BKM Public Health & Community Medicine
Berita Kedokteran Masyarakat

Volume 40 **Number** 7, 2024, **Pages** e6806
DOI: 10.22146/bkm.v40i07.6806

Anemia-free strategies and antenatal care services in stunting prevention

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Submitted:
January 27th, 2023
Accepted:
July 19th, 2024
Published:
July 30th, 2024

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Abstract

Purpose: The purpose of this study was to evaluate the effectiveness of interventions targeting anemia prevention and antenatal care (ANC) to reduce the risk of stunting in children. **Methods:** A comprehensive search will be conducted in electronic databases to investigate the impact of anemia prevention strategies on child stunting. Studies will be included if they assess interventions in women focusing on iron supplementation, nutrition counseling, or a combination of both and report child stunting as an outcome measure. **Results:** Anemia prevention is very effective in improving children's growth outcomes, thus contributing to knowledge and ways of treating anemia in the preconception and antenatal periods to reduce the prevalence of stunting. **Conclusion:** The importance of comprehensive interventions in improving the health and well-being of future generations. Implementing health policies integrating blood supplementation interventions, nutrition education, and quality antenatal care is highly recommended to create a healthier and more qualified generation.

Keywords: anemia prevention; antenatal care; child stunting; iron supplementation; nutrition counseling

INTRODUCTION

Stunting is a chronic nutritional problem in toddlers of shorter heights than children of the same age. Children who suffer from stunting will be more susceptible to disease and, when they become adults, are at risk of developing degenerative diseases. The impact of stunting is not only in terms of health but also affects children's intelligence levels [1-3]. The problem of stunting is a nutritional problem facing the world, especially in poor and developing countries. Stunting is a health problem because it is associated with the risk of morbidity and death and suboptimal brain development, resulting in delayed motor development and stunted mental growth. Globally, around 150.8 million children under five experience stunting problems. The data shows that 55% of children under five in Asia are stunted. In contrast, the data on the prevalence of stunting under five was collected by the World Health Organization (WHO), and Indonesia is included as the third country with the highest prevalence in the Southeast Asia Regional (SEAR) [4]. The average prevalence of stunting under five in Indonesia from 2005-2017 was

36.4%; in 2018, the national prevalence of stunting was recorded at 30.8%; in 2019, it became 27.67% [3].

Stunting, a chronic undernutrition manifested by impaired linear growth and development, is closely intertwined with anemia and often occurs concurrently in low-resource settings. Addressing stunting requires a comprehensive approach that encompasses both preconception and postnatal periods. Anemia, a prevalent condition characterized by iron deficiency, is a significant risk factor for stunting in both prospective brides and pregnant women. Anemia during pregnancy is a major public health concern, affecting an estimated 27-32% of pregnant women globally. This condition can lead to severe complications for both mothers and babies, including preterm birth, low birth weight, and increased maternal mortality [5].

The prevalence of anemia among adolescent girls and pregnant women in developing countries is alarmingly high, ranging from 15% to over 50% [6,7]. This is particularly concerning as anemia during pregnancy can lead to adverse outcomes for both the mother and the developing fetus, including increased risk of morbidity, mortality, postpartum hemorrhage, preterm birth, and low birth weight. Additionally, maternal anemia has been shown to have a direct impact on the nutritional status of children, highlighting the importance of addressing this issue through comprehensive antenatal care services [6,8].

Antenatal Care (ANC) plays a crucial role in identifying and managing anemia among pregnant women. ANC programs provide an opportunity for anemia screening, iron supplementation, and nutrition counseling, which can effectively prevent and treat anemia [6]. According to the 2018 basic health research (RISKESDAS), a study was conducted on ANC visits to pregnant women, and a comparison was made between 2013 and 2018 that of all provinces in Indonesia, the lowest percentage of ANC visits was on Papua Island, namely 71.7%. If it is divided according to the ANC examination at visit 1 (K1) and visit 4 (K4), the lowest percentage of K1 is in Southeast Sulawesi province, namely by 67% in 2013, while in 2018, it decreased by 3.5%. Moreover, the lowest K4 percentage was in the province of Papua, which was 43.8% in 2013, with no definite data for 2018 [9].

