


Predictors of Neonatal Jaundice Admissions: A Comparative Study Between Thai and Myanmar Mothers Residing in Thailand

Wimala Eksamut¹, Somsiri Rungamornrat², Sudaporn Payakkaraung²

¹Master of Nursing Sciences (Pediatric Nursing) (Candidate), Faculty of Nursing, Mahidol University, Bangkok, Thailand; ²Department of Pediatric Nursing, Faculty of Nursing, Mahidol University, Bangkok, Thailand

Correspondence: Somsiri Rungamornrat, Faculty of Nursing, Mahidol University, Bangkok, Thailand, Tel +6624197466, Email somsiri.run@mahidol.ac.th

Purpose: This study aimed to explore the relationship between maternal health literacy, preventive practices, and neonatal jaundice admissions among Thai and Myanmar mothers.

Patients and Methods: A cross-sectional predictive design was employed with 400 mothers of full-term infants, including 200 Thai and 200 Myanmar mothers, recruited from a provincial hospital in Thailand. Data were collected in two phases: baseline demographic and clinical data were obtained before discharge, and maternal health literacy and preventive practices were assessed post-discharge when infants were 4–5 days old. Logistic regression was used to examine associations between maternal health literacy, preventive practices, and neonatal jaundice admissions, adjusting for covariates such as maternal age and education.

Results: Maternal health literacy and preventive practices were significantly associated with reduced neonatal jaundice admissions among Thai mothers. However, after adjusting for covariates, these factors were not independent predictors, suggesting that Thailand's universal healthcare and postpartum education programs mitigate individual limitations. For Myanmar mothers, maternal health literacy was the sole significant predictor of neonatal jaundice admissions, reflecting its critical role in resource-limited settings. Preventive practices were not significant predictors, likely due to systemic barriers such as language challenges, limited healthcare access, reliance on traditional remedies, and insufficient skills to observe and manage early signs of neonatal jaundice effectively.

Conclusion: Maternal health literacy plays a pivotal role in shaping neonatal jaundice outcomes, particularly for immigrant mothers in resource-limited contexts. Strengthening bilingual education, culturally tailored healthcare support, and expanding resources for migrant populations are essential to reducing disparities and improving neonatal outcomes in low- and middle-income countries.

Keywords: maternal health literacy, neonatal jaundice, preventive practices, immigrant mothers, low- and middle-income countries (LMICs)

Introduction

Neonatal jaundice, characterized by elevated total serum bilirubin (TsB) levels, is one of the most common conditions in healthy newborns globally and a leading cause of hospital readmissions, particularly in low- and middle-income countries (LMICs)^{1–4} such as Thailand.^{4,5} Study report an incidence of neonatal jaundice as high as 249 per 1000 live births along the Thai-Myanmar border, with 20% of affected neonates requiring phototherapy. These statistics highlight the burden of jaundice in resource-constrained settings where limited maternal awareness, cultural practices, and systemic barriers often exacerbate the issue.^{4,5} If inadequately managed, severe jaundice can progress to kernicterus, a life-threatening condition that causes irreversible brain damage.⁶

Effective management and prevention of neonatal outcomes depend heavily on maternal health literacy. Maternal health literacy—the ability to access, understand, and apply health-related information—plays a pivotal role in preventing and managing neonatal conditions, including jaundice.^{7,8} Mothers with adequate health literacy are more likely to comprehend neonatal jaundice, access relevant information, and identify sources of support.^{3,9–13} This enables them to perform appropriate home-based care, particularly breastfeeding, which is crucial for bilirubin elimination.

Frequent feeding stimulates stooling, thereby reducing the risk of jaundice.^{14,15} Conversely, inadequate health literacy—stemming from a lack of understanding about the condition or insufficient access to information—may lead to inappropriate practices such as formula supplementation or water substitution.^{10,16} These practices diminish the effectiveness of bilirubin clearance. Additionally, concerning evidence from immigrant populations in Thailand highlights the use of harmful traditional practices, such as the application of mothballs, which exacerbate jaundice by inducing red blood cell breakdown.⁴ Addressing these gaps in health literacy is essential to reducing preventable readmissions and improving neonatal outcomes, particularly among vulnerable groups such as migrant mothers from Myanmar.

Although Thailand's healthcare system offers universal coverage and programs to educate mothers¹⁷ these initiatives may not reach vulnerable populations, particularly immigrants. Migrant mothers often rely on Migrant Health Workers (MHWs) and Migrant Health Volunteers (MHVs) for information, which may be inconsistent or incomplete.¹⁸ Such disparities underscore the need for culturally tailored interventions to improve maternal health literacy and neonatal outcomes in diverse populations.¹⁹

While maternal education programs aim to provide critical knowledge about neonatal care, significant gaps remain in understanding whether the knowledge provided is effectively utilized by mothers to prevent jaundice. Few studies have examined how well mothers apply their knowledge, seek additional information, or adopt recommended practices, particularly in immigrant populations.^{16,19–21} Additionally, little is known about how maternal health literacy influences care-seeking behaviors and neonatal readmissions in Thailand, where cultural practices and systemic barriers intersect.

