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Maternal knowledge of the maternal and child health handbook and nutritional status among children aged 6–59 months

Syifa Syahirah Azahra*, Astri Pinilih, Debi Arivo, Nina Herlina

Fakultas Kedokteran, Universitas Malahayati
Corresponding Author: Syifa Syahirah Azahra. Email: syifaazzahra0502@gmail.com

Abstract

Background: The Maternal and Child Health (MCH) Handbook is an integrated home-based record and health-education resource that supports child growth monitoring, nutrition, vaccination, feeding practices, and early recognition of health problems. Maternal understanding of the handbook may influence how effectively its information is applied in daily childcare.
Purpose: To examine the association between maternal knowledge of the MCH Handbook and the nutritional status of children aged 6–59 months at Rajabasa Indah Public Health Center, Bandar Lampung.
Method: This cross-sectional analytic study included 100 mother–child pairs recruited through convenience sampling in 2026. Maternal knowledge was assessed using a questionnaire, and child nutritional status was determined from anthropometric measurements using the weight-for-length/height indicator. Descriptive statistics summarized the study variables, and the chi-square test assessed the association between maternal knowledge and nutritional status.
Results: Good knowledge of the MCH Handbook was reported by 82 mothers (82.0%), while 14 (14.0%) had poor knowledge and 4 (4.0%) had moderate knowledge. Eighty-three children (83.0%) had normal nutritional status, 14 (14.0%) were undernourished, and 3 (3.0%) were overnourished. Maternal knowledge was significantly associated with child nutritional status ($p < 0.001$).
Conclusion: Maternal knowledge of the MCH Handbook was associated with the nutritional status of children aged 6–59 months. Because the study was cross-sectional and several contingency-table cells were sparse, the findings indicate an association rather than a causal effect.

Keywords: Children Under Five; Maternal and Child Health Handbook; Maternal Knowledge; Nutritional Status; Primary Health Care.

INTRODUCTION

Nutritional status during early childhood is commonly assessed using standardized growth indicators. Children younger than five years undergo rapid physical growth and therefore require adequate dietary intake, appropriate feeding practices, and regular growth monitoring. The World Health Organization Child Growth Standards provide reference indicators for assessing length or height and weight relative to age and body size (World Health Organization, 2006). The continuing coexistence of undernutrition and excess weight in many low- and middle-income countries reinforces the need for evidence-based nutrition and feeding interventions (Keats, Das, Salam, Lassi, Imdad, Black, & Bhutta, 2021; Lassi, Rind, Irfan, Hadi, Das, & Bhutta, 2020; Victora, Christian, Vidaletti, Gatica-Domínguez, Menon, & Black, 2021).

Child nutritional status is shaped by multiple interacting determinants, including dietary intake, infection, household socioeconomic conditions, caregiving practices, access to health services, and caregiver knowledge. Indonesia continues to face a double burden of malnutrition among children under five, underscoring the importance of reliable growth

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assessment and caregiver education (Ministry of Health of the Republic of Indonesia, 2022).

The Indonesian Maternal and Child Health Handbook, commonly known as the Buku KIA, is an integrated record and educational resource for maternal, newborn, and child health. It contains information on growth and development, vaccination, breastfeeding, complementary feeding, nutritional monitoring, and warning signs requiring health-care attention. Mothers who understand the handbook may be better positioned to monitor growth, apply feeding guidance, attend community health services, and seek timely care (Ministry of Health of the Republic of Indonesia, 2024). Intervention and review evidence indicates that MCH handbooks and related home-based records can support service use, care practices, communication, and selected maternal and child outcomes (Aiga, Nguyen, Nguyen, Nguyen, & Nguyen, 2016; Carandang, Sakamoto, Kunieda, Shibanuma, Yarotskaya, Basargina, & Jimba, 2021; Osaki, Hattori, Toda, Mulati, Hermawan, Pritasari, Bardosono, & Kosen, 2019). Other evidence highlights potential benefits for maternal communication and bonding, while also identifying the need for nutrition information that addresses both undernutrition and overnutrition(Carandang, Sakamoto, Kunieda, Shibanuma, Yarotskaya, Basargina, & Jimba, 2022; Saito & Kondo, 2023).

Evidence regarding maternal knowledge, MCH Handbook use, and child nutritional outcomes is mixed. Maternal nutrition knowledge has been associated with child nutritional status in some settings, although findings are not uniform (Fadillah, Zuhroh, & Dewi, 2014; Forh, Apprey, & Agyapong, 2022; Prasetyo, Permatasari, & Susanti, 2023). The effect of handbook knowledge may also depend on health-worker support, education, access, reading frequency, and other contextual factors (Amir & Rahma, 2021; Cahyawati, 2020; Hasanah & Susanti, 2023; Herfanda & Subiyatun, 2021; Putra, Tanjung, Hutagalung, & Lubis, 2024).

