



Factors Influencing Health Practices Among Mothers with Children Aged 0–5 Years in the Working Area of Sirait Public Health Center, Nainggolan District, Samosir Regency

Dewi R. Bancin¹, Friska Megawati Sitorus¹, Sharfina Haslin¹, Muhammad Syafii²

¹University of Sari Mutiara Indonesia, Medan, Indonesia

²Institute of Medistra Health, Lubuk Pakam, Indonesia

Email correspondence: dewi_bancin@gmail.com

<p>Track Record Article</p> <p>Revised: 5 January 2026 Accepted: 28 February 2026 Published: 31 March 2026</p> <p>How to cite : Bancin, D. R., Sitorus, F. M., Haslin, S., & Syafii, M. (2026). Factors Influencing Health Practices Among Mothers with Children Aged 0–5 Years in the Working Area of Sirait Public Health Center, Nainggolan District, Samosir Regency. <i>Contagion : Scientific Periodical of Public Health and Coastal Health</i>, 8(1), 259–272.</p>	<p style="text-align: center;">Abstract</p> <p><i>Maternal and child health is an important indicator in assessing the degree of public health. The toddler period (0–5 years) is a critical period that determines the quality of life of children in the future. Samosir Regency still faces various challenges in maternal health practices, especially related to low exclusive breastfeeding coverage and posyandu visits. This study aims to analyze the factors that influence health practices among mothers with toddlers in the working area of the Sirait Community Health Center in Nainggolan District. This study is an analytical survey with a cross-sectional study design. This study was conducted in the working area of the Sirait Community Health Center in Nainggolan District, from August to September 2025. The study population consisted of all mothers with children aged 0-5 years. The study sample consisted of 120 pregnant women, as the sampling technique used was purposive sampling. Data analysis consisted of three stages, namely univariate analysis, bivariate analysis using chi-square, and multivariate analysis using multiple logistic regression with a significance level of 95% ($\alpha=0.05$). The results showed that the level of mothers knowledge about the concept of health ($p=0.001$; $Exp.B=28.842$), mothers perceptions of health and disease ($p=0.012$; $Exp.B=11.184$), access to health services ($p=0.003$; $Exp.B=0.409$, 95% CI: 1.323-2.445) together influence health practices among mothers with children aged 0-5 years in the working area of the Sirait Community Health Center, Nainggolan District, Samosir Regency. It can be concluded that knowledge, perception, and access to health services play an important role in shaping the health practices of mothers with young children. It is recommended that the Community Health Center and the Health Office improve maternal and child health education, expand access to services, and strengthen communication between health workers and the community to encourage the implementation of innovative health practices at the family level.</i></p> <p>Keywords: Health Practices, Knowledge, Perception, Access.</p>
--	--

INTRODUCTION

Maternal and child health is an important indicator in assessing the health status of a country. Early childhood, especially ages 0-5, is a critical period that determines the quality of life of children in the future. During this period, babies are very vulnerable to various health problems due to their immature immune systems and complete dependence on parental care, especially from their mothers (World Health Organization, 2023).

According to the Ministry of Health of the Republic of Indonesia, the Infant Mortality Rate (IMR) in Indonesia remains a serious concern, with a rate of 21.12 per 1,000 live births in 2022. The highest proportion of infant deaths occurs during the neonatal period (0-28 days), reaching 15.49 per 1,000 live births (Ministry of Health of the Republic of Indonesia, 2023).

The main issues affecting this rate include delays in recognizing danger signs, delays in decision-making, and limited access to adequate health services. This situation highlights the importance of optimal health practices by mothers in caring for their babies during the first months of life.

North Sumatra Province recorded an infant mortality rate of 18 per 1,000 live births in 2023, with significant disparities between districts/cities (North Sumatra Provincial Health Office, 2023). Samosir District, as one of the island districts with unique geographical characteristics and limited access to health services, faces its own challenges in reducing infant mortality rates. Data from the Samosir District Health Office in 2022 shows that the coverage of complete neonatal visits has only reached 76.3%, still below the national target of 90% (Samosir District Health Office, 2023).

Health practices for mothers with children aged 0-5 years cover various important aspects, including complete basic immunizations, growth and development monitoring, infection prevention, and regular use of health services (United Nations Children's Fund, 2024). Research conducted by Supriani et al. (2022) shows that good health practices can reduce the risk of morbidity and mortality in infants by up to 60%, but in reality, many mothers still do not implement health practices optimally.

