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The Impact of Early Weaning on Nutritional Status of Children Aged 6–24 Months in Cinambo

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A B S T R A C T

The weaning period is critical as it marks the transition from breastfeeding to solid foods, during which infants are particularly susceptible to nutritional disorders. The optimal weaning age is generally around two years, as breastfeeding until this age significantly supports a child's growth. Factors influencing weaning include parental education, economic status, parental employment, and the age of weaning. The timing of weaning is related to nutritional status since a child's diet shifts from exclusively breast milk to a combination of breast milk and solid foods, with increased energy and nutritional needs. This study investigates the relationship between weaning age and nutritional status in children aged 6-24 months at Puskesmas Cinambo, Bandung City. Employing a cross-sectional analytical design, the population includes mothers of children in this age range, totaling 534 respondents. Accidental sampling yielded 118 respondents over one week. Data were collected through questionnaires and analyzed using univariate and bivariate methods, with significance set at $p<0.05$. Results indicated that 52.5% of respondents had normal nutritional status, while 47.5% were undernourished. Most weaning ages were found to be inappropriate, with 66.1% weaning before the recommended age of 24 months. The Spearman Rank test revealed a significant relationship ($p=0.020$), confirming H1. In conclusion, there is a relationship between weaning age and nutritional status in children aged 6-24 months at Puskesmas Cinambo. Health services should provide regular education on appropriate weaning practices to enhance the nutritional status of this age group.

1. Introduction

Malnutrition prevalence presents significant challenges at various levels. In 2022, globally, 148.1 million children under the age of five (22.3%) experienced stunting, while 45 million children (6.8%) were affected by wasting, with 13.6 million (2.1%) suffering from severe wasting [1]. According to the 2021 Indonesian Nutritional Status Study (SSGI), the prevalence of underweight in children under five was recorded at 17.0% and slightly increased to 17.1% in 2022. Meanwhile, the prevalence of wasting rose from 7.1% to 7.7%, while overweight decreased from 3.8% to 3.5% in the same year. However, according to data from the Ministry of Health, the stunting rate showed a decline from 24.4% to 21.6% [2]. In Bandung City, stunting rates are lower, at 12.4% [3], but still require serious attention. Addressing this issue necessitates a comprehensive approach through nutritional education, specific interventions, and improved access to healthcare and sanitation services [4]. One of the critical periods influencing a child's nutritional status is the weaning phase. Inadequate weaning practices may contribute to the high prevalence of malnutrition, including stunting and underweight conditions observed in various regions.

The weaning period is a critical phase in an infant's development, marking the transition from exclusive breastfeeding to the introduction of solid foods. Proper weaning involves introducing high-quality complementary foods at six months of age and ensuring

diets meet the child's nutritional needs to prevent malnutrition and stunting. During this time, children are particularly vulnerable to nutritional disorders, which can have lasting impacts on their physical growth, cognitive development, and overall health outcomes [5], [6]. Current guidelines recommend breastfeeding for up to two years, as this practice has been shown to significantly support optimal growth and health outcomes [3], [4].

Several factors influence the timing and process of weaning, including parental education, economic status, and parental employment [7], [8]. These factors can impact not only the age at which children are weaned but also the quality and quantity of the foods introduced during this transitional period. Research indicates that inappropriate weaning practices can lead to nutritional deficiencies, as children's diets shift from breast milk to a combination of breast milk and solid foods, increasing their energy and nutritional needs.

This study aims to investigate the relationship between weaning age and nutritional status in children aged 6-24 months at Puskesmas Cinambo, Bandung City. Understanding this relationship is essential for developing effective nutritional interventions and educational programs tailored to local needs. By identifying how weaning practices affect nutritional outcomes, this research will contribute to the promotion of healthier dietary practices among families, ultimately enhancing child health and development [9], [10].

This study seeks to answer the following research question: How does weaning age influence the nutritional status of children aged 6-24 months?

2. Research Method

This study employs a cross-sectional analytical design to investigate the relationship between weaning age and nutritional status in children aged 6-24 months at Puskesmas Cinambo, Bandung City, Indonesia. The population for this research consists of mothers with children in the specified age range, totaling 534 respondents. Accidental sampling was employed to include mothers of children aged 6–24 months who were present at the health facility during the one-week data collection period and have 118 respondents were selected. This method was chosen due to its efficiency in gathering data quickly and its simplicity, as it does not require a predefined sampling frame or randomization. While accidental sampling allows researchers to conveniently access respondents, it has limitations, such as potential sampling bias. The respondents present at the health facility might not represent the entire population, as their characteristics (e.g., health-seeking behavior or socioeconomic background) could differ from those not present. Thus, while this method is suitable for exploratory research, caution should be exercised when interpreting and generalizing the findings [11].