Factors causing stunting, according to WHO, are comprehensively broken down into direct and indirect factors. The cause of stunting is several factors, including parents, child factors, and household environmental factors. Parents have a very important role in paying attention to children's development and supporting efforts to overcome nutritional problems in children. Preventing malnutrition in children starts with the mother. A mother's health is very important for the future health of her child. The development of a child in the womb is affected if the mother is malnourished [8]. ANC is a health service health workers provide for mothers during pregnancy. It follows the service standards set out in the Midwifery Service Standards (SPK) to detect the risk of pregnancy complications. The MDG's indicators are K1 (ANC at least once) and ANC at least four times, and ANC indicators for evaluating maternal health service programs in Indonesia are ideal coverage of K1 and K4 [2]. Care during pregnancy is very important to note to prevent complications during pregnancy and childbirth and to maintain the health of the fetus. In reality, people's behavior, especially in Indonesia, there are still many mothers who consider pregnancy as normal, natural, and natural. They feel that they do not need to routinely check their pregnancies to health services, which in turn causes the risk factors that the mother may experience not to be detected early [10]. A study stated that mothers who had less than three antenatal care and did not check their pregnancies with doctors, nurses, or midwives could have a risk of stunting in their children. ANC visits that are carried out regularly can detect early pregnancy risks that exist in a mother and her fetus, especially those related to nutritional problems [10].

Stunting needs special attention and care from various entities, including the government and families, as it is a national health concern. In light of these circumstances, Budi Gunadi Sadikin, the Republic of Indonesia's Minister of Health, announced that three measures are being taken to avoid stunting, which begins in the pre-pregnancy phase for women. Minister Budi Gunadi Sadikin stated that the Ministry of Health is responsible for bringing the stunting rate down from 24% to 14% by 2024 during his remarks at the MURI Balanced Nutrition and Record-Breaking Campaign event on Thursday, August 11, 2022. The intervention will, therefore, concentrate on mothers before childbirth as a preventive measure [11].

Anemia affects not just young women but also expectant mothers. It can stunt fetal development, result in an early birth, and compromise the health of the unborn child due to low iron stores. It can also become dangerous after childbirth—mother, like passing out or even dying. One of the nutritional issues that toddlers face is stunting. Early-onset dietary issues are the cause of developmental delays in young children. A nutrition journal reveals that genetic triggers from parents with a history of anemia, as well as a history of anemia during pregnancy, are risk factors for stunting [12].

METHODS

The literature review describes theories, findings, and other research articles obtained from reference materials to be used as the basis for research activities. It can be used to develop a clear frame of mind when formulating the problem to be studied. A literature review also provides criticism of research on specific science topics. It contains reviews, summaries, and the author's thoughts on several library sources.

The inclusion criteria were research articles published in journals within the last five years (2018-2023), in English, and available in full-text form. Then, according to the research objectives, articles are selected through titles, abstracts, and full text.

RESULTS

Based on a predetermined search, 144 articles were found on screening for anemia prevention strategies and antenatal care services for stunting prevention. In the end, we got keywords within the 2017-2023 publication period, Ten selected literature were then reviewed to determine the anemia prevention and antenatal care instruments used and the results obtained. **Table 1** provides more detailed information on each of these literatures.

