/Mayor Regulations regarding the Village Role, KPM coaching, data management systems, stunting measurement and publication, and annual work reviews (Bappenas, 2019). Stunting prevention policies implemented are top-down, so bottom-up integrative policies need to be implemented to make people understand their role in resolving stunting issues. In 2022, the stunting prevalence of West Sulawesi province was 35% (Kementerian Kesehatan RI, 2022) and ranked second highest in Indonesia. Many factors contribute to stunting prevalence in West Sulawesi, ranging from lack of education to high child marriage rates (TVRI Sulbar, 2023).

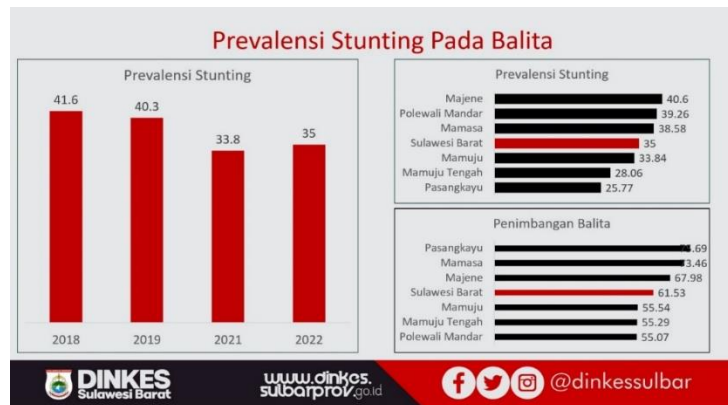


Source: SSGI (2022)

Figure 1. Stunting Prevalence by Province in Indonesia

According to Government Agency Performance Accountability Report (LKJIP) of West Sulawesi Provincial Health Office in 2022, stunting becomes one of major problems faced by the Provincial Health Office (Dinkes Sulbar, 2023a). To overcome this problem, several programs already run by West Sulawesi Health Office such as intervention directly to community by distributing vitamins, blood enhancement tablets, counseling and socialization to pregnant women. Health Office works with BKKBN and Regional Office of Kemenag Sulbar in educating the community about marriage. Government, in this case the PJ Governor, also provided stimulant packages of rice and eggs to several residents, especially mothers and children who were threatened with stunting (TVRI Sulbar, 2023). According to data from the West Sulawesi Health Office, the stunting prevalence in West Sulawesi has decreased, although not significantly. In 2018, the stunting prevalence was 41.6% and decreased in 2022 by 35%, in 4 years there was only a decrease of 6.6%. This rate increased about 1.2% in 2022. Among seven districts, Majene

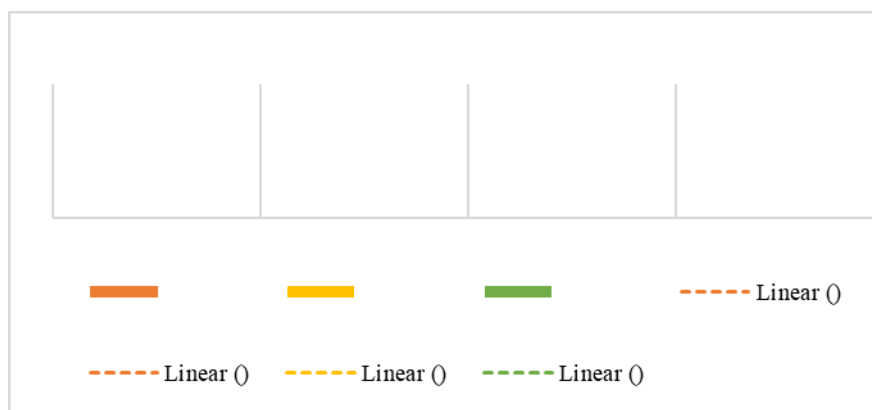
district ranked first with 40.6% stunting prevalence, followed by Polewali Mandar district at 39.26% and Mamasa district at 35.58% (Ditjen Bangda, 2023).