This study investigates the relationship between maternal health literacy, preventive practices, and neonatal jaundice outcomes among Thai and Myanmar mothers in Thailand. Specifically, it examines how maternal literacy and preventive practices influence jaundice admissions while accounting for key factors such as maternal age,²² and education.⁷ We hypothesize that higher maternal health literacy and adherence to preventive practices are associated with lower rates of neonatal jaundice readmissions. Findings from this study will inform interventions aimed at improving maternal health literacy, reducing preventable neonatal admissions, and addressing cultural and language barriers in maternal healthcare.

Materials and Methods

Design

This study employed a cross-sectional predictive design to examine the relationships between maternal health literacy, preventive practices, and neonatal jaundice admissions among Thai and Myanmar mothers in Thailand. The design was chosen to identify associations at a single time point, addressing the logistical challenges of tracking migrant mothers longitudinally. While causality cannot be established, this approach provides valuable insights into predictors of neonatal jaundice admissions. Potential biases, such as selection bias and recall bias, were mitigated through purposive sampling in diverse healthcare settings and the use of structured questionnaires to enhance response accuracy.

Study Design and Sampling

The researcher calculated the sample size using the formula proposed by Peduzzi et al,²³ expressed as $n = 10k/p$ ($10 \times 2 / 0.1 = 200$). Based on this calculation, the study included a total of 400 mothers of full-term infants, with 200 Thai mothers and 200 Myanmar mothers. Participants were purposively sampled to ensure the inclusion of Thai and Myanmar mothers whose infants were at risk of neonatal jaundice and met specific eligibility criteria. This method enabled meaningful comparisons of maternal health literacy and preventive practices between the two groups.

The samples were divided into two groups: those whose infants were admitted for treatment of jaundice (admission group) and those whose infants were not admitted (non-admission group). Statistical data from Samut Sakhon Hospital (2019–2021) indicated notable percentages of newborns returning to the hospital for jaundice treatment, with rates of 10.25%, 12.14%, and 12.03%, respectively. Among these cases, 57% of the infants were Thai, and 43% were Myanmar.²⁴ Consequently, the sample was categorized into an admission group (20 infants) and a non-readmission group (180 infants) for each population, ensuring balanced representation to explore potential differences and similarities in neonatal jaundice outcomes.

Data were collected from mothers who met the following criteria: (1) mothers of full-term infants with no history of severe complications or prior treatment for jaundice requiring phototherapy or exchange transfusion, (2) mothers aged at least 18 years who were discharged home with their infants and responsible for feeding them upon returning home, and (3) Myanmar mothers required to have basic communication skills in Thai. By focusing on mothers of full-term infants, the study aimed to minimize confounding variables related to preterm birth, which is a significant independent risk factor for neonatal jaundice.

Data Collection and Questionnaires

The data collection for this study was conducted in two phases. Phase 1 involved preparing mothers to provide information, whereas Phase 2 focused on monitoring neonatal jaundice when the infants were 4–5 days old. During Phase 1, researchers engaged participants from postpartum ward, which serves both Thai mothers and Myanmar mothers. Standardized pre-discharge education, including individualized breastfeeding guidance, was provided as part of routine postpartum care. This was not part of the study intervention. At 48 hours postpartum, all infants underwent Microbilirubin (MB) screening for neonatal jaundice. Infants who did not meet phototherapy criteria and whose mothers had no postpartum complications (eg, hemorrhage or infection) were discharged on the second day for vaginal deliveries and the third day for cesarean deliveries. Before discharge, researchers introduced themselves, obtained informed consent to collect baseline demographic and clinical data, and provided options for submitting post-discharge questionnaires via online platforms (Google Forms) or structured telephone interviews. No surveys or questionnaires were administered during this phase. Thai mothers were contacted online, while Myanmar mothers were interviewed by phone to address language and technological barriers. This approach ensured equitable participation but may have affected the consistency and detail of responses.

Phase 2: Monitoring Neonatal Jaundice

1. Home-Based Monitoring: For infants without signs of increased MB level and no scheduled follow-up appointments, post-discharge monitoring relied on maternal observations informed by pre-discharge education. Thai mothers completed the Maternal Health Literacy and Preventives Practice for Neonatal Jaundice questionnaires online via Google Forms, while Myanmar mothers, who may face language or technological barriers, participated in structured telephone interviews conducted by researchers.

2. Follow-Up Appointments: Infants with MB levels approaching abnormal thresholds based on AAP guidelines⁶ were referred to pediatric outpatient clinics for TsB testing.

- Infants diagnosed with jaundice requiring treatment were admitted for phototherapy.

- Infants without jaundice received home care instructions from the attending physician to prevent further jaundice development.

