International Journal of Women's Health

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ORIGINAL RESEARCH

Factors Influencing Maternal Health Literacy in Postpartum Women

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Background and Purpose: Maternal health literacy affects maternal and child health outcomes. The findings of previous studies have shown, that mothers with low maternal health literacy have inappropriate healthcare behaviors, especially among postpartum women. However, there is still a paucity of studies on the correlates of maternal health literacy in postpartum mothers. This study aimed to examine the predictive power of age, education level, family income, social support, and media use on maternal health literacy in postpartum women.

Patients and Methods: A cross-sectional study was conducted among eligible postpartum women who delivered at full term and were admitted to the postpartum unit at two university hospitals. The purposive sampling method was employed. Data were initially collected at the postpartum unit. Then, after six weeks, data collection was performed online. The instruments used included the personal record form, the Social Support in Postpartum Questionnaire, the Media Use Questionnaire, and the Maternal Health Literacy Scale. After six weeks, nine women had not responded to the questionnaire at 6 weeks postpartum, and after identifying the outliers, 112 postpartum women were selected for analysis. Descriptive statistics and Multiple Linear Regression were used for data analysis in PASW Statistics version 18.

Results: Age, education level, family income, social support, and media use together statistically significantly predicted maternal health literacy among postpartum mothers, accounting for 32.90% ($R^2 = 0.329$, $F = 10.382$, $p < 0.001$). Specifically, social support ($\beta = 0.545$, $p < 0.001$) and family income ($\beta = 0.174$, $p < 0.05$) were statistically significant predictors of maternal health literacy.

Conclusion: Postpartum mothers should be supported in their efforts to access maternal health information with the assistance of family members to promote maternal health literacy.

Keywords: maternal health literacy, postpartum period, social support

Introduction

Maternal health literacy refers to the cognitive and social skills that determine a mother's motivation and ability to understand and utilize health information to promote and maintain good health for herself and her baby.[1] The postpartum period, which spans from childbirth to the first 6 weeks (42 days), is a crucial time for women, newborns, and families. Maternal and neonatal mortality and morbidity rates remain alarmingly high, and the full potential to enhance maternal well-being and promote better newborn care has yet to be realized.[2] To ensure maternal and newborn health care and services are accessible to all, UNICEF and its partners have implemented policies to utilize evidence, monitor progress, and promote learning. These aim to provide every pregnant woman, new mother, and newborn with an opportunity for survival, health, and well-being, regardless of their location.[3] Although some postpartum mothers may have knowledge of postpartum care practice and awareness of complications, gaps in their understanding could lead to inadequate application and assessment of postpartum care. The low level of maternal health literacy among postpartum mothers is of concern because it may hinder their ability to make informed decisions about health information.[4] High maternal health literacy contributes to positive health behaviors for mothers and infants,[5,6] and is crucial for achieving the Sustainable Development Goals (SDGs), particularly SDG Goal 2 (Zero Hunger), which focuses on reducing malnutrition in children and addressing the nutritional needs of pregnant and lactating women to ensure food security and

Received: 10 December 2024
Accepted: 12 March 2025
Published: 21 April 2025

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improved nutrition,[7] and SDG Goal 3 (Good Health and Well-being), which aims to reduce global maternal and neonatal mortality.[2,7] Improving maternal health literacy empowers mothers to mitigate health risks and make informed healthcare decisions.[8] This literacy can enhance maternal awareness regarding preventing complications and risk factors for mothers and children, enabling mothers to make informed health decisions, an essential which are in maternal and child safety, and reducing maternal morbidity and mortality.[9–11]

According to reviews, maternal health literacy significantly determines health behaviors and outcomes, particularly among postpartum mothers.[5] Issues related to maternal health conditions are often linked to improper self-care practices.[12] For instance, a study conducted in a country in Southeast Asia indicated that mothers with low maternal health literacy exhibited inappropriate healthcare behaviors.[13] This was attributed to challenges in accessing information, such as difficulties in finding or using educational resources,[13] and inadequate understanding of medical advice and health information necessary for postnatal care.[14] According to a study conducted in Atlanta, Georgia,[15] mothers with low maternal health literacy had less intention to engage in exclusive breastfeeding because they did not adequately comprehend the information they received on this subject.