Local evidence from Rajabasa Indah Public Health Center in Bandar Lampung remains limited. This study therefore examined the association between maternal knowledge of the MCH Handbook and the nutritional status of children aged 6–59 months attending the health center.

RESEARCH METHOD

A quantitative analytic study with a cross-sectional design was conducted at Rajabasa Indah Public Health Center, Bandar Lampung, Indonesia, in 2026. The study population comprised mothers with children aged 6–59 months in the health-center service area. A total of 100 mother–child pairs were recruited through convenience sampling.

Maternal knowledge of the MCH Handbook was the independent variable and was classified as poor, moderate, or good. Knowledge was assessed using a questionnaire developed from indicators of handbook comprehension and use.

Child nutritional status was the dependent variable and was determined from anthropometric measurements using the weight-for-length/height indicator based on the World Health Organization Child Growth Standards. Nutritional status was classified as undernutrition, normal nutritional status, or overnutrition.

Categorical variables were summarized using frequencies and percentages. Because individual-level age data were unavailable, mean ages and sample standard deviations were estimated from grouped age categories using class midpoints. The association between maternal knowledge and child nutritional status was evaluated using the chi-square test, with statistical significance set at $p < 0.05$. The study received ethical approval from the Health Research Ethics Committee, Faculty of Medicine, Universitas Malahayati (No. 5249/EC/KEP-UNMAL/IV/2026).

Syifa Syahirah Azahra[1*], Astri Pinilih[2], Debi Arivo[3], Nina Herlina[4]

Fakultas Kedokteran, Universitas Malahayati
Corresponding Author: Syifa Syahirah Azahra. Email: syifaazzahra0502@gmail.com

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RESEARCH RESULTS

A total of 100 mother–child pairs were included. Table 1 summarizes maternal and child characteristics, maternal knowledge of the MCH Handbook, and child nutritional status.

Table 1. Participant Characteristics and Study Variables (N = 100)

Variable	Results
Maternal age, years, estimated mean ± SD (grouped range)	32.84 ± 5.86 (25–50)
25–30	47 (47.0)
31–40	42 (42.0)
41–50	11 (11.0)
Highest educational attainment	
Primary school	13 (13.0)
Junior high school	13 (13.0)
Senior high school	54 (54.0)
Bachelor's degree	20 (20.0)
Occupation	
Homemaker	90 (90.0)
Self-employed worker	4 (4.0)
Merchant	4 (4.0)
Civil servant	1 (1.0)
Other occupation	1 (1.0)
Child age, months, estimated mean ± SD (grouped range)	32.55 ± 12.94 (6–59)
6–24	35 (35.0)
25–59	65 (65.0)
Child sex	
Male	58 (58.0)
Female	42 (42.0)
Maternal knowledge of the MCH Handbook	
Poor	14 (14.0)
Moderate	4 (4.0)
Good	82 (82.0)
Child nutritional status	
Undernutrition	14 (14.0)
Normal nutritional status	83 (83.0)
Overnutrition	3 (3.0)

The estimated mean maternal age was 32.84 ± 5.86 years, and the estimated mean child age was 32.55 ± 12.94 months. Most mothers were aged 25–30 years (47.0%), had completed senior high school (54.0%), and were homemakers (90.0%). Most children were aged 25–59 months (65.0%), and 58.0% were male. Good knowledge of the MCH Handbook was reported by 82 mothers (82.0%), while 83 children (83.0%) had normal nutritional status.

Table 2. Maternal Knowledge of the MCH Handbook and Child Nutritional Status (N = 100)

Maternal knowledge	Child nutritional status			Total	p-value
	Undernutrition	Normal	Overnutrition		
Poor	14 (100.0)	0 (0.0)	0 (0.0)	14 (100.0)	

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Fakultas Kedokteran, Universitas Malahayati
Corresponding Author: Syifa Syahirah Azahra. Email: syifaazzahra0502@gmail.com

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Maternal knowledge	Child nutritional status			Total	p-value
	Undernutrition	Normal	Overnutrition		
Moderate	0 (0.0)	4 (100.0)	0 (0.0)	4 (100.0)	
Good	0 (0.0)	79 (96.3)	3 (3.7)	82 (100.0)	

All mothers in the poor-knowledge category had children classified as undernourished. All mothers in the moderate-knowledge category had children with normal nutritional status. Among mothers with good knowledge, 79 children (96.3%) had normal nutritional status and 3 (3.7%) were overnourished. The reported analysis showed a statistically significant association between maternal knowledge and child nutritional status ($p < 0.001$).

DISCUSSION

Maternal knowledge of the MCH Handbook was associated with child nutritional status. This finding should be interpreted as an overall relationship rather than proof that knowledge alone determined the observed nutritional outcomes.