3. Post-Consultation Data Collection: Following clinical evaluations, all participating mothers completed the same questionnaires, and medical records, including data on jaundice diagnosis and treatment, were collected for analysis.

Thai and Myanmar mothers were contacted using different approaches—online for Thai mothers and telephone interviews for Myanmar mothers—to address potential language and technological barriers. While this ensured equitable participation, it may have introduced variability in the detail and completeness of responses.

The study utilized a combination of tailored and adapted tools to measure variables related to neonatal jaundice readmission, maternal health literacy, and preventive practices for neonatal jaundice. These tools were systematically developed, adapted, and validated to ensure reliability and appropriateness for the target population

Maternal Health Literacy Questionnaire for neonatal jaundice prevention was adapted from the Thai Health Literacy Scale,²⁵ which was provided by the Health Education Division, Department of Health Service Support, Ministry of Public Health (2017). This questionnaire consists of 47 items across five health literacy domains: 1) access to health information and services (8 items); 2) understanding information and services sufficient for action (5 items); 3) evaluating health information and services (6 items); 4) communicating and social support (17 items); and 5) managing personal health (11 items).

Preventive Practices for Neonatal Jaundice Questionnaire was adapted from an existing questionnaire on practices to prevent jaundice,^{11,20} consisting of 25 questions across three areas: lactation (10 items), excretion assessment (4 items), and jaundice assessment (11 items).

The tools underwent rigorous validation for content validity and cultural relevance. A panel of five experts, including a neonatologist, two neonatal nurses, and two nurses experienced in maternal and child health and migrant populations, evaluated the tools for relevance, clarity, and alignment with the study objectives. The Content Validity Index (CVI) for each questionnaire was 0.97, exceeding the acceptable threshold of 0.80. Reliability testing was conducted with 60 mothers (30 Thai and 30 Myanmar), yielding Cronbach’s alpha values of 0.957 for the Maternal Health Literacy Questionnaire and 0.892 for the Prevent Practices for Neonatal Jaundice Questionnaire. In a larger sample of 400 participants, these values were 0.950 and 0.832, respectively.

For non-Thai participants, the tools were translated into Burmese using a back-translation method to ensure accuracy. Bilingual experts conducted the initial translation, and independent translators performed the back-translation. Any discrepancies were resolved through collaborative discussions with the research team.

Data Analysis

The researcher analyzed the obtained data using SPSS (Statistical package for social sciences) version 26 and set the statistical significance at 0.05. Descriptive statistics were used to summarize maternal and infant characteristics, as well as maternal health literacy and preventive practices for neonatal jaundice. To examine relationships between variables, correlation analysis was performed separately for Thai and Myanmar mothers. Differences in maternal health literacy and preventive practices between admitted and non-admitted groups were analyzed using independent *t*-tests. Logistic regression analysis was conducted to identify predictors of neonatal jaundice readmission, with maternal health literacy and preventive practices as independent variables. Covariates, including maternal age and education, were controlled for in the analysis.

Result

Characteristics of Thai and Myanmar Mothers and Their Infants

The characteristics of Thai and Myanmar mothers, along with their infants, are presented in Table 1. Thai mothers had a mean age of 28.56 years (SD = 6.19), while Myanmar mothers were slightly older, with a mean age of 29.51 years (SD = 5.65). Educational attainment was higher among Thai mothers, with 75.5% completing secondary education compared to 45.5% of Myanmar mothers. Infant characteristics were comparable between groups, with similar birth weights and gestational ages, but a higher proportion of Thai infants (70%) were delivered via normal labor compared to Myanmar infants (73%).

Comparison of Admitted and Non-Admitted Neonatal Jaundice

Maternal health literacy and preventive practices were significantly lower among mothers of admitted infants compared to non-admitted infants in both groups (Table 2). Thai mothers of admitted infants had lower health literacy scores (Mean = 121.00) and preventive practice scores (Mean = 74.65) compared to non-admitted mothers (Health Literacy: Mean = 130.96; Preventive Practices: Mean = 80.01). Similarly, Myanmar mothers of admitted infants scored lower in health

Table 1 Characteristics of Thai and Myanmar Mothers and Their Infants

Characteristic	Thai (n = 200)	Myanmar (n = 200)
Mothers		
Age (years), Mean (SD)	28.56 (6.19)	29.51 (5.65)
Aged 21–30 years (%)	51%	55%
Monthly Income (10,001–20,000 baht) (%)	54%	62%
Education – Secondary (%)	75.5%	45.5%
Infants		
Birth Weight (grams), Mean (SD)	3,135.83 (400.68)	3,133 (381.16)
Gestational Age (weeks), Mean (SD)	38 (1.04)	39 (1.36)
Normal Labor (%)	70%	73%

Table 2 Comparison of Maternal Health Literacy and Preventive Practices for Neonatal Jaundice Between Admitted and Non-Admitted Neonatal Jaundice Among Thai and Myanmar Mothers