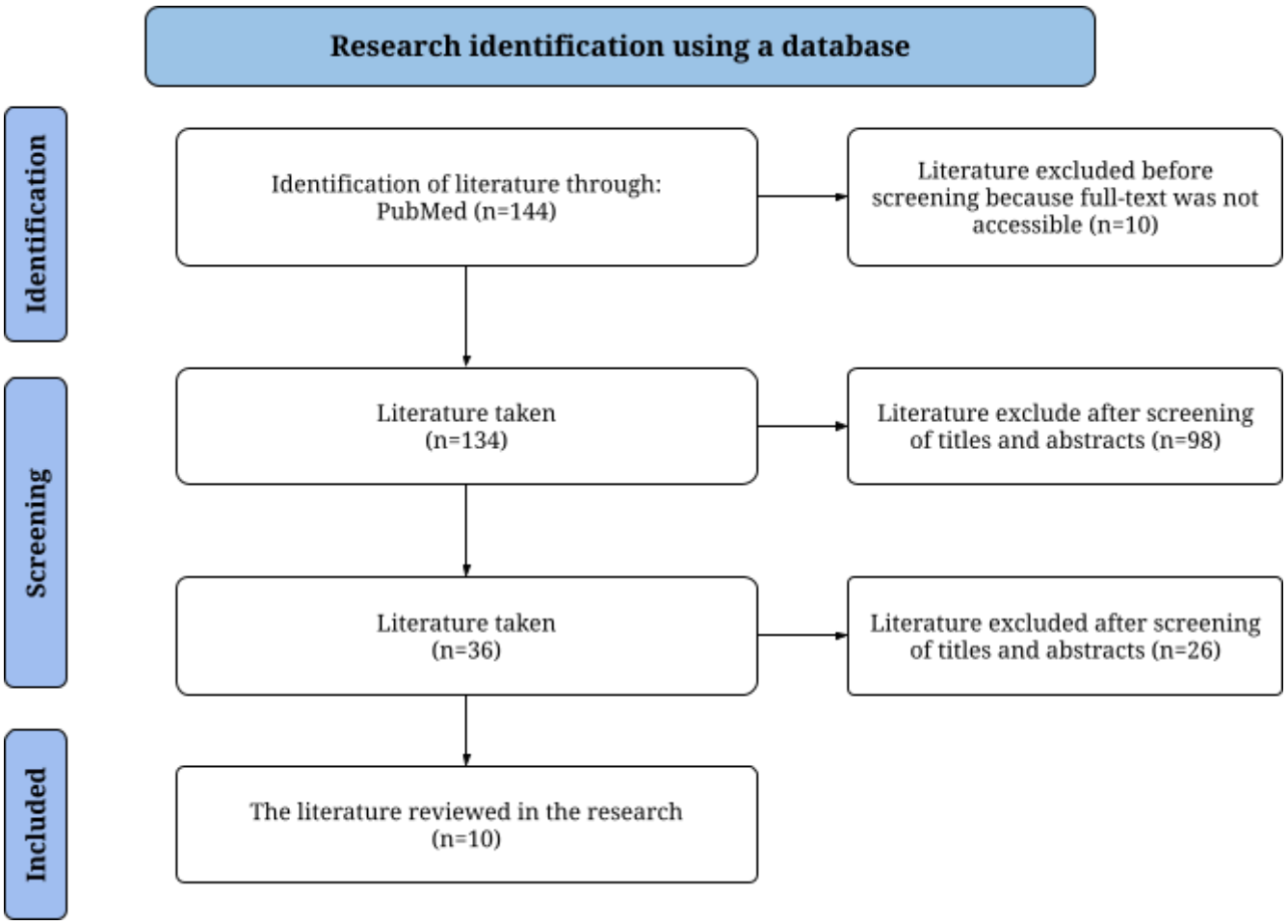

Figure 1. Flowchart of the literature selection process

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Table 1. Review of the content of the literature

