ORIGIAL RESEARCH ARTICLE

Effectiveness of the 'Marpokkat' community-based care intervention model on stunting in Mandailing Natal (Madina) District, Indonesia

DOI: 10.29063/ajrh2025/v29i9.17

Siti S. Nasution[*]*, Farida L.S.S. Erniyati and Siti Z. Nasution*

Department of Maternity and Pediatric Nursing, Faculty of Nursing, Universitas Sumatera Utara, Medan, Indonesia.

***For Correspondence:** Email: *siti.saidah@usu.ac.id* ; Phone: +6281284525427

Abstract

This study analysed the impact of a Marpokkat intervention on the health status of stunted/non-stunted children. This study was quantitative with a quasi-experimental post-test-only design. Intervention with health counselling about stunting in accordance with the cultural and social aspects of the surrounding community involves community and traditional leaders. The population comprised mothers and families who had children aged five years, with a total population of 250, with a sample of 86 respondents consisting of intervention and control groups. The instrument contained demographic data and the status of stunted/non-stunted children using the Child Anthropometry Standard. Data were analysed using univariate and bivariate statistical tests with the chi-square test. The intervention results were significant (p=0.001); (odds ratio [OR]: 9.759). This program will improve children's health status and prevent stunting *(Afr J Reprod Health 2025; 29 [9]: 184-190)*

Keywords: Stunting, Community, Socio-Cultural, Care

Résumé

Cette étude a analysé l'impact d'une intervention Marpokkat sur l'état de santé des enfants souffrant ou non d'un retard de croissance. Il s'agit d'une étude quantitative avec une conception quasi-expérimentale post-test uniquement. L'intervention, qui consiste à donner des conseils de santé sur le retard de croissance conformément aux aspects culturels et sociaux de la communauté environnante, fait intervenir les chefs communautaires et traditionnels. La population était composée de mères et de familles ayant des enfants âgés de cinq ans, soit une population totale de 250 personnes, avec un échantillon de 86 répondants répartis entre les groupes d'intervention et de contrôle. L'instrument contenait des données démographiques et le statut des enfants souffrant ou non d'un retard de croissance selon la norme d'anthropométrie de l'enfant. Les données ont été analysées à l'aide de tests statistiques univariés et bivariés avec le test du chi-carré. Les résultats de l'intervention étaient significatifs (p=0,001) ; (odds ratio [OR] : 9,759). Ce programme permettra d'améliorer l'état de santé des enfants et de prévenir les retards de croissance. *(Afr J Reprod Health 2025; 29 [9]: 184-190).*

Mots-clés: Retard de croissance, communauté, socioculturel, soins

Introduction

Stunting refers to chronic undernutrition during the growth and development of children in early life. This situation is represented by a height-for-age (height/age) z-score of less than -2 standard deviations (SD) based on growth according to WHO.[1] Stunting (short stature) is an indication of a lack of nutritional intake, both in quantity and quality that is not fulfilled for a long time, including from the womb.[2] This condition causes children to have a short height for their age.[3] In addition to a short body, stunting also has both short and long term impacts on children.[4] The short-term impact is observed in childhood—stunted development, cognitive decline, decreased immune function, and disease susceptibility.[4,5] The long-term impact is observed in adulthood—stunted children will develop with a slow mindset, the risk of degenerative diseases, such as diabetes mellitus, coronary heart disease, hypertension, and obesity.[6] Currently, Indonesia is one of 117 countries in the world with high nutritional problems in children aged ≤5. The Global Nutrition Report 2014 Nutrition Country Profile Indonesia reported stunting, wasting, and overweight.[7,8] Of them, stunting is the biggest problem with an incidence of ~37.2%.[6,9] The government continues to show seriousness in reducing the prevalence of stunting in Indonesia, especially in North Sumatra, which is

a priority for implementing the national action plan to accelerate the reduction of stunting in Indonesia.[10,11] Based on data from the Indonesian Nutrition Status Survey (SSGI) issued by the Indonesian Ministry of Health, the incidence of stunting in North Sumatra reached 25.8%. The target for 2024 must decrease to only 10%.[12] The highest number of stunting cases in North Sumatra is in Mandailing Natal Regency at 47.7%.[13]

Many factors cause stunting, including the socioculture of the community and parenting or childcare in the family. Many people in Madina district still adhere to a hereditary culture in healthcare that is applied in everyday life, including maternal care, childbirth, and newborn care. There are still several community beliefs and cultures that are inappropriate and do not support health, such as abstinence from certain foods, myths, and prohibitions of colostrum breastfeeding. Therefore, we aimed to create a model to overcome stunting health problems in Mandailing Natal District by examining socio-culture and involving the community directly.