Variable	Admitted (Mean \pm SD)	Non-Admitted (Mean \pm SD)	t, p
Thai Mothers			
Health Literacy	121.00 \pm 29.32	130.96 \pm 18.97	-2.093, $p < 0.05^a$
Preventive Practices	74.65 \pm 11.30	80.01 \pm 9.75	-2.293, $p < 0.05^a$
Myanmar Mothers			
Health Literacy	102.15 \pm 26.60	131.35 \pm 23.03	-5.296, $p < 0.001^a$
Preventive Practices	71.15 \pm 13.05	77.55 \pm 11.10	-2.402, $p < 0.05^a$

Notes: t represents the t-value, and p represents the p-value for independent t-tests, ^a $p < 0.05$.

literacy (Mean = 102.15) and preventive practices (Mean = 71.15) compared to non-admitted mothers (Health Literacy: Mean = 131.35; Preventive Practices: Mean = 77.55).

In terms of specific domains of maternal health literacy (Table 3), Thai mothers with admitted infants scored significantly lower in accessing information and services (Mean = 34.50 vs 37.69, $p = 0.038$) and managing personal health (Mean = 17.25 vs 18.80, $p = 0.048$). For Myanmar mothers, admitted infants scored significantly lower across all domains, particularly in accessing information and services (Mean = 26.95 vs 36.08, $p < 0.001$), understanding information for practice (Mean = 14.55 vs 19.13, $p < 0.001$), and managing personal health (Mean = 16.00 vs 18.87, $p < 0.003$).

Regarding preventive practices for neonatal jaundice (Table 4), Thai mothers of admitted infants scored significantly lower in jaundice assessment (Mean = 30.45 vs 33.96, $p = 0.017$). Myanmar mothers with admitted infants demonstrated significantly lower scores in lactation practices (Mean = 27.95 vs 30.38, $p = 0.041$) and jaundice assessment (Mean = 30.00 vs 33.59, $p = 0.023$).

Relationships Between Variables

Significant negative correlations were observed between maternal health literacy and neonatal jaundice admissions in both Thai ($r = -0.147$, $p < 0.05$) and Myanmar mothers ($r = -0.352$, $p < 0.01$). Preventive practices also showed negative

Table 3 Compare Maternal Health Literacy of Thai and Myanmar Mothers

Outcomes	Thai Mothers Who not Return Admit with Jaundice (n=180)	Thai Mothers Who Return Admits with Jaundice (n=20)	Comparison		Myanmar Mothers Who not Return Admit with Jaundice (n=180)	Myanmar Mothers Who Return Admits with Jaundice (n=20)	Comparison	
	Mean \pm SD	Mean \pm SD	t	p	Mean \pm SD	Mean \pm SD	t	p
Maternal health literacy	130.96 \pm 18.97	121 \pm 29.32	-2.093	0.038*	131.35 \pm 23.03	102.15 \pm 26.60	-5.296	0.000 ^a
- Accessing the information and services	37.69 \pm 6.34	34.50 \pm 7.78	-2.087	0.038*	36.08 \pm 8.58	26.95 \pm 7.78	-4.551	0.000 ^a
- Understanding enough the information and services to practice	19.18 \pm 3.24	17.90 \pm 4.80	-1.590	0.114	19.13 \pm 4.17	14.55 \pm 5.07	-4.553	0.000 ^a
- Reassure the information and services	18.42 \pm 3.11	16.90 \pm 5.14	-1.918	0.057	19.13 \pm 4.08	13.85 \pm 5.11	-5.352	0.000 ^a
- Interactive and social support	36.87 \pm 6.37	34.45 \pm 9.28	-1.529	0.128	38.13 \pm 7.69	30.80 \pm 9.75	-3.934	0.000 ^a
- Managing personal health	18.80 \pm 3.11	17.25 \pm 4.84	-1.985	0.048*	18.87 \pm 3.91	16.00 \pm 4.84	-3.036	0.003 ^a

Note: ^a $p < 0.01$.

Table 4 Compare Preventive Practices for Neonatal Jaundice of Thai and Myanmar Mothers

Outcomes	Thai Mothers Who Not Return Admit with Jaundice (n=180)	Thai Mothers Who Return Admits with Jaundice (n=20)	Comparison		Myanmar Mothers Who Not Return Admit with Jaundice (n=180)	Myanmar Mothers Who Return Admits with Jaundice (n=20)	Comparison	
	Mean ± SD	Mean ± SD	t	p	Mean ± SD	Mean ± SD	t	P
Preventive Practices for Neonatal Jaundice	80.01 ± 9.75	74.65 ± 11.30	-2.293	0.023*	77.55 ± 11.10	71.15 ± 13.05	-2.402	0.017 ^a
- Lactation	32.36 ± 4.28	31.80 ± 4.10	-0.558	0.577	30.38 ± 4.86	27.95 ± 6.19	-2.062	0.041 ^a
- Excretion assessment	13.69 ± 2.19	12.40 ± 2.37	-2.474	0.014*	13.58 ± 2.47	13.20 ± 2.55	-0.646	0.519
- Jaundice assessment	33.96 ± 5.94	30.45 ± 8.25	-2.398	0.017*	33.59 ± 6.50	30 ± 7.90	-2.291	0.023 ^a

