Jurnal Eduhealth
Volume 15, Number 04 2024 DOI 10.54209/eduhealth.v15i04
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

A Retrospective Study of Preconception and Pregnancy Behaviors Among Mothers of Stunted Infants

Nurul Qamarya[1], Erni Faturrahmah[2], Bela Santika Sandra[3]
Akademi Kebidanan Surya Mandiri Bima, Jln.Gajah Mada No.19 Penato'i, Kota Bima NTB

Article Info
Keywords:
Behavior,
Preconception,
Pregnancy,
Stunting.

ABSTRACT
Stunting is a chronic nutritional problem influenced by various factors, including maternal behavior before and during pregnancy. Social environment, lifestyle, nutritional status, and maternal health history play significant roles in the incidence of stunting. This study aims to describe the behaviors of mothers during the preconception period and pregnancy who have children with stunting conditions. This research is a descriptive quantitative study with a retrospective approach. A total of 17 mothers with stunted toddlers in Monggonao Subdistrict, Bima City, in 2024 were selected using purposive sampling. Data were collected through questionnaires and interviews, then analyzed univariately and presented in frequency distribution tables. Most mothers did not smoke but were exposed to cigarette smoke as passive smokers both during preconception and pregnancy. As many as 58.8% regularly attended antenatal care, yet still had children with stunting. The majority (64.7%) consumed nutritious food during pregnancy, but not consistently and were limited by economic factors. A total of 47% of mothers had a history of comorbidities such as diabetes, asthma, heart disease, anemia, and chronic energy deficiency (CED). Exposure to cigarette smoke, inconsistent nutritional intake, and maternal health conditions are risk factors contributing to stunting, even among mothers who received antenatal care. A more holistic intervention approach is needed to prevent stunting starting before pregnancy.

Corresponding Author:
Nurul Qamarya
Akademi Kebidanan Surya Mandiri Bima
Jln.Gajah Mada No.19 Penato'i Kota Bima-NTB
nurulqamarya987@gmail.com

INTRODUCTION

The global prevalence of stunting among children under five in 2019 was approximately 21.3%, or about 144 million children (UNICEF et al., 2020). In Indonesia, the prevalence of stunting among children under five reached 27.7% (SSGBI, 2019). Although this figure has decreased compared to the previous year, the target set in the National Medium-Term Development Plan (RPJMN) for 2020–2024 is to reduce the prevalence of stunting to 14% (Presidential Regulation of the Republic of Indonesia, 2020).

Children affected by stunting are at risk of impaired intelligence and poorer health status in adulthood (Ministry of Health, 2018). Stunting can lead to both physical and cognitive damage, resulting in hindered growth and development (UNICEF et al., 2020). If this condition persists, it may reduce the overall quality and productivity of future generations in Indonesia

Jurnal Eduhealth
Volume 15, Number 04 2024 DOI 10.54209/eduhealth.v15i04
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

(Harikatang et al., 2020). Therefore, stunting prevention and intervention efforts are essential. Prevention measures include ensuring that children maintain good health status, receive adequate nutrition during the first 1,000 days of life, obtain immunizations, and adopt clean living habits to prevent disease.

The lifestyle and behaviors of women during the preconception period and throughout pregnancy may also contribute to the incidence of stunting. However, the extent to which each of these factors affects stunting outcomes in children remains unclear. According to data from Bappenas (2018, p. 1), the social environment also significantly influences the incidence of stunting in children. Within a social environment, there are norms established by the community. These societal norms or values can shape and transform cultural behaviors that become ingrained in individuals. Culture is commonly understood as a system of values and norms that regulate the behavior patterns of a group of people or a community in a specific area (Martiara, 2012).

Culture forms mindsets and behaviors that may either support or contradict health-promoting practices. This is referred to as the social construction within a society, which influences people's priorities, knowledge, and parenting responsibilities (Lestari & Kristiana, 2018, p. 21). Cultural values may also manifest in other forms that contribute to stunting, such as feeding practices, early marriage, parenting styles, lifestyle habits, and more.

Preconception behaviors that are relevant to stunting prevention include the assessment of maternal nutritional status (e.g., Mid-Upper Arm Circumference or MUAC), tetanus toxoid (TT) immunization, consumption of iron and folic acid supplements, tobacco and substance use, hemoglobin (Hb) levels, body mass index (BMI), and HIV screening.