Postpartum mothers are encouraged to have a higher level of maternal health literacy, and exhibit improved maternal health behaviors and outcomes. This includes exclusive breastfeeding within 24 hours, extending to six weeks postpartum. Adhering to these practices reduces the incidence of acute mastitis, postpartum constipation, postpartum overweight, and dermatitis in infants.[5] Mothers with adequate health literacy are better informed, so they can more effectively evaluate the impact of the information they receive on their ability to care for their children compared to mothers with low health literacy.[16] Furthermore, mothers with high levels of maternal health literacy were capable of higher levels of maternal health care practices,[13] which ensured that their children were fully immunized.[17,18]

The Integrated Model of Health Literacy established by Sørensen et al[19] conceptualizes the knowledge, motivation, and competencies required to access, comprehend, evaluate, and apply health-related information within healthcare, disease prevention, and health promotion contexts. Factors influencing health literacy can be categorized into distal determinants, such as societal and environmental influences, and proximal determinants, which include personal, socioeconomic, and situational factors.[19] Maternal health literacy is a critical form of health literacy that focuses on the ability to access information. It involves assessing data reliability and having confidence in making decisions regarding the selection of existing health information for use in maternity situations and contexts.[1] Guttersrud et al[20] developed the concept of maternal health literacy by integrating the concept of health literacy developed by Sørensen et al[19] with the ability to play maternal roles such as competence and coping skills and health information appraisal.[20]

Previous studies on motherhood have identified several factors related to maternal health literacy, including personal determinants such as age,[14,17,21,22] education level,[14,16,21,23,24] and family income.[14,16,23–26] In addition, situational determinants have included social support,[16,23,26] and media use for accessing health information pertinent to health-related decision-making.[27,28]

Age influences how individuals respond to events and their ability to adapt. As people age, they generally experience an increase in cognitive skills, physical preparedness, and proficiency in accessing health resources.[14] Furthermore, increased maternal maturity has been correlated with higher levels of maternal health literacy, subsequently resulting in more appropriate health behaviors.[14,21,22]

The level of education was found to correlate with maternal health literacy.[14,16,21,23,24] This review showed that mothers with higher education levels had better skills required to find, read, and understand health information.[14,16,21] Maternal health literacy increases with maternal education levels.[14]

Family income is an indicator of economic status, providing more opportunities to access health services and obtain health information.[14,23] Consequently, economically viable women tend to have adequate maternal health literacy.[14,24,25]

Social support impacts maternal health literacy since a companion frequently accompanies a pregnant woman to antenatal care services where she receives the necessary health information,[26] contributing to maternal health literacy[23,26] which enables her to make appropriate healthcare decisions from pregnancy through postpartum.[29] Additionally, receiving appropriate parenting assistance and emotional support ensures that mothers maintain good mental health, allowing them to evaluate and make decisions based on the health information they have received.[16,23]

The use of media refers to communication channels utilized to search for and receive health information, either directly from service providers or through online[30] and offline media. Intrinsically, media use is linked to health literacy.[19,31,32] Research has indicated that mothers' behavior of seeking health information from internet media influences maternal health literacy.[27] Additionally, mothers utilize media as a source of health information for both themselves and their babies.[28] However, a study conducted in Thailand[33] found that media use did not differently affect health literacy across age groups.

Maternal health literacy impacts care practices during the puerperium, as well as care-seeking behaviors and ongoing postnatal follow-up.[5] Despite the importance of maternal health literacy for this phase in the maternal and neonatal continuum of care, few studies have explored the factors influencing maternal health literacy during this period. This study aimed to identify these factors to provide further insights into enhancing health-promoting behaviors among postpartum mothers and their newborns.