Research Title	Research purposes	Methods,Sample	Results
The effect of giving blood supplement tablets to adolescent girls on increasing hemoglobin levels in Cirebon District to prevent stunting and develop a quality generation in Cirebon District [13]	The study aimed to assess the impact of providing blood supplement tablets to adolescent girls on increasing hemoglobin levels to determine if they were anemic. The goal was to emphasize the importance of maintaining anemia-free adolescents to prevent stunting and promote the birth of healthy generations in the Cirebon District.	Methods: Quasi experiment Sample: The study involved 20 female junior high school students in Cirebon District who had experienced menstruation and were selected to receive the blood supplement tablets for the intervention	The findings support the importance of interventions like providing blood supplement tablets to prevent anemia, promote healthy hemoglobin levels, and contribute to the overall well-being of adolescent girls in Cirebon District. By addressing anemia and improving hemoglobin levels in adolescent girls, the study contributes to efforts to prevent stunting and foster the development of a healthy and quality generation in Cirebon District for the future.
An investment framework for nutrition: reaching the global targets for stunting, anemia, breastfeeding, and wasting [14]	The research objectives include determining the effectiveness of the "No Anemia No Stunting" (Si NaNing) application and module on stunting prevention.	Methods: Quasi experiment Sample: The sample consisted of 30 pregnant women from the Independent Practice of Midwives in Tanjungpinang City.	The Si NaNing application increased knowledge, attitudes, and motivation to prevent anemia and stunting, suggesting the need for further development and enhancement.
Prevention of stunting through improving maternal parenting and early detection of pregnancy risk factors [15]	Evaluate the effectiveness of nutrition education in increasing knowledge about stunting prevention among pregnant women at Puskesmas Sidomulyo.	Methods: Quasi experiment Sample: All pregnant women attending classes at Puskesmas Sidomulyo	Providing nutrition education for pregnant women can effectively enhance their understanding of stunting prevention, potentially leading to improved health outcomes for mothers and infants.
The influence of pre-marriage class on knowledge of bride and groom in prevention of stunting toddlers [16]	Investigate the impact of pre-marriage classes on the knowledge of brides and grooms regarding the prevention of stunting in toddlers.	Methods: Descriptive research design Sample: Include brides and grooms attending pre-marriage classes	pre-marriage classes are crucial in educating brides and grooms about stunting prevention, potentially contributing to improved health outcomes for future children.
Antenatal care visits with incidence of stunting in children aged 24–36 months [17]	This study aims to determine the relationship between antenatal care visits and the incidence of stunting in children aged 24–36 months in Kec. Cigandamekar Kab. Kuningan	Methods: Cross-sectional Sample: 174 mothers who have children aged 24-36 months	There is a relationship between antenatal care visits and the incidence of stunting in children aged 24–36 months in Kec. Cigandamekar Kab. Brass year 2020 with a p-value = 0.000

Antenatal care visits associated with stunting incidents [18]	To identify the relationship between antenatal care visits in checking their pregnancy with health workers with stunting incidents in Kulon Progo Regency	Methods: Cross-sectional Sample: 100 children aged 2-5 years who are stunted	The results showed a significant relationship between antenatal care visits and the incidence of stunting, with a p-value of 0.000. ($p<0.05$). The relationship closeness is marked by a correlation coefficient value of (r) = 0.38.
Quality & quantity of antenatal care (ANC) history visits with stunting toddlers age 24-59 months in Pujon District, Malang Regency [19]	This study aims to determine the quality and quality relationship between the history of ANC visits and stunting in toddlers aged 24-59 in Pujon District, Malang Regency.	Methods: Cross-sectional Sample: 98	The results showed a significant relationship between ANC quality (p-value = 0.004) and ANC quantity (p-value = 0.003) and stunting.
Description of antenatal services in stunting children [20]	The purpose of this study was to describe the antenatal care for stunting toddlers at the Karuwisi Health Center of Makassar.	Methods: Descriptive Sample: 37 samples	The results showed that of the 37 children's height, the highest were very short, 21 people (56.8%), and the lowest were short, 16 people (43.2%). All stunted children get an examination of weight, height, blood pressure, LILA, uterine fundal height, TT immunization, blood supplement tablets, fetal heart rate, test laboratory, administration communication, information, and education.
The relationship of antenatal care to stunting incidence in toddlers aged 24-59 month [21]	The purpose of this study was to describe the relationship between the quality of ANC and the incidence of stunting in toddlers aged 24-59 months at	Methods: Cross-sectional Sample: 100	The quality of antenatal care, including the frequency of antenatal care visits and the standard of antenatal care services, is significantly related to the incidence of stunting. However, the quality of antenatal care is not significantly related to the incidence of stunting, namely.
Affecting factors of stunting incidences among children aged 12-59 months in West Nusa Tenggara Province Indonesia [22]	The aim is to determine the relationship between antenatal care visits and the incidence of stunting in children aged 12-59 months in North Lombok Regency, West Nusa Tenggara Province, Indonesia, in 2016 by involving foreign variables such as the mother's age in pregnancy and the mother's age at pregnancy family income level.	Methods: Case-control Sample: 128	There is a relationship between ANC (Antenatal Care) visits and the incidence of stunting in children aged 12-59 months involving extraneous variables such as the mother's age at pregnancy, family income level, birth weight, and body length (OR 2.13 (95% CI: 1.012 -4,494)

