

Association of High-Risk Maternal Age and Chronic Energy Deficiency During Pregnancy with Stunting in the Rasabou Community Health Center Service Area

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ABSTRACT

The prevalence of stunting nationally has increased from 35,6 (2010) to 37,2% (2013) and to 30,8% (2018), while data from the results of the 2017 Nutritional Status Monitoring (PSG) shows that the percentage of stunted toddlers in the toddler group (29,6%) is greater when compared to toddlers (20,1%) (Ministry of Health of the Republic of Indonesia, 2018). The aim of this research is to determine the relationship between pregnancies in mothers of high risk age and chronic energy deficiency with the incidence of stunting in the Rasabou Community Health Center Working Area. The population in this study were all toddlers < 2 (two) years old who were in the working area of the Rasabou Health Center, Hu'u District, District Dompou. The type of research used in this research is observational description with a cross sectional design which explains cause and effect relationships. The research results shows that as many as 23 people or 71,9% of those with high risk ages and children experience stunting (short) and as many as 9 people or 28,1% of mothers with high risk ages with children in the stunting category (very short). Meanwhile, there were 12 mothers whose age was not at high risk or 60,0% of their children were stunted (very short) and 8 people or 40,0% were in the stunted (short) category. The results of the research analysis show that there is a significant relationship between the mother's age at risk and the incidence of stunting (p -value Chi Square Tst = 0,023 < α 0,005). It is further recommended that: 1) For mothers: The results of this research can be a basis for information for preparing oneself for pregnancy and meeting energy needs as well as being a guide in caring for children; 2) For Health Officers: The results of this research are the basis for preparing maternal and child health programs, health counseling for adolescents and mothers of productive age as well as making proposals for supporting stunting prevention policies.

Keywords: *Chronic energy deficiency, High risk pregnancy, Stunting*

1. BACKGROUND

Stunting remains a major global public health and nutrition challenge, affecting approximately 165 million children under the age of five worldwide. Nearly 80% of these children live in 14 countries, with Indonesia ranking fifth among the countries with the largest number of stunted children [1]. According to the 2018 Basic Health Research (Riskesdas), West Nusa Tenggara (NTB) Province ranked seventh among the provinces with the lowest prevalence of stunting in Indonesia. Nevertheless, the overall prevalence of

stunting in the province remained high at 31.4% [2].

In Dompou Regency, data from the Electronic Community-Based Nutrition Recording and Reporting System (*Elektronik Pencatatan dan Pelaporan Gizi Berbasis Masyarakat* [EPPGBM]) showed that the prevalence of stunting was 14.3% in 2021 and remained unchanged at 14.3% in 2022 [3].

Hu'u District, one of the districts in Dompou Regency, West Nusa Tenggara Province, has been designated by the government as a priority area for stunting

intervention. In 2022, the prevalence of stunting in the district reached 14.9%. Stunting has serious short- and long-term consequences for children's health and development, including impaired cognitive function, disrupted brain development, restricted physical growth, and metabolic disorders.

One of the major risk factors associated with stunting is adolescent pregnancy. Adolescent pregnancy refers to pregnancy among women younger than 20 years of age. This definition is consistent with Law No. 16 of 2019, which amended Law No. 1 of 1974 on Marriage. Article 7(1) stipulates that marriage is permitted only when both men and women have reached the age of 19 years. In addition to adolescent pregnancy, maternal age above 35 years is also considered a risk factor for stunting.

Another important maternal risk factor contributing to the high prevalence of stunting is chronic energy deficiency (CED). In West Nusa Tenggara Province, the prevalence of CED among pregnant women was reported to be 12.4% in 2022 [4]. In Dompu Regency, there were 5,633 recorded cases of CED. Within the service area of Rasabou Community Health Center (*Puskesmas Rasabou*), 77 out of 451 pregnant women (17%) were identified as having CED in 2022 [5].

Delivery records from Rasabou Community Health Center indicated that there were 433 births in 2022. Of these, 41 births (9.4%) occurred among mothers younger than 20 years, while 54 births (12.47%) were to mothers older than 35 years.

Based on these findings, the authors were interested in examining the relationship between high-risk maternal age during pregnancy and chronic energy deficiency with the incidence of stunting

among children in the service area of Rasabou Community Health Center.

2. RESEARCH METHODS

This study employed an observational analytic design with a cross-sectional approach to examine the relationship between high-risk maternal pregnancy and chronic energy deficiency (CED) and the incidence of stunting. The population and sample in this study comprised all stunted children under two years of age ($n = 52$) in the service area of the Rasabou Community Health Center, Hu'u District, Dompu Regency. The study was carried out between January and February 2026.

3. RESULTS AND DISCUSSION

3.1 Results

Table 1. Frequency Distribution of Child and Maternal Characteristics at Rasabou Community Health Center, Dompu Regency
Source: Primary Research Data.