Material and Methods

Design and Study Area

This study was conducted in central Thailand, focusing on two university hospitals, including Ramathibodi Hospital in Health Region 13, which covers Bangkok, the nation's capital. According to the 2021 annual report, Bangkok had a population of 5,457,986, of whom 2,903,889 were women.[34] The city has 13 hospitals under the Ministry of Public Health, 28 hospitals managed by other agencies, and 68 public health service centers across all districts. Ramathibodi Chakri Naruebodindra Hospital is located in Health Region 6, Samut Prakan Province, approximately 40 km from Bangkok. Health Region 6 comprises eight provinces and includes 853 hospitals under the Ministry of Public Health, 7 hospitals managed by other agencies, and 28 municipal public health service centers.[35] According to the 2021 annual report, the region had a population of 1,335,201, with 699,914 women.[34] This study employed a cross-sectional design and was conducted between May 2023 and January 2024.

Population and Samples

Using the purposive sampling method, this study selected postpartum mothers at full term (gestational age between 37 weeks and 42 weeks) based on the following inclusion criteria. 1) Single childbirth that occurred without any comorbidities or complications during pregnancy, labor, or the postpartum period, such as heart disease, thyroid disease, diabetes, high blood pressure, postpartum infection, and postpartum hemorrhage. 2) Simultaneous discharge of mothers and newborns. 3) Ability of mothers to read, write, and communicate in Thai, their possession of mobile phones, and internet access. This study excluded mothers diagnosed with postpartum depression and those with a history of mental illness or mental symptoms. This study also excluded babies with serious complications requiring transfer to the neonatal hospitalization ward and those with severe congenital malformations such as congenital heart disease.

The sample size was calculated using the G* Power 3.1.9.2 program. The power of the study was 80% and the significance level was 5%. This study conducted a power analysis for the Multiple Regression Coefficient statistical tests based on related previous studies in the United States;[16] in which a statistically significant correlation was found between education level and maternal health literacy ($r = 0.33$, $p < 0.01$). Subsequently, $R^2 = 0.1089$ was calculated with an effect size of $f^2 = 0.1222$, indicating that in this study, 111 subjects were required, and 10% was added in case of data loss,[36] resulting in a total of 122 subjects.

Research Instruments

Instruments for Implementation

This study utilized the following four categories of data collection tools:

1. The Personal Data Questionnaire Part 1 included general information such as age, marital status, family characteristics, education level, current occupation, average monthly family income, receipt of postpartum and neonatal self-care advice, and people who provided healthcare information. There were 8 questions in total. Part 2 included data from the medical history file, including pregnancy and previous births, number of children, age at

the first antenatal visit, number of antenatal visits, and delivery history including the gestational age at birth and method of delivery. Neonatal health assessment included APGAR scores at one minute and five minutes, neonatal weight, and infant health during hospital stay.

2. The Postpartum Maternal Social Support Questionnaire developed by Sitthiboonma et al[37] was based on House's concept of social support.[38] This assessed the perception of postpartum mothers regarding support in various aspects, including emotional, informational, instrumental, and appraisal areas. The questionnaire consisted of 37 questions, with the total score ranging from 37 points to 185 points. A higher total score indicated that postpartum mothers received higher social support, while a lower total score indicated lower social support.
3. The Media Use as Health Information Resource Questionnaire was developed during this study based on a review of previous studies.[39–41] It evaluated the media channels for seeking health information about postnatal self-care and newborns from medical personnel or hospitals as a source of health information. Eleven items were divided into the use of online media and the use of offline media. The score was interpreted based on the averages of online and offline media usage. The average score for online media use was higher than that for offline media use, indicating that online media was the primary source of health information. Conversely, if the average score in the offline media usage section was greater than in online media usage, it would indicate that offline media was the primary source of health information.
4. The Maternal Health Literacy Scale Questionnaire was developed by Guttersrud et al[20] based on the concept of maternal health literacy. It was translated into Thai and verified using back-translation, and the questionnaire was adapted to fit the postpartum mother's context to assess maternal health literacy. There were 12 questions in total. Scores for the Maternal Health Literacy assessment ranged from 12 to 72, with the score being directly proportional to the maternal health literacy level.