Various factors are known to influence maternal health practices in caring for toddlers. These factors include mothers knowledge about child health, education level, family economic status, support from husbands and families, access to health facilities, and the influence of local culture and beliefs (Rehing et al., 2021). Research conducted by Hasibuan & Boangmanalu (2023) revealed states that low levels of maternal knowledge.

Socioeconomic factors also play a significant role in shaping maternal health practices (Rahmadani et al., 2023). Families with low economic status tend to have limited access to quality health information and services (Binuko & Fauziyah, 2024). In addition, social support from husbands, families, and the surrounding environment has been shown to increase mothers motivation to implement good health practices (Siswati et al., 2025).

The geographical characteristics of Samosir Regency as an archipelago pose health problems related to access to health services, where access to health services is also an important factor. Families with limited access to health services may face greater risks of nutritional problems (Rahmadani et al., 2023). Limited access to health facilities, especially in remote areas such as Nainggolan District, can prevent mothers from making regular visits to health posts or community health centers (Hikmahwaty et al., 2024). This condition is exacerbated by the lack of health workers and limited transportation infrastructure (Ahmad et

al., 2025). In addition to the geographical characteristics of Samosir District, cultural aspects cannot be ignored in the Samosir District area (Samosir & Nurhayati, 2025).

Samosir Regency is Bona Pasogit or the homeland of the Batak Toba people, who still apply the advice of their ancestors in their daily lives, including traditions in health, child care, and traditional medicine (Agustrisno et al., 2023; Samosir & Nurhayati, 2025). The Batak people, who are steeped in traditions and beliefs passed down from generation to generation, often have baby care practices that differ from modern medical recommendations (Sidabutar, 2022).

The results of research by Situmorang & Saragih (2021), state that traditional medicine is more trusted than conventional medicine. This is due to the Batak community living with strong customs and traditions and residing in forest areas with geographical and natural factors that make the community highly dependent on customs, beliefs, and knowledge that traditional (conventional) medicine is more trusted than modern (innovative) medicine.

The Sirait Community Health Center, as the primary health facility in Nainggolan District, plays a strategic role in providing maternal and child health services. However, data from the Sirait Community Health Center shows that there are still various problems related to maternal health practices. The Batak Toba community still believes in reducing a child's fever by blowing on them using spices such as jerango, turmeric, and candlenut, which are chewed first and then blown onto areas of the baby's body that are considered to be the center of the illness, such as the waist, chest, knees, palms, soles of the feet, back, and forehead. In addition, the use of small iron scissors, often decorated with three-colored thread (red, white, and black), is also believed by mothers to ward off supernatural spirits that can interfere with the health of toddlers, for example when a toddler has a high fever and experiences temporary seizures. Medically, this condition is known as hyperthermia, often referred to as step.

The importance of maternal health practices in determining the health quality of toddlers requires the identification of factors that influence health practices among mothers with toddlers aged 0-5 years in the working area of the Sirait Community Health Center. Therefore, this study aims to analyze the factors that influence health practices among mothers with toddlers aged 0-5 years in the working area of the Sirait Community Health Center, Nainggolan District, Samosir Regency.

METHODS

This study used a quantitative design with a cross-sectional approach. The study was conducted in the working area of the Sirait Community Health Center, Nainggolan District, Samosir Regency, and was carried out from August to September 2025, starting from the licensing process, data collection, to analysis of the results. The population in this study consisted of all mothers with children aged 0–5 years residing in the working area of the Sirait Community Health Center. The research sample was determined based on calculations using the Slovin formula with a 10% margin of error, resulting in a research sample of 120 people. The sampling technique used purposive sampling.

Health practices carried out by mothers are concrete actions taken by mothers in caring for children aged 0–5 years related to health services through innovative approaches (modern health services such as integrated health service posts, community health centers, immunizations, and consultations with health workers) and conventional approaches (traditional medicine such as shamans, healers, or traditional practices passed down from generation to generation) with ordinal data measurement scales. Mothers level of understanding of the concepts of health and illness in toddlers, including knowledge about immunization, nutrition, signs of illness, environmental hygiene, and utilization of health services, where correct answers are given a score of 1 and incorrect answers are given a score of 0, with categories of Good ($\geq 75\%$ total correct score) and Not Good ($< 75\%$ total correct score) and an ordinal data measurement scale. Mothers perceptions of health and illness are their views, beliefs, and attitudes regarding the health and illness of toddlers, including their trust in modern and traditional health services, where good answers are given a score of 1 and bad answers are given a score of 0, with categories of Positive ($\geq 75\%$ total correct score) and Negative ($< 75\%$ total correct score) and an ordinal data measurement scale. Mothers access to health services refers to the ease with which mothers can reach and utilize health service facilities, in terms of distance, cost, transportation, availability of health workers, and service hours, where good answers are given a score of 1 and bad answers are given a score of 0, with categories of Supportive ($\geq 75\%$ total correct score) and Not Supportive ($< 75\%$ total correct score) and an ordinal data measurement scale.

