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Breastfeeding Practices and Stunting: A Cross-Sectional Study Among Children Aged 24-59 Months in Indonesia

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Abstract

Background: Stunting is a chronic nutritional problem that remains a major global public health concern. Inadequate breastfeeding practices, such as delayed early initiation of breastfeeding (EIB), non-exclusive breastfeeding, and early cessation of breastfeeding, can contribute to nutritional deficits that lead to stunting.

Methods: This descriptive correlational study with a case-control approach analyzed the correlation between breastfeeding practices and the incidence of stunting among toddlers aged 24–59 months in Jember Regency. A total of 174 mother–toddler pairs participated, comprising 87 stunted (case group) and 87 non-stunted toddlers (control group). Data on breastfeeding practices (EIB, exclusive breastfeeding, and continued breastfeeding) were collected using researcher-assisted questionnaires and verified through Maternal and Child Health (KIA) books when available. Nutritional status was assessed via direct anthropometric measurements and analyzed using World Health Organization (WHO) Anthro software.

Results: All toddlers in the case group were classified as stunted (100%), with 70.1% moderately stunted and 29.9% severely stunted. Chi-square analysis showed a significant correlation between breastfeeding practices and stunting incidence. Toddlers who received EIB had 2.278 times greater odds of normal height ($p = 0.022$). Those exclusively breastfed had 2.554 times greater odds ($p = 0.004$), and those with continued breastfeeding had 2.514 times greater odds of normal height ($p = 0.003$).

Conclusion: There is a significant association between delayed initiation of breastfeeding, non-exclusive breastfeeding, and early cessation of continued breastfeeding with the occurrence of stunting among toddlers. Strengthening breastfeeding practices from birth through two years of age, supported by families and health institutions, is essential to promote optimal growth and prevent stunting.

Key Words: Breastfeeding, Continued Breastfeeding, Child, Early Initiation of Breastfeeding, Exclusive Breastfeeding, Stunting.

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1- INTRODUCTION

Stunting remains a major public health concern in Indonesia and globally. characterized by impaired linear growth due to chronic undernutrition, with long-term consequences on a child's cognitive development, health, and productivity. According to the World Health Organization (WHO), stunting is defined as a height-for-age Z-score below -2 standard deviations (SD) from the median of the WHO Child Growth Standards (1). Although the national stunting prevalence in Indonesia declined slightly to 21.6% in 2023 (2), it still exceeds the WHO maximum threshold of 20% and remains a critical issue, particularly in East Java, where the stunting rate reached 17.7%, with Jember Regency reporting a high prevalence of 29.7% (2). As part of the national strategy to reduce stunting, Jember has designated three subdistricts, Rambipuji, Sumberjambe, and Ledokombo, as priority intervention areas due to their high prevalence (3).

The first 1000 days of life is a critical period for preventing stunting, with adequate breastfeeding practices being among the most important interventions. According to the WHO and UNICEF Global Strategy for Infant and Young Child Feeding, early initiation of breastfeeding within one hour after birth, exclusive breastfeeding for the first six months, and continued breastfeeding up to two years or beyond are strongly recommended to support optimal growth and development (4). Each of these stages plays a vital role in a child's development. Early initiation of breastfeeding (EIB) allows newborns to receive colostrum, which is rich in antibodies and nutrients, providing immediate immune protection and supporting the success of continued breastfeeding (5). Exclusive breastfeeding ensures complete nutrition and prevents infections such as diarrhea and pneumonia, both of which can interfere with nutrient absorption and growth (6). Continued breastfeeding alongside appropriate complementary feeding maintains energy and nutrient supply during the second year of life, supporting sustained linear growth and reducing stunting risk (7). Inadequate breastfeeding practices, including delayed EIB, non-exclusive breastfeeding, and early cessation of breastfeeding, are associated with an increased risk of infections and nutrient deficiencies, both of which contribute to linear growth faltering (5,6). Despite various national and local initiatives, including regulations, lactation classes, and family-centered breastfeeding education, Jember continues to experience a gap between breastfeeding coverage and stunting outcomes, indicating the need for a deeper analysis of breastfeeding quality and its direct association with child growth (8,9).