Based on Table 1, the distribution of respondents by the child's sex showed that, of the 52 children included in the study, 33

1. Child's Sex	F	%
Male	33	63,5%
Female	19	36,5%
Total	52	100%
2. Child's age (Month's)		
<12 Months	21	40,4%
12 - 24 Months	31	59,6%
Total	52	100%
3 Maternal age		
< 20 Years	5	9,6%
20 - 35 Years	20	38,5%
>35 Years	27	51,9%
Total	52	100%

(63.5%) were male and 19 (36.5%) were female. Regarding age, most children were between 12 and 24 months old, accounting for 31 (59.6%) of the respondents, while 21 (40.4%) were younger than 12 months.

The distribution of respondents according to maternal age indicated that the largest proportion of mothers were older than 35 years (51.9%), followed by those aged 20–35 years (38.5%). Mothers younger than 20 years constituted the smallest proportion of the study population, representing only 9.6% of the respondents.

Table 2. Frequency Distribution of High-Risk Maternal Age at Rasabou Community Health Center, Dompu Regency

Variable	Frequency (n)	Percentage (%)
High-risk maternal age	32	61,5
Non high-risk maternal age	20	38,5
Total	52	100

Source: Primary Research Data.

As shown in Table 2, the majority of mothers were classified as being of high-risk maternal age, comprising 32 respondents (61.5%). In contrast, 20 respondents (38.5%) were classified as non-high-risk maternal age.

Table 3. Frequency Distribution of Maternal Chronic Energy Deficiency (CED) at Rasabou Community Health Center, Dompu Regency

Variable	Frequency (n)	Percentage (%)
Chronic Energy Deficiency	23	44,2
No Chronic Energy Deficiency	29	56,8
Total	52	100

Source: Primary Research Data.

As shown in Table 3, 29 mothers (56.8%) did not have chronic energy deficiency, whereas 23 mothers (44.2%) were identified as having chronic energy deficiency.

Table 4. Cross-tabulation of the Association Between High-Risk Maternal Age and Stunting in the Rasabou Community Health Center Service Area

Crosstabulation	Severely Stunted	Stunted	Total
High-risk	9 (28.1%)	23 (71.9%)	32 (100.0%)
No High-Risk	12 (60.0%)	8 (40.0%)	20 (100.0%)
Total	21 (40.4%)	31 (59.6%)	52 (100.0%)
<i>Chi Square Test p-value sig. = 0,023 < α. 0,05</i>			

Table 5. Cross-tabulation of the Association Between Maternal Chronic Energy Deficiency (CED) and Stunting in the Rasabou Community Health Center Service Area

Crosstabulation	Sangat Pendek	Pendek	Total
Chronic Energy Deficiency	13 (56.5%)	10 (43.5%)	23 (100.0%)
No Chronic Energy Deficiency	8 (27.6%)	21 (72.4%)	29 (100.0%)
Total	21 (40.4%)	31 (59.6%)	52 (100.0%)
<i>Chi Square Test p-value sig. = 0,035 < α. 0,05</i>			

Table 6. Multivariate Analysis of the Dominant Factors Associated with Stunting in the Rasabou Community Health Center Service Area

Variable		Severely Stunted		Stunted		Sig.	OR
		n	%	n	%		
Maternal Age	High-risk	9	42.9%	23	74.2%	0,023	0,261
	Non High-risk	12	57.1%	8	25.8%		
Chronic Energy Deficiency (CED)	CED	13	56.5%	10	43.5%	0,035	3.412
	No CED	8	27.6%	21	72.4%		

As shown in Table 6, two potential risk factors were identified: high-risk maternal age and maternal chronic energy deficiency

(CED). The relative contribution of these factors was assessed using the odds ratio (OR). Based on the OR values, maternal chronic energy deficiency (CED) was the more dominant factor associated with stunting among children under two years of age (OR = 3.412), whereas **high-risk maternal age** showed a lower odds ratio (OR = 0.261).

3.2 DISCUSSION

a) Child Sex and Age Characteristics

This study, which focused on stunting among children, found no significant association between the child's sex and the occurrence of stunting. These findings are consistent with those reported [6], who investigated the relationship between birth weight, birth length, and sex with stunting and concluded that sex was not significantly associated with stunting. Similarly, Sekarini [7] reported no significant relationship between a child's sex and the occurrence of stunting among children under five years of age. Likewise, Angelina et al. (2018), who examined the determinants of stunting among children aged 6–23 months in Lampung Province, also found no association between sex and stunting in this age group.