Data were collected using a structured questionnaire that assessed both weaning practices and the nutritional status of children. The questionnaire included demographic information, details on weaning age, and indicators of nutritional status, such as dietary intake and growth measurements [7], [10]. The questionnaire used was pre-tested on 30 respondents to assess its validity and reliability. Content validity was confirmed by experts in public health and pediatric nutrition, ensuring that all relevant dimensions of weaning age and nutritional status were addressed. Validity was havibg score 0.78-0.89. Reliability was evaluated using Cronbach's alpha, yielding a score of 0.85, indicating high internal consistency. This step ensures the robustness of the instrument in measuring the intended variables and enhances trust in the study's findings.

The data analysis involved two main approaches: univariate and bivariate analysis. Univariate analysis was used to describe the characteristics of the respondents and the distribution of nutritional status, while bivariate analysis was conducted using the Spearman Rank test to examine the relationship between weaning age and nutritional status. A significance level of $p<0.05$ was set for determining statistical significance [4], [8].

This methodology is designed to provide insights into the factors affecting weaning practices and their impact on child nutritional outcomes, contributing to the development of targeted interventions for improved health among children in this age group [10], [12].

3. Result and Discussion

The results of this study are presented in several sections, including the characteristics of respondents, description of weaning age, nutritional status, cross-tabulation analysis between weaning age and nutritional status, and statistical analysis of their relationship.

3.1. Characteristics of Respondents

Table 1. Respondent Characteristics

Respondent Characteristics	Number (n)	Percentage (%)
Mother's Age		
17 – 25 Years	50	42.4%
26 – 35 Years	37	31.4%
36 – 45 Years	31	26.3%
Total	118	100.0%
Education		
Low (Elementary – Junior High)	82	69.5%
High (Senior High – University)	38	30.5%
Total	118	100.0%
Employment		
Employed	21	17.8%
Unemployed	97	82.2%
Total	118	100.0%
Child's Age		
6 – 12 Months	19	16.0%
12 – 18 Months	46	39.0%
18 – 24 Months	53	44.9%
Total	118	100.0%
Has Weaning Been Done?		

Respondent Characteristics	Number (n)	Percentage (%)
Yes	83	70.3%
No	35	29.7%
Total	118	100.0%
Received Information About Weaning?		
Yes	100	100.0%
No	0	0.0%
Total	118	100.0%
Age When Started MPASI?		
< 6 Months	62	52.5%
> 6 Months	56	47.5%
Total	118	100.0%
Source of Information		
- Health Workers	49	41.0%
- Family	36	29.7%
- Others	34	28.8%
Total	118	100.0%

Table 1 shows the characteristics of respondents in this study, which involved children aged 6–24 months at Puskesmas Cinambo, Bandung City. Based on the mothers' ages, the majority fall within the 17–25 year range (42.4%). Most parents have low education levels (69.5%), and the majority are unemployed (82.2%). The age distribution of the children indicates that most are in the 18–24 month range (44.9%). Furthermore, a significant number of mothers reported having weaned their children (70.3%), with all mothers receiving information about weaning (100%). Most children were introduced to complementary foods before 6 months (52.5%), and the primary source of information regarding weaning was health workers (41%).

3.2. Description of Weaning Age in Children Aged 6–24 Months

Table 2. Weaning Age Description

Weaning Age	Number (n)	Percentage (%)
Appropriate (24 months)	40	33.9%
Inappropriate (< 24 months)	78	66.1%
Total	118	100.0%

Table 2 shows the description of weaning age among respondents aged 6–24 months, with a majority of children not weaned appropriately (66.1%), totaling 78 respondents.

3.3. Description of Nutritional Status in Children Aged 6–24 Months

Table 3. Nutritional Status Description

Nutritional Status	Number (n)	Percentage (%)
Very Poor	0	0.0%
Poor	56	47.5%
Normal	62	52.5%
At Risk	0	0.0%
Total	118	100.0%

Table 3 illustrates the nutritional status of respondents aged 6–24 months, with the majority of children classified as normal (52.5%), totaling 62 respondents.