Data Quality Assurance

The questionnaires were suitably constructed; three experts, including an obstetric nurse teacher, evaluated the quality and language suitability of the instruments to ensure correctness. The content validity indexes of the questionnaires were as follows: the Postpartum Maternal Social Support Questionnaire had a score of 1. The Media Use as Health Information Resource Questionnaire also had a score of 1, and the Maternal Health Literacy scale questionnaire also had a score of 1.

This study had applied pilot-tested questionnaires on a sample of 30 subjects similar to the study participants at 6 weeks after parturition who were undergoing postpartum follow-up at Ramathibodi Hospital and Ramathibodi Chakri Naruebodindra Hospital. The Cronbach's alpha coefficient for the Postpartum Maternal Social Support Questionnaire was 0.798, that for the Media Use as Health Information Questionnaire was 0.803, and that for the Maternal Health Literacy Scale Questionnaire was 0.804.

Methods of Data Collection

Data collection began in the postpartum unit and later continued online at six weeks postpartum. By the six-week postpartum period, many physical and emotional changes from childbirth typically stabilize. This timeframe allows for a more accurate assessment of maternal health, well-being, and recovery.

The initial phase of the research participation process involved recruiting potential subjects in the postpartum unit prior to their discharge from the hospital. This approach ensured that the subjects were comprehensively informed regarding the purpose, procedures, and potential impacts of the study. After providing verbal consent, the mothers were requested to formalize their participation by signing a consent form. For those under 18 years of age, informed consent was obtained from parents or legal representatives, in addition to participant assent. Subsequently, the subjects were asked to complete Part 1: General Information, while the researcher collected information on pregnancy and labor/delivery history from medical records.

Subjects were then invited to join an online platform created by the researcher for research communication. Clear instructions were provided for access and use. At 6 weeks post-birth, subjects who permit follow-up received a questionnaire via the platform or telephone. During this time, they maintained their usual activities without study interventions.

At the end of six weeks, participants received an online questionnaire (Google form) via a link and QR code on the online platform. This included the Postpartum Maternal Social Support Questionnaire, the Questionnaire on the Use of Media as a Health Information Resource, and the Maternal Health Literacy Scale Questionnaire. The researcher confirmed the completeness of the responses before proceeding with statistical analyses and drawing conclusions.

In cases where participants did not respond, the researcher followed up online the next day and/or made a single phone call. Participants who could not be contacted through either method were considered to have voluntarily withdrawn from the study.

Data Analysis

The data were analyzed using PASW Statistics version 18.0, with the threshold for statistical significance set at $p < 0.05$.

Quantitative data were presented using mean values with standard deviations for normally distributed data or median values with interquartile ranges for non-normally distributed data. Personal data were presented as frequencies and percentages. The relationship between categorical variables (family income level and media use) was examined using the Point Biserial Correlation Coefficient. In addition, the relationships between age, education level, social support, and maternal health literacy were analyzed using Pearson's Product-Moment Correlation.

The influence of factors such as age, education level, family income, social support, and media use on maternal health literacy was analyzed using multiple linear regression with the Enter method in PASW Statistics version 18. The analysis was conducted based on the following assumptions: 1) maternal health literacy was measured on an interval scale and followed a normal distribution, as verified using the Kolmogorov–Smirnov test ($p > 0.05$); 2) predictor variables were either quantitative, such as age, education, and social support, or categorical, with categorical ones including family income (≤ 45,000 baht = 0; > 45,000 baht = 1) and media use (online media = 0; offline media = 1); 3) multicollinearity between independent variables was assessed using the variance inflation factor; 4) the residual terms had constant variance, ensuring homoscedasticity; 5) autocorrelation was tested using the Durbin–Watson test, with an expected value near 2; 6) variables were normally distributed with a mean of 0; and 7) the mean values of the outcome variable for each increment of the predictors lay along a straight line, ensuring linearity.[42]

Results

Out of the 122 eligible participants, nine did not respond to the questionnaire at six weeks postpartum. Therefore, this study culminated with 113 study participants. After identifying and removing one outlier, the sample size for statistical analysis was 112 cases.