The present study showed that most children with stunting were between 12 and 24 months of age. This finding is consistent with the study by Setyawati [8] which reported that the prevalence of stunting is higher among children younger than two years of age. Ideally, infants should receive exclusive breastfeeding during the first six months of life, a period characterized by rapid gains in both weight and length. After six months, complementary feeding should be introduced while breastfeeding continues, as children require greater nutrient intake to support their rapid

physical growth and motor development.

However, several challenges commonly arise during this period. Many children experience feeding difficulties, while both the quantity and quality of breast milk gradually decline as they grow older. Consequently, the period up to 24 months of age represents a critical stage of adaptation to complementary foods that adequately meet nutritional requirements. After weaning, generally beyond 24 months of age, children tend to consume larger amounts and a greater variety of foods than before weaning. As a result, nutritional problems, including stunting, are less frequently observed among children older than 24 months.

b) Association Between High-Risk Maternal Age and Stunting

The findings of this study demonstrated a statistically significant association between **high-risk maternal age** and the occurrence of stunting among children under two years of age. Among the mothers of stunted children, 32 (61.5%) were classified as being of high-risk maternal age. In this study, high-risk maternal age was defined as pregnancy occurring before the age of 20 years or after the age of 35 years. Women aged 20–35 years are generally considered to be within the optimal reproductive age range. Before the age of 20 years, the reproductive organs may not have reached full physiological maturity, whereas after the age of 35 years, reproductive function gradually declines. Jiang et al. [9] reported that women who became pregnant after the age of 35 years were 2.74 times more likely to give birth to a stunted child than women who conceived between the ages of 25 and 35 years.

Pregnancy between the ages of 20 and 35 years is considered the safest

period because both reproductive maturity and psychological readiness for pregnancy and childbirth have generally been achieved. Previous studies have suggested that women of advanced maternal age may experience reduced nutrient absorption, resulting in inadequate nutritional intake, as well as a gradual decline in immune function. These physiological changes may increase their susceptibility to various health conditions during pregnancy.

Both adolescent mothers (<20 years) and older mothers (>35 years) are at greater risk of adverse maternal and fetal outcomes during pregnancy, childbirth, and the postpartum period. Consequently, pregnancies occurring at these ages are considered high-risk and may contribute to unfavorable birth outcomes, including an increased risk of stunting among children [10].

c) Association Between Maternal Chronic Energy Deficiency (CED) and Stunting

The findings of this study demonstrated a statistically significant association between maternal chronic energy deficiency (CED) and the occurrence of stunting among children under two years of age ($p = 0.035$, < 0.05). Of the 52 stunted children included in the study, 23 (44.2%) were born to mothers who experienced chronic energy deficiency.

Chronic energy deficiency is a form of long-term undernutrition. Pregnant women are classified as having CED when their mid-upper arm circumference (MUAC) is less than 23.5 cm. Maternal undernutrition during pregnancy can impair fetal growth and development, increasing the likelihood of delivering a low birth weight infant. Low birth weight is a well-established risk factor for stunting during early childhood [11].

The findings of the present study are consistent with those of Qoyyimah et al. [12], who investigated the association between a maternal history of chronic energy deficiency during pregnancy and stunting among children aged 3–5 years at Jatinom Community Health Center, Klaten. Their study also reported a significant association between maternal CED and the occurrence of stunting. Similarly, Sumardilah and Rahmadi [13], in their study of stunting risk among children aged 7–24 months, found that inadequate maternal energy intake was significantly associated with stunting.

Overall, evidence from previous studies, together with the findings of the present study, highlights the importance of maintaining adequate maternal energy intake during pregnancy and breastfeeding. Insufficient maternal nutritional intake may adversely affect infant nutritional status and growth, thereby increasing the risk of stunting. Although maternal chronic energy deficiency is an important determinant of stunting, other maternal, child, household, and environmental factors may also contribute to its occurrence. Therefore, reducing the prevalence of stunting requires comprehensive, multisectoral interventions, which remain a national public health priority in Indonesia. Based on the odds ratio analysis, mothers with chronic energy deficiency had 3.421 times higher odds of having a stunted child than mothers without chronic energy deficiency. Furthermore, when compared with high-risk maternal age, chronic energy deficiency showed a stronger association with stunting, indicating that it was the more dominant factor associated with stunting in this study population.

4. CONCLUSION

- a. Among children with stunting, the majority were male (63.5%), and most were 12–24 months of age (59.6%). Regarding maternal characteristics, the largest proportion of mothers of stunted children were older than 35 years (51.9%).
- b. There was a statistically significant association between high-risk maternal age and stunting among children under two years of age ($p = 0.023$).
- c. There was a statistically significant association between maternal chronic energy deficiency (CED) and stunting among children under two years of age ($p = 0.035$).
- d. Maternal chronic energy deficiency (CED) was the factor most strongly associated with stunting, with an odds ratio (OR) of 3.421, indicating that mothers with CED had higher odds of having a stunted child than those without CED.

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