Data collection was conducted using a structured questionnaire that had been tested for validity and reliability. The questionnaire consisted of four sections: (1) mothers level of knowledge about healthy concepts, (2) mothers perceptions of health and illness, (3) mothers access to health services, and (4) health practices carried out. Data collection was conducted directly by researchers and trained enumerators. Data analysis consisted of three stages:

univariate analysis, bivariate analysis using chi-square, and multivariate analysis using logistic multiple regression with a significance level of 95% ($\alpha=0.05$). The principal investigator received a certificate of approval from the Health Research Ethics Committee of the University of Sari Mutiara Indonesia (No: 3981/F/KEP/USM/X/2025). In addition, permission from university administrators and relevant authorities was obtained prior to data collection, with the aim of obtaining informed consent from respondents before distributing the questionnaire.

RESULT

Family Characteristics of Households with Children Aged 0–5 Years

The family characteristics assessed in this study included education level, occupation, income, number of dependents, and type of vehicle ownership. The frequency distribution analysis of family characteristics among households with children aged 0–5 years is presented as follows:

Table 1. Frequency Distribution of Family Characteristics Among Households with Children Aged 0–5 Years

Family characteristics	n	%
Mother's Education Level		
No formal education	0	0.0
Elementary School	10	8.3
Junior High School	23	19.2
Senior High School	79	65.8
Higher Education	8	6.7
Father's Education Level		
No formal education	3	2.5
Elementary School	8	6.7
Junior High School	28	23.3
Senior High School	78	65.0
Higher Education	3	2.5
Mother's Occupation		
Unemployed	3	2.5
Laborer	1	0.8
Trader/Service Provider/Entrepreneur	10	8.3
Farmer	62	51.7
Private Employee	5	4.2
Civil Servant/Military/Police	32	26.7
Other	7	5.8
Father's Occupation		
Unemployed	1	0.8
Laborer	3	2.5
Trader/Service Provider/Entrepreneur	12	10.0
Farmer	88	73.3
Private Employee	11	9.2
Civil Servant/Military/Police	3	2.5
Other	2	1.7
Mother's Income		
> IDR 3,000,000	17	14.1
< IDR 3,000,000	103	85.9

Family characteristics	n	%
Father's Income		
> IDR 3,000,000	15	12.5
< IDR 3,000,000	105	87.5
Number of Dependents (Family Members Supported)		
< 2 persons	24	28.8
> 2 persons	96	71.2
Type of Vehicle Ownership		
Car and Motorcycle	38	31.7
Car only	24	20.0
Motorcycle only	22	18.3
None	36	30.0

Based on Table 1, which presents the frequency distribution of family characteristics among households with children aged 0–5 years, it was found that the majority of mothers had completed senior high school education (65.8%), and similarly, the majority of fathers also had senior high school education (65.0%). The most common occupation among mothers was farmer (51.7%), while the majority of fathers were also farmers (73.3%). In terms of income, most mothers (87.5%) and fathers (87.5%) had a monthly income of less than IDR 3,000,000. The majority of families had more than two dependents (71.2%). Regarding transportation ownership, the most common type of vehicle owned was both a car and a motorcycle (31.7%).

Description of Variables

The frequency distribution of variables description in the working area of Puskesmas Sirait is presented as follows:

Table 2. Frequency Distribution of Variables Description in the Working Area of Puskesmas Sirait

Variables Description	n	%
Health Practices Performed by Mothers		
Innovative	20	16.7
Conventional	100	83.3
Mothers Knowledge Level Regarding the Concept of Health		
Good	30	25.0
Poor	90	75.0
Mothers Perceptions of Health and Illness		
Positive	70	58.3
Negative	50	41.7
Mothers Access to Health Services		
Supportive	11	9.2
Unsupportive	109	90.8

Based on Table 2, which presents the frequency distribution of variables description in the Working Area of Puskesmas Sirait, it was found that innovative health practices were performed by 20 mothers (16.7%), while conventional health practices were performed by 100 mothers (83.3%), it was found that 30 mothers (25.0%) had a good level of knowledge, while 90 mothers (75.0%) had a poor level of knowledge, it was found that 70 mothers (58.3%) had a positive perception, while 50 mothers (41.7%) had a negative perception, it was found that

supportive access to health services was reported by 11 mothers (9.2%), while unsupportive access was reported by 109 mothers (90.8%).