Socio-Demographic Characteristics

Participants were aged 16–43 years with a mean age of 31.13±5.47 years. Nuclear families accounted for 56.25% of the sample, while extended families made up 43.75%. The mean education duration was 14.71±2.28 years, with 64.29% of participants holding at least a bachelor's degree. Family incomes ranged from 10,000 baht to 250,000 baht per month, with a mean value of 45,071.49±31,231.97 baht (Table 1).

Table 1 Sociodemographic Characteristics of the Study Participants (N = 112)

Demographic Data	Category	Total (N = 112)	Percent (100%)
Age (years)	≤19 20–34 ≥35	2 83 27	1.80 74.10 24.10
	Min/Max: 16/43		
	Mean±SD: 31.13±5.47		
Marital status	Married Divorced/Widowed/Separated	88 2	98.20 1.80

(*Continued*)

Table 1 (Continued).

Demographic Data	Category	Total (N = 112)	Percent (100%)
Family types	Nuclear family Extended family Own family member Husband's family member	63 49 43 6	56.25 43.75 87.76 12.24
Education level	Secondary school or less than High school/Vocational/Diploma Bachelor's degrees or above	7 33 72	6.25 29.46 64.29
	Min/Max: 9/18 years		
	Mean±SD: 14.71±2.28		
Occupations	Government employee Private employee/Employment Self-employed/Merchant Other (student/housewife/ unemployed)	25 44 21 22	22.30 39.30 18.80 19.60
Family income (baht)	≤15,000 15,001–30,000 30,001–45,000 >45,000	5 35 30 42	4.46 31.25 26.79 37.50
	Min/Max: 10,000/250,000		
	Mean±SD: 45071.49±31,231.97		
Obtain the necessary information on postpartum self-care and newborn care	At the Maternity ward At the ANC & Maternity ward	71 41	63.40 36.60

Abbreviations: ANC, antenatal care; SD, standard deviation.

Obstetric Characteristics

First-time pregnancies were reported by 46.42% of subjects, and 73.21% of them visited the antenatal clinic before 12 weeks' gestation. The mean number of prenatal visits was 9.03±2.24, with 98.20% of participants attending at least five visits (Table 2).

Table 2 Obstetric Characteristics of the Study Participants (N = 112)

Demographic Data	Category	Total (N = 112)	Percent (100%)
Pregnancy order	1 ≥2	52 60	46.42 53.58
	Min/Max: 1/5		
GA at first visit (week)	<12 ≥12	82 30	73.21 26.79
	Min/Max: 5 5/7 weeks 32 4/7 weeks		
ANC visit	<5 ≥5	2 110	1.80 98.20
	Min/Max: 2/16		
	Mean±SD: 9.03±2.24		

(*Continued*)

Table 2 (Continued).

Demographic Data	Category	Total (N = 112)	Percent (100%)
Place of birth	University Hospitals, tertiary care University hospitals, primary and secondary care	51 61	45.54 54.46

Abbreviations: GA, gestational age; ANC, antenatal care; SD, standard deviation.

Media Use Data

Online platforms were used by 97.3% of subjects for health information (Table 3).

Level of Social Support

The social support mean score was 156.71±20.44 (range: 109–185). The mean emotional support score was 35.13±4.84, the mean information support score was 41.21±6.57, the mean instrumental support score was 43.61±5.86, and the appraisal support score was 36.75±6.46 (Table 4).