Breastfeeding success depends not only on maternal readiness but also on adequate family support. A mother’s psychological and physiological adaptation in the early postpartum period influences breastfeeding initiation and sustainability. According to maternal nursing theories such as Reva Rubin’s phases of maternal role attainment, early emotional bonding and confidence-building are essential, especially during the “taking in” and “taking hold” phases (10). Family members, particularly husbands and grandmothers, play a crucial role in providing emotional, informational, and instrumental support, which positively influences oxytocin release and sustained breastfeeding (11,12). Therefore, strengthening maternal support systems and breastfeeding education is crucial to improving nutritional outcomes and preventing stunting.

This study aimed to analyze the relationship between breastfeeding practices and the incidence of stunting among children aged 24–59 months in Jember Regency, rpecifically examining

the associations between early initiation of breastfeeding, exclusive breastfeeding, and continued breastfeeding with stunting status in high-burden subdistricts designated as stunting loci.

2- MATERIALS AND METHODS

2-1. Study Design

This study utilized a descriptive-analytical method with a case-control approach, conducted from April to July 2025. The research took place in three priority subdistricts for stunting intervention in Jember Regency, East Java Province, Indonesia: Rambipuji, Sumberjambe, and Ledokombo Subdistricts, as specified in the Decree of the Regent of Jember Number 188.45/293/1.12/2024.

2-2. Participants

The study population consisted of mothers with children aged 24–59 months living in the working areas of Rambipuji, Sumberjambe, and Ledokombo Public Health Centers. The case group included children classified as stunted based on the height-for-age index with a z-score < -2 SD. The control group comprised children in the same age range with normal nutritional status based on the HAZ index. Sampling was conducted using a stratified random sampling method with two levels of stratification: by subdistrict and by stunting locus village. The total population was 3995 children, including 695 stunted and 3300 non-stunted children. The final sample size was 174 subjects, with 87 children in the case group and 87 in the control group. The sample size was calculated using the two-proportion formula, with a 95% confidence level, 80% power, and the stunting prevalence in Jember Regency of 29.7%. Inclusion criteria were children aged 24–59 months registered at the posyandu in the stunting locus villages, cared for by their biological mother, and living with the mother at the time of data collection. Exclusion criteria included children with congenital or genetic disorders that could affect growth (e.g., Down syndrome, cerebral palsy, cleft palate), chronic illnesses (e.g., HIV/AIDS, tuberculosis), hospitalization for more than 7 consecutive days, or mothers who declined participation.

2-3. Data Collection Procedures

Data were collected through home visits conducted by the researcher and posyandu cadres, following coordination with village midwives and nutrition officers at the public health centers. The mothers were informed about the study objectives and procedures and asked to sign an informed consent form. Quantitative data were collected through structured questionnaires, anthropometric measurements, and verification of secondary data from the Maternal and Child Health (MCH) book, when available. Instruments used included a sociodemographic questionnaire covering maternal characteristics (age, education, occupation, household income) and child characteristics (age, sex, delivery type, rooming-in status, gestational age at birth, birth order, height, and weight). The breastfeeding practice questionnaire was developed based on the Indicators for Assessing Infant and Young Child Feeding Practices (7) and consisted of three dichotomous (Yes/No) questions covering EIB, exclusive breastfeeding, and continued breastfeeding. Breastfeeding data were collected through researcher-assisted structured interviews and, when available, cross-checked with data in the MCH book. This study focused on breastfeeding practices (EIB, exclusive breastfeeding, and continued breastfeeding) as the primary independent variables. Complementary feeding practices after six months, including dietary diversity, feeding frequency, and diet quality, were not measured or matched between the two groups, as they were beyond the scope of the current analysis.

Anthropometric measurements were conducted using a microtoise for height and a digital scale for weight. The child's age, weight, and height data were entered into the WHO Anthro software to calculate z-scores for the indicators height-for-age z-score (HAZ), weight-for-age z-score (WAZ), weight-for-height z-score (WHZ), and body mass index-for-age z-score (BAZ), based on WHO 2006 growth standards. Stunting status was defined as HAZ < -2 SD.

2-4. Data Analysis

After data collection, editing, coding, data entry into SPSS version 26, and cleaning were conducted, descriptive analysis was used to present an overview of the collected data. Categorical data were presented in frequencies and percentages, while numerical data were presented as medians and interquartile ranges. Normality was tested using the Kolmogorov-Smirnov test. Inferential analysis included two statistical tests: the Mann–Whitney test was used to assess differences in nutritional status z-scores, body weight, and height between stunted and non-stunted children, due to the non-normal distribution of most data. The Chi-square test was used to examine the relationship between breastfeeding practices and stunting incidence. A p-value < 0.05 was considered statistically significant.