Mothers who understand the handbook may be better able to apply guidance on breastfeeding, complementary feeding, meal quality, growth monitoring, vaccination, and recognition of warning signs. Repeated reading and structured nutrition education have been associated with greater maternal knowledge and improved caregiving practices (Aiga et al., 2016; Prasetyo et al., 2023; Putra et al., 2024). Evidence from Indonesia also indicates that handbook use can support continuity of care, although handbook content should address both undernutrition and overnutrition (Osaki et al., 2019; Saito & Kondo, 2023). Stronger nutrition knowledge may support more appropriate feeding practices (Wangsa & Sarah, 2024). However, household food security, infection, caregiving resources, health-service access, and socioeconomic conditions may also influence child growth.

Previous evidence is mixed. Associations between maternal nutrition knowledge and child nutritional status have been reported, but not consistently across settings (Fadillah et al., 2014; Forh et al., 2022). Differences in sample composition, measurement tools, knowledge-category thresholds, local services, and nutritional-status distributions may explain variation across studies. Handbook utilization also appears to depend on health-worker support, education, access, and other contextual factors (Amir & Rahma, 2021; Cahyawati, 2020; Carandang et al., 2021; Carandang et al., 2022; Hasanah & Susanti, 2023; Herfanda & Subiyatun, 2021).

The magnitude and pattern of the association require cautious interpretation. Several cells contained zero observations, and the poor- and moderate-knowledge categories were small. These sparse data may violate assumptions of the conventional chi-square test and produce unstable results. An exact procedure for an r × c table, such as the Fisher–Freeman–Halton test, is preferable when expected cell counts are below the required threshold.

This study has several limitations. Its cross-sectional design does not establish temporal direction or causality. Convenience sampling at a single public health center limits generalizability and may introduce selection bias. The questionnaire, scoring system, category thresholds, validity, and reliability were not fully reported. The anthropometric equipment, calibration procedures, measurement protocol, and exact World Health Organization z-score thresholds also require fuller description. In addition, the analysis did not adjust for potential confounders such as maternal education, household income, food security, recent infection, feeding practices, birth history, and health-service utilization.

Despite these limitations, the findings support integrating MCH Handbook education with structured counseling and growth-monitoring services. Health workers should review the handbook with caregivers, demonstrate how to interpret growth information, and confirm understanding through teach-back. These activities should complement individualized nutritional assessment rather than replace clinical evaluation, consistent with evidence supporting

Syifa Syahirah Azahra[1*], Astri Pinilih[2], Debi Arivo[3], Nina Herlina[4]

Fakultas Kedokteran, Universitas Malahayati
Corresponding Author: Syifa Syahirah Azahra. Email: syifaazzahra0502@gmail.com

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combined nutrition education, feeding support, and broader interventions to address child malnutrition (Keats et al., 2021; Lassi et al., 2020; Victora et al., 2021).

CONCLUSION

Maternal knowledge of the MCH Handbook was associated with the nutritional status of children aged 6–59 months at Rajabasa Indah Public Health Center. Because the study was cross-sectional, used convenience sampling, and included sparse contingency-table cells, the finding should be interpreted as an association rather than evidence that maternal knowledge directly caused the observed nutritional outcomes.

SUGGESTION

Rajabasa Indah Public Health Center should strengthen structured education on the MCH Handbook during growth-monitoring and child-health visits, with particular attention to complementary feeding, interpretation of growth charts, and early referral for growth faltering. Future studies should use validated knowledge instruments, fully reported anthropometric procedures, larger probability-based or multicenter samples, exact statistical procedures when cell counts are sparse, and multivariable analyses that account for socioeconomic, dietary, infectious, and caregiving factors.

REFERENCES

Aiga, H., Nguyen, V. D., Nguyen, C. D., Nguyen, T. T. T., & Nguyen, L. T. P. (2016). Knowledge, attitude and practices: Assessing maternal and child health care handbook intervention in Vietnam. *BMC Public Health, 16*, 129.

Amir, F., & Rahma, N. (2021). Hubungan dukungan petugas kesehatan terhadap pemanfaatan Buku KIA pada masa COVID-19 di Puskesmas Cendrawasih Makassar. *Jurnal Kesehatan Delima Pelamonia, 5*(1), 50–54.

Cahyawati, F. E. (2020). Gambaran tingkat pengetahuan ibu hamil tentang pemanfaatan buku kesehatan ibu dan anak. *Media Ilmu Kesehatan, 9*(1), 40–47.

Carandang, R. R., Sakamoto, J. L., Kunieda, M. K., Shibanuma, A., Yarotskaya, E., Basargina, M., & Jimba, M. (2021). Roles of the Maternal and Child Health Handbook and other home-based records on newborn and child health: A systematic review. *International Journal of Environmental Research and Public Health, 18*(14), 7463.