3.4. Cross Tabulation Between Weaning Age and Nutritional Status in Children Aged 6–24 Months

Table 4. Cross Tabulation

Weaning Age	Very Poor	Poor	Normal	At Risk	Total
Appropriate	0	13 (23.2%)	27 (43.5%)	0	40 (33.9%)
Inappropriate	0	43 (76.8%)	35 (56.6%)	0	78 (66.1%)
Total	56	62	118		

From the results in Table 4, it can be seen that respondents who were weaned before 24 months had a nutritional status categorized as poor, with 43 respondents.

3.5. Relationship Between Weaning Age and Nutritional Status in Children Aged 6–24 Months

Table 5. Spearman Rank Test Results

Correlation	Coefficient	Sig (2-Tailed)
Weaning Age – Nutritional Status	-0.215	0.020

Based on Table 5, the Spearman Rank test results indicate a significant relationship between weaning age and nutritional status in children, with a significance value (Sig) of 0.020 < 0.05. This implies a significant relationship between weaning age and nutritional status among children at Puskesmas Cinambo, Bandung City. The correlation coefficient of -0.215 suggests a weak negative relationship.

3.6. Discussions

The characteristics of the respondents in this study reveal significant insights into the demographic factors influencing weaning practices and nutritional status among children aged 6–24 months at Puskesmas Cinambo, Bandung City. A majority of the mothers were in the 17–25 age range (42.4%), which corresponds to a critical period for developing effective parenting skills and nutritional knowledge. The fact that a substantial proportion of these mothers had low educational attainment (69.5%) and high unemployment rates (82.2%) suggests a socioeconomic backdrop that may limit their access to resources and knowledge essential for healthy child-rearing practices [13], [14] .These factors can lead to suboptimal feeding practices, thereby jeopardizing children's health and development.

The study's alarming finding that 66.1% of children were weaned before the recommended age of 24 months aligns with existing literature, which links early weaning to adverse health outcomes. Early weaning has been associated with a heightened risk of nutritional deficiencies, growth delays, and developmental challenges [14], [15]. Furthermore, over half of the children (52.5%) were introduced to complementary foods before six months of age, contrary to guidelines advocating for exclusive breastfeeding during this period. This raises significant concerns regarding the adequacy of nutritional intake in these young children, emphasizing the need for improved adherence to established guidelines [16].

The assessment of nutritional status revealed that 52.5% of children were classified as having a normal nutritional status, while 47.5% were found to be undernourished. This high prevalence of undernutrition mirrors findings from similar studies, highlighting the vulnerability of children in low-income settings to malnutrition, often exacerbated by inadequate weaning practices [1], [17]. The cross-tabulation analysis indicates a clear association between early weaning and poor nutritional status, reinforcing the critical need for timely and appropriate weaning practices that align with children's nutritional requirements [17].

The Spearman Rank test revealed a weak yet significant negative correlation between weaning age and nutritional status ($r = -0.215$, $p = 0.020$). While the correlation is categorized as weak, it has practical implications; even minor improvements in weaning practices could meaningfully enhance child health outcomes. For instance, interventions targeting delayed introduction to solid foods could mitigate the risks of undernutrition and developmental delays [9]. The discussion could benefit from comparison with similar studies conducted in Indonesia or other regions. For example, studies have shown comparable trends in early weaning and malnutrition in other urban and rural areas, reinforcing the need for context-specific health interventions [17], [18]. Practical recommendations include implementing community-based education programs led by Puskesmas to promote proper feeding practices. These programs could include peer-to-peer education, tailored workshops, and follow-up visits to ensure that theoretical knowledge is translated into actionable practices.

Additionally, while 41% of mothers reported receiving information about weaning from health workers, the persistence of suboptimal practices indicates a gap between knowledge dissemination and its application. Strengthening communication strategies, such as culturally tailored counseling sessions or practical demonstrations, could enhance the effectiveness of health education programs and bridge this gap [18].

Family support plays a vital role in establishing healthy feeding practices. Engaging family members in discussions about nutrition can create a supportive environment that encourages adherence to recommended practices, thereby reducing the risk of malnutrition [19]. Community-based interventions that foster collaborative discussions among family members could prove beneficial in promoting healthier feeding habits.