2-5. Research Ethics

This study received ethical approval from the Health Research Ethics Committee of the Faculty of Nursing, University of Jember, with reference number 338/UN25.1.14/KEPK/2025.

3- RESULTS

Table 1 shows that the median age of mothers in both groups was 30 years. In the case group, most mothers had completed junior high school (40.23%) and elementary school (34.48%), whereas in the control group, most mothers had completed senior high school (66.67%). Mothers without formal education were more common in the case group (4.60%), while those with higher education (diploma/degree) were more prevalent in the control group (9.20%). Most mothers were unemployed in both groups, with a slightly higher proportion in the case group (93.10%) than in the control group (81.61%). Nearly all families in the case group had incomes below the regional minimum wage (95.40%), while the majority in the control group had incomes above the minimum wage (82.76%).

Table 2 presents child characteristics. The median age of children was 40 months across the sample. The majority were male (55.17%), born at term (97.13%), and delivered vaginally (93.10%). Most children were the firstborn, especially in the case group (56.32%) compared to the control group (44.83%). Regarding rooming-in practices, most children in both groups had roomed-in with their mothers after delivery, but the proportion was higher in the control group (95.40%) than in the case group (80.46%). These patterns are further discussed in subsequent sections regarding the impact of cesarean delivery, prematurity, and maternal health complications as contributing factors to the absence of rooming-in and early breastfeeding.

Breastfeeding practices assessed in this study included EIB, exclusive breastfeeding, and continued breastfeeding. The distribution of these practices is shown in Figure 1 Inadequate breastfeeding practices were more prevalent in the case group. Children in this group had higher proportions of not receiving EIB (32.18%), non-exclusive breastfeeding (44.83%), and discontinued breastfeeding (51.72%) compared to the control group (17.24%, 24.14%, and 29.89%, respectively).

Table-1. Distribution of Mother Characteristics in Jember Regency (n=174).

Variable	Case Group (n=87)	Control Group (n=87)	Total (n=174)
Maternal Age (years)			
Md (P_{25}-$_{75}$)	30 (26–34)	30 (28–33)	30 (27–34)
Education Level, n (%)			
No formal education	4 (4.60)	0 (0.00)	4 (2.30)
Elementary school/equivalent	30 (34.48)	10 (11.49)	40 (22.99)
Junior high school/equivalent	35 (40.23)	11 (12.64)	46 (26.44)
High school/equivalent	15 (17.24)	58 (66.67)	73 (41.95)
Diploma/Bachelor's degree	3 (3.45)	8 (9.20)	11 (6.32)
Maternal Occupation, n (%)			
Unemployed	81 (93.10)	71 (81.61)	152 (87.36)
Informal sector	5 (5.75)	14 (16.09)	19 (10.92)
Formal sector	1 (1.15)	2 (2.30)	3 (1.72)
Family Income, n (%)			
< Minimum Wage Rp. 2.838.642,00	83 (95.40)	15 (17.24)	98 (56.32)
≥ Minimum Wage Rp. 2.838.642,00	4 (4.60)	72 (82.76)	76 (43.68)

Notes: n (%): Frequency (percentage); **Md :** Median; **P_{25}-P_{75} :** Percentiles 25-57

Table 2. Distribution of Child Characteristics in Jember Regency (n=174).

Variable	Case Group (n=87)	Control Group (n=87)	Total (n=174)
Child's Age (months)			
Md (P_{25}-$_{75}$)	40 (32–52)	40 (32–48)	40 (32–50)
Sex, n (%)			
Male	46 (52.87)	50 (57.47)	96 (55.17)
Female	41 (47.13)	37 (42.53)	78 (44.83)
Delivery History, n (%)			
Normal	79 (90.80)	83 (95.40)	162 (93.10)
Caesar	8 (9.20)	4 (4.60)	12 (6.90)
Rooming-in, n (%)			
No	17 (19.54)	4 (4.60)	21 (12.07)
Yes	70 (80.46)	83 (95.40)	153 (87.93)
Gestational Age at Birth, n (%)			
< 37 weeks	3 (3.45)	2 (2.30)	5 (2.87)
≥ 37 weeks	84 (96.55)	85 (97.70)	169 (97.13)
Birth Order in the Family, n (%)			
First	49 (56.32)	39 (44.83)	88 (50.57)
Second	32 (36.78)	39 (44.83)	71 (40.80)
Third or higher	6 (6.90)	9 (10.34)	15 (8.62)