Cultural values are concepts that function as a guide that gives orientation and direction to its citizens.[17,18] Women of reproductive age with low social support are 5.4 times at risk of having negative behaviour in needing reproductive health services.[19]

Infant illness and death caused by cultural perceptions that do not result in good conditions are still commonly found in various places in Indonesia.[20] Health status can be determined with the following indicators: illness, infant mortality, and nutritional status.[21,22] Good conditions are still commonly found in various places in Indonesia.[10] The Madina community has several family habits that adhere to traditions and culture in childcare, including in feeding babies and children.[14] There are still many food restrictions and treatments that affect child nutrition.[15]

The role of community leaders and village officials still influences the behaviour of the Madina community.[16] Therefore, it is important to further study the life and behaviour of the community in Mandailing Natal.[13]

One of the factors that influence health status including in terms of fulfilling family nutrition is the socio-culture of the community.[6] Culture is a characteristic that affects behaviour and habits.[17]

Methods

The study protocol was approved by the Institutional Research & Ethics Committee of the University of Sumatera Utara with the study protocol code 1015/KEPK/USU/2022. This clinical research was performed following the ethical principles for medical research involving human subjects in accordance with the Helsinki Declaration 2013.[24]

The study design is quantitative with a quasi-experimental post-test-only design.[25] This design aims to find a causal relationship with the involvement of research in manipulating the independent variable.[26] The research site was the Mandailing Natal District. The study population comprised 86 mothers (43 intervention and 43 control groups) with children aged 1–60 months. The intervention group was given health counselling activities on stunting for one month, with eight meetings delivered in the local language (Mandailing language; the material was given by traditional leaders or community leaders who had previously been trained and provided an understanding of stunting, causes, risk factors, consequences, prevention, and treatment methods). This activity was referred to as the Marpokkat Health Intervention. The program was evaluated after six months by assessing the health status of children by measuring height and weight and determining the possibility of stunting risk. Instrument collected demographic data and respondent characteristics which is Age, Number of Children, Education, Occupation, Family Support and Counselling and children's health status to assess the state of stunting or not assessed by the results of the assessment of children's age, height and weight using Anthropometric Measurements (height/ age or weight / age) <-2 SD based on the WHO curve. Data were analysed conducted using univariate statistical tests for demographic data and Health status of stunted or non-stunted children, while bivariate to measure the impact of the intervention using the Chi Square test.

Results

The distribution of maternal respondent characteristics was mostly > 35 years of age (66.3%). Parity/number of children was >1, multipara was 72.1%, and the educational status of

Table 1: Distribution of respondents based on maternal characteristics in the intervention group and control group (n = 43, n 2 = 43, total = 86)

Characteristics	Intervention group (n1)	%	Control group (n2)	%	Total (n)	%
1. Age						
<35 years	16	37.2	13	30.2	29	33.3
>35 years	27	62.8	30	69.8	57	66.3
2. Number of children						
1	13	30.2	11	25.6	24	27.9
> 1	30	69.8	32	74.4	62	72.1
3. Education						
Low	18	41.9	23	53.5	41	47.7
High	25	58.1	20	46.5	45	52.3
4. Occupation						
Not working	6	14	8	18.6	14	16.3
Working	37	86	35	81.4	72	83.7
5. Family support						
Not supportive	5	11.6	7	16.3	12	14
Support	38	88.4	36	83.7	74	86
6. Counselling						
Never	32	74.4	31	72.1	63	73.3
Ever	11	25.6	12	27.9	23	26.7

Table 2: Distribution of respondents based on maternal characteristics with health status of stunted children in the intervention group and control group (n = 43, n 2 = 43, total = 86