Moreover, the study highlights the importance of integrating nutrition education into maternal health services. Tailoring educational materials to resonate with cultural beliefs and practices surrounding weaning can help overcome barriers to proper nutrition [20]. Culturally sensitive interventions are likely to be more effective, as they address the specific needs and beliefs of the community.

In summary, this study exposes critical gaps in weaning practices among mothers in Bandung City and their implications for child nutritional status. Targeted educational programs and community health initiatives that address these gaps are essential for improving health outcomes for vulnerable populations. Future research should explore the effectiveness of specific interventions aimed at promoting optimal weaning practices while considering the unique socioeconomic and cultural contexts of families.

By continuing to engage with families and communities, health workers can play a pivotal role in shaping effective feeding practices that align with the nutritional needs of children. This collaborative approach may lead to significant improvements in child health, ultimately fostering a healthier future generation.

3. Conclusion

In conclusion, while pain management in the ICU is generally implemented optimally, significant barriers remain. These include gaps in knowledge, attitudes toward pain relief, and issues related to professional authority among nursing staff. Addressing these challenges is crucial for improving pain management practices and ensuring better patient outcomes.

To overcome these barriers, enhanced educational programs and ongoing training for nurses are essential to elevate their competence and confidence in managing pain effectively. Such initiatives can improve adherence to pain management protocols and enhance overall care quality.

The implications of this study suggest that hospitals should prioritize fostering a supportive organizational culture that empowers nurses in their roles. This could involve clearer communication strategies, improved resources, and stronger administrative support. Furthermore, public education campaigns should increase awareness of the importance of proper pain management in critical care. Policymakers should also consider implementing regulations and guidelines that support the continuous education and professional development of healthcare providers.

Future research should explore factors not fully addressed in this study, particularly the relationship between external patient factors and pain management practices. Both qualitative and quantitative studies can provide deeper insights into these dynamics, informing more comprehensive strategies for effective pain relief in critical care settings.

Expanding the scope of research will contribute to a more nuanced understanding of the challenges and

solutions in diverse healthcare environments. Ultimately, this study highlights the importance of integrating public education and policy interventions to foster a healthcare system where optimal pain management is consistently achieved.

References

[1] M. Yigezu et al., "Undernutrition and its determinants among children aged 6–59 months in Southern Ethiopia," *Scientific Reports*, vol. 14, no. 1, Sep. 2024, doi: 10.1038/s41598-024-73182-5.

[2] A. Riana, I. Harun, G. C. Irawan, and E. Amalia, " Maternal Nutrition Education Based on Maternal and Child Health (MCH) Book: Its Effect on Knowledge and Nutritional Status in Children Under Five Years of Age," *Al GIZZAI: PUBLIC HEALTH NUTRITION JOURNAL*, vol. 4, no. 2, pp. 178–188, 2024, doi: 10.24252/algizzai.v4i2.49411.

[3] D. N. Akbar, M. G. Arfananda, S. Saladin, and Rudiana, "Study of the Implementation of Autonomy and Decentralization of the Bandung City Government in the Convergence of Stunting Prevention," *Jurnal Kolaboratif Sains*, vol. 8, no.1, pp. 443-453, 2025. doi: 10.56338/jks.v8i1.6764

[4] Manullang, A. L., Sinaga, S., and Rahayu, A. P., "KORELASI ANTARA ASPEK PSIKOSOSIAL DAN SPIRITUAL DENGAN PENYAPIHAN DINI PADA ANAK USIA BADUTA: KORELASI ANTARA ASPEK PSIKOSOSIAL DAN SPIRITUAL DENGAN PENYAPIHAN DINI PADA ANAK USIA BADUTA," *Jurnal Keperawatan Wiyata*, vol. 2, no. 1, pp. 81–90, 2021.

[5] L. Hou et al., "Impact of the Duration of Breastfeeding on the Intelligence of Children: A Systematic Review with Network Meta-Analysis," *Breastfeeding Medicine*, vol. 16, no. 9, pp. 687–696, Sep. 2021, doi: 10.1089/bfm.2020.0364.

[6] T. Idayanti et al., Ed., "*Pentingnya Asi Eksklusif Dan Mp-Asi Di Masa Pertumbuhan Golden Period*,". Bandung, Jawa Barat, Indonesia: CV. MEDIA SAINS INDONESIA, 2023.

[7] P. A. Pramayoza, "PENGARUH MOBILISASI DINI TERHADAP TINGKAT NYERI PADA PASIEN POST LAPARATOMI DI RSUP DR M DJAMIL PADANG," *Doctoral dissertation, Fakultas Keperawatan, Universitas Andalas*, 2023.