Source: West Sulawesi Health Office

Figure 2. Prevalence of Stunting in Toddlers in West Sulawesi, West Sulawesi Provincial Health Office (2022)

To support the argument, researchers used time series forecasting analysis for the period 2019-2022. Data used are Human Development Index (HDI), the annual infant mortality rate and the percentage of girls marriage aged 10 years and above. HDI percentage is still low, around 65-66%, and there is no significant increase from year to year. Secondly, marriage rate for girls aged above 10 years is increasing each year. This is based on BKKBN West Sulawesi's statement that child marriage reached 57,061 and will continue to increase until the end of 2022 (Ramli, 2022).



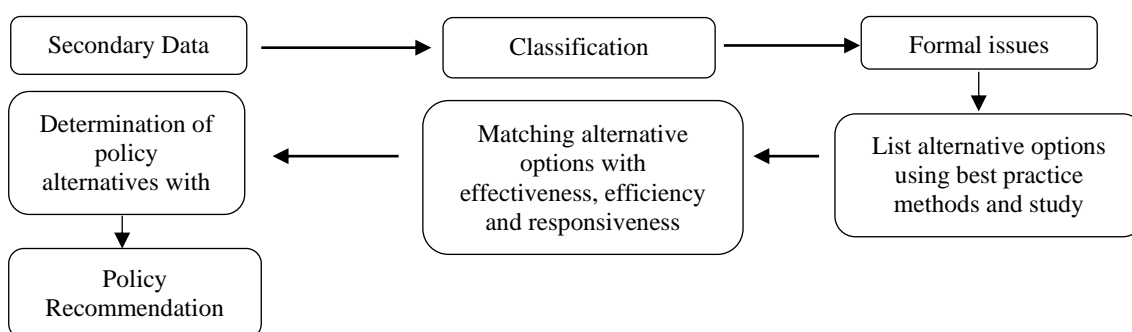
Source: Analyzed by Researcher

Figure 3. Time series forecasting Stunting Issue

High rates of child marriage affect divorce rates and stunting due to malnutrition and poor parenting. Threats of infant mortality also increased from 22% in 2021 to 25% in 2022. The questions that arise are " How to analyze the roots of stunting problems and which policy are effective to overcome stunting problems in West Sulawesi?". This research aims to analyze the root of problem based on data and findings while provide policy recommendation for stunting problem. The method used is public policy analysis to thoroughly examine stunting problems (Dunn, 2018).

METHOD

The research type is qualitative research with literature study or secondary data (Bungin, 2006). Researchers used documents from West Sulawesi BPS reports, West Sulawesi Province in Numbers 2019-2023, journals about stunting, West Sulawesi Health Office reports, videos and various online information related to the stunting problem. Researchers used a classification analysis approach to define and classify the stunting problem. Furthermore, researchers listed alternative options using best practice methods. Researchers use lexicographic ordering method to sort the alternatives by fulfilling the policy criteria (Dunn, 2003). Policy alternatives were selected using effectiveness, efficiency, acceptability and equity criteria (Patton, Sawicki, & Clark, 2015).



Source: Analyzed by Researcher

Figure 4. Stunting Policy Analysis Framework

RESULT AND DISCUSSION

Result

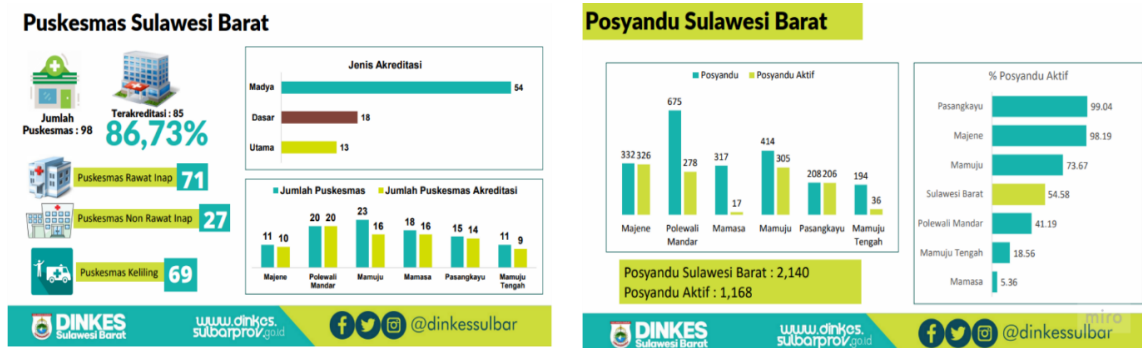
According to these analyses, stunting was caused by various factors such as social, demographic, cultural, economic, poor environmental conditions, food insecurity, poor parenting, low maternal educational status, lack for access health services, clean water, sanitation and poor hygiene practices (Woldesenbet, Tolcha, & Tsegaye, 2023). Issues discussed in this research related to education, health, economic and cultural factors that contributed to high prevalence of stunting. The argument was analyzed by using logical division in classification analysis method

to find the formal problem of stunting in West Sulawesi Province. Analysis is based on in-depth data and study findings. Explanation of the analysis is:

