

Relationship between post-partum mothers' knowledge and essential newborn care practices in Jambi, Indonesia

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ABSTRACT

Introduction: Essential Newborn Care (ENC) is crucial for neonatal survival, which is known to be very significant for the objective of Sustainable Development Goals in 2030 as an attempt to decrease neonatal morbidity and mortality. Mothers play an important role in ENC. This study aimed to delve into the relationship between mothers' knowledge, parity, education level, age, occupation, economic status, and ENC practices in post-partum mothers.

Materials and Methods: A cross-sectional design was conducted in Jambi, Indonesia from June to August 2021. There were 152 post-partum mothers who had neonates aged 0–28 days, consisting of 76 primiparous and 76 multiparous mothers. A questionnaire on ENC knowledge and practice was utilized to collect the data from the instrument of the previous study. The data were examined using univariate, bivariate, and multivariate analyses.

Results: Multivariate analysis on ENC practices revealed that mothers with low knowledge had a higher risk of performing poor ENC practices with OR 10.6 than those with high knowledge, and it was significantly different. Mothers with low educational level had more risks of practicing poor ENC with OR 2.9 than those with high educational level, which was significantly different. Meanwhile, parity, age, occupation, and economic status of post-partum mothers did not present a statistically significant correlation ($p > 0.05$) with ENC practices.

Conclusion: There was a significant difference in ENC practices, with high risk in those who had low knowledge followed by low education. There was no association between ENC practices and parity, age, occupation, and economic status of post-partum mothers. These findings highlight the importance of improving the knowledge of post-partum mothers in supporting ENC practices. The result of the study should nevertheless be interpreted in such a way by considering the limitations of the study design and the instruments used.

KEYWORDS:

Essential newborn care, practices, mothers' knowledge, post-partum mothers

INTRODUCTION

According to World Health Organization (WHO), approximately 66% of infants in the world die in the first 24 hours of life and 34% die after 24 hours of life.¹ Although globally the infant mortality rate decreased from 31 deaths to 18 deaths per 1,000 live births in 2017, the trend of the neonatal mortality rate, however, remains relatively higher than that in other Southeast Asian countries.² The risk of death is doubled in babies born to mothers with low economic status and education levels.^{3,4} This indicates that neonatal mortality is not only induced by medical causes such as prematurity, pneumonia, and low birth weight, but it can also be fueled by sociodemographic conditions.

Indonesian Demographic and Health Survey (IDHS) reported infant mortality rate in Indonesia decreased significantly from 32 deaths to 24 deaths per 1,000 live births in 2017.⁵ Infant mortality is influenced by the quality of newborn care, which is still below the standard.⁶ WHO recommends that the standard of essential newborn care (ENC) have to meet three important aspects, namely prevention of heat loss, umbilical cord care and breastfeeding.⁷⁻⁸ Parenting process can describe the mother's knowledge and skills in providing the best care for her baby.⁹ Babies born to primiparous mothers are at greater risk of death than those born to multiparous mothers,¹⁰ which suggests parity affects neonatal mortality. Knowledge of newborn care is pivotal for primiparous mothers. Some newborn care practices are known to adopt traditional notions.¹¹⁻¹⁴ This happens when primiparous mothers have low knowledge.¹⁵

Neonatal survival is essential to achieve the development goals of the Sustainable Development Goals (SDGs). Health development priorities include family development.² As a family component, mothers play an important role in optimizing the growth and development of their children.

MATERIALS AND METHODS

This was a cross-sectional study with an analytical approach, which was conducted in the sub-district of Maro Sebo Ilir, District of Batang Hari, Jambi Province, from June to August 2021. The study population was post-partum primiparous and multiparous mothers who had infants aged 0 - 28 days. Purposive sampling was used to gather the samples. The inclusion criteria were singleton, born vaginally without

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equipment assistance with gestational age of 37 - <42 weeks, normal birth weight (2500 - <4000g), and oral feeding. Exclusion criteria, on the other hand, include newborn with congenital anomalies, birth trauma, severely-ill mothers, mothers with post-partum depression, mothers unable to breastfeed their newborns due to their health issues, newborn or mothers remained in the hospital care. The total number of samples in this study was 152, consisting of 76 primiparous mothers and 76 multiparous mothers.

Knowledge of post-partum mothers was the independent variable of this study, whereas the dependent variable was the practice of ENC. Meanwhile, age, education level, economic status, and occupation served as the confounding variables.

We used Google form to collect the data, and were assisted by 1 midwife and 1 research assistant. The data were gathered using a questionnaire of knowledge and ENC practices. The instrument used in the study was adapted from the one that had been employed and validated in the previous research, with Cronbach's alpha 0,76.¹⁶ Validation and reliability tests in this study were not reiterated. This limitation had been regarded in the interpretation of the result of the study and was declared in the Discussion.