Characteristics	Child Health Status				Total		P
	Stunting		Not Stunted		(n)	(%)	
	(n)	(%)	(n)	(%)			
Intervention Group							
Age							
<35 years	23	53.5	1	2.3	24	100	0.719
>35 years	18	41.9	1	2.3	19	100	
Number of Children							
1	12	27.9	1	2.3	13	100	0.857
> 1	29	67.4	1	2.3	30	100	
3. Education							
Low	23	53.3	2	4.7	23	100	1.000
High	18	41.9	0	0	20	100	
4. Occupation							
Not working	26	60.5	1	2.3	30	100	1.000
Employed	15	34.9	1	2.3	13	100	
5. Family support							
Not supportive	20	46.5	2	4.7	5	100	0.596
Support	21	48.8	0	0	38	100	
6. Counselling							
Never	31	72	2	4.7	32	100	0.303
Ever	10	23.3	0	0	11	100	
Control Group							
1. Age							
<35 years	15	34.9	3	7	23	100	1.191
>35 years	19	44.2	6	14	20	100	
2. Number of Children							
1	11	25.6	2	4.7	11	100	0.657
> 1	23	53.5	7	16.3	22	100	
3. Education							

Low	22	51.2	9	20.9	19	100	0.583
High	12	27.9	0	0	24	100	
4. Occupation							
Not working	17	39.5	1	2.3	33	100	0.815
Employed	17	39.5	8	18.6	10	100	
5. Family support							
Not supportive	24	55.8	9	20.9	7	100	1.000
Support	10	23.3	0	0	36	100	
6. Counselling							
Never	27	62.8	9	20.9	30	100	0.925
Ever	7	16.3	0	0	13	100	

Table 3: Distribution of health status of stunted children in the intervention group (marpokkat programme) and control group in madina district (n = 86)

Group	**Not Stunted**		**Stunting**		**P Value**	**OR (95 %)**
	N	**%**	**N**	**%**		
Intervention	41	95.3	2	4.7	0.001	9.759
Control	34	79.1	9	20.9		(3.619 - 26.314)
Total	75	87.2	11	12.8		

both groups was almost evenly distributed between low education and higher education. Low education refers to the mother's educational level, which ranged from elementary to junior high school. According to Indonesian government regulations, nine years of compulsory education is considered low. Higher education extends from high school to university. A mother's education level is also a determining factor, as mothers with higher education are typically better able to understand and implement better parenting, feeding, and hygiene practices, thus reducing the risk of stunting.[27] Regarding employment status, most were employed (83.7 %). Family habits mostly supported taking care of children to avoid stunting (86 %). The mothers had never received health information or counselling about stunting (73.3 %).

There was no relationship between maternal age and the incidence of stunting as mothers in the intervention group aged <35 years with the status of stunting children obtained a P value of 0.719, while the control group obtained a P value of 0.191. There was no significant relationship between the number of children and stunting health status as mothers who gave birth to their first child in the intervention group had a P value of 0.857, whereas those in the control group had a P value of 0.657. There is no relationship between maternal educational level and the incidence of stunting as maternal education level in the intervention group had a P-value of 1.000, and that in the control group had a P-value of 0.583. Maternal employment status in the intervention group had a P value of 1.000, whereas in the control group, the P value was 0.815, indicating no significant relationship between maternal employment status and stunting health status. Family support in the intervention group had a value of P value = 0.596, while in the control group, value = 1.000, indicating that there was no significant relationship between family support and the incidence of stunting. Mothers in the intervention group had a P value of 0.303, while in the control group, the P value was 0.925, indicating that there was no significant relationship between mothers who had received previous counselling and the incidence of stunting.

In the intervention group, 41 (95.3%) children were stunted and 2 (4.7%) were not stunted. Whereas in the control group, 34 people (79%) were not stunted and 21 people (77.5%) were stunted.

Both groups showed a P value of 0.001, indicating that the 'Marpokkat' programme effectively and meaningfully improved the health status of children and reduced the incidence of stunting. The odds ratio (OR) value was 9.759 (3.619–26.314), implying that mothers who participated in the program had the opportunity to avoid stunting their children by 10 times compared to mothers who did not participate in the program.