1. Health

Analysis was based on data from the West Sulawesi Province society's low awareness of Clean and Healthy Lifestyle, for example family access to clean water facilities was not maximized. According to West Sulawesi Provincial Health Office report, 88.87% of families have access to clean water facilities. Then, in 2021, only 78.75% of households had access to proper sanitation services, while 21.25% had yet to meet proper sanitation indicators and 81% of families used latrines. This basic access has not been fulfilled by 100%, causing various diseases. A report from the WHO revealed that contaminated water and poor sanitation can cause the transmission of diseases like cholera, diarrhea, polio, hepatitis A and typhoid (Siska, 2023). When children suffer from one of these diseases, they need more nutrition. In case of malnutrition, it will cause stunting.

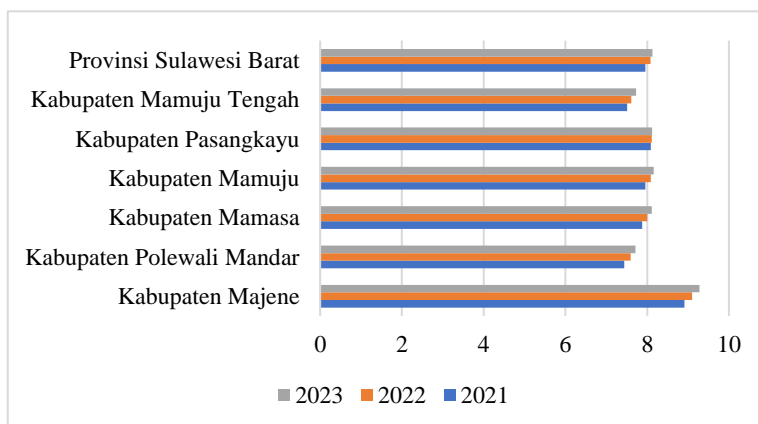
Furthermore, health services in West Sulawesi Province were not optimal, with only 54.58% of the total 2,140 posyandu found to be active. The puskesmas in West Sulawesi were only accredited at 86.73%, with accreditation generally at the intermediate level. In terms of Human Resources for Health (HRH) there are still shortcomings both in terms of quality and quantity. It found that 3.01% of puskesmas did not have a doctor, 35.71% of puskesmas did not have 9 types of basic health workers and 28.57% of district/city hospitals were not fulfilled with various types of specialist doctors (Dinkes Sulbar, 2023b).



Source: West Sulawesi Health Office
Figure 5. West Sulawesi Province Health Service Quality

2. Education

Access to education drives the high stunting cases in West Sulawesi, due to its relevance to mothers' knowledge of parenting and infant feeding. This remains an obstacle in West Sulawesi with average years of education still quite low and not even reaching the Government's 12-year schooling program. BPS West Sulawesi data showed an increase of average years of schooling, but this increase was not significant. By 2023, average school years only around 8 years (BPS Sulbar, 2023a). The data can be seen in the following figure.