The questionnaire was made up of three major domains, namely prevention of heat loss, umbilical cord care, and breastfeeding. The questionnaire evaluated the 3 components as part of newborn care. The scoring of ENC knowledge and practices was based on the percentage of the correct answers from the maximum total score. Knowledge and practice of ENC were considered good if they were $\geq 75\%$ and were stated insufficient if they were $< 75\%$. The cut off 75% to categorize knowledge and practice of ENC was based on Guidelines for Essential Newborn Care, Ministry of Health, Republic of Indonesia⁸ and the previous study,¹⁷ which recommended that adequate knowledge and practice of ENC should reach at least 75% of the evaluated indicator.

Primipara refers to mothers who have given birth to their babies once only, whereas multipara pertains to those who have given birth multiple times or more than once. The age of mothers was divided into 2 groups, namely < 20 or > 35 years and 20-34 years. Mothers' educational levels were categorized into low if they were < 9 years and high if they were 9-12 years. Meanwhile, the economic status of mothers was based on the Regional Minimum Wage (RMG) in Jambi province in 2021, which was Rp 2.630.162, and it was defined as low if the family income was $< \text{RMG}$ and high if it was $> \text{RMG}$. Mothers' occupation was described as their daily activities, which belonged to working mothers if they worked outside their homes for salaries and housewives if they worked at home.

Statistical analysis

The data were examined using univariate, bivariate, and multivariate analyses. The correlation between independent and dependent variables was analyzed using a statistical test conforming to $p < 0,05$. The variable with $p < 0,25$ based on bivariate analysis will be put into multivariate analysis. The result of multivariate analysis was presented in odds ratio

(OR) and confidence interval 95% (IK95%). The data were processed into SPSS 25 (Library of Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada).

Ethics approval

This study was conducted in accordance with relevant guidelines and regulations. Ethical clearance was obtained from the Ethics Commission of Aisyiyah University, Yogyakarta, which was declared ethically appropriate with approval no.1403/KEP-UNISA/V/2021.

RESULTS

The majority of primiparous and multiparous mothers had an age range of 20-35 years, with the level of education ranging from 9 to 12 years. Primiparous mothers had lower economic status than multiparous mothers, with 68.4% and 47.4% respectively. In terms of ENC knowledge, both primiparous and multiparous mothers had the same level of ENC knowledge, with 94.7% having high knowledge. In the practice of ENC, 72.4% primiparous mothers had good ENC practices, and multiparous mothers had 78.9% which was obviously better ENC practice (Table I).

Primiparous mothers with low knowledge were prone to practice poor ENC practices 9 times as much as those who had good knowledge, although it was not statistically significant. Meanwhile, multiparous mothers with low knowledge had the opportunity to have a poor ENC 13 times as much as those with good knowledge, which was statistically significant (Table II). Bivariate analysis on ENC practices showed that mothers whose knowledge was low had the risk of poor ENC practices with OR 10.9 compared with those with high knowledge and it was significantly different. Mothers with low educational level posed the risk of poor ENC practices with OR 3.5, which was significantly different from those with high educational level (Table III).

Multivariate analysis on ENC practices revealed that mothers with poor knowledge had higher risk of performing poor ENC practices with OR 10.6 than those with high knowledge and it was significantly different. Mothers with low educational level had more risks of practicing poor ENC with OR 2.9 than those with high educational level, which was significantly different (Table IV).

DISCUSSION

Correlation between knowledge and essential newborn care (ENC) practices

The result of the study shows a significant relationship between knowledge of post-partum mothers and ENC practices. Mothers with poor knowledge were more likely to perform low quality ENC than those who had better knowledge. This proves that knowledge plays an important role in the care of newborns. Mothers with high-quality knowledge generally have a better understanding of basic intervention in ENC.

The findings of our study was similar to that of a study conducted on 414 post-partum mothers, whereby 55.5% of whom had high knowledge.¹⁸ The same result was obtained

Table I: Characteristics of primiparous and multiparous mothers (N=152)

Characteristic	Primipara (n=76)		Multipara (n=76)		Total (N=152)	
	n	%	n	%	n	%
Age (years)						
<20 and >35	5	6.6%	4	5.3%	9	5.9%
20-35	71	93.4%	72	94.7%	143	94.1%
Education level (years)						
<9 years	17	22.4%	14	18.4%	31	20.4%
9-12 years	59	77.6%	62	81.6%	121	79.6%
Economic status (RMW)						
Low	52	68.4%	36	47.4%	88	57.9%
High	24	31.6%	40	52.6%	64	42.1%
Occupation						
Working mother	20	26.3%	16	21.1%	36	23.7%
Housewife	56	73.7%	60	78.9%	116	76.3%
Knowledge of ENC						
Low	4	5.3%	4	5.3%	8	5.3%
High	72	94.7%	72	94.7%	144	94.7%
ENC Practices						
Poor practices	21	27.6%	16	21.1%	37	24.3%
Good practices	55	72.4%	60	78.9%	115	75.7%