[8] S. Bintanah, M. Maskhanah, F. S. Nadia, and S. H. S. Putri, "Pengaruh Pemberian F 100 Terhadap Perubahan Berat Badan pada Balita Gizi Buruk di Rumah Sakit Bhakti Asih Brebes," *Jurnal Gizi*, vol. 13, no. 1, p. 8, Aug. 2024, doi: 10.26714/jg.13.1.2024.8-16.

[9] J. M. F. Pinheiro et al., "Feeding practices and early weaning in the neonatal period: a cohort study," *Revista de Saúde Pública*, vol. 55, p. 63, Nov. 2021, doi: 10.11606/s1518-8787.2021055003248.

[10] O. Abolurin, O. Oyelami, S. Oseni, M. Akinlosotu, K. Sodeinde, and A. Adekoya, "Relationship between breastfeeding practices and nutritional status of children aged 6-24 months in South-west Nigeria," *Annals of Health Research*, vol. 7, no. 2, pp. 179–189, May 2021, doi: 10.30442/ahr.0702-09-128.

[11] R. A. E. L. El-Sayed, N. M. Helaly, H. M. Ramadan, and S. E. S. Saleh, "Mothers' Knowledge Regarding Weaning Practices for Their Children Aged from 6 to 24 Months," *Alexandria Scientific Nursing Journal*, vol. 24, no. 1, pp. 77–88, 2022.

[12] A. M. Metwally et al., "Promoting weaning practices and growth of Egyptian infants by using communication for behavioral development approach," *BMC Pediatrics*, vol. 22, no. 1, Dec. 2022, doi: 10.1186/s12887-022-03741-0.

[13] A. Pietravalle et al., "Incorrect Feeding Practices, Dietary Diversity Determinants and Nutritional Status in Children Aged 6–23 Months: An Observational Study in Rural Angola," *Children*, vol. 10, no. 12, p. 1878, Nov. 2023, doi: 10.3390/children10121878.

[14] P. K. Appiah et al., "Breastfeeding and weaning practices among mothers in Ghana: A population-based cross-sectional study," *PLOS ONE*, vol. 16, no. 11, p. e0259442, Nov. 2021, doi: 10.1371/journal.pone.0259442.

[15] A. A, A. Azeez, and A. S. Kumar, "Influence of Feeding Patterns on Nutritional Status of Children upto 2 Years," Influence of Feeding Patterns on Nutritional Status of Children upto 2 Years," *International Journal of Life Sciences, Biotechnology and Pharma Research*, vol. 14, no. 2, pp. 622-626, Feb. 2025, doi: 10.69605/ijlbpr_14.2.2025.116.

[16] S. Ganesan, J. Jayaraj, S. Geminiganesan, and M. Rajan, "A study on parental awareness of feeding practices in children in the age-group 12-24 months," *Journal of preventive medicine and hygiene*, vol. 62, no. 4, pp. E909–E917, 2021, doi: 10.15167/2421-4248/jpmh2021.62.4.2287.

[17] J. Pearce and S. C. Langley-Evans, "Comparison of food and nutrient intake in infants aged 6–12 months, following baby-led or traditional weaning: A cross-sectional study," *Journal of Human Nutrition and Dietetics*, vol. 35, no. 2, pp. 310–324, Sep. 2021, doi: 10.1111/jhn.12947.

[18] M. P. Akinyi and M. F. C. Achieng, "Influence of Complementary Feeding Practices on Nutritional Status of Children Between 6 to 24 Months in Kisumu County, Kenya", *Journal of Research in Social Science and Humanities*, vol. 2, no. 2, pp. 1–6, Jan. 2023.

[19] B. P. Mmbando et al., "Nutritional status of children under five years old involved in a seasonal malaria chemoprevention study in the Nanyumbu and Masasi districts in Tanzania," *PLOS ONE*, vol. 17, no. 4, p. e0267670, Apr. 2022, doi: 10.1371/journal.pone.0267670.

[20] S. M. Perdana, M. B. Butar, and M. N. H. Syah, "Study of Complementary Feeding and Children's Nutritional Status in Jambi City," *Journal of Global Nutrition*, vol. 4, no. 2, pp. 420–429, Nov. 2024, doi: 10.53823/jgn.v4i2.99.