Based on data obtained from the Bima City Health Office as of September 7, 2024, the prevalence of stunting in Bima City was 9.72%, or 1,111 cases out of 11,541 target children. However, according to the 2023 Indonesian Health Survey (SKI), the stunting prevalence in Bima City was reported to be 31.8%. These discrepancies prompted the researcher to explore and describe the stunting conditions in a specific area, namely Monggonao Subdistrict of Bima City, to gain a more localized understanding of the situation.

METHODS

This study is a quantitative descriptive research with a retrospective approach, aiming to describe the behaviors of mothers during the preconception and pregnancy periods who have children with stunting. The study was conducted in Monggonao Sub-district, Bima City, in the year 2024. The population included all mothers with toddlers in Bima City. A purposive sampling technique was used to select 17 mothers who have stunted children.Data were collected through questionnaires and direct interviews with the respondents.Data were analyzed univariately and presented in frequency distribution tables.

Jurnal Eduhealth
Volume 15, Number 04 2024 DOI 10.54209/eduhealth.v15i04
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

RESULTS AND DISCUSSION

Tabel 1. Frequency Distribution of Mothers' Lifestyle During the Preconception Period

NO	LIFESTYLE BEHAVIOR	FREQUENCY				TOTAL	
		Yes	%	No	%	N	%
1	Smoking	3	17,6	14	82,4	17	100
2	Nutrititious Food	7	41,2	10	58,8	17	100
3	Diagnosed with hereditary/congenital disease	5	29.5	12	70,5	17	100

Source: Primary Data

Rom Table 1, it can be seen that among the 17 mothers with stunted children, the majority (82.4% or 14 mothers) did not smoke during the preconception period. However, despite not being active smokers, their husbands were active smokers, resulting in the mothers being passive smokers due to daily exposure to secondhand smoke.

In terms of nutrition, most mothers (58.8% or 10 individuals) did not consume nutritious food during the preconception period. Their diets were often limited to what was available at home, including ready-to-eat or processed foods.

Regarding health status, most mothers (70.5%) did not have any known hereditary or congenital diseases. However, 5 mothers (29.5%) reported having a history of hereditary conditions such as diabetes, asthma, or heart disease, and two of them experienced anemia..

Table 2. Frequency Distribution of Mothers' Lifestyle During Pregnancy

NO	GAYA HIDUP	FREQUENCY				TOTAL	
		Yes	%	No	%	N	%
1	Smoking	0	0	17	100	17	100
2	Antenatal care	10	58,8	7	41,2	17	100
3	Nutritious food	11	64,7	6	35,3	17	100
4	Diagnosed with hereditary/congenital disease	8	47	9	53	17	100

Source: Primary Data

As shown in Table 2, during pregnancy, none of the 17 mothers were active smokers. Nevertheless, similar to the preconception period, a majority (82.3% or 14 mothers) were passive smokers, as they were consistently exposed to cigarette smoke from their husbands. Regarding antenatal care, more than half of the mothers (58.8%) regularly attended antenatal check-ups during pregnancy.

In terms of nutrition, most mothers (64.7% or 11 individuals) reported eating nutritious food during pregnancy. These mothers generally tried to consume foods with adequate nutritional value to support their pregnancy, though some occasionally consumed junk food. Meanwhile, 6 mothers (35.3%) still relied on whatever food was available at home.

As for health conditions, the majority (53% or 9 mothers) did not report any hereditary or congenital diseases. However, 8 mothers (47%) reported a history of health problems including diabetes, asthma, heart disease, and anemia (2 individuals). Additionally, 3 mothers experienced Chronic Energy Deficiency (CED) during pregnancy.

Jurnal Eduhealth
Volume 15, Number 04 2024 DOI 10.54209/eduhealth.v15i04
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

Discussion

Smoking

Based on the results of this study, through the distribution of questionnaires to respondents, it was found that three mothers smoked during the preconception period, while none of them smoked during pregnancy. However, interviews revealed that there were husbands and teenage children in the household who smoked, which made the mothers passive smokers due to constant exposure to secondhand smoke.