Relationship Between Variables

The relationship between variables in this study refers to the association between the independent variables (mothers knowledge level regarding the concept of health, mothers perceptions of health and illness, and mothers access to health services) and the dependent variable (mothers health practices).

Table 3. Relationship Between Independent and Dependent Variables

Variables	Health Practices Performed by Mothers				Total		<i>p-value</i>	OR
	Innovative		Conventional		N	%		
	n	%	n	%				
Mothers Knowledge Level Regarding the Concept of Health								
Good	16	53.3	14	46.7	30	100.0	0.001	12.000
Poor	4	4.4	86	95.6	90	100.0		
Mothers Perceptions of Health and Illness								
Positive	18	25.7	52	74.3	70	100.0	0.004	6.429
Negative	2	4.0	48	96.0	50	100.0		
Mothers Access to Health Services								
Supportive	8	72.7	3	27.3	11	100.0	0.001	6.606
Unsupportive	12	11.0	97	89.0	97	89.0		

Based on the results presented in the table 3 above, all variables demonstrated *p*-values < 0.05, indicating statistically significant associations. Maternal knowledge was significantly associated with health practices among mothers with children aged 0–5 years (*p* = 0.001; OR = 12.000). Similarly, maternal perceptions regarding health and disease were significantly associated with health practices among mothers with children aged 0–5 years (*p* = 0.004; OR = 6.429). In addition, maternal access to healthcare services was significantly associated with health practices among mothers with children aged 0–5 years (*p* = 0.004; OR = 6.606).

Factors Affecting Health Practices among Mothers with Children Aged 0-5 Years in the Working Area of the Sirait Community Health Center, Nainggolan District, Samosir Regency

Multivariate analysis was used with multiple logistic regression testing, employing the enter method to obtain variables that could predict factors influencing health practices among mothers with children aged 0-5 years in the working area of the Sirait Community Health Center, Nainggolan District Samosir Regency as follows :

Table 4. Factors Affecting Health Practices among Mothers with Children Aged 0-5 Years in the Working Area of the Sirait Community Health Center, Nainggolan District Samosir Regency

Model	Variables	Beta	p-value	Exp.B	95% CI for EXP(B)	
					Lower	Upper
Selection I	Constant	6.899	0.001			
	Mothers Knowledge Level Regarding the Concept of Health	3.362	0.001	28.842	5.690	146.195
	Mothers Perceptions of Health and Illness	2.414	0.012	11.184	1.687	74.141
	Mothers Access to Health Services	2.141	0.003	11.152	1.174	72.632

Based on the results in Table 4, it can be seen that all independent variables can predict the effect of health practices carried out by mothers with children aged 0-5 years in the working area of the Sirait Community Health Center, Nainggolan District, Samosir Regency, including mothers level of knowledge about healthy concepts (P=0.001; OR=28.842), mothers perceptions of health and disease (P=0.012; OR=11.184), and mothers access to health services (P=0.003; OR=11.152).

DISCUSSION

The results of the study show that the majority of mothers still practice conventional health practices, while only a few mothers apply innovative practices. The results of this study show that the health practices carried out by mothers in the Sirait Community Health Center Working Area, Nainggolan District, Samosir Regency, are still dominated by traditional approaches such as going to local traditional healers or thabibs. This shows that conventional practices do not mean a total rejection of modern health services, but rather reflect the dualism of the health system that is still embraced by the community.

According to Febriyanti et al. (2024), the community does not view traditional and modern medicine as mutually exclusive options, but rather as complementary depending on the culture and condition of the illness. This knowledge, attitude, and use of traditional medicine are strongly influenced by local cultural factors (Febriyanti et al., 2024). According to Cipta et al. (2024), the effectiveness of health interventions depends heavily on the ability of health workers to acknowledge and respect the cultural beliefs of patients, rather than simply conveying modern medical information unilaterally (Cipta et al., 2024).

Beliefs and cultural attitudes can influence health-seeking behavior. In the Samosir Regency, the entire Batak community, which is steeped in traditions passed down from generation to generation, has a belief system that is integrated into health care practices, whereby the community places more trust in traditional health care practices such as visiting a shaman than in health services.

The results of this study are reinforced by research conducted by Situmorang et al. (2020), which states that the Batak people still adhere strongly to traditional practices in infant care that are sometimes not in line with modern medical recommendations. Religious and spiritual beliefs have a major influence on health attitudes among ethnic communities (Supriyanti & Asiah, 2025), but they do not prevent these groups from using maternal health services, where people consult with spiritual leaders and government facilities for care information (Latip & Sharkawi, 2021; Putri et al., 2025). The low adoption of innovative health practices shows that changes in health behavior are influenced by attitudes, subjective norms, and perceived behavioral control (Baldini et al., 2021; Sianipar et al., 2022).