Notes: n (%) : frequency (percentage); **Md :** Median; **P_{25}-P_{75} :** Percentiles 25-57

Table 3 shows that the medians for height, weight, and all nutritional status indicators were lower in the case group than in the control group. Mann-Whitney tests revealed statistically significant differences between the groups for all variables ($p < 0.0001$). The distribution of nutritional status in the case and control groups is illustrated in Figure 2 and 3, respectively. All children in the case group were classified as stunted (100% with HAZ < -2 SD), of whom 29.89% were severely stunted (HAZ < -3 SD). The majority had low WAZ scores (54.02%), but most were still categorized as having

good nutrition according to WHZ (65.52%) and BAZ (74.71%). In contrast, all children in the control group had normal HAZ and high proportions of normal WAZ (97.70%), WHZ (96.55%), and BAZ (95.40%), suggesting consistently better nutritional status.

As presented in Table 4, all three breastfeeding practices were significantly associated with stunting. Children who received EIB were 2.278 times more likely to be non-stunted (χ^2 = 5.220; p = 0.022; OR = 2.278; 95% CI = 1.114–4.658). Those who were exclusively breastfed had a 2.554-fold higher chance of growing normally (χ^2 = 8.242; p = 0.004; OR = 2.554; 95% CI = 1.336–4.881). Continued breastfeeding was also significantly associated with a lower risk of stunting (χ^2 = 8.589; p = 0.003; OR = 2.514; 95% CI = 1.349–4.685).

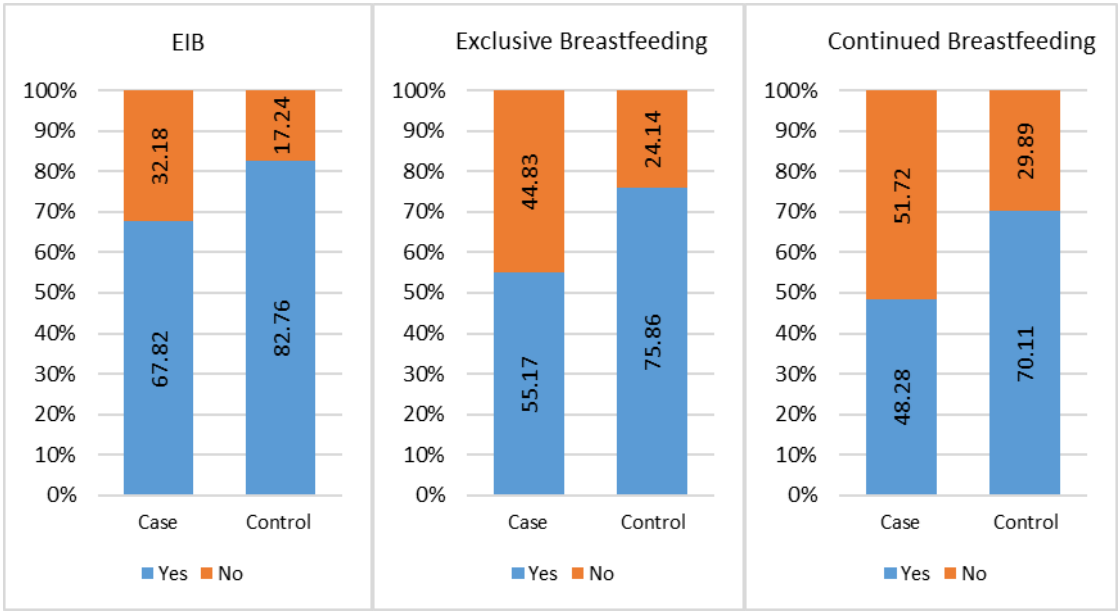

Figure-1: Breastfeeding Practices include EIB, Exclusive Breastfeeding, and Continued Breastfeeding in the Case and Control Groups (n=174).**Note: (%) :** Percentage of participants