Numerous studies have been conducted on the effects of smoking or exposure to cigarette smoke during pregnancy and breastfeeding. The findings consistently show that smoking behavior or inhalation of cigarette smoke during pregnancy has a negative impact on the fetus and the newborn. Exposure to tobacco smoke during pregnancy is associated with various adverse outcomes, including low birth weight, impaired fetal development, and an increased risk of health problems in early childhood.

According to a study by the Social Security Study Center at the University of Indonesia (2018), toddlers living with smoking parents weigh on average 1.5 kg less than those living with non-smoking parents. The longer a pregnant woman lives in a household with an active smoker—with average exposure exceeding 7 hours per day—the higher the risk of giving birth to a baby with low birth weight.

The harmful substances in cigarettes inhaled by pregnant women enter the maternal bloodstream, thereby reducing oxygen supply to both the placenta and the fetus. As a result, nutrient delivery to the baby is also diminished, leading to cell death due to oxygen deprivation. This mechanism significantly contributes to impaired fetal growth and increases the risk of stunting later in life.

Fetal hypoxia and reduced umbilical blood flow can result in intrauterine growth restriction (IUGR), ultimately leading to low birth weight (LBW) infants (Hanifah, 2017). A study by Darwin et al. found a significant association between LBW and stunting in children aged 6–24 months. The results indicated that children with a history of LBW were 5.6 times more likely to experience stunting compared to those born with normal birth weight.

This condition occurs because LBW infants have already experienced intrauterine growth retardation, which often continues after birth. These infants typically experience slower growth and development than those born with normal weight, and frequently fail to catch up to the expected growth trajectory for their age (Nasution et al., 2014). Researchers also observed that growth faltering began as early as two months of age in LBW infants. Early growth failure at two months is a strong predictor of continued growth failure in subsequent developmental stages.

Based on the findings of this study, although the majority of mothers did not actively smoke during the preconception period or pregnancy, interviews with all 17 respondents revealed that almost all were exposed to cigarette smoke, both before and during pregnancy, as well as after the birth of their children. This indicates that stunted children were not necessarily born to mothers who actively smoked, but rather were indirectly affected by consistent exposure to secondhand smoke, highlighting the significant role of passive smoking in the risk of stunting.

Jurnal Eduhealth
Volume 15, Number 04 2024 DOI 10.54209/eduhealth.v15i04
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

Antenatal care

Monitoring pregnancy conditions through visits to health facilities or healthcare professionals is crucial to ensure that the pregnancy progresses normally. Pregnant women who regularly attend antenatal care (ANC) visits are more likely to detect potential complications early, thereby reducing the risk of pregnancy-related emergencies.

A study conducted by Alfi and Bayu (2024) reported that mothers who did not receive antenatal care during pregnancy were 1.74 times more likely to have children with stunting, compared to those who did receive ANC. In this current study, the majority of mothers (58.8%, or 10 individuals) reported regular antenatal visits. However, despite this, their children were still diagnosed with stunting.

This suggests that while antenatal care is essential, it alone may not be sufficient to prevent stunting. Other contributing factors such as nutrition, exposure to secondhand smoke, genetic predisposition, infections, and postnatal care practices may also play a significant role in the occurrence of stunting.

This indicates that even mothers who regularly attend antenatal care (ANC) visits may still have children with stunting, as stunting is influenced by multiple other factors. In this study, routine antenatal care is defined as care that follows national standards, which include a minimum of six visits throughout pregnancy, with at least two conducted by a physician during the first and third trimesters. According to the Indonesian Ministry of Health (2020), the recommended ANC schedule consists of:

a. Two visits in the first trimester (up to 12 weeks of gestation),
b. One visit in the second trimester (between 12 and 26 weeks), and
c. Three visits in the third trimester (from 24 to 40 weeks).

This emphasizes that while adherence to ANC standards is crucial, comprehensive interventions addressing other risk factors such as nutrition, environmental exposures, infection, and postnatal care are equally essential in preventing stunting. Although most mothers had routinely attended antenatal care visits in accordance with the standard schedule, this alone does not fully guarantee the prevention of stunting. This suggests that the quality of ANC services, including nutrition education, environmental assessment, and early detection of maternal health issues, also plays a crucial role. Therefore, antenatal care should not solely focus on visit frequency but should also incorporate a multidimensional intervention approach involving nutrition, environmental health, and maternal behavior."