Level of Maternal Health Literacy

Maternal health literacy scores ranged from 45 to 72, with a mean value of 60.94±7.07 (out of 72). The mean scores were 35.00±4.50 in the appraisal of health information and 25.94±3.25 in competence and coping skills (Table 5).

Maternal Health Literacy and Associated Factors

The findings revealed that there was a statistically significant positive correlation between social support and maternal health literacy ($r = 0.540$, $p < 0.01$). Furthermore, there was a statistically significant positive correlation between age and level of education ($r = 0.462$, $p < 0.01$). Additionally, there was a statistically significant positive correlation between the level of education and family income ($r = 0.336$, $p < 0.01$; Table 6).

Table 3 Media Use as a Source of Health Information Classified According to the Media Platform Consulted Regularly to Seek Health Information (N = 112)

Variable	Platform of Media	Total (N = 112)	Percent (100%)
Media use	Online Offline	109 3	97.30 2.70

Table 4 Social Support Scores According to Dimensions (N = 112)

Dimensions of Variables	Ranges of Scores		Mean	SD
	Possible Score	Actual Score		
Emotional support	8–40	22–40	35.13	4.84
Information support	10–50	26–50	41.21	6.57
Instrumental support	10–50	27–50	43.61	5.86
Appraisal support	9–45	14–45	36.75	6.46
Total Social Support	37–185	109–185	156.71	20.44

Abbreviation: SD, standard deviation.

https://doi.org/10.2147/IJWH.S511322

Table 5 Maternal Health Literacy Scores According to Dimensions (N = 112)

Dimensions of Variables	Ranges of Scores		Mean	SD
	Possible Score	Actual Score		
Appraisal of health information	6–42	24–42	35.00	4.50
Competence and coping skill	6–30	20–30	25.94	3.25
Total Maternal Health Literacy	12–72	45–72	60.94	7.07

Abbreviation: SD, standard deviation.

Table 6 Correlations Between Variables and Maternal Health Literacy Levels

Variables	1	2	3	4	5	6
1 Age	1					
2 Education level	0.462**	1				
3 Family income	0.174	0.336**	1			
4 Social support	−0.069	0.041	0.040	1		
5 Media use	−0.075	−0.052	−0.129	−0.027	1	
6 Maternal Health Literacy	−0.027	−0.044	0.146	0.540**	0.049	1

Notes: **= $p < 0.01$; Correlations were significant at the 0.01 level (2-tailed).

The multiple linear regression analysis revealed that age, education level, family income, social support, and media use together predicted a statistically significant 32.90% variance in maternal health literacy ($R^2 = 0.329$, $F = 10.382$, $p < 0.001$). Among these, two factors (family income and social support) were identified as significant predictors of maternal health literacy (Table 7).

Table 7 Predictive Factors of Maternal Health Literacy in Postpartum Women Using Multiple Regression (N = 112)

Variables	B	SE	Β	t	*p*-value
Age	0.068	0.117	0.053	0.584	0.560
Education level	−0.448	0.292	−0.145	−1.538	0.127
Family income (baht)					
≤45,000	Reference	-	-	-	-
>45,000	2.528	1.237	0.174	2.044	0.043*
Social support	0.188	0.028	0.545	6.805	<0.001**
Media use					
Online	Reference	-	-	-	-
Offline	3.594	3.503	0.083	1.026	0.307
Constant	34.836	6.046	-	5.762	<0.001**
$R = 0.573$, $R^2 = 0.329$, Adjust $R^2 = 0.297$, $F = 10.382$, $p < 0.001$**					

Notes: *=Significant $p < 0.05$; ** =Significant $p < 0.001$.
Abbreviations: B, non-standardized coefficient; SE, standard error of the estimate; β, standardized coefficient; t, t-value; F, F-value; p, p-value.