Note: ^ap< 0.05.

correlations with admissions for both Thai ($r = -0.161$, $p < 0.05$) and Myanmar mothers ($r = -0.168$, $p < 0.05$), indicating that higher maternal health literacy and better preventive practices are associated with fewer admissions, as shown in Table 5

Predictors of Neonatal Jaundice Admission

Logistic regression analysis (Table 6) revealed maternal health literacy as a significant predictor of neonatal jaundice admissions among Myanmar mothers (AOR = 0.96, $p < 0.001$). Preventive practices were not significant predictors in this group. For Thai mothers, neither maternal health literacy nor preventive practices independently predicted admissions after adjusting for covariates, suggesting that systemic healthcare support may mitigate individual differences.

Discussion

This study explored the relationship between maternal health literacy, preventive practices, and neonatal jaundice admissions in Thai and Myanmar mothers. The findings revealed distinct patterns between the two groups, highlighting how systemic and cultural contexts influence maternal health literacy, preventive practices and neonatal outcomes.

Maternal health literacy and preventive practices were associated with reduced neonatal jaundice admissions among Thai mothers. However, logistic regression revealed these factors were not independent predictors after adjusting for

Table 5 Correlation Coefficients Between Maternal Health Literacy, Preventive Practices for Neonatal Jaundice, and Readmissions for Jaundice in Infants of Thai and Myanmar Mothers

Variable	1	2	3
Thai Mothers			
1. Readmissions for Jaundice			
2. Maternal Health Literacy	-0.147 ^a		
3. Preventive Practices for Neonatal Jaundice	-0.161 ^a	-0.296 ^b	
Myanmar Mothers			
1. Readmissions for Jaundice			
2. Maternal Health Literacy	-0.352 ^b		
3. Preventive Practices for Neonatal Jaundice	-0.168 ^a	-0.489 ^b	

Note: ^ap < 0.05, ^bp < 0.01.

Table 6 Logistic Regression Analysis for Predictors of Neonatal Jaundice Readmission Among Thai and Myanmar Mothers

DV = Readmission	Thai			Myanmar		
	AOR	95% CI	P value	AOR	95% CI	P value
Constant	5.95	–	0.410	99.08	–	0.034
Age	0.55	0.95, 1.11	0.553	0.98	0.90, 1.07	0.678
Education (> 9 year)	0.65	0.26, 2.33	0.648	1.86	0.57, 6.04	0.300
Maternal Health Literacy	0.99	0.96, 1.02	0.385	0.96	0.94, 0.98	<0.001 ^a
Preventive Practices for Neonatal Jaundice	0.96	0.91, 1.01	0.149	0.99	0.94, 1.03	0.492
Hosmer & Lemeshow Test		P = 0.652			P = 0.507	

Note: ^ap < 0.001.

covariates. This suggests maternal health literacy involves more than knowledge, encompassing the ability to access, understand, and apply health information effectively.^{9–13} Thailand's universal healthcare and postpartum education programs likely provide systemic support that helps mothers overcome individual limitations, ensuring early detection and timely management of neonatal health concerns.^{26–28}

For Myanmar mothers, maternal health literacy was the sole predictor of neonatal jaundice admission, highlighting its critical role in resource-limited settings. Higher health literacy enables timely recognition of jaundice and medical intervention, reducing preventable admissions.²⁸ However, preventive practices were not significant predictors, likely due to structural barriers such as language challenges,²⁹ limited healthcare access^{30,31} and reliance on traditional remedies.⁴ Disparities in health literacy domains, such as accessing information and managing personal health, were evident between admitted and non-admitted groups, underscoring the need to address systemic inequities to improve maternal care.

For Thai mothers, differences in preventive practices—specifically jaundice monitoring and excretion assessment—were observed between mothers whose infants were readmitted and those who were not. These findings highlight the importance of maternal engagement in detecting and addressing early signs of neonatal jaundice, supported by Thailand's universal healthcare and postpartum education systems.²⁷ In contrast, preventive practices among Myanmar mothers were not significant predictors of neonatal jaundice readmissions. Barriers such as limited access to bilingual healthcare resources^{29,30} and reliance on cultural practices like mothballs may hinder their ability to implement effective preventive measures.⁴ While systemic barriers such as language challenges and limited access to bilingual resources remain, Thailand's healthcare system has initiatives like Migrant Health Workers (MHWs)^{18,32} and postpartum education programs aimed at supporting immigrant mothers. However, strengthening these efforts with improved training and resources could further address gaps in maternal care.^{33,34}

Controlling for maternal age and education did not diminish the predictive power of maternal health literacy among Myanmar mothers. This finding suggests that health literacy operates independently of formal education and age in shaping neonatal outcomes in this population. It also highlights the unique challenges faced by immigrant mothers, whose access to healthcare services and educational opportunities are often constrained by systemic inequities.³⁵ In contrast, the interplay between health literacy and education may be less pronounced among Thai mothers due to their greater integration into the healthcare system and access to broader social support networks.