Carandang, R. R., Sakamoto, J. L., Kunieda, M. K., Shibanuma, A., Yarotskaya, E., Basargina, M., & Jimba, M. (2022). Effects of the Maternal and Child Health Handbook and other home-based records on mothers' non-health outcomes: A systematic review. *BMJ Open, 12*(6), e058155.

Fadillah, E. P., Zuhroh, I. N., & Dewi, R. S. (2014). Hubungan pengetahuan ibu tentang gizi balita dengan kejadian status gizi balita bawah garis merah (studi di Desa Kendalsari, Kecamatan Sumobito, Kabupaten Jombang). *Jurnal Kebidanan, 4*(1).

Forh, G., Apprey, C., & Agyapong, N. A. F. (2022). Nutritional knowledge and practices of mothers/caregivers and its impact on the nutritional status of children 6–59 months in Sefwi Wiawso Municipality, Western-North Region, Ghana. *Heliyon, 8*(12), e12330.

Hasanah, M., & Susanti, D. (2023). Faktor-faktor yang berhubungan dengan pemanfaatan Buku Kesehatan Ibu dan Anak (KIA) oleh ibu hamil. *Jurnal Akademika Baiturrahim Jambi, 12*(2), 465–472.

Herfanda, E., & Subiyatun, S. (2021). Gambaran pemanfaatan buku kesehatan ibu dan anak (KIA) oleh ibu hamil trimester III tentang persiapan persalinan di Puskesmas Tempel 1. *Jurnal Kebidanan, 10*(2), 129–139.

Keats, E. C., Das, J. K., Salam, R. A., Lassi, Z. S., Imdad, A., Black, R. E., & Bhutta, Z. A. (2021). Effective interventions to address maternal and child malnutrition: An update of the evidence. *The Lancet Child & Adolescent Health, 5*(5), 367–384.

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Corresponding Author: Syifa Syahirah Azahra. Email: syifaazzahra0502@gmail.com

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Lassi, Z. S., Rind, F., Irfan, O., Hadi, R., Das, J. K., & Bhutta, Z. A. (2020). Impact of infant and young child feeding nutrition interventions on breastfeeding practices, growth and mortality in low- and middle-income countries: Systematic review. *Nutrients, 12*(3), 722.

Ministry of Health of the Republic of Indonesia. (2022). *Results of the 2022 Indonesian Nutritional Status Survey (SSGI)*. Retrieved from: https://repository.badankebijakan.kemkes.go.id/id/eprint/4855/

Ministry of Health of the Republic of Indonesia. (2024). *Maternal and Child Health Handbook (KIA), 2024 edition*. Directorate General of Public Health. Retrieved from: https://kesprimkom.kemkes.go.id/assets/uploads/contents/others/Buku_KIA_2024.pdf

Osaki, K., Hattori, T., Toda, A., Mulati, E., Hermawan, L., Pritasari, K., Bardosono, S., & Kosen, S. (2019). Maternal and Child Health Handbook use for maternal and child care: A cluster randomized controlled study in rural Java, Indonesia. *Journal of Public Health, 41*(1), 170–182.

Prasetyo, Y. B., Permatasari, P., & Susanti, H. D. (2023). The effect of mothers' nutritional education and knowledge on children's nutritional status: A systematic review. *International Journal of Child Care and Education Policy, 17*, 11.

Putra, M. I. T., Tanjung, I. C. D., Hutagalung, S. V., & Lubis, A. P. (2024). Pengaruh frekuensi membaca Buku Kesehatan Ibu dan Anak terhadap pengetahuan ibu. *Sari Pediatri, 25*(6), 371–377.

Saito, A., & Kondo, M. (2023). Maternal and Child Health handbook and under-6 child overweight in greater Jakarta, Indonesia: A cross-sectional web-based survey. *BMC Nutrition, 9*, 40.

Victora, C. G., Christian, P., Vidaletti, L. P., Gatica-Domínguez, G., Menon, P., & Black, R. E. (2021). Revisiting maternal and child undernutrition in low-income and middle-income countries: Variable progress towards an unfinished agenda. *The Lancet, 397*(10282), 1388–1399.

Wangsa, S. M., & Sarah, D. M. (2024). Hubungan pengetahuan ibu tentang status gizi dan pemberian MP-ASI. *Jurnal Kedokteran STM (Sains dan Teknologi Medik), 7*(1), 8–14

World Health Organization. (2006). *WHO child growth standards: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: Methods and development*. Retrieved from: https://www.who.int/publications/i/item/924154693X

Syifa Syahirah Azahra[1*], Astri Pinilih[2], Debi Arivo[3], Nina Herlina[4]

Fakultas Kedokteran, Universitas Malahayati
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