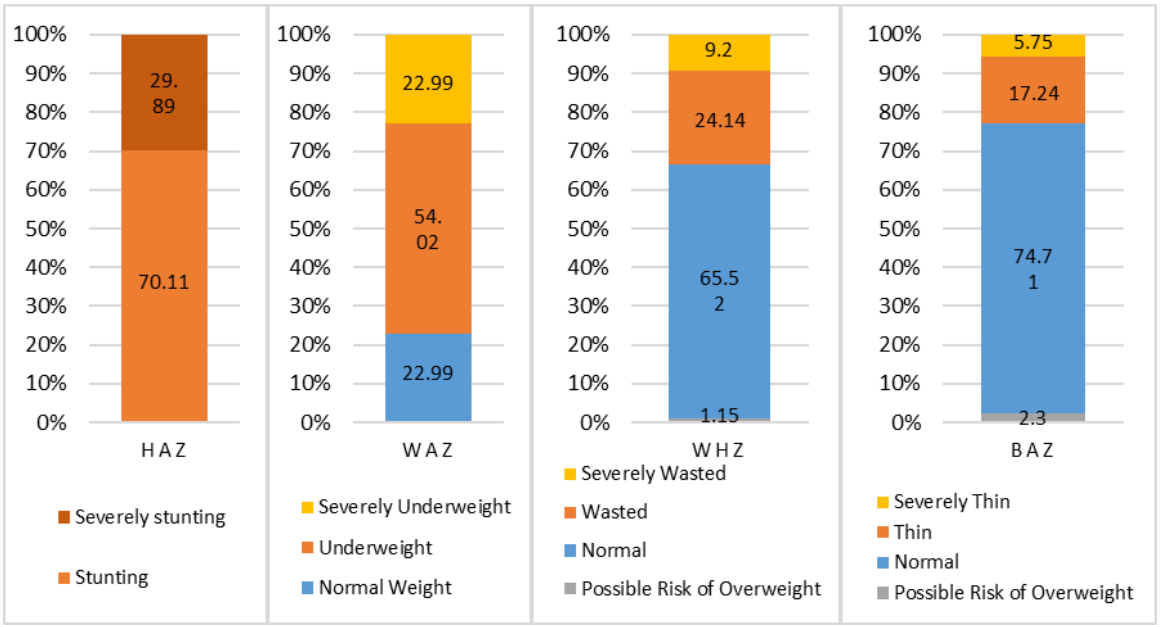

Figure-2: Distribution of Nutritional Status Based on HAZ, WAZ, WHZ, and BAZ Indicators in the Case Group (n=87). **Note: (%) :** Percentage of participants

Table-3. Distribution of Nutritional Status of Children Aged 24–59 Months in Jember Regency (n=174).

Hasil Ukur	Case Group			Control GrOUP			p-value[b]
	Md(P_{25}-P_{75})	Z	p-value[a]	Md(P_{25}-P_{75})	Z	p-value[a]	
Measurement	87.28 (82.51 – 94.35)	0.109	0.013	96.43 (91.43 – 102.75)	0.078	0.200	<0.001
Height (cm)	10.64 (9.67 – 12.37)	0.072	0.200	14,63 (12.80 – 15.96)	0.072	0.200	<0.001
Weight (kg)							
HAZ	-2.54 (-3.20 – -2.22)	0.140	<0.001	-0.14 (-0.51 – 0.20)	0.178	<0.001	<0.001
WAZ	-2.58 (-2.95 – -2.07)	0.117	0.005	-0.08 (-0.47 – 0.22)	0.145	<0.001	<0.001
WHZ	-1.51 (-2.25 – -0.85)	0.074	0.200	0.01 (-0.37 – 0.29)	0.129	0.001	<0.001
BAZ	-97.00 (-194.00 – -12.00)	0.082	0.200	-1.00 (-38.00 – 24. 00)	0.170	<0.001	<0.001

Notes: Md : Median; **P_{25}-P_{75} :** Percentiles 25-75; **Z :** Kolmogorov–Smirnov test statistic; **p-value[a]:** Significance of Kolmogorov–Smirnov test (normality test); **p-value[b]:** Significance of Mann–Whitney U test (group comparison)

Table-4. The Relationship Between Breastfeeding Practices and the Incidence of Stunting in Children Aged 24–59 Months in Jember Regency (n=174).