The results of this study are reinforced by research conducted by Ngere et al. (2022), which states that the use of traditional medicine for children under five years of age is greatly influenced by the belief that certain conditions such as seizures and high fever are caused by supernatural forces, so traditional healers are considered more appropriate to treat them.

The results of the analysis show that the three variables (mothers level of knowledge about healthy concepts, mothers perceptions of health and disease, and mothers access to health services) significantly influence the health practices of mothers in the working area of the Sirait Community Health Center in Nainggolan District, Samosir Regency.

This study shows that the majority of mothers have a poor level of knowledge about healthy concepts, and there is a strong and positive significant relationship between mothers level of knowledge about healthy concepts and their health practices. The results of the study also show that there is an influence of mothers level of knowledge about healthy concepts on the health practices carried out by mothers in the Sirait Community Health Center Working Area, Nainggolan District, Samosir Regency.

Rural areas with limited access to information, such as the Samosir Regency, have low levels of maternal knowledge due to several structural factors. In mountainous areas, this is related to maternal care, as the lack of social media such as the internet means that mothers must travel long distances to seek care outside their area of residence.

The results of this study are in line with research conducted by Li et al. (2025), which shows that perceptions of the usefulness of information influence health-seeking behavior. In the digital age, even though internet access in rural areas is still limited, online health information-seeking behavior can increase positive perceptions of health.

These findings are reinforced by research conducted by Setyawan et al. (2022), which states that there is a strong correlation between maternal knowledge and child health practices, whereby mothers with better knowledge of health management have children with a better

quality of life and more optimal health control. The results of research by Wulandari et al. (2025), state that rural Indonesian mothers have low maternal nutrition knowledge, characterized by a lack of understanding of food groups, meal frequency, and signs of malnutrition, which are structural factors that encourage mothers to rely on traditional care practices.

This study shows that the majority of mothers have positive perceptions, but there are still some mothers with negative perceptions that need attention, and there is a significant moderate and positive relationship between mothers perceptions of health and disease and health practices. The results of the study also show that there is an influence of mothers perceptions of health and disease on the health practices carried out by mothers in the Sirait Community Health Center Working Area, Nainggolan District, Samosir Regency.

Negative experiences with the formal health system can shape unfavorable perceptions, which can affect the quality and suitability of health services in rural communities (VanGurp et al., 2025), including inadequate medical equipment and essential medicines, high informal costs for essential medicines, and limited capacity in general to provide care (Oldfield et al., 2025).

The results of this study are in line with research conducted by Hotchkiss et al. (2025), which states that mothers perceptions of the quality of health services (including respectful treatment, clear communication, and provider competence) are more predictive of health-seeking behavior. These findings are reinforced by research conducted by Sigit et al. (2025), which states that positive perceptions of surveillance and health monitoring programs are key factors determining community participation in community-based maternal and child health programs.

This study shows that the majority of mothers experience unsupportive access to health services, which is consistent with secondary data from the Sirait Community Health Center showing low coverage of complete immunization, high rates of sick children visiting the center, and suboptimal participation in integrated health service posts. This indicates that barriers to access have a direct impact on health practices. The analysis results show that there is a strong and positive significant relationship between access to health services and health practices. The results of the study also show that there is an influence of access to health services on the health practices carried out by mothers in the working area of the Sirait Community Health Center, Nainggolan District, Samosir Regency.

These severely limited access conditions reflect the reality of health services in rural and remote areas, where rural communities face long distances to health services, lack

transportation, and have few transportation options, resulting in poor health practices in these areas (Kaiser & Barstow, 2022; Chen et al., 2023). More than half of the rural population needs to drive more than 30 miles to receive obstetric services, with some needing to drive 100 miles or more (Ihantamalala et al., 2022; Ratnapradipa et al., 2023). Rural areas face the obstacle of transportation to health facilities, which can result in delayed or canceled use of health services (Olutade-Babatunde et al., 2024).

The results of this study are in line with research conducted by Leosari et al. (2023), which states that the accessibility of health facilities in the island communities of Maluku Province, Indonesia, where the average distance from settlements to the nearest health center reaches 18.43 km (combined land and sea routes). The results of research conducted by Mangoma et al. (2024), state that geographical barriers are a major factor influencing the low utilization of health services in remote areas.