Family income was found to be a significant predictor of maternal health literacy (β = 0.174, p < 0.05) (Table 7). Postpartum mothers whose family income exceeded 45,000 baht had maternal health literacy levels 2.528 points higher than those of postpartum mothers with a family income of ≤45,000 baht after adjusting for other variables.

Social support emerged as a significant predictor of maternal health literacy (β = 0.545, p < 0.001) (Table 7). An increase of one point in social support corresponded to a rise of 0.188 points in maternal health literacy values after adjusting for other variables.

Discussion

Maternal health literacy is important for the well-being of both mothers and their newborns. The maternal health literacy score showed that mothers understood and applied the content received after giving birth, consistent with a previous study,[4,5] which reported increased maternal health literacy levels among mothers who received postpartum self-care and neonatal care education at six weeks.[5] Enhanced maternal health literacy positively impacts a woman's knowledge and health behaviors,[43] subsequently improving her adjustment to postpartum motherhood.[44]

According to this study, the mean score of maternal health literacy was 60.94±7.07 (out of 72), with a minimum maternal health literacy score of 45 and a maximum of 72. Similarly, another study found that the mean score of maternal health literacy in Thai pregnant women was also high.[26] This might result from the policy of quality maternal care during pregnancy and after birth. Consequently, postpartum mothers could understand and apply the content to care for themselves and their babies.

The evidence showed a statistically significant positive correlation between social support and maternal health literacy. This outcome aligned with research conducted in Thailand,[26] China,[23] and the USA.[16] These findings suggest that participants who received substantial social support also had higher maternal health literacy. This underscores the importance of a support system in improving health literacy among postpartum mothers.

This study's that all mothers receive health information during antenatal visits and postpartum and newborn care information after childbirth in the maternity ward. The results of the study found that 73.21% of participants attended antenatal care before 12 weeks of gestation, and 98.20% of participants attended prenatal care at least five times. Therefore, the participants received information support from healthcare providers during those visits. Moreover, the highest average social support score was from individuals who were close to the people bringing them to scheduled examinations. About 43.75% of the subjects had extended families, and nearly all postpartum mothers (98.20%) lived with their husbands. This living arrangement allowed them to receive assistance from their husbands and close family members in accessing postpartum care services, obtaining health information, and receiving the necessary health information, which contributed to maternal health literacy. These findings aligned with similar results observed in Thailand[26] and China.[23] Additionally, the availability of social support sources was associated with making appropriate healthcare decisions based on health information received from pregnancy[26] through postpartum,[16,23] which was consistent with the findings of Barnes et al' s systematic review.[29]

Maternal health literacy is primarily shaped by support from family, medical professionals, friends, and relatives. This support includes providing information and emotional assistance, expanding access to maternal health resources, and raising awareness to encourage proactive health information-seeking.[23]

Family income emerged as a significant predictor of maternal health literacy. Higher family incomes allowed mothers to attend more antenatal and follow-up appointments, utilize health services when needed, and consequently obtain the necessary health information to care for themselves and their babies after birth. Women with higher wealth status were more likely to utilize postnatal care than those with the lowest income status.[45] Higher wealth status can provide better access to information platforms and service channels, expanding maternal knowledge and supporting health decisions,[23] ultimately leading to adequate maternal health literacy.[17] This finding aligned with a study by Bello et al[14] which highlighted the role of income in predicting access to health resources and promoting healthy pregnancy outcomes. This suggested that higher family income levels ensured better access to resources and information, enhancing maternal health literacy.

In this study, the average age of the mothers was 31.13±5.47 years, with only 1.80% being 19 years old or younger. No significant statistical differences in maternal health literacy were observed, which may be due to the participants'

https://doi.org/10.2147/IJWH.S511322

similar ages. This result indicated that age was not correlated with maternal health literacy, consistent with other studies that found no significant effect of age on maternal health literacy.[13,16,23]

This study found no significant correlation between education levels and maternal health literacy and elucidated that the health information received directly from healthcare professionals was comprehensive, ensuring mothers of varying education levels received equal health information. With the increasing number of health information sources available nowadays, mothers have easy access to information from the pregnancy stage onward.[26,46] The current social nature offers numerous health information resources, making it easier for pregnant women and postpartum mothers with varying educational backgrounds to access health information. This finding aligned with a previous study by Andong et al[4] which found that different levels of maternal education did not affect maternal health literacy levels.