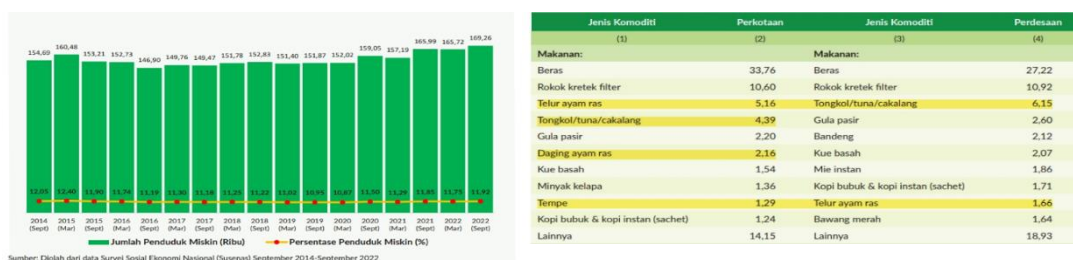
Source: BPS West Sulawesi

Figure 6. Average Years of Education in West Sulawesi Province

Parental education becomes a factor that influences stunting cases. Higher parental education will reduce the risk of stunting by 3% to 5%. Conversely, if parental education is low, it will increase the risk of nutritional problems such as stunting (Rachman, Nanda, Larassasti, Rachsanzeni, & Amalia, 2021). A family with highly educated parents tends to be better able to provide good and adequate nutrition for their children so that the risk of stunting will be lower (Rachman et al., 2021).

3. Economy

Poverty is the main problem triggering stunting in West Sulawesi. BPS data shows the number of people categorized as poor has increased in the last five years. In 2022, there were 166.26 thousand poor people (11.92%) of the total population (BPS Sulbar, 2023b). High poverty rates affected people's food purchasing power, which correlated with fulfillment of infant nutrition. Several food commodities have a major influence on increasing poverty lines in West Sulawesi Province, including protein sources needed by infants (bagged chicken eggs, tuna/skipjack, purebred chicken meat and tempeh).

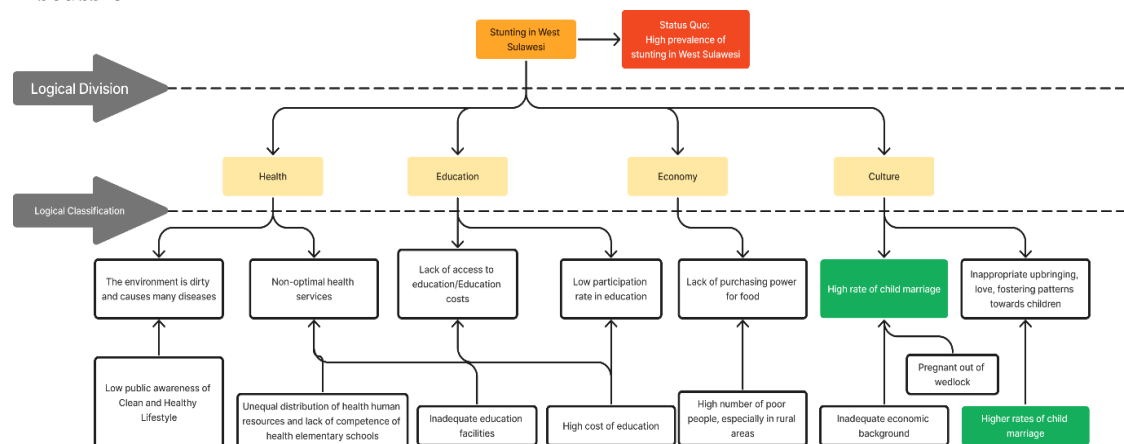


Source: BPS West Sulawesi

Figure 7. Poverty Level Development and Commodity list that affect Poverty Line in West Sulawesi Province

Sulawesi (Kemensetneg RI, 2023). Improper feeding to children caused by lack of knowledge about parenting contributes to stunting.

Discussion



Source: Analyzed by Researcher

Figure 9. Classification Analysis of Formal Stunting Problems in West Sulawesi

The analysis found that there is a cause-and-effect relationship of various sources causing stunting. Figure 1 shows that the problem of stunting arises because of the high rate of child marriage, which is driven by low education, which has an impact on knowledge about clean and healthy lifestyles and knowledge of good and correct parenting. Moreover, frequent early marriages are also driven by two things, cultural and economic factors, causing many teenagers in West Sulawesi Province to get married early. High rate of early marriage in line with the high prevalence of stunting so that it becomes a formal problem that causes the high prevalence of stunting in West Sulawesi Province. The policy alternatives chosen referred to the context of resolving the stunting problem by focusing on tackling child marriage problems in West Sulawesi Province. Some policy alternatives include:

1. Introduce in the school curriculum a subject about sexual education, sexual health and reproductive health, considering the cultural and age characteristics of students.