Praktik Pemberian ASI	Incidence of Stunting in Children				χ^2	p-value	OR	95% CI
	Stunting		Non-Stunting					
	f	%	f	%				
EIB								
No	28	32.18	15	17.24	5.220	0.022	2.278	1.114-4.658
Yes	59	67.82	72	82.76				
Exclusive Breastfeeding								
No	39	44.83	21	24.14	8.242	0.004	2.554	1.336–4.881
Yes	48	55.17	66	75.86				
Continued Breastfeeding								
No	45	51.72	26	29.89	8.589	0.003	2.514	1.349–4.685
Yes	42	48.28	61	70.11				

Notes: **f :** Frequency; **% :** percentage; **χ^2:** Chi-square statistic; **p-value:** Significance of Chi-square test; **OR:** Odds Ratio; **95% CI :** 95 Confidence interval

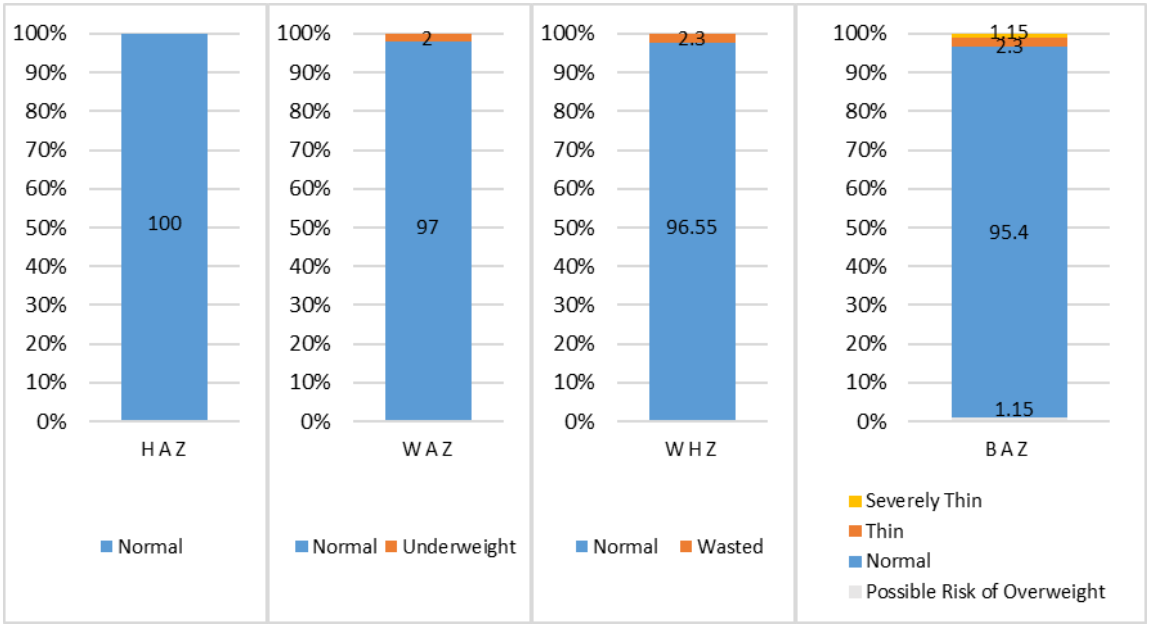

Figure-3: Distribution of Nutritional Status Based on HAZ, WAZ, WHZ, and BAZ Indicators in the Control Group (n = 87).**Note: (%) :** Percentage of respondents

4- DISCUSSION

4-1.Breastfeeding Practices

4-1-1. Early Initiation of Breastfeeding (EIB)

In this study, 28 children in the case group did not receive EIB, and 60.7% of them were not roomed-in with their mothers. Most of these cases were attributed to cesarean delivery, preterm birth, or maternal medical conditions. The lack of rooming-in emerged as a major barrier to EIB, although this practice is ideally carried out in health facilities within the first hour after delivery. During the early postpartum adaptation phase (taking in), mothers are in a physically and emotionally vulnerable state, requiring support from healthcare providers and family members to establish initial bonding with their infants. Taha et al. (13) reported that the absence of rooming-in increased the risk of delayed EIB (AOR = 3.85; 95% CI: 1.56–9.51), while Mudhawaroh et al. (14) found that among post-cesarean mothers, family support increased the success rate of EIB within one hour from 8.7% to 57.5%.

Conversely, in the control group, 82.8% of children received EIB and 98.9% were roomed-in. This finding is consistent with Alrasheedi (15), who reported that 24-hour rooming-in increased the likelihood of EIB (AOR = 6.26; 95% CI: 1.31–29.8; p = 0.021). Overall, the success of EIB is influenced not only by clinical conditions but also by maternal psychological readiness and a strong family support system, as described by Friedman (11), which includes emotional, informational, instrumental, and appraisal support. Therefore, antenatal education involving husbands and other family members in family-centered care, along with adaptive strategies such as delayed EIB, should be implemented to overcome clinical barriers.