DISCUSSION

Efforts to reduce stunting have profound social impacts, extending beyond individual health to broader societal benefits. Addressing stunting can significantly boost economic development by improving cognitive development and physical health, which enhances educational outcomes and workforce productivity, thereby contributing to overall economic growth [23]. Moreover, reducing stunting can lead to substantial public health improvements by decreasing susceptibility to chronic diseases, thus lowering healthcare costs and enhancing population health [24].

It also promotes social equality by tackling the socio-economic disparities that often underlie stunting, fostering more equitable opportunities for children from diverse backgrounds, and helping break the poverty cycle. Additionally, healthier children are more likely to perform better academically and continue their education, contributing to a more educated and skilled workforce essential for national development [25]. Investing in stunting prevention is beneficial for immediate health outcomes. It promotes long-term sustainability by creating a positive feedback loop where improved health and productivity reinforce each other, leading to sustained societal well-being and development [26].

Efforts that will be carried out by public health in Indonesia to prevent stunting, including Conducting pregnancy checks and providing supplementary food to pregnant women to provide adequate nutrition and iron content in pregnant women; the stunting prevention efforts mentioned above are urgent programs to implement. These efforts are expected to impact reducing stunting rates in Indonesia positively. [27,28].

Providing regular blood supplement tablets to 20 menstruating women increased hemoglobin levels, prevented anemia, and potentially reduced the risk of stunting in their offspring. These findings emphasize the importance of blood supplementation interventions to prevent anemia and stunting from adolescence [29].

Nutrition education for pregnant women effectively increases their knowledge about stunting prevention, potentially improving maternal and infant health. Proper nutrition education helps pregnant women understand the importance of balanced nutritional intake during pregnancy to prevent stunting in their children. Comprehensive and practical information about nutrition is very necessary [30].

Regular and high-quality ANC visits are associated with a lower incidence of stunting in children. The quality and frequency of ANC visits are important in preventing stunting. Therefore, access and quality of ANC services must be improved to achieve optimal health outcomes [31].

Preventing and managing anemia during pregnancy and providing comprehensive antenatal care services are essential components in the fight against stunting and malnutrition. By addressing the underlying causes of anemia, such as iron or folate deficiency, and providing targeted interventions like iron supplementation, healthcare providers can improve the overall health and well-being of mothers by reducing maternal mortality rates associated with severe anemia-related complications while also benefiting their children through a reduced risk of low birth weight or preterm birth [32].

The ANC quality standards in the 2010 Integrated Antenatal Service Manual are weighing, measuring upper arm circumference (LILA), measuring blood pressure, measuring uterine fundal height, calculating fetal heart rate (DJJ), determining fetal presentation, administering TT immunization, administering blood supplement tablets (iron tablets), laboratory examinations (routine and special), case management and effective IEC. It is categorized according to the standard if the "11T" above is carried out during a pregnancy visit and not according to the standard if it is not carried out in its entirety. The implementation of ANC services is influenced by several factors, such as ANC service facilities and infrastructure, ANC service processes, midwives' compliance with ANC service standards, and recording devices or notebooks. Research conducted in three Latin American countries explains that ANC can be used as a factor in the risk of stunting whose value is not influenced by other variables. The study stated that access to ANC is related to the incidence of stunting in children. It was found that access to antenatal care significantly reduced malnutrition in Colombia and Peru. However, in Bolivia, research results show no relationship between ANC and stunting. Differences in outcomes in these countries can be seen in the quality of antenatal care [33].

ANC visits during pregnancy that are carried out by a mother regularly can detect early risks of pregnancy, especially those related to nutritional problems. Every pregnancy in its development has a risk of experiencing complications. So, according to the standard, ANC must be carried out routinely to ensure quality antenatal care. Pregnant women who make ANC visits at least four times during the pregnancy period can detect early risks of pregnancy,

prepare the delivery process for good birth and maternal health, and continue until lactation and puerperium [34].