In Indonesia, sex education is considered as extracurricular knowledge and considered a taboo. In fact, sex education will give adolescents knowledge about reproductive health and provide an understanding that early marriage could lead to dangerous pregnancies and births. Several countries already mandate sex education, for example the Netherlands teach it from the age of four years old and above. Topics include respecting one's own body, peers, contraception, and sexually transmitted diseases. In Switzerland, sex education is mandatory since children are in kindergarten. Topics include body anatomy, gender differences and healthy relationships. In England, sex education is mandated since children are in primary school. Topics include reproductive health, pregnancy, mental health and bullying. In Finland, sex education is compulsory from the age of nine. Topics include the menstrual cycle, sexual orientation, and gender identity. In Portugal, sex education is compulsory from

the age of 12, with materials about sexual health, human rights, and gender equality (Sulistyowati, 2020). The application form from these countries can be adopted in Indonesia.

2. Monetary incentives, subsidies, and scholarships for families or daughters.

Policy that gives them space to achieve their full potential not only impacts on themselves but also on the well-being of future generations. Cash transfer programs for adolescent girls implemented in Malawi had a significant impact at short term of 2 years. The program name is Zomba Cash Transfer Program (ZCTP) which is a program that provides financial assistance every month for two years for unmarried women aged 13-22 years. Interventions are carried out in two ways, by providing cash assistance with conditions of school attendance or Conditional Cash Transfer (CCT) and providing unconditional assistance or Unconditional Cash Transfer (UCT) (J.Baird, Chirwa, Hoop, & Ozler, 2013). This kind of intervention can also be applied in West Sulawesi Province by providing scholarship assistance to girls who are vulnerable to early marriage or pregnancy before marriage.

3. Microfinance and related training to support income generation of adolescent girls.

This is practiced on girls who are at risk of early marriage or single motherhood. Besides being given assistance and training in life skills and health education, they are also trained to earn money to support their families and start saving so that they can better control their lives. It has been practiced in Bangladesh since 1993 under the name Adolescent Development Program (ADP) (Malhotra, Warner, McGonagle, & Lee-Rife, 2011). This program consists of dozens of contents with estimated time 1 hour per session. Methods used are quite diverse ranging from role playing, discussion, group work, and brainstorming to improve skills and financial empowerment, children's rights and social reproductive health (Shanker, 2016). This policy can be implemented in West Sulawesi Province by identifying girls at risk of early marriage and providing incentives to motivate them to actively participate in these activities.

According to the three policies, it is synchronized with the criteria determined by the researcher, namely effectiveness, efficiency (Patton et al., 2015) and responsiveness (Setianingrum & Tsalatsa, 2016). The three criteria were analyzed with a score of 1 (lowest) and 5 (highest) to determine the selected policy alternative. The description analysis of the policy alternatives is explained in the following table.

Table 1. Non-Dominated Alternative Analysis in Determining Stunting Policy Alternatives in West Sulawesi

Policy Alternative	Policy Criteria			Aggregate Value
	Effective	Efficient	Responsiveness	
Sex education subjects	4	2	3	9
Monetary incentives, subsidies, and scholarships for families or daughters	5	2	3	10
Microfinance and related training to support income generation of adolescent girls.	5	4	4	13

Source: Analyzed by Researcher

The microfinance policy and training to support income generation of adolescent girls is the optimal solution because the alternative has a high score in effectiveness as it can solve the stunting problem by reducing the number of early marriages through empowering adolescent girls. It also considered more efficient compared to other alternatives because it can be an empowerment program in stunting prevention rather than changing the curriculum and providing scholarships that cost more money. The policy can provide knowledge and skills that are very useful for adolescent girls to develop themselves and prepare for the future while also providing information about the negative impacts of early marriage, risks to reproductive health, domestic violence, poverty and change social norms discriminate against women.

CONCLUSION

There are many factors that contribute to the high prevalence of stunting. Classification analysis used to define the formal problem of stunting causes and it found that high rate of child marriage impacted on the high prevalence of stunting in West Sulawesi. Policy alternatives were recommended namely microfinance and related training to support the income generation of adolescent girls. The policy is considered more effective, efficient, and responsive because it could implement youth empowerment programs for adolescent girls and suits the needs of adolescents. This research has limitations in data that obtained only from secondary data so it necessary for further research to strengthen the research results. The scope of this study also still at the regional level so it needs to be developed for research to be carried out in Indonesia, considering that stunting becomes national issue. Therefore, the stunting prevalence rate can decrease and affect the younger generation in the future.