These findings align with existing literature that demonstrates the multifaceted nature of maternal health literacy and its critical role in improving neonatal outcomes.^{15,36} Research demonstrates that maternal health literacy in LMICs improves the capacity to identify early symptoms, secure appropriate care, and uphold preventive practices like exclusive breastfeeding.¹⁶ However, systemic inequities, such as those faced by Myanmar mothers, often limit the application of health literacy, reducing its impact on neonatal outcomes. Research on underserved and immigrant populations underscores the importance of bilingual education culturally tailored healthcare support,³⁶ and expanded access to resources to overcome these barriers. The findings from Thailand further highlight the role of robust healthcare systems in amplifying

the impact of maternal health literacy and preventive practices, enabling better outcomes even in populations with varying individual capacities.

Methodological Considerations

The study involved sampling two distinct populations: Thai mothers and Myanmar immigrant mothers, allowing for a comparative perspective on maternal health literacy and preventive practices in differing cultural and systemic contexts. While there is potential variability introduced by differences in linguistic and healthcare access, this approach enhances the understanding of how systemic and cultural factors influence preventive practices and neonatal outcomes. Data collection for Myanmar mothers included telephone interviews conducted at home, a method that ensures accessibility and convenience for participants. Although this method may introduce variability in responses due to environmental factors, it reflects an effort to include a potentially hard-to-reach population in the study, ensuring their perspectives are represented.

The observed correlation between maternal health literacy and preventive practices highlights an important relationship central to the study's findings. While these variables may overlap to some degree, their combined influence on neonatal outcomes is critical to understanding maternal care dynamics. Furthermore, while the study's findings are specific to Thailand's healthcare system, they provide insights that are applicable to similar LMIC contexts, especially regarding systemic support for maternal health. Despite a relatively small sample size of readmitted cases, the study effectively identifies key predictors and systemic barriers. Cross-cultural factors, such as language challenges faced by Myanmar mothers, are acknowledged, demonstrating the study's depth in addressing disparities and informing tailored interventions to improve maternal and neonatal health outcomes.

Conclusion

This study underscores the critical role of maternal health literacy in reducing neonatal jaundice admissions, particularly among Myanmar mothers, where it serves as a key predictor in resource-limited contexts. Preventive practices, while associated with admissions, were not independent predictors, emphasizing the need for systemic support to enhance their effectiveness. These findings highlight disparities in maternal health and access to care, offering a foundation for targeted interventions, such as culturally tailored education and expanded healthcare access, to improve neonatal outcomes and reduce preventable readmissions.

Ethical Considerations and Approval

The study followed the Declaration of Helsinki, providing participants with verbal and written information about its purpose, procedures, and rights, including voluntary participation and withdrawal without consequences. Written informed consent was obtained, with interpreters available for Myanmar participants to ensure understanding and respect for cultural differences. Confidentiality was maintained through anonymized and securely stored data, with minimal risk to participants and no undue burden on vulnerable groups. Ethical approval was granted by Mahidol University IRB (IRB-NS2022/106.0612), Samut Sakhon Hospital (SKH REC 31/2566/V.1), and Krathum Baen Hospital (No. 003/66).

Acknowledgments

The research team sincerely thanks all participants for their invaluable contributions to this study.

Author Contributions

WE and SR contributed to the study's conception, design, and material preparation. Data collection and analysis were performed by WE. The first draft of the manuscript was written by WE and SR. SP provided extensive comments on data interpretation and critically revised multiple drafts. All authors reviewed and approved the final version of the manuscript, agreed on the journal to which the article has been submitted, and agree to be accountable for all aspects of the work.

Funding

This project was partially supported by the Faculty of Graduate Studies and Graduate Studies of the Mahidol University Alumni Association and the Perinatal Society of Thailand.

Disclosure

The author(s) report no conflicts of interest in this work.