These findings are reinforced by research conducted by Widyaningsih et al. (2025), which shows that distance to health facilities is significantly related to low utilization of maternal and child health services in Indonesia. These findings are relevant to the geographical conditions of Samosir Regency with its limited services.

CONCLUSION

The results of this study can be concluded that there is a significant influence of mothers knowledge about healthy concepts, mothers perceptions of health and disease, and access to health services on the health practices of mothers with children aged 0-5 years. The factor that most influences the health practices of mothers with children aged 0-5 years is mothers knowledge about healthy concepts, with the highest odds ratio (OR) of all research variables.

Recommendations that can be given to the Sirait Community Health Center and the Samosir District Health Office are to increase sustainable maternal and child health education activities through outreach programs, toddler classes, and innovative integrated health service posts. The Samosir District Government is expected to expand access to health services, improve the availability of transportation to health facilities, and add health services in hard-to-reach areas, especially in rural and remote areas. Health workers (midwives, nurses, and posyandu officers) are expected to strengthen interpersonal communication and provide humane health services, as mothers perceptions of service quality often influence their decision to visit health facilities. The community is expected to participate in posyandu activities and village health programs, as well as become agents of change in abandoning traditional practices that pose a risk to toddler health.

REFERENCES

- Agustrisno, Simanjuntak, E. A. D., Lumbanraja, F. D. N., Putra, G. A., Butar-Butar, I., & Zaria, M. (2023). An anthropological perspective of childbirth in the Batak Toba Tribe. *Indonesian Journal of Medical Anthropology*, 4(1), 0–5.
- Ahmad, E., Tahir, A., & Sudarsono. (2025). Strategi manajemen kesehatan untuk meningkatkan partisipasi keluarga berencana: Studi kualitatif di Kecamatan Monano Kabupaten Gorontalo Utara. *Jurnal Promotif Preventif*, 8(5), 1235–1245.
- Baldini, P. R., Helena, B., Camilo, N., & Pina, J. C. (2021). Effect of parental mutuality on the quality of life of mothers of children with special health needs. *Revista Latino-Americana Enfermagem*, 29(e3423), 1–8. <https://doi.org/10.1590/1518-8345.4385.3423>
- Binuko, R. S. D., & Fauziyah, N. F. (2024). Pengaruh faktor ekonomi dan sosial terhadap akses pelayanan kesehatan di Rumah Sakit. *Jurnal Manajemen Dan Administrasi Rumah Sakit Indonesia (MARS)*, 8(2), 123–134.
- Chen, L., Chen, T., Lan, T., Chen, C., & Pan, J. (2023). The contributions of population distribution, healthcare resourcing, and transportation infrastructure to spatial accessibility of health care. *Health Services in the Asia-Pacific Region*, 60, 1–16. <https://doi.org/10.1177/00469580221146041>
- Cipta, D. A., Andoko, D., Theja, A., Utama, A. V. E., Hendrik, H., William, D. G., Reina, N., Handoko, M. T., & Lumbuun, N. (2024). Culturally sensitive patient-centered healthcare: a focus on health behavior modification in low and middle-income nations—insights from Indonesia. *Frontiers in Medicine*, 11(April), 1–7. <https://doi.org/10.3389/fmed.2024.1353037>
- Dinas Kesehatan Kabupaten Samosir. (2023). *Profil Kesehatan Kabupaten Samosir Tahun 2022*. Dinas Kesehatan Kabupaten Samosir
- Dinas Kesehatan Provinsi Sumatera Utara. (2023). *Profil Kesehatan Provinsi Sumatera Utara Tahun 2023*.
- Febriyanti, R. M., Saefullah, K., Susanti, R. D., & Lestari, K. (2024). Knowledge, attitude, and utilization of traditional medicine within the plural medical system in West Java, Indonesia. *BMC Complementary Medicine and Therapies*, 24(1), 1–13. <https://doi.org/10.1186/S12906-024-04368-7>
- Hasibuan, R., & Boangmanalu, W. (2023). Pengetahuan, dukungan suami, dan peran tenaga kesehatan terhadap pemberian asi eksklusif. *Media Informasi*, 19(1), 55–61.
- Hikmahwaty, Amalia, N., Irmawati, & Sabaruddin. (2024). Strategi bidan desa dalam meningkatkan kepatuhan ibu hamil terhadap kunjungan antenatal care di Pustu Bulo, Kecamatan Bungin, Kabupaten Enrekang. *Jurnal Media Keperawatan: Politeknik Kesehatan Makassar*, 15(2), 59–68.
- Hotchkiss, D. R., Blum, L. S., Craig, L. S., Yemweni, A., Wisniewski, J., & Lusamba-Dikassa, P. S. (2025). Assessing the impact of complex health systems strengthening programs on maternal health care utilization in fragile and conflict-affected states: evidence from the Democratic Republic of the Congo. *BMC Pregnancy and Childbirth*, 25(1). <https://doi.org/10.1186/s12884-025-07470-x>
- Ihantamalala, F., Cordier, L., Cowley, G., Id, K. F., Hanitriniaina, F., Miller, A. C., Ralantomalala, L. M., & Id, A. G. (2022). Geographic barriers to care persist at the community healthcare level: Evidence from rural Madagascar. *PLOS Global Public Health*, 2(12), 1–21. <https://doi.org/10.1371/journal.pgph.0001028>
- Kaiser, N., & Barstow, C. K. (2022). Rural transportation infrastructure in low- and middle-income countries: A review of impacts, implications, and interventions. *Sustainability*, 14(4), 1–48.
- Kementerian Kesehatan Republik Indonesia. (2023). *Profil Kesehatan Indonesia Tahun 2022*.