4-1-2. Exclusive Breastfeeding Practices

This study found that 39 children in the case group did not receive exclusive breastfeeding for the first six months, with 79.3% of their mothers having a low level of education. Limited education restricts understanding of the benefits of exclusive breastfeeding and increases the risk of early introduction of complementary foods. Emagneneh et al. (16) found that

mothers with low education levels were at a higher risk of not providing exclusive breastfeeding (OR = 2.79; 95% CI: 1.86–3.72), while Witten et al. (17) noted that a lack of family support could trigger emotional stress that weakens commitment to breastfeeding.

Conversely, in the control group, 75.9% of children received exclusive breastfeeding, with 70.1% of their mothers having medium to high education levels. Higher education facilitates access to health information and increases awareness of the benefits of breastfeeding, supported by family involvement in assisting the mother to breastfeed. This finding aligns with Alsada et al. (18), who found that mothers with higher education were more likely to practice exclusive breastfeeding (OR = 4.4; p = 0.015). Tumaji et al. (19) reported a similar likelihood among mothers with medium to high education levels (AOR = 2.325; 95% CI: 2.001–2.701), and Hu et al. (20), as well as Nie et al. (21), highlighted the importance of partner and extended family support. Overall, the success of exclusive breastfeeding is influenced by a combination of individual factors and consistent family support. Therefore, healthcare providers should develop family-centered breastfeeding education through prenatal classes, home visits, and family counseling to maintain exclusive breastfeeding for the first six months of life.

4-1-3. Continued Breastfeeding Practices

In this study, 49 children in the case group did not receive continued breastfeeding up to 24 months, with 56.3% of them being first-born children. Limited experience and emotional readiness among primiparous mothers make them more vulnerable to challenges in sustaining long-term breastfeeding, such as increased child activity, tighter maternal schedules, and social pressure to wean early. Yasuda et al. (22) reported that primiparity was a significant predictor of early cessation of breastfeeding (AOR = 1.59; 95% CI: 1.13–2.25), while Paramashanti et al. (23) highlighted that insufficient family support, including suggestions to stop breastfeeding, can trigger early cessation.

In contrast, most children in the control group continued to receive breastfeeding up to two years or beyond, with 55.17% being second-born or later-born children. Multiparous mothers tend to be better prepared both emotionally and technically, supported by an already established family support system. Hackman et al. (24) found that multiparous mothers had significantly longer breastfeeding durations, and Mekonen (25) reported that multiparity increased the likelihood of breastfeeding for 12–23 months. Paramashanti et al. (23) also emphasized that emotional and instrumental support strengthens breastfeeding continuation. Overall, the success of continued breastfeeding is influenced by a combination of parity status, prior positive experiences, and consistent family support. In the context of Jember, where religious values are strongly upheld, the recommendation to breastfeed for two years as stated in Qur'an Surah Al-Baqarah verse 233 may serve as an additional motivational factor. Therefore, family nursing interventions should be collaborative and long-term, actively involving family members to sustain continued breastfeeding practices.

4-1-4. The incidence of stunting in children

All children in the case group experienced linear growth failure based on the HAZ indicator, with 70.1% classified as stunted and 29.9% as severely stunted, while all children in the control group were within the normal category. Stunting, as a manifestation of growth failure due to chronic undernutrition, may be triggered by inadequate dietary intake, recurrent

infections, poor sanitation, suboptimal breastfeeding practices, and maternal as well as household environmental factors (26). In the case group, the highest prevalence of nutritional impairment was observed in WAZ, with 54.0% underweight and 23.0% severely underweight. The majority of children still had normal nutritional status based on WHZ (65.5%) and BAZ (74.7%). This finding reaffirms that stunting does not necessarily co-occur with wasting or thinness, as stunting reflects chronic malnutrition, whereas wasting and thinness are more indicative of acute malnutrition (27). The consistency between stunting and underweight in this study indicates a sustained chronic nutritional deficit, consistent with Thurstans et al. (28), who reported that linear growth faltering is often accompanied by low weight-for-age.

The Mann–Whitney test showed significant differences across all nutritional status indicators between the case and control groups, with lower median Z-scores in the case group for HAZ, WAZ, WHZ, and BAZ. Although most children in the case group were still classified as well-nourished according to WHZ and BAZ, their score distributions were consistently lower than those in the control group, indicating broader nutritional vulnerability.