Discussion

Childcare is related to the socio-cultural community and family customs including feeding and fulfilling

child nutrition.[11] The intervention programme provided based on the socio-culture of the 'Marpokkat' community was designed to improve children's health status based on Mandailing community culture. The model examines the community's sociocultural habits related to pregnancy and childbirth, as well as postpartum and infant care. We examined the language of instruction in daily life.[15] We analysed figures/role models in the community that influence decision-making related to healthcare. We analysed community perceptions (pregnant women, traditional leaders) related to customs or culture.[16] We formed a team to address stunting issues from elements of the community appointed by deliberation (Marpokkat). The team conducted counselling led by community leaders using the local language of Mandailing by making leaflets and posters. The 'Marpokkat' programme was effective and beneficial in improving children's health status to prevent stunting. The results of the OR value were 9.759 (3.619–26.314), meaning that mothers who participated in the program had the opportunity to avoid the status of stunting children by 10 times compared with mothers who did not participate in the program.

This result is in accordance with reported about the process of adjusting to the role of motherhood is very vulnerable to emotional disturbances, especially during pregnancy, childbirth, postpartum and breastfeeding, so a strong and consistent support system is required from the husband or partner.[24] In nursing services, support from the husband is based on the concept of family-centred care which plays an important role in providing comprehensive maternity nursing care.[28] Maternal knowledge should also be regularly improved through comprehensive education or counselling on the principles of child feeding.[18]
Husbands or other family members must be educated to provide social support in feeding practices.[26] Social support in the form of providing motivation through home visits also needs to be done to increase mothers' self-efficacy and overcome barriers in feeding practices in feeding practices.[20] Furthermore, breastfeeding education aimed at fathers can effectively result in various positive impacts related to breastfeeding practices.[1] Prevention of stunting is an important step that must be done early, because the first 1000 days of life, including pregnancy, is a critical period for optimal growth and development of children.[29] This prevention effort emphasises the importance of adequate nutritional intake, both macronutrients and micronutrients, for pregnant women. Supplementation with zinc, iron, and folic acid helps prevent stunting by supporting optimal foetal development.[29] Health education must be imparted to pregnant women through audiovisual media about nutrition and health. Regular weight monitoring of pregnant women is also important to ensure healthy weight gain during pregnancy.[29] The mother's education and economic status also influence the risk of stunting. Mothers with low education have a higher risk of giving birth to stunted children, so there is a need for interventions that also target this group.[29]
Health education on prenatal nutritional needs, the importance of nutrition during pregnancy, and its impact on pregnancy outcomes needs to be conducted to address misconceptions, improve understanding, and update health education guidelines according to the latest findings. Furthermore, awareness of the nutritional benefits of local foods should be increased, and farmers should be encouraged to increase the production and availability of local foods that have high nutritional value for pregnant women.[30] The majority of mothers expressed that they wanted positive support without comparing them to other mothers and appreciated support from professionals.[14] Social support provided in consideration of the mother's feelings and expectations during breastfeeding can have a positive impact on breastfeeding success.[11] Therefore, social and behavioural interventions are needed to educate and encourage family, friends, relatives, and others to provide optimal social support to breastfeeding mothers.[13] Handling stunting in children and pregnant women requires a comprehensive approach that covers various aspects, including nutrition fulfilment, parenting, and community empowerment.[31] In pregnant women, handling is performed by ensuring adequate nutritional intake, including the provision of nutritious food through puskesmas or community programmes.[31] Parenting is also important because children are highly dependent on parental care and attention. Moreover, social and educational approaches are needed, as stunting is often influenced by a lack of access to basic services such as clean water, education, and health services.[31] Educating the community about the dangers of stunting and how to prevent it is important so that people are more aware of and able to implement practices that support child development.[31] An

integrated approach from the individual to the community level for handling stunting must be implemented continuously and in coordination with the government. This study showed that 10% of the mothers had breast milk protein levels exceeding 0.9 g/100 mL, with significant associations between maternal age, energy and protein intake, and breast milk protein levels. Maternal diet, especially energy and protein intake, directly affects the protein content of breast milk. Therefore, support from family and loved ones is essential to encourage mothers to increase their daily intake through the consumption of nutritionally balanced and varied foods.[11] Health workers play a unique role in assessing and encouraging attachment behaviours. It is important to improve practice at the middle level, such as the development and management of social support, as well as at the micro level, that is, working directly with pregnant women and expectant parents before birth.[23] Based on previous research, several factors can influence mothers in exclusive breastfeeding, such as knowledge, values or norms, social, work support, childcare, and health services. Therefore, pregnant women should improve and support the success of exclusive breastfeeding after childbirth.[20]

The limitations of this research are determining the meeting schedule with respondents, because the majority work as farmers from morning to evening, then difficulties in terms of data collection due to language barriers, where the research community uses the local language and there are still several respondents who have difficulty understanding the Indonesian language, so communication is assisted by an interpreter.