- Latip, M., & Sharkawi, I. (2021). The influence of attitude, subjective norm, perceived behavioral control, and perceived attributes of innovation towards environmental management practices intention among SMEs. *Malaysian Journal Of Consumer And Family Economics*, 26(2021), 207–229.
- Leosari, Y., Uelmen, J. A., & Carney, R. M. (2023). Spatial evaluation of healthcare accessibility across archipelagic communities of Maluku Province, Indonesia. *PLOS Global Public Health*, 3(3), 1–20. <https://doi.org/10.1371/journal.pgph.0001600>
- Li, H., Li, D., Zhai, M., Lin, L., & Cao, Z. (2025). Associations among online health information seeking behavior, online health information perception, and health service utilization: Cross-sectional study. *Journal Of Medical Internet Research*, 27(e66683), 1–17. <https://doi.org/10.2196/66683>
- Mangoma, J., Mangoma, J., & Sulistiadi, W. (2024). Island health crisis: Bridging gaps in Indonesia's Healthcare Deserts. *Journal of Indonesian Health Policy and Administration*, 9(2). <https://doi.org/10.7454/ihpa.v9i2.1005>
- Ngere, S. H., Akelo, V., Ondeng'E, K., Ridzon, R., Otieno, P., Nyanjom, M., Omore, R., & Tippett Barr, B. A. (2022). Traditional medicine beliefs and practices among caregivers of children under five years The Child Health and Mortality Prevention Surveillance (CHAMPS), Western Kenya: A qualitative study. *PLoS ONE*, 17(11 November), 1–12. <https://doi.org/10.1371/journal.pone.0276735>
- Oldfield, L., Penm, J., Mirzaei, A., & Moles, R. (2025). Articles Prices, availability, and affordability of adult medicines in 54 low-income and middle-income countries: evidence based on a secondary analysis. *The Lancet Global Health*, 13(1), e50–e58. [https://doi.org/10.1016/S2214-109X\(24\)00442-X](https://doi.org/10.1016/S2214-109X(24)00442-X)
- Olutade-Babatunde, O., Kwaak, A. van Der, Christian, B. N., & Keshinro, M. I. (2024). A critical review of factors affecting health-seeking behavior among adolescent mothers in nigeria: towards inclusive and targeted interventions. *Medtigo Journal Network*, 2(4), 1–20.
- Putri, L. M., Tjokro, S. H., Widyanto, I. M., & Kurniawan, A. (2025). Pengaruh aspek spiritual dalam preferensi pemilihan pelayanan kesehatan dari perspektif masyarakat Madura, Jawa Timur. *Jurnal Ilmu Kesehatan Masyarakat*, 21(2), 1–7. <https://doi.org/10.19184/ikesma.v21i2.53032>
- Rahmadani, R. A., Wahyuni, R., Arda, D., Musrah, S., & Sabriana, R. (2023). Faktor sosial ekonomi dengan status gizi balita. *Jurnall Ilmiah Kesehatan Sandi Husada*, 12(2), 445–451. <https://doi.org/10.35816/jiskh.v12i2.1115>
- Ratnapradipa, K. L., Jadhav, S., Kabayundo, J., Wang, H., & Smith, L. C. (2023). Factors associated with delaying medical care : cross - sectional study of Nebraska adults. *BMC Health Services Research*, 23(118), 1–10. <https://doi.org/10.1186/s12913-023-09140-0>
- Rehing, E. Y., Suryoputro, A., & Adi, S. (2021). Faktor-faktor yang mempengaruhi kunjungan ibu balita ke posyandu: literatur review. *Jurnal Ilmu Keperawatan Dan Kebidanan*, 12(2), 256–262.
- Samosir, C. T., & Nurhayati, S. R. (2025). Unveiling the meaning and factors of marriage happiness: A phenomenological study of Toba Batak Couples. *World Psychology*, 4(2), 184–197.
- Setyawan, D., Nugroho, D., & Baikhaqi, I. (2022). Pendidikan alternatif dalam pemberdayaan perempuan: kontribusi komunitas epistemik payungi dalam membangun pengetahuan. *TOPIK*, 45(2), 232–247.
- Sianipar, C. E., Parwati, N. W. M., & Teja, N. M. A. Y. R. (2022). Faktor-faktor yang berhubungan dengan pemilihan tenaga penolong persalinan pada ibu hamil TM III di Wilayah Kerja Puskesmas Mogang Kabupaten Samosir Tahun 2021. *Jurnal Ilmu Kesehatan MAKIA*, 12(2), 90–103.