ANC is very important for maternal and fetal health, and maternal and fetal mortality can be reduced with regular antenatal care (ANC) checks because every visit from K1 to K4 indicates the quality of health services for pregnant women [2].

Quality examination for pregnant women will prevent complications or defects in the mother and fetus early, which can be a factor in preventing stunting in children. Research reported that antenatal care prevents obstetric complications whenever possible and ensures that complications are detected as early as possible and handled adequately. If the antenatal care examination does not meet service standards, then the welfare of the mother and fetus is not properly monitored, so there is a risk of having a stunted child [35].

This research is also supported by research which states that mothers who make non-standard ANC visits have 2.4 times the risk of having stunting toddlers compared to mothers who make standard ANC visits 15. In pregnant women's examinations or ANC visits, there are 10T as standard examinations that are mandatory for pregnant women; with quality, 10T examinations can be used to detect complications in pregnant women and refer or treat pregnancy problems early [36].

Stunting is a long process, beginning with failure to thrive both during pregnancy and after birth in the first two to three years of life. Examination in Antenatal Care (ANC) is important in preventing stunting. 10T of pregnancy checks consists of measuring the mother's height, measuring LILA, weighing the mother's weight and blood pressure, measuring TFU, calculating fetal heart rate, TT immunization status, giving Fe tablets, lab tests, counseling, management / and medication. This 10T examination is an examination that must be given to pregnant women for early detection in pregnant women so that they can be handled more if there are problems. Monitoring maternal nutrition during examinations of pregnant women or antenatal care (ANC) visits supports pregnancy and maternal health. The fetus will experience growth and development very fast, and what the mother consumes will affect the baby's taste preferences for certain foods through the amniotic fluid, so the quality of food, the rate of weight gain, the mother's health and lifestyle can affect the future of a child [37].

CONCLUSION

A comprehensive approach is highly effective in improving the health and well-being of future generations. Giving blood supplement tablets to young women significantly increases hemoglobin levels and prevents anemia, which can reduce the risk of stunting in their children in the future. In addition, nutrition education for pregnant women through applications such as "Si NaNing" and nutrition classes in health facilities effectively increases mothers' knowledge and motivation to maintain their health and that of the fetus, thus contributing to the prevention of stunting. The quality and frequency of antenatal care (ANC) visits have also been very important in reducing the incidence of stunting in children. Regular, high-quality ANC visits ensure pregnant women receive comprehensive health checks and adequate nutritional information for healthy fetal development. Pre-wedding classes, which educate prospective brides and grooms about the importance of nutrition and health during pregnancy and the early stages of a child's life, also significantly prevent stunting. Therefore, implementing health policies integrating blood supplementation interventions, nutritional education, and quality antenatal care is highly recommended to create a healthier and more qualified generation.

REFERENCES

1. Soliman A, De Sanctis V, Alaaraj N, Ahmed S, Alyafei F, Hamed N, et al. Early and Long-term Consequences of Nutritional Stunting: From Childhood to Adulthood. Acta Bio Medica. 2021;92(1):2021168.
2. Manu NNK, Regaletha TAL, Upa EEP, Ilmu P, Masyarakat K, Kesehatan F, et al. Kajian Pelaksanaan Pelayanan Cakupan K4 Di Puskesmas Baumata Tahun 2018. Timorese Journal of Public Health. 2019.1(3):124-133
3. Kemenkes RI. Cegah Stunting, itu Penting. Pus Data dan Informasi, Kementeri Kesehatan Republik Indonesia. 2018;1–27. Available from: [Website]
4. World Health Organization. Seychelles 2018 Update. Monit Prog Univers Heal Cover Heal Sustain Dev Goals South- East Asia Reg 2018. 2018; Available from: [Website]
5. Agedew E. Predictors of Chronic Under Nutrition (Stunting) Among Children Aged 6-23 Months in Kemba Woreda, Southern Ethiopia: A Community Based Cross-Sectional Study.

