

Mother's Practices on Newborn Care with Jaundice at the Mountain General Hospital, Vietnam

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ABSTRACT

Background: Jaundice due to indirect hyperbilirubinemia is the most common disease in newborns. In Vietnam, newborns with jaundice are mainly born to mothers living in rural, mountainous, ethnic minority, low-income areas, so they often bring their newborns to the hospital late.

Objective: To describe the practice of caring for newborn jaundice and finding some risk factors related to the practice of mothers with children under 28 days old at Tuyen Quang General Hospital, Vietnam.

Methods: This was a descriptive cross-sectional study. A total of 280 mothers with newborn had been treated at the Department of Obstetrics and Pediatrics of Tuyen Quang Provincial General Hospital from January 2025 to May 2025.

Results: The proportion of mother's correct practice on caring for jaundice newborns were 33.9%. In particular, the technical practice of early detection of jaundice (15.7%), take the newborn to the doctor immediately after detecting jaundice (44.3%) and take the newborn to the hospital within 12 hours when the medical staff suggested (44.6%). Group of mothers under 25 years old, ethnic minority, low education, rural areas, manual labor, income ≤ 3 million/month, have no relatives who are health workers, do not often seek information on caring for jaundice newborns that is at high risk of incorrect practice than mothers ≥ 25 years old, Kinh ethnicity, high level of education, living in urban areas, mental labor, income of over 3 million/month (OR is 5.3; 5.2; 7.5; 5.0; 10.8; 5.2; 10.0; 17.5 and $P < 0.0001$, respectively).

Conclusion: The proportion of mothers practicing the right care of jaundice in newborn is still low. Demographic and social factors such as young mothers, ethnic minorities, low education, rural areas, low income, working manual work, no relatives of medicine, giving birth first, mothers lack information and not find information, increase the risk of practice incorrectly.

Keywords

Jaundice newborns, Mother's practices.

Introduction

Jaundice due to indirect hyperbilirubinemia is the most common disease in newborns, accounting for about 60% of full-term infants and 80% of premature infants. Although most cases are benign [1], however, sometimes the concentration of bilirubin in the blood increases, exceeding the threshold of the infant's brain, causing kernicterus, which can lead to severe brain damage and leave

serious neurological sequelae [2,3]. Mothers and caregivers play an important role in preventing kernicterus by detecting jaundice early and taking the child to see a doctor and get treatment promptly [1,3,4]. According to the research results of some authors, it was found that the rate of mothers practicing correct neonatal jaundice care was not high, only from 34.8% to 58.6% [5-8]. Previous studies also showed that some risk factors such as age, education level, place of residence, mother's occupation, employment status, family income are risk factors related to mothers' correct neonatal jaundice care practices [9-11].

In the first 6 months of 2024, Tuyen Quang General Hospital has received and treated more than 300 newborns with jaundice. Of those, there were 3 babies with severe jaundice with total serum bilirubin above the exchange transfusion threshold because their families brought them to the hospital to late. Several studies have found that cerebral palsy consistent with kernicterus occurred in 3 infants with total serum bilirubin levels of more than 5.0 mg/dL [12-14]. Wennberg RP, et al. found that Providing information about jaundice to mothers was associated with a reduction in the incidence of bilirubin encephalopathy per hospital admission [15].

In Vietnam, newborns with jaundice are mainly born to mothers living in rural, mountainous, ethnic minority, low-income areas, so they often bring their newborns to the hospital late. Therefore, we conducted this study with the aim of describing the practice of caring for newborn jaundice and finding some risk factors related to the practice of mothers with children under 28 days old at Tuyen Quang General Hospital, Vietnam.

Methods

Study design, setting and population

A Cross-Sectional Study on the mothers with newborn babies under 28 days old, who are being monitored and treated at the Department of Obstetrics and Pediatrics of Tuyen Quang Provincial General Hospital from January 2025 to May 2025.

Inclusion and exclusion criteria

Mothers have ability to communicate normally, be clear-minded during the interview and voluntarily agree to participate in the study.

Mothers with obstetric complications or severe postpartum trauma, needing to continue postpartum treatment at Tuyen Quang Provincial General Hospital.

Data collection instrument

A structured questionnaire was used to collect data. The questionnaire was developed based on literature reviews and expert consultations. The questionnaire was pre-tested on a sample of 30 parents from a different hospital to assess its validity and reliability. Cronbach's alpha was used to measure the internal consistency of the practice, with a value of 0.796.

Based on the mothers' answers to assess their practices. Each correct answer of the mother is counted as 01 point, incorrect answer is counted as 0 point. The total is 07 points. The method of evaluating the practice in each question is as follows:

- Classify the mother's practice into 02 levels:
- + Correct practice: < 70% of the total score (< 05 points)
- + Incorrect practice: ≥ 70% of the total score (≥ 05 points)

Data analysis

The data is processed using medical statistical algorithms based on SPSS 20.0 software

Results

Table 1: Baseline Characteristics of mothers and newborn in the study group.