ENC: Essential Newborn Care, RMW: Regional minimum wage

Table II: Relationship between knowledge and essential newborn care practices (N=152)

Group	Knowledge ENC		Practices ENC		X ²	p	OR (95% CI)
			Poor practices	Good practices			
Primipara (n= 76)	Low	n	3	1	2.567	0.109	9.00 (0.88-92.06)
		%	75.0%	25.0%			
Multipara (n=76)	High	n	18	54	4.364	0.037*	13.62 (1.31-141.55)
		%	25.0%	75.0%			
	Low	n	3	1			
		%	75.0%	25.0%			
	High	n	13	59			
		%	18.1%	81.9%			

* p<0.05= significant difference. CI=confident interval, ENC= Essential newborn care, OR=odds ratio

Table III: Bivariate analysis knowledge and essential newborn care practices (N=152)

Variable	ENC practices				p	OR (95% CI)
	Low		High			
	n	%	n	%		
Knowledge						
Low	6	75.0% ^z	2	25.0%	0.001*	10.94 (2.10-56.88)
High	31	21.5%	113	78.5%		
Parities						
Primipara	21	27.6%	55	72.4%	0.345	1.43 (0.68-3.02)
Multipara	16	21.1%	60	78.9%		
Age of mother (years)						
<20 and >35	4	44.4%	5	55.6%	0.147	2.67 (0.68-10.51)
20-35	33	23.1%	110	76.9%		
Education						
Low	14	45.2%	17	54.8%	0.002*	3.51 (1.51-8.13)
High	23	19.0%	98	81.0%		
Occupation						
Working mother	6	16.7%	30	83.3%	0.219	0.55 (0.21-1.44)
Housewife	31	26.7%	85	73.3%		
Economic status						
Low RMW	25	28.4%	63	71.6%	0.239	1.72 (0.79-3.75)
High RMW	12	18.8%	52	81.3%		

*p<0.05=significant difference, CI=confident interval, ENC=essential newborn care, OR=Odds Ratio, RMW=Regional minimum wage

Table IV: Multivariate analysis knowledge and essential newborn care practices (N=152)

Variable	p	OR	95% CI
Knowledge	0.007*	10.59	1.92-58.53
Age of mother's	0.412	1.87	0.42-8.29
Education	0.038*	2.90	1.06-7.94
Occupation	0.981	0.99	0.34-2.85
Economic status	0.863	1.08	0.44-2.64

*p<0.05=significant difference, CI=confident interval, ENC=essential newborn care, OR=odds ratio, RMW=Regional minimum wage

from a study in Nepal, where 60% of mothers with good knowledge did not give anything to the umbilical cord,²¹ which was consistent with the WHO's recommendation as part of the umbilical cord care - to keep the umbilical cord clean and dry.⁷ A study in Ethiopia reported that as many as 80.4% of mothers had good knowledge about ENC.¹⁴

Optimization of newborn care practices can be influenced by the intervention of knowledge. In line with the results of the research, which stated that there was a relationship between knowledge and practice, mothers with high knowledge were more likely to practice good essential newborn care. This was similar to a study conducted on young mothers in Ethiopia,^{14,18} where mothers with good knowledge were more likely to engage in satisfactory practice of ENC.^{17,19-21} This is due to the fact that accumulated experience and awareness about safe cord care, thermal care, and breastfeeding would help mothers to put ENC into practice.¹⁷⁻¹⁸

The findings of Nukpezah's study warrant the need to keep promoting education during the antenatal period to ensure that mothers should initiate breastfeeding right after birth as a critical component of ENC. This can only be achieved when the mothers have the requisite knowledge and understanding of the benefits of early initiations.²⁰ Efforts to improve knowledge must be in line with the ease, with which mothers access the information. Various programs implemented by the Ministry of Health of the Republic of Indonesia to improve knowledge of pregnant women have been running quite optimally, one of which is through the class for pregnant women.²²

Correlation between parity and ENC practices

Our study did not find a significant relationship between parity and ENC practices. Nevertheless, multiparous mothers' prior experiences in taking care of their newborns could positively affect their way of applying their knowledge on a daily basis. It shows that parity did not serve as an independent factor in ENC, yet it could be associated with mothers' experiences in taking care of their babies.