Journal of Nutrition & Food Sciences. 2015;05(04).
6. Alemu T, Gebremedhin S. Prevalence and Predictors of Anaemia Among Adolescent Girls in Rural Hadero Tunto District, Southern Ethiopia: Community Based Study. International Journal Nutrition and Food Science. 2020;9(1):16–24.
7. Pesak E, Kristianto J, Bongakaraeng B, Tuegeh J, Kolompoy JA, Firdaus PN. The Impact of Anemia Prevention Health Counseling on Knowledge of Pregnant Women in Puskesmas. Journal Health Sains. 2023;4(5):24–30.
8. Singh DP, Biradar RA, Halli SS, Dwivedi LK. Effect of maternal nutritional status on children nutritional status in India. Children Youth Service Review. 2021;120:105727.
9. Kemenkumham. Peraturan Presiden Republik Indonesia No 18 Tahun 2020 Tentang Sistem Pembangunan Jangka Menengah Nasional 2020-2024. Kemenkumham Indonesia. 2020;2271.
10. Quamme SH, Iversen PO. Prevalence of child stunting in Sub-Saharan Africa and its risk factors. Clinical Nutrition Open Science. 2022;42:49–61.
11. Ministry of Health Republic of Indonesia. (2022 A 11). MBGSKTAS dari 24 PM 14 P pada 2024. Kejar Target Stunting Turun Hingga 14%, Kemenkes Lakukan Pendekatan Gizi Spesifik – Sehat Negeriku. Available from: [Website]
12. Arinda IK, Sserwanja Q, Kamara K, Mukunya D, Agnes N, Edirisa Juniour N, et al. Anemia and Associated Factors Among Lactating Women in Sierra Leone: An Analysis of the Sierra Leone Demographic and Health Survey 2019. Nutrition and Metabolic Insights. 2022;15.
13. Sari VM, Rahmatika SD, Widayanti W. The effect of giving blood supplement tablets to adolescent girls on increasing haemoglobin levels in Cirebon District to prevent stunting and develop a quality generation in Cirebon District. Jurnal Ners dan Kebidanan Indonesia. 2022;10(1):7–7.
14. Shekar M, Kakietek J, Dayton Eberwein J, Walters D. An investment framework for nutrition : reaching the global targets for stunting, anemia, breastfeeding, and wasting. World Bank Public. 2016;1–261. Available from: [Website]
15. Pranata IW, Yuniawati RA, Robbika NA, Permadi GH, Anwar MN, Putri RADE, et al. Prevention of Stunting through Improving Maternal Parenting and Early Detection of Pregnancy Risk Factors. Jurnal Pengabdian Masyarakat Bestari. 2022;1(9):1025–34.
16. Sri Sumardilah D, Puji Hastuti R, Gizi Poltekkes Tanjungkarang J, Keperawatan Poltekkes Tanjungkarang J, Jurusan Keperawatan Poltekkes Tanjungkarang Jl Soekarno Hatta No Mk, Natar K, et al. The Influence of Pre-Marriage Class on Knowledge of Bride and Groom in Prevention of Stunting Toddlers. Jurnal Aisyah Jurnal Ilmu Kesehatan. 2022;7(1):309–16.
17. Heryanto ML. Kunjungan Antenatal Care Dengan Kejadian Stunting Pada Anak Usia 24 – 36 Bulan. Jurnal Ilmu PANNMED (Pharmacist, Analyst, Nurse, Nutrition, Midwivery, Environment, Dentist). 2021;16(1):1–8.
18. Hutasoit M, Utami KD, Afriyliani NF. Kunjungan Antenatal Care Berhubungan Dengan Kejadian Stunting. Jurnal Kesehatan Samodra Ilmu. 2020;11(1):38–47.
19. Diani Magasida, Erawati E. Hubungan Antenatal Care Terhadap Kejadian Stunting Pada Balita Usia 24-59 Bulan. Midwifery Research. 2022;11(1).
20. Syatriani S, Pawenrusi EP, Syahrir NA. Gambaran Pelayanan Antenatal Pada Anak Stunting. Jurnal Keperawatan. 2022;14:695–700.
21. Magasida D, Tinggi Ilmu Kesehatan Muhammadiyah Cirebon Program Studi SS. Hubungan Antenatal Care Terhadap Kejadian Stunting Pada Balita Usia 24-59 Bulan. Midwife's Research. 2022 Jun 26;11(1).
22. Huang Y-W. Affecting Factors of Stunting Incidences among Children Aged 12-59 Months in West Nusa Tenggara Province Indonesia. Journal Healthcare Communication. 2017;2(4).
23. The State of the World's Children 2019 | UNICEF. Available from: [Website]
24. Levels and trends in child malnutrition: UNICEF/WHO/The World Bank Group joint child malnutrition estimates: key findings of the 2020 edition. Available from: [Website]
25. Sinha B, Chowdhury R, Sankar MJ, Martines J, Taneja S, Mazumder S, et al. Interventions to improve breastfeeding outcomes: a systematic review and meta-analysis. Acta Paediatric. 2015;104(467):114–35.
26. Shekar M, Kakietek J, Dayton Eberwein J, Walters D. An Investment Framework for Nutrition: Reaching the Global Targets for Stunting, Anemia, Breastfeeding, and Wasting. 2017 Apr 12; Available from: [Website]
27. Sanghvi T, Nguyen PH, Ghosh S, Zafimanjaka M, Walissa T, Karama R, et al. Process of developing