Conclusion

Overall, providing health education by involving families and focusing on the social culture of the community exerts a positive effect. Marpokkat Intervention had an impact on improving children's health status and reducing the incidence of stunting in Mandailing Natal district ($P < \alpha$, 0.05).

Acknowledgments

The authors grateful to Universitas Sumatera Utara Rector and Head of Institutional Research. This research was funded by Universitas Sumatera Utara.

Contributor of authors

The writing of this manuscript was carried out in collaboration with colleagues with the same knowledge in the nursing field. Siti Saidah Nasution as the first author is the person responsible for coordinating every activity and coordinating every series of activities during data collection to data analysis, contributing to discussions with the team, responsible for publication procedures, the second author Erniyati as the party responsible for implementing the intervention, distributing questionnaires and also involved in data processing. The third author, Farida Linda Sari Siregar conducted the survey and coordinated with the community government regarding stunting issues, and the fourth author, Siti Zahara Nasution, contributed to the manuscript's preparation, including determining appropriate references and the citation process. The entire article was finalized by the first author, Siti S Nasution, who is responsible for the research. All authors involved have approved the completion of this manuscript

References

1. WHO. Global Strategy on Infant and Young Child Feeding. Switzerland: World Health Organzation; 2016. p.15-24.
2. Anggorowati, Widiasih. R, Restuning, and Nasution SS. Asuhan Keperawatan Maternitas Antepartum Diagnosis Nanda-1 Hasil NOC Tindakan NIC. 2019. Buku Kedokteran EGC.
3. Anisa Paramitha. Faktor-Faktor yang Berhubungan dengan Kejadian Stunting pada Balita Usia 25-60 Bulan di Kelurahan Kalibaru Depok. 2012. Universitas Indonesia
4. Aryanti. Hubungan Pola Asuh Makan Dan Kesehatan Dengan Status Kesehatan Anak Balita. 2010. Medan: USU
5. Depkes RI. Pemantauan Pertumbuhan Anak. Direktorat Gizi Masyarakat. Jakarta. www.depkes.go.id, 2010. accessed on May 10, 2025.
6. MCA Indonesia. Stunting dan Masa Depan Indonesia. In Millennium Challenge Account - Indonesia. 2014.
7. Departemen Kesehatan Republik Indonesia.Pedoman gizi seimbang. Jakarta: Depkes RI; 2021.
8. IFPRI. Global Nutrition Report 2014: Action and Accountability to Accelerate the. 2014.
9. Unicef Indonesia. Ringkasan Kajian Gizi Ibu dan Anak. 2023.
10. Dinkes RI. Status Gizi Anak dengan Pemberian Makanan Tambahan. 2018. Jakarta: EGC.
11. Nasution SS, Girsang, B, and Hariati. Evaluation of the Effect of Sociocultural Factors on the Children Stature in Langkat Regency, Indonesia. Open Access Macedonian Journal of Medical Sciences. 2021. May