References

- Lain SJ, Roberts CL, Bowen JR, Nassar N. Early discharge of infants and risk of readmission for jaundice. *Pediatrics*. 2015;135(2):314–321. doi:10.1542/peds.2014-2388
- Olusanya BO, Osibanjo FB, Slusher TM. Risk factors for severe neonatal hyperbilirubinemia in low and middle-income countries: a systematic review and meta-analysis. *PLoS One*. 2015;10. doi:10.1371/journal.pone.0117229
- Ezeaka VC, Ekure EN, Fajolu IB, Ezenwa BN, Akintan PE. Mothers' perception of neonatal jaundice in Lagos, Nigeria: an urgent need for greater awareness. *South Afr J Child Health*. 2016;10(4):227–230. doi:10.7196/sajch.2016.v10i4.1190
- Prins TJ, Trip-Hoving M, Paw MK, et al. A survey of practice and knowledge of refugee and migrant pregnant mothers surrounding neonatal jaundice on the Thailand–Myanmar Border. *J Trop Pediatr*. 2017;63(1):50–56. doi:10.1093/tropej/fmw055
- Thielemans L, Trip-Hoving M, Bancone G, et al. Neonatal hyperbilirubinemia in a marginalized population on the Thai-Myanmar border: a study protocol. *BMC Pediatr*. 2017;17(32). doi:10.1186/s12887-017-0798-8
- Kemper AR, Newman TB, Slaughter JL, et al. Clinical practice guideline revision: management of hyperbilirubinemia in the newborn infant 35 or more weeks of gestation. *Pediatrics*. 2022;150(3):e2022058859. doi:10.1542/peds.2022-058859
- Brandstetter S, Atzendorf J, Seelbach-Göbel B, Melter M, Kabisch M, Apfelbacher C. Sociodemographic factors associated with health literacy in a large sample of mothers of newborn children: cross-sectional findings from the KUNO-Kids birth cohort study. *Eur J Pediatr*. 2020;179:165–169. doi:10.1007/s00431-019-03483-9
- Bello CB, Esan DT, Akerele SA, Fadare RI. Maternal health literacy, utilization of maternal healthcare services and pregnancy outcomes among newly delivered mothers: a cross-sectional study in Nigeria. *Public Health Pract*. 2022;1(10006). doi:10.1016/j.puhip.2020.100006
- Moawad EMI, Abdallah EAA, Ali YZA. Perceptions, practices, and traditional beliefs related to neonatal jaundice among Egyptian mothers: a cross-sectional descriptive study. *Medicine*. 2016;95(36):e4804. doi:10.1097/md.00000000000004804
- Seneadza NAH, Insaiddoo G, Boye H, et al. Neonatal jaundice in Ghanaian children: assessing maternal knowledge, attitude, and perceptions. *PLoS One*. 2022;17(3):e0264694. doi:10.1371/journal.pone.0264694
- Adoba P, Ephraim RKD, Kontor KA, et al. Knowledge level and determinants of neonatal jaundice: a cross-sectional study in the Effutu Municipality of Ghana. *Int J Pediatr*. 2018;2018:1–8. doi:10.1155/2018/3901505
- Ezeaka CV, Ugwu RO, Mukhtar-Yola M, et al. Pattern and predictors of maternal care-seeking practices for severe neonatal jaundice in Nigeria: a multi-centre survey. *BMC Health Serv Res*. 2014;14(192). doi:10.1186/1472-6963-14-192
- Hui LL, Liao E, Yeung KHT, Ip PLS, Lam HS, Nelson EAS. Reducing admissions for neonatal jaundice are needed to maximize benefits of breastfeeding promotion. *Acta Paediatr Nurt Child*. 2024;113(2):362–364. doi:10.1111/apa.17028
- Gaupšienė A, Vainauskaitė A, Baglaieva J, et al. Associations between maternal health literacy, neonatal health and breastfeeding outcomes in the early postpartum period. *Eur J Midwifery*. 2023;7(25):1–6. doi:10.18332/ejm/170161
- Salarvand S, Ghazvineh S, Mousivand F, et al. Health literacy and its related factors as predictors for the breastfeeding self-efficacy in a western province in Iran. *BMC Public Health*. 2023;23(593). doi:10.1186/s12889-023-15522-0
- König A, Nabieva J, Manssouri A, et al. A systematic scoping review on migrant health coverage in Thailand. *Trop Med Infect Dis*. 2022;7:166. doi:10.3390/tropicalmed7080166
- Kosiyaporn H, Julchoo S, Phaiyaron M, et al. Strengthening the migrant-friendliness of Thai health services through interpretation and cultural mediation: a system analysis. *Glob Health Res Policy*. 2020;5:53. doi:10.1186/s41256-020-00181-0
- Langlois ÉV, Miszkurka M, Zunzunegui MV, Ghaffar A, Ziegler D, Karp I. Inequities in postnatal care in low- and middle-income countries: a systematic review and meta-analysis. *Bulletin of the World Health Organization*. 2015;93(4):259–270. doi:10.2471/BLT.14.140996
- Huang Y, Chen L, Wang X, et al. Maternal knowledge, attitudes and practices related to neonatal jaundice and associated factors in Shenzhen, China: a facility-based cross-sectional study. *BMJ Open*. 2022;12(8):e057981. doi:10.1136/bmjopen-2021-057981
- Muhammed BK, Hasan SS. Mothers' knowledge regarding home care management of neonatal jaundice in Qaladze - Sulaymaniyah City. *Erbil J Nurs Midwifery*. 2022;5(2):72–78. doi:10.15218/ejnm.2022.08
- Lynn Z, Chuemchit M. Determinants of prenatal breastfeeding knowledge, attitudes and self-efficacy among Burmese migrant pregnant mothers in Samut Sakhon Province, Thailand: a cross-sectional study. *BMJ Open*. 2024;14(7):e084609. doi:10.1136/bmjopen-2024-084609
- Peduzzi P, Concato J, Kemper E, Holford TR, Feinstein AR. A simulation study of the number of events per variable in logistic regression analysis. *J Clin Epidemiol*. 1996;49(12):1373–1379. doi:10.1016/S0895-4356(96)00236-3
- Samut Sakhon Hospital. Neonatal jaundice readmission statistics 2019–2021. 2022.
- Health Education Division. *Health Literacy*. Nonthaburi, Thailand: Ministry of Public Health; 2017.
- Tangcharoensathien V, Witthayapipopsakul W, Panichkriangkrai W, Patcharanarumol W, Mills A. Health systems development in Thailand: a solid platform for successful implementation of universal health coverage. *Lancet*. 2018;391(10126):1205–1223. doi:10.1016/S0140-6736(18)30198-3
- Silverman R, Sakuma Y, Post L, et al. Health access for all: thailand's universal coverage scheme. In: Glassman A, Temin M, editors. *Millions Saved: New Cases of Proven Success in Global Health*, 3rd. Washington: Center for Global Development; 2016:89–96.
- DeWalt DA, Dilling MH, Rosenthal MS, Pignone MP. Low parental literacy associated with worse asthma care measures in children. *Ambul Pediatr*. 2007;7:25–31. doi:10.1016/j.ambp.2006.10.001
- Tschirhart N, Jiraporncharoen W, Angkurawaranon C, et al. Choosing where to give birth: factors influencing migrant women's decision making in two regions of Thailand. *PLoS One*. 2020;15(4):e0230407. doi:10.1371/journal.pone.0230407