Nutritious Food Intake

Most mothers (64.7%, or 11 individuals) stated that they consumed nutritious foods during pregnancy. Although they generally attempted to fulfill their nutritional needs, occasional consumption of fast food or processed meals was still reported. Meanwhile, 35.3% (6 mothers) relied solely on the availability of food at home, which may have led to inadequate nutrient intake.

Adequate nutrition during pregnancy is essential for the health of both mother and fetus. Failing to meet nutritional requirements increases the risk of complications such as Chronic Energy Deficiency (CED), which may negatively impact fetal growth.

Jurnal Eduhealth
Volume 15, Number 04 2024 DOI 10.54209/eduhealth.v15i04
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

A study by Rikayoni (2023) suggested no significant association between maternal nutritional status during pregnancy and stunting in children aged 0–36 months. However, a systematic review by Ifra et al. (2023), which examined 20 articles, found that insufficient intake of protein, zinc, and vitamins A, C, and D during pregnancy could impair fetal development and increase the risk of stunting. Poor maternal nutrition may also contribute to CED, leading to low birth weight (LBW), which is linked to a higher likelihood of growth failure and delayed cognitive milestones in early childhood.

In this study, although a majority of respondents reported consuming nutritious food, follow-up interviews revealed that economic limitations often restricted the frequency and quality of their dietary intake. This inconsistent nutritional pattern may have been one of the factors contributing to stunting in their children.

This finding highlights the importance of not only promoting nutritional awareness among pregnant women but also addressing structural issues such as food accessibility and economic hardship. Interventions should not focus solely on individual behavior change but must be supported by community-based nutrition programs, government food assistance, and education on affordable, nutrient-rich food choices. Ensuring consistent access to balanced nutrition before and during pregnancy is a critical component in the prevention of stunting.

Diagnosed with Hereditary or Congenital Diseases

The findings of this study show that nearly half (48.7%) of the mothers who had stunted children experienced comorbidities or hereditary illnesses, either during the preconception period or during pregnancy. Among these eight mothers, several had a history of hereditary diseases such as diabetes, asthma, and heart disease. Additionally, two mothers suffered from anemia, and three experienced Chronic Energy Deficiency (CED) during pregnancy.

Hereditary and comorbid conditions during pregnancy are critical for healthcare professionals to detect early, as they are important indicators of maternal health status and potential obstetric complications. Early identification allows for appropriate interventions to reduce the risks associated with pregnancy, labor, and the postpartum period. These conditions can significantly affect both the mother and the fetus, potentially resulting in complications or developmental issues for the child.

Hereditary diseases such as diabetes, asthma, and cardiovascular disorders are often used as a clinical basis in obstetric diagnoses, as they may aggravate maternal and fetal conditions both during gestation and after birth. According to the World Health Organization (WHO), anemia in pregnancy is defined as a hemoglobin (Hb) level below 11 g/dL. The consequences of anemia during pregnancy may include increased risk of bleeding during delivery, low birth weight (LBW), and even maternal mortality.

Research by Nasution and Nurdiati (2018) demonstrated a significant association between LBW and stunting in children aged 6–24 months. Children born with low birth weight were found to have a 5.6 times greater risk of becoming stunted compared to those born with normal weight.

Jurnal Eduhealth
Volume 15, Number 04 2024 DOI 10.54209/eduhealth.v15i04
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

CONCLUSION

This study reveals that although most mothers did not actively smoke, nearly all were exposed to cigarette smoke from their husbands or other family members, making them passive smokers both during the preconception period and pregnancy. Most mothers regularly attended antenatal care (ANC) visits and attempted to consume nutritious food; however, nutritional intake was not consistently optimal due to economic limitations. Additionally, almost half of the mothers had comorbid or hereditary conditions such as anemia, diabetes, heart disease, and chronic energy deficiency (CED), which contributed to the risk of stunting in children. Diharapkan ibu hamil dan calon ibu lebih memperhatikan kesehatan sejak sebelum kehamilan dengan menghindari paparan asap rokok, menjaga pola makan bergizi, dan rutin memeriksakan kehamilan. Tenaga kesehatan perlu memberikan edukasi yang intensif, dan pemerintah diharapkan memperkuat program pencegahan stunting secara berkelanjutan.