24; 9(E):461-466. https://doi.org/10.3889/oamjms.2021.6132. eISSN: 1857-9655
12. Almatsier H. Prinsip Dasar Ilmu Gizi. 2010. Jakarta: PT. Gramedia Pustaka Utama.
13. Dinas Kesehatan Kabupaten Madina. Profil Kesehatan Ibu dan Anak Kabupaten Mandailing Natal Provinsi Sumatera Utara. 2023
14. Nasution SS, Badaruddin B, Dasatjipta G, and Lubis, Z. Effectiveness of the Health Awareness Community Team Intervention in Improving the Maternal and Neonatal Health Status in Mandailing Natal (Madina) Sumatera Utara Indonesia. 2015. Int J Med Sci Public Health, 4(6), 799-804.
15. Nasution SS, and Erniyati. The Intervention of Community Role for Improving Health Status of Pregnant Woman Suffering HIV-AIDS in Medan. Open Acces Mecodenian Journal of Medical Sciences. 2018. Nomor, Volume: 6, 9, September.
16. Nasution SS. Asuhan Keperawatan pada Ibu Hamil Resiko Tinggi : HIV-AIDS dengan Melibatkan Masyarakat. 2018. USU Press
17. Triatmaja NT, Mahmudiono T, and Indriani D. 2024. Factors related to feeding practices of mothers to prevent stunting based on social-cognitive theory construct: A scoping review. African Journal of Reproductive Health, 28(10), 282–292. https://doi.org/10.29063/ajrh2024/v28i10s.32
18. Nurmaini N, Sudaryati E, Martilova D, and Sitepu R. 2024. Behavioural determinants of women of reproductive age in the indigenous Talang Mamak Ethnic group. African Journal of Reproductive Health. https:// doi.org/10.29063/ajrh2024/v28i2.6
19. Simanjuntak BY, Yunita Y, Krisnasary A, Anisa A, and Sukmawati N. 2024. Food intake of breastfeeding mothers versus protein content of breastmilk in the coastal area of Bengkulu, Indonesia. African Journal of Reproductive Health, 28(5), 22–29. https://doi.org/10.29063/ajrh2024/v28i5.3
20. Mazúchová L, Kelčíková S, Maskalová E, Malinovská N, and Grendár M. Mother-infant bonding and its associated factors during postpartum period. Kontakt. 2021. 23(2), 126–132. https://doi.org/10.32725/kont.2021.018
21. Siregar FLS, and Nasution SS. (2023). Effect of Seven-contact Breastfeeding on the Knowledge, Motivation, and Ability of Breastfeeding during the First Eight-weeks Postpartum.
22. Kanikwu PN, Jimmy JA, and Emesowum AC. Nutrition in pregnancy and pregnancy outcome in two primary health centres, okpanam. Kontakt. 2021. 23(1), 25–32. https://doi.org/10.32725/kont.2021.004
23. World Medical Association Declaration of Helsinki, 2013. Ethical Principles for Medical Research Involving Human Subjects. Seoul: World Medical Association.
24. Ajike SO, Ogunsanmi OO, Chinenye-Julius AE, Dangana JM, and Mustapha MM. Effect of a breastfeeding educational programme on fathers' intention to support exclusive breastfeeding: A quasi-experimental study. African Journal of Reproductive Health, 2020. 24(3), 59–68. https://doi.org/10.29063/ajrh2020/v24i3.7
25. Arikunto, S. (2002). Prosedur penelitian. 5th ed. Jakarta : Rineka Cipta.
26. Polit, D. F., Beck, C.T., & Hungler, B. P. (2001). Essensial of Nursing research: Methodes, appraisal,and utilization. Philadelphia : Lippincott.
27. Tyanii, Setyawati A, resmi D, Khoiriyah S., Indriani F, and Romdiyah R, "Pengaruh edukasi 1000 hari pertama kehidupan sebagai upaya pencegahan stunting terhadap pengetahuan dan sikap ibu hamil", *jurnal ilmiah kesehatan*, vol. 13, no. 1, pp. 25-32, may 2023.
28. Eker A, Beşen MA, and Vayisoğlu SK. Support experiences of mothers with breastfeeding problems: A qualitative study. African Journal of Reproductive Health. 2022. 26(7), 102–111. https://doi.org/10.29063/ajrh2022/v26i7.11
29. Marni M, Soares D, Wahyudi T, Irfan M, and Nurul S. (2022). Analysis Stunting Prevention and Intervention: A Literatur Review. Proceedings of the International Conference on Nursing and Health Sciences, 3(1), 27–36.
30. Alfiben, 2000. Efektifitas Peningkatan Dukungan Suami dalam Menurunkan Terjadinya Depresi Postpartum. Majalah Obstetric Ginaecology Indonesia. Volume 24. Nomor 4.
31. Irfan HM, Rahmawati I, and Tri ID. (2023). Strengthening Posyandu Institutions in Handling Stunting Problems. Indonesian Journal of Adult and Community Education, 2(1), 7–9.

.