29. Holumyong C, Ford K, Sajjanand S, Chamratrithirong A. The access to antenatal and postpartum care services of migrant workers in the Greater Mekong Subregion: the role of acculturative stress and social support. *J Pregnancy*. 2018;1:1–12. doi:10.1155/2018/9241923
30. Steinbrook E, Min MC, Kajeechiwa L, et al. Distance matters: barriers to antenatal care and safe childbirth in a migrant population on the Thailand-Myanmar border from 2007 to 2015, a pregnancy cohort study. *BMC Pregnancy Childbirth*. 2021;21:802. doi:10.1186/s12884-021-04276-5
31. Gilder ME, Moo P, Hashmi A, et al. “I can’t read and don’t understand”: health literacy and health messaging about folic acid for tube defect prevention in a migrant population on the Myanmar-Thailand border. *PLUS ONE*. 2019;14:1–17. doi:10.1371/journal.pone.0218138
32. Phanwichatkul T, Burns E, Liamputtong P, Schmied V. The experiences of Burmese healthcare interpreters (Iam) in maternity services in Thailand. *Women Birth*. 2018;31(3):152–161. doi:10.1016/j.wombi.2017.09.011
33. Cheng GZ, Chen A, Xin Y, Ni QQ. Using the teach-back method to improve postpartum maternal-infant health among women with limited maternal health literacy: a randomized controlled study. *BMC Pregnancy Childbirth*. 2023;23(13). doi:10.1186/s12884-022-05302-w
34. World Health Organization. Migrant and non-national population health program. 2022. Available from: https://cdn.who.int/media/docs/default-source/thailand/country-cooperation-strategy/2022-2026/4.1.3-migrant-health_ccs_25102021-thaihealth-clear.pdf?sfvrsn=2fca743a_2. Accessed November 24, 2024.
35. Ghotbizadeh F, Panahi Z, Manshadi AT, Soltani S, Akbari R, Parsapur M. Maternal health literacy and pregnancy outcomes: does any association exist? *J Obstet Gynecol Cancer Res*. 2023;8(1):68–75. doi:10.30699/jogcr.8.1.68
36. Hashmi A, Carrara VI, Nyein PB, Darakamon MC, Charunwatthana P, McGready R. The healthy baby flipbook: piloting home-based counseling for refugee mothers to improve infant feeding and water, sanitation, and hygiene (WASH) practices. *Global Health Action*. 2019;12(1):1560115. doi:10.1080/16549716.2018.1560115

Journal of Multidisciplinary Healthcare

Publish your work in this journal

The Journal of Multidisciplinary Healthcare is an international, peer-reviewed open-access journal that aims to represent and publish research in healthcare areas delivered by practitioners of different disciplines. This includes studies and reviews conducted by multidisciplinary teams as well as research which evaluates the results or conduct of such teams or healthcare processes in general. The journal covers a very wide range of areas and welcomes submissions from practitioners at all levels, from all over the world. The manuscript management system is completely online and includes a very quick and fair peer-review system. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/journal-of-multidisciplinary-healthcare-journal>

Dovepress
Taylor & Francis Group