According to a recent study by Slomian et al[28] postpartum mothers used the internet the most to gather health information and gained confidence in making decisions about their own and their babies' health after using it as a source of information.

In this study, media use as a health resource was not a significant predictor of maternal health literacy, despite the high engagement with digital platforms among postpartum mothers. The results emphasized the importance of maintaining direct communication between healthcare providers and patients, especially for conveying critical health knowledge. According to a recent study by Punduk Yilmaz et al[47] face-to-face breastfeeding education led to more improvement in breastfeeding practice scores compared to video-based education. Face-to-face interactions in health education hold a unique value that digital means often cannot fully replicate.

Additionally, this study has pointed out the necessity of adapting health communication strategies to the specific needs and contexts of various populations. While digital media can effectively disseminate health information, it should be thoughtfully integrated with traditional methods to ensure optimal outcomes.

Future research should investigate innovative approaches to enhance the use of digital media in health literacy, potentially through targeted interventions that complement the direct guidance from healthcare professionals. This could better leverage the potential of digital platforms to support informed decision-making and improve health outcomes across diverse populations.

This study's main strength lies in its recruitment of participants from the postpartum units at two different university hospitals which provide healthcare services for all people in Thailand.

The study area for this research showed that health personnel appeared to be the primary source of information for mothers. Therefore, this study's findings can reflect maternal health literacy among postpartum mothers in similar contextual studies. However, it used purposive sampling, which limited the generalizability of its findings. Future studies should use cluster random sampling to improve the representativeness of the study sample.

Conclusion

Maternal health literacy plays a crucial role in shaping care practices during the puerperium, significantly influencing maternal and neonatal well-being during this critical phase of the continuum of care. This study has demonstrated that age, education level, family income, social support, and media use together significantly predict maternal health literacy among postpartum mothers. Specifically, social support and family income were significant influences on maternal health literacy in postpartum mothers. However, no significant correlation was found between age, education level, or media use and maternal health literacy.

Healthcare providers should help these mothers access health information with family assistance. This study has emphasized the importance of targeted interventions to improve maternal health literacy and suggests economic support for low-income families to boost financial stability and health outcomes. Programs to increase social support for postpartum mothers through community groups, healthcare providers, and social networks are essential. A well-organized social support system allows women to effectively utilize available resources and improves their maternal health literacy.

Abbreviations

APGAR, which is a score for assessing a newborn's well-being, is the sum of five rated conditions; ANC, antenatal care; SD, standard deviation; GA, gestational age; ANC, antenatal care; SD, standard deviation; B, non-standardized coefficient; SE, standard error of the estimate; β, standardized coefficient; t, t-value; F, F-value; p, p-value.

Ethics Approval and Informed Consent

This research project was approved and certified by the Human Research Ethics Committee of the Faculty of Nursing (NSIRB) together with the Human Research Ethics Committee of the Faculty of Medicine at Ramathibodi Hospital (RAMAIRB), Mahidol University, and the approval number is MU-MOU CoA No. IRB-NS/2023/761.0803, date of approval: March 8, 2023. This study was conducted in accordance with the principles of the Declaration of Helsinki. All participants were treated ethically following Human Research Protection guidelines, and data collection adhered to international standards set by the Human Research Ethics Committee.

Acknowledgments

The authors would like to give special thanks to the venues of data collection, and the nurses stationed in the ward who cooperated and facilitated for the successful collection of this study's data, as well as heartfelt thanks to all the participants who contributed to this research.

Disclosure

The authors report no conflicts of interest in this work.

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