REFERENCE

1. UNICEF, WHO, & World Bank. (2020). *Levels and trends in child malnutrition: Key findings of the 2020 edition of the Joint Child Malnutrition Estimates*. Geneva: WHO. Retrieved from https://www.who.int/publications/i/item/jme-2020-edition
2. Mardiyono, R., Karisma, M. M., Babo, B., Kartika, L., & Tahapary, P. A. (2020). Hubungan pengetahuan dan sikap ibu dengan kejadian balita stunting di satu kelurahan di Tangerang. *Jurnal Mutiara Ners*, 3(2), 76–88. Retrieved from http://114.7.97.221/index.php/NERS/article/view/1178
3. Dinas Kesehatan Kabupaten Bima. (2018). *Pemantauan status gizi* (Laporan tidak diterbitkan). Bima.
4. UNICEF, WHO, & World Bank. (2020). *Levels and trends in child malnutrition: Key findings of the 2020 edition of the Joint Child Malnutrition Estimates*. New York: UNICEF. Retrieved from https://www.unicef.org/reports/joint-child-malnutrition-estimates-levels-and-trends-child-malnutrition-2020
5. Studi Status Gizi Balita Indonesia (SSGBI). (2019). *Studi status gizi balita di Indonesia tahun 2019*. Jakarta: Kementerian Kesehatan RI.
6. Fikadu, T., Assegid, S., & Dube, L. (2014). Factors associated with stunting among children aged 24 to 59 months in Meskan district, Gurage Zone, South Ethiopia: A case-control study. *BMC Public Health*, 14, 800. https://doi.org/10.1186/1471-2458-14-800
7. Kementerian Kesehatan Republik Indonesia. (2020). Pajanan rokok sebabkan anak jadi stunting. Retrieved from https://kemkes.go.id/id/rilis-kesehatan/pajanan-rokok-sebabkan-anak-jadi-stunting
8. Hanifah, H. (2017). *Pengaruh paparan asap rokok lingkungan pada ibu hamil terhadap kejadian bayi berat lahir rendah* (Skripsi). Universitas Islam Negeri Syarif Hidayatullah Jakarta.
9. Nasution, D., et al. (2014). Berat badan lahir rendah (BBLR) dengan kejadian stunting pada anak usia 6–24 bulan. *Jurnal Gizi Klinik Indonesia*, 11(1), 31–37.
10. UNICEF, UNU, & WHO. (2001). *Iron deficiency anaemia: Assessment, prevention and control – A guide for programme managers*. Geneva: World Health Organization.

11. Iis, S. (2008). *Seri kesehatan ibu dan anak: Masa kehamilan dan persalinan*. Jakarta: Elex Media Komputindo.
12. Azizah, A. M., & Laksana, B. I. (2024). Meta-analisis: Hubungan antenatal care yang dilakukan ibu hamil dengan kejadian stunting pada balita. *Jurnal Kesehatan Tambusai*, 5(3), 55–63.
13. Heryanto, M. L. (2021). Kunjungan antenatal care dengan kejadian stunting pada anak usia 24–36 bulan. *Jurnal Ilmiah PANNMED*, 16(1), 1–8. https://doi.org/10.36911/pannmed.v16i1.1043
14. Camelia, V. (2020). 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*, 4(3), 100–111. https://doi.org/10.21776/ub.joim.2020.004.03.1
15. Hamid, N. A., et al. (2021). Kunjungan antenatal care (ANC) dengan kejadian stunting pada bayi usia 6–23 bulan. *Media Gizi Pangan*, 28(2), 102–109.
16. Rikayoni, F. (2023). Status gizi ibu hamil dan hubungannya dengan kejadian stunting pada balita umur 0–36 bulan. *Jurnal Penelitian dan Kajian Ilmiah Universitas Muhammadiyah Sumatera Barat*, 17(1), 56–64.
17. Hayana, I., et al. (2023). Hubungan asupan gizi ibu hamil dengan kejadian stunting: Metode systematic review. *Jurnal Gizi Indonesia*, 4(4), 200–210.
18. Kementerian Kesehatan Republik Indonesia. (2020). *Pedoman pelayanan antenatal terpadu* (Edisi ke-3). Jakarta: Kemenkes RI.