Erfina et. al. who studied young mothers during their transition to motherhood found that mothers felt helpless because they were not included in the care of their babies.¹⁵ But, on the other hand, mothers' powerlessness in caring for their babies was also caused by their inability to process emotions and stress to the increasing needs after the birth of the child.²³ Hence, the process of caring for babies is often carried out by parents, grandmothers, or traditional birth attendants based on misunderstandings.²⁴⁻²⁵ Multiparous mothers will be more realistic in anticipating their physique and more easily adapt to ENC.²⁶ Experience provides an

opportunity for multiparous mothers not to make the same mistakes. The process of becoming a mother has already been owned.

Meanwhile, Leta et. al. confirmed that parity was significantly associated with ENC practices among postpartum mothers attending post-natal services at the state hospital of Harar town, Eastern Ethiopia.²⁷

Correlation between mothers' education and ENC practices

Mothers' education level was significantly associated with ENC practices. The study shows that the majority of mothers had high education (9-12 years). Mothers with higher educational levels presented a significant alliance with knowledge and practice. High education could help mothers prepare for various situations from pregnancy to postpartum period. Education can improve the health and well-being of mothers and babies.¹⁶ Mothers with good education will receive information related to antenatal and post-natal care more easily.²⁸ The likelihood of adopting the highest level of ENC practices was higher among mothers with relatively higher education.^{17,27,29} Nukpezah et. al. explained that education, at least tertiary level, was a significant predictor of good ENC practices.²⁰ Meanwhile, Abebe's study reported no significant difference between mothers' education and ENC practices. It was a community-based, cross-sectional study that was conducted among mothers who gave birth within the past six months in Gurage Zone, Southwest Ethiopia. For the quantitative part of the mixed study, 624 participants were involved by using a multi-stage sampling method.³⁰

Correlation between age, occupation, and economic status of post-partum mothers and ENC practices

Mothers' age did not show a significant difference in ENC practices. Nukpezah et. al. narrated that respondents who were between the ages of 25-29 years (AOR=1.18, 95% CI:0.35-4.01), were more likely to practice good ENC practices than their counterparts.²⁰

In our study, working mothers had no significant difference from housewives. A community cross-sectional study in Ethiopia by Abebe reported a similar result - no significant difference between employment and ENC practices.³⁰ Nukpezah's study identified that self-employed mothers were significant predictors of good ENC practices.²⁰

Several studies reported that most of their respondents were housewives who had to take care of their babies by themselves. However, the practice of caring for newborns by primiparous mothers remains unsatisfactory.³¹⁻³² As many as 45% of mothers gave their newborns food other than

breastmilk, and 44.8% of them did not give colostrum.¹³ Meanwhile, working mothers complained that they could not spend much time with their babies. Thus, baby care was more often carried out by family members, especially parents.²³ Therefore, the practice of baby care was not only assessed by the intensity or how often the mother spent caring for her baby, but also by the quality of the baby care carried out by the mother.

Our study did not present a significant difference between economic status and ENC practices. A study conducted among postnatal mothers attending post-natal services in the government hospital of Harar town, Eastern Ethiopia, reported average monthly income was significantly associated with ENC practices.²⁷ A wealth-based equity study in ENC in Ethiopia reported that inequity skin to skin contact and delayed bathing were evident in home delivery.³³ Another study also recounted that neonates born at health facilities had higher, although not optimal, coverage of ENC practices.³⁴

LIMITATIONS AND STRENGTHS OF THE STUDY

There were a few limitations of the study. First, cross-sectional design was unlikely to draw a causal conclusion. Second, ENC was measured by the respondents' answers, which potentially resulted in information bias. Third, validation and reliability tests of the instruments in this study were not repeated, although the instruments had been validated and adapted from the previous study. Therefore, the results of this study need to be interpreted by considering the limitations aforementioned. Fourth, the study could not obtain more in-depth knowledge and practice-related information that could support the results of the quantitative research. Fifth, it did not observe directly the ENC practices so that the answers from the respondents tended to be normative. Sixth, despite a significant relationship, there was a very wide range of Confidence Interval in each variable, which shows less precision and needs a higher number of samples. Seventh, single center nature of the study. Future research should be a multi center study in order to obtain a more general result.

The strength of the study is that the manuscript provides a noticeable contribution to the understanding of the factors that affect ENC practices, especially among postpartum mothers in the areas with limited resources such as Jambi.

CONCLUSION

The study reveals a significant correlation between post-partum mothers' knowledge and ENC practices in Jambi, Indonesia. Mothers with high knowledge were likely to practice ENC better. Mothers' education also affected ENC practices, whereas parity, age, occupation, and socio-economic condition did not demonstrate statistically significant correlations.

The study confirms the importance of improving the knowledge of pregnant women in an attempt to support ENC practices. Nevertheless, the results of this study have to be interpreted scrupulously considering that it uses a cross-sectional design and has limitations in instrument

measurement. Future research using a mixed-method design must be able to explore deeper behavioral insight and inform community-based interventions.

CONFLICT OF INTEREST

The authors have no relevant financial or non-financial interests to disclose.

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