REFERENCES

- Bappenas. (2018). Cegah Stunting di 1000 Hari Pertama Kehidupan, Investasi Bersama untuk Masa Depan Anak Bangsa. *www.bappenas.go.id*. Retrieved from <https://www.bappenas.go.id/index.php/berita/cegah-stunting-di-1000-hari-pertama-kehidupan-investasi-bersama-untuk-masa-depan-anak-bangsa>
- Bappenas. (2019). *Petunjuk Teknis Pedoman Pelaksanaan Intervensi Penurunan Stunting Terintegrasi di Kabupaten/Kota*.
- BPS Sulbar. (2023a). Rata-Rata Lama Sekolah (Tahun). *Badan Pusat Statistik Daerah Sulawesi Barat*. Retrieved from <https://sulbar.bps.go.id/indicator/26/35/1/rata-rata-lama-sekolah.html>
- BPS Sulbar. (2023b). Profil Kemiskinan Sulawesi Barat September 2022. Sulawesi Barat: Badan Pusat Statistik Provinsi Sulawesi Barat.
- Bungin, B. (2006). *Metodologi Penelitian Kuantitatif: Komunikatif, Ekonomi, Kebijakan Publik dan Ilmu Sosial Lainnya*. Jakarta: Kencana.
- Candarmaweni, & Yayuk Sri Rahayu, A. (2020). Collaborative governance to achieve SDGs social development: Preventing stunting lesson from Pandeglang. *E3S Web of Conferences*, 211, 1–9.
- Dinkes Sulbar. (2023a). *Laporan Akuntabilitas Kinerja Instansi Pemerintah (LKJIP) Dinas*

- Kesehatan Provinsi Sulawesi Barat Tahun 2022. Dinas Kesehatan Provinsi Sulawesi Barat. Sulawesi Barat.*
- Dinkes Sulbar. (2023b). *Desain Layanan di Provinsi Sulawesi Barat. Sulawesi Barat: Dinas Kesehatan Provinsi Sulawesi Barat.*
- Ditjen Bangda. (2023). *Monitoring Pelaksanaan 8 Aksi Konvergensi Intervensi Penurunan Stunting Terintegrasi. aksi.bangda.kemendagri.go.id. Retrieved July 17, 2023, from <https://aksi.bangda.kemendagri.go.id/emonev/DashPrev>*
- Dunn, W. N. (2003). *Pengantar Analisis Kebijakan Publik. Gadjah Mada Universitas Press. Retrieved from <https://www.pdfdrive.com/pengantar-analisis-kebijakan-publik-e176089208.html>*
- J.Baird, S., Chirwa, E., Hoop, J. de, & Ozler, B. (2013). *Girl Power: Cash Transfers and Adolescent Welfare. Evidence From a Cluster-Randomized Experiment in Malawi (No. 19479). Nber Working Paper Series, JEL No. C93,I10,I21,I38. Cambridge. Retrieved from <http://www.nber.org/papers/w19479>*
- Javier, F. (2023). *Apakah Tingkat Kemiskinan Berkorelasi dengan Stunting? data.tempo.co. Retrieved from <https://data.tempo.co/data/1620/apakah-tingkat-kemiskinan-berkorelasi-dengan-stunting>*
- Kemendsetneg RI. (2023). *Perkawinan Anak Jadi Pemicu Stunting di Mamuju. stunting.go.id. Retrieved from <https://stunting.go.id/perkawinan-anak-jadi-pemicu-stunting-di-mamuju/#:~:text=Menurut Bupati Mamuju%2C Sutinah Suhardi%2C pernikahan anak di,kata Sutinah di Mamuju%2C Sulawesi Barat%2C Kamis %283%2F8%2F2023%29.>*
- Kementerian Kesehatan RI. (2022). *Buku Saku Hasil Studi Status Gizi Indonesia (SSGI) Tahun 2022. Kemenkes RI.*
- Malhotra, A., Warner, A., McGonagle, A., & Lee-Rife, S. (2011). *Solutions to End Child Marriage. International Center for Research on Women. India: International Center for Research on Women.*
- Mushlih, Rahman, S., & Yunus, A. (2022). *Journal of Lex Generalis (JLS). Journal of Lex Generalis (JLS), 3(3), 404–417.*
- Nurbaya, Irwan, Z., & Najdah. (2022). *Pelatihan keterampilan konseling pada kader posyandu di daerah lokus stunting. Jurnal Masyarakat Mandiri (JMM), 6(1), 248–257.*
- Oktarina, Z., & Sudiarti, T. (2014). *Faktor Risiko Stunting Pada Balita (24—59 Bulan) Di Sumatera. Jurnal Gizi dan Pangan, 8(3), 177.*
- Patton, C. V., Sawicki, D. S., & Clark, J. J. (2015). *Basic methods of policy analysis and planning. Basic Methods of Policy Analysis and Planning.*
- Picauly, I., & Toy, S. M. (2013). *Analisis Determinan Dan Pengaruh Stunting Terhadap Prestasi Belajar Anak Sekolah Di Kupang Dan Sumba Timur, Ntt. Jurnal Gizi dan Pangan, 8(1), 55.*
- Rachman, R. Y., Nanda, S. A., Larassasti, N. P. A., Rachsanzeni, M., & Amalia, R. (2021). *Hubungan Pendidikan Orang Tua Terhadap Risiko Stunting Pada Balita: a Systematic Review. Jurnal Kesehatan Tambusai, 2(2), 61–70.*
- Ramli, F. (2022). *Pernikahan Anak Usia Dini di Sulbar Meningkat, BKKBN Sulbar: Polman Tertinggi Capai 17.630. sulbar.tribunnews.com. Retrieved from <https://sulbar.tribunnews.com/2022/05/17/pernikahan-anak-usia-dini-di-sulbar-meningkat-bkkbn-sulbar-polman-tertinggi-capai-17630>*