From Friedman's perspective (1), the family plays a crucial role in maintaining health through adequate nutrition, growth monitoring, and early healthcare-seeking (29). Suboptimal performance of these functions increases the risk of growth faltering. Rahmadiyah et al. (30) emphasized that family involvement in decision-making, caregiving, and psychosocial support is vital for stunting prevention and management. Therefore, interventions should focus on strengthening family capacity through education and the active engagement of fathers and other family members in sustaining healthy caregiving practices.

4-2.Breastfeeding Practices and the Incidence of Stunting

4-2-1. Early Initiation of Breastfeeding (EIB) and Stunting

There was a significant association between EIB and the incidence of stunting among children aged 24–59 months ($p = 0.022$), with EIB coverage of 82.8% in the non-stunted group and 67.8% in the stunted group. Children who received EIB were 2.278 times more likely to have normal growth (OR = 2.278; 95% CI: 1.114–4.658). EIB enables infants to obtain colostrum, which is rich in antibodies and essential nutrients, supports immune and digestive system maturation, and increases the likelihood of exclusive breastfeeding which contributes to adequate nutritional intake during the early stages of infancy (31). EIB is a critical initial step in preventing growth disorders. These findings underscore the need to implement EIB as a standard childbirth practice through Baby-Friendly Hospital Initiative policies and consistent training for healthcare workers.

4-2-2. Exclusive Breastfeeding Practices and Stunting

Exclusive breastfeeding for the first six months of life was significantly associated with stunting in children aged 24–59 months ($p = 0.004$), with coverage of 75.9% in the non-stunted group and 55.2% in the stunted group. Children who received exclusive breastfeeding were 2.554 times more likely to have normal growth compared to those who did not (OR = 2.554; 95% CI: 1.336–4.881). Exclusive breastfeeding provides adequate nutrition without the risk of contamination from early complementary feeding, protects infants from diarrhea and acute respiratory infections that may impair linear growth, and supports adequate nutrient intake and immunity until six

months of age (16, 32). These findings highlight the importance of interventions such as breastfeeding education, lactation counseling, and community support starting from the antenatal period to increase exclusive breastfeeding coverage as an early stunting prevention strategy.

4-2-3.Continued Breastfeeding Practices and Stunting

There was a significant association between continued breastfeeding up to two years of age and the incidence of stunting among children aged 24–59 months ($p = 0.003$), with coverage of 70.1% in the non-stunted group and 48.3% in the stunted group. Children who continued breastfeeding had 2.514 times greater odds of achieving normal growth compared to those who did not (OR = 2.514; 95% CI: 1.349–4.685). After six months of age, children's energy requirements increase and are met through a combination of complementary feeding and continued breastfeeding, which still provides a substantial portion of energy needs and essential immune components (33). WHO & UNICEF (7) recommends continued breastfeeding up to two years as a long-term stunting prevention strategy. These findings emphasize the need for sustained breastfeeding support through family education and strengthening of the caregiving environment to prevent stunting in the long term.

5- CONCLUSION

Based on the findings of this study, it can be concluded that the incidence of stunting among children aged 24–59 months in Jember Regency was significantly associated with inadequate breastfeeding practices. Among the stunted children, 32.2% did not receive EIB, 44.8% were not exclusively breastfed for the first six months, and 51.7% did not receive continued breastfeeding up to two years of age. In contrast, among non-stunted children, the proportions were lower: 17.2% did not receive EIB, 24.1% were not exclusively breastfed, and 29.9% did not receive continued breastfeeding. Inferential analysis showed that breastfeeding practices were significantly associated with stunting. Children who received EIB had greater odds of achieving normal height-for-age ($\chi^2 = 5.220$; $p = 0.022$; OR = 2.278; 95% CI = 1.114–4.658). Likewise, children who were exclusively breastfed ($\chi^2 = 8.242$; $p = 0.004$; OR = 2.554; 95% CI = 1.336–4.881) and those who received continued breastfeeding ($\chi^2 = 8.589$; $p = 0.003$; OR = 2.514; 95% CI = 1.349–4.685) had greater odds of achieving normal linear growth. These results highlight the importance of adequate breastfeeding practices, which must be supported by comprehensive family involvement. Family-based interventions, starting from the antenatal period up to the child's second year of life, are essential strategies for sustainable stunting prevention at both the household and community levels.

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