- Sigit, F. S., Yelda, F., Ayuningtyas, D., Adisasmita, A. C., & Prasetyo, S. (2025). Barriers and opportunities in developing community-based maternal and child health surveillance: A mixed methods study in Depok, Indonesia. *Plos One*, 20(11 November), 1–16. <https://doi.org/10.1371/journal.pone.0332469>
- Siswati, H., Defriman, A., & Denas, D. (2025). Dukungan sosial terhadap pengasuhan balita stunting : Perspektif pengasuh di Nagari Tanjung Sumatera Barat. *SOSIO KONSEPSIA: Jurnal Penelitian Dan Pengembangan Kesejahteraan Sosial*, 14(2), 135–149.
- Situmorang, S. R. Y., Sanusi, S. R., Zuska, F., Rochadi, R. K., & Sudaryati, E. (2020). The uniqueness of newborn health care in The Batak Toba Community. *International Journal of Advances in Social and Economics*, 1(2), 79–88.
- Situmorang, S. R. Y., & Saragih, V. C. D. (2021). Perspektif sehat dan sakit anak pada masyarakat batak toba di Kabupaten Samosir. *Tropical Public Health Journal*, 1(1), 9–15. <https://doi.org/10.32734/trophico.v1i1.6048>
- Sondang Sidabutar. (2022). Care of new born infants according to the cultural perspective of the batak toba tribe in Huta Bayu Raja District. *Morfai Journal*, 1(2), 402–410. <https://doi.org/10.54443/morfai.v1i2.723>
- Supriani, A., Rosyidah, N. N., Widiyawati, R., & Sholeh, R. (2022). Pemeriksaan kesehatan serta sosialisasi peningkatan kesehatan ibu dan anak untuk mencegah stunting. *JPPMI: Jurnal Pengabdian Pada Masyarakat Indonesia*, 1(6), 43–53.
- Supriyanti, & Asiah, N. (2025). Analisis faktor sosial budaya terhadap pemanfaatan layanan kesehatan ibu dan anak di Aceh. *Assyifa : Jurnal Ilmu Kesehatan*, 1(1), 1–9.
- United Nations Children’s Fund. (2024). *Infant and Young Child Feeding: Global Database 2024*.
- VanGurp, M., Alba, S., Ammiwala, M., Arab, S. R., Sadaat, S. M., Hanifi, F., Safi, S., Ansari, N., Campos-Ponce, M., & Kok, M. O. (2025). The availability of essential medicines in public healthcare facilities in Afghanistan: navigating sociopolitical and geographical challenges. *Health Policy and Planning*, 40(3), 368–379. <https://doi.org/10.1093/heapol/czae121>
- Widyaningsih, V., Mohanty, I., Mulyaningsih, T., Gebremedhin, T. A., Miranti, R., Zaen, N. A., Nugroho, S. D., Azmiardi, A., & Probandari, A. (2025). Exploring the multilevel determinants of suboptimal maternal and child continuum of care in Indonesia. *Maternal and Child Health Journal*, 29(7), 919–931. <https://doi.org/10.1007/s10995-025-04110-w>
- World Health Organization. (2023). *Newborn Health and Survival: A Multi-Country Analysis*. WHO Press. <https://www.healthynewbornnetwork.org/hnn-content/uploads/HPP-launch-PPT-FINAL.pdf>
- Wulandari, D. T., Azizah, N., Rahmawati, V. E., & Annuchasari, H. (2025). Community-based insights on maternal nutrition knowledge and its role in preventing stunting and wasting in rural Indonesian children. *Journal of Current Health Sciences*, 5(3), 145–154. <https://doi.org/10.47679/jchs.2025128>