- Setianingrum, T., & Tsalatsa, Y. (2016). Mempertanyakan Responsivitas Pelayanan Publik Pada Pengelolaan Pengaduan Kasus Upik di Kota Yogyakarta. *Pusat Studi Kependudukan dan Kebijakan*, 24(1), 1–25.
- Shanker, A. (2016). BRAC and BRAC International. *globaled.gse.harvard.edu*. Retrieved from <https://globaled.gse.harvard.edu/brac-and-brac-international>
- Siska, S. P. (2023). Dampak Air Bersih Terhadap Stunting yang Perlu Diketahui. *health.kompas.com*. Retrieved from <https://health.kompas.com/read/23F30200000568/dampak-air-bersih-terhadap-stunting-yang-perlu-diketahui>
- Sulistiyowati, A. (2020). Mengintip Pendidikan Seks di Sejumlah Negara, Bagaimana dengan Indonesia? *jeda.id*. Retrieved from Mengintip Pendidikan Seks di Sejumlah Negara, Bagaimana dengan Indonesia?
- Syafrawati, S., Lipoeto, N. I., Masrul, M., Novianti, N., Gusnedi, G., Susilowati, A., Nurdin, A., et al. (2023). Factors driving and inhibiting stunting reduction acceleration programs at district level: A qualitative study in West Sumatra. *PLoS ONE*, 18(3), 1–21. Retrieved from <http://dx.doi.org/10.1371/journal.pone.0283739>
- TVRI Sulbar. (2023). BINCANG MALAQBI - Penanganan Stunting Di Sulawesi Barat. Mamuju, Sulawesi Barat: TVRI Sulbar. Retrieved from <https://www.youtube.com/watch?v=NnRt5S3rv0Y>
- Wahidamunir. (2022). Hubungan Kejadian Stunting dengan Tingkat Perkembangan Anak Usia 48-59 Bulan di TK Pertiwi Majene. *J-HEST Journal of Health Education Economics Science and Technology*, 2(1), 26–37.
- Woldesenbet, B., Tolcha, A., & Tsegaye, B. (2023). Water, hygiene and sanitation practices are associated with stunting among children of age 24-59 months in Lemo district, South Ethiopia, in 2021: community based cross sectional study. *BMC Nutrition*, 9(1), 1–9. BioMed Central. Retrieved from <https://doi.org/10.1186/s40795-023-00677-1>