models of maternal nutrition interventions integrated into antenatal care services in Bangladesh, Burkina Faso, Ethiopia and India. Maternal and Children Nutritional. 2022;18(4):e13379.
28. Ciulei MA, Smith ER, Perumal N, Jakazi CS, Sudfeld CR, Gernand AD. Nutritious Supplemental Foods for Pregnant Women from Food Insecure Settings: Types, Nutritional Composition, and Relationships to Health Outcomes. Current Development in Nutrition. 2023;7(6):100094.
29. Sari VM, Rahmatika SD, Widayanti W. The effect of giving blood supplement tablets to adolescent girls on increasing haemoglobin levels in Cirebon District to prevent stunting and develop a quality generation in Cirebon District. JNKI Jurnal Ners dan Kebidanan Indonesia. 2022;10(1):7.
30. Muhamad Z, Mahmudiono T, Abihail CT, Sahila N, Wangi MP, Suyanto B, et al. Preliminary Study: The Effectiveness of Nutrition Education Intervention Targeting Short-Statured Pregnant Women to Prevent Gestational Stunting. Nutrients. 2023;15(19).
31. Camelia V, Proborini A, Jannah M. Hubungan Antara Kualitas & Kuantitas Riwayat Kunjungan Antenatal Care (ANC) Dengan Stunting Pada Balita Usia 24-59 Bulan Di Kecamatan Pujon Kabupaten Malang. Journal of Issues in Midwifery. 2020;4(3):100–11.
32. Abraha I, Bonacini MI, Montedori A, Di Renzo GC, Angelozzi P, Micheli M, et al. Oral iron-based interventions for prevention of critical outcomes in pregnancy and postnatal care: An overview and update of systematic reviews. Journal Evidence Based Medicine. 2019;12(2):155–66.
33. Soares Goncalves A, Maria Ferreira I, Pestana-Santos M, McCourt C, Paula Prata A. Antenatal care policy in high-income countries with a universal health system: A scoping review. Sexual and Reproductive Healthcare. 2022;32.
34. Heinonen K. Strengthening antenatal care towards a salutogenic approach: A meta-ethnography. International Journal of Environmental Research and Public Health. 2021;18(10).
35. WHO. WHO recommendations on antenatal care for a positive pregnancy experience [Internet]. 2016. [cited 2024 June 25]. Available from: [Website]
36. Amini A. Hubungan Antenatal Care (ANC) dengan Kejadian Stunting pada Balita Usia 12-59 Bulan di Kabupaten Lombok Utara Provinsi NTB Tahun 2016. Universitas Aisyiyah Yogyakarta. 2016;2–22.
37. Kemenkes RI. Pedoman Pelayanan Antenatal Terpadu 2020 Ed.3 [Internet]. Vol. III, Kementerian Kesehatan Republik Indonesia. 2020. 4–6 p. Available from: [Website]