Variables	Characteristics	Number (N=280)	Percentage (%)
Baseline Characteristics of mothers			
Age	< 25 years	116	41.4
	≥ 25 years	164	58.6
Ethnic group	Kinh	125	44.6
	Other minority	155	55.4
Blood group of mothers	O	120	42.9
	A	64	22.9
	B	77	27.5
	AB	19	6.8
Education level	High school and below	108	38.6
	University, Postgraduate and above	172	61.4
Accommodation	Urban	107	38.2
	Rural	173	61.8
Occupation	Civil servants	126	45.0
	Famer	63	22.5
	Employed	47	16.8
	Homemaker	22	7.9
	Others	22	7.9
Average family monthly income. Vietnam dong	≤ 3.000.000	111	39.6
	>3.000.000	169	60.4
Relatives/close friends are health workers	Yes	87	31.1
	No	193	68.9
Number of children	First child	116	41.4
	Second child onwards	164	58.6
History of previous neonatal jaundice	Yes	118	42.1
	No	162	57.9
Baseline Characteristics of newborn			
Gender	Male	168	60.0
	Female	112	40.0
Ways of birth	cesarean birth	162	57.9
	Vaginal birth	118	42.1
Gestational age	Premature (< 37 weeks)	45	16.1
	full term (≥ 37 weeks)	235	83.9
Blood group of newborns	O	125	44.6
	A	50	17.9
	B	85	30.4
	AB	20	7.1
Weight of birth	<2500g	59	21.1
	≥2500g	221	78.9
Birth asphyxia	Yes	35	12.5
	No	245	87.5

Among the 280 mothers surveyed, the age distribution of mothers showed that the group ≥ 25 years old accounted for 58.6%,

higher than the group < 25 years old. Regarding the form of birth, cesarean section accounted for 57.9%, higher than normal birth (42.1%). Most children were born at full term (83.9%). Regarding ethnicity, ethnic minority mothers accounted for 55.4%, higher than Kinh people (44.6%). The educational level of mothers was mainly at university level or higher (61.4%). The proportion of mothers living in rural areas was 61.8%, and in urban areas was 38.2%. The most common occupation was civil servant (45.0%), the lowest was housewife (7.9%) and other occupations (7.9%) (Table 1).

The proportion of mothers with correct practices on neonatal jaundice ranged from 15.7% to 66.8%. There were 187 (66.8%) mothers who observed their babies to know if they had jaundice in the first 2 weeks after birth. Meanwhile, only 44 (15.7%) mothers pressed their babies' skin and looked to know if they had jaundice. There were 95 (33.9%) mothers who achieved the correct practice of neonatal jaundice while 185 (66.1%) did not achieve it (Table 2).

Table 2: Correct practice on neonatal jaundice among mothers.

Correct Practice	Number (n=280)	Percentage (%)
1. After discharge, I kept an eye on my baby for jaundice for 2 weeks	187	66.8
2. I pressed the baby's skin and looked to see if he/she had jaundice.	44	15.7
3. I looked at my baby's skin in bright enough sunlight to detect jaundice.	106	37.9
4. I look at the baby's skin color in the facial area to detect jaundice.	180	64.3
5. After discharge, I looked at my baby's skin at least once a day for 2 weeks to detect jaundice.	131	46.8
6. I took my child to the doctor as soon as I discovered he had jaundice.	124	44.3
7. I take my child to see a doctor within 12 hours if the medical staff recommends seeing a pediatrician for jaundice.	125	44.6
8. Mothers' practices for jaundiced infants are considered correct if they achieve at least 5 of the 7 points above	95	33.9

Considering the risk factors associated with incorrect practices in caring for newborns with jaundice. We found that mothers under 25 years old, ethnic minorities, low education level (High school and below), living in rural areas, manual labor, family income ≤ 3 million/month, no relatives working in the medical profession, and not regularly seeking information were 5.3; 5.2; 7.5; 5.0; 10.8; 5.2; 10.0 and 17.5 times more likely to have improper practices, respectively, than those ≥ 25 years old, Kinh ethnic group, high education level (University, Postgraduate or above), living in urban areas, mental labor, family income > 3 million, having relatives working in the medical profession, and seeking information.

Similarly, the study also found that the risk factors of incorrect

practices among mothers delivered first time, mothers without a history of previous jaundice neonatal were 2.9 and 5.0 times higher than mothers delivered second time or more and the mothers with a history of previous jaundice neonatal.

Table 3: Risk factors affecting mother's practice on neonatal jaundice.

Risk factors affecting mother's practice		Not correct n (%)	Correct n (%)	OR (95% CI) P
Age	< 25 years	99 (85.3)	17 (14.5)	5.3(2.9-9.6)
	≥ 25 years	86 (52.4)	78 (47.6)	<0.0001
Ethnic group	Other minority	127 (81.9)	28 (18.1)	5.2(3.1-8.9)
	Kinh	58 (46.4)	67 (53.6)	<0.0001
Education level	High school and below	96 (88.9)	12 (11.1)	7.5(3.8-14.5)
	University, Postgraduate or above	89 (51.7)	83 (48.3)	<0.0001
Accommodation	Rural	138 (79.8)	35 (20.2)	5.0(2.9-8.6)
	Urban	47 (43.9)	60 (56.1)	<0.0001
Profession	Manual labor	127 (88.8)	16 (11.2)	10.8(5.8-20.1)
	Mental labor	58 (42.3)	79 (57.7)	<0.0001
Average family income; dong	≤ 3.000.000 per month	95 (85.6)	16 (14.4)	5.2(2.8-9.6)
	> 3.000.000 per month	90 (53.3)	79 (46.7)	<0.0001
Relatives/close friends are health workers	No	158 (81.9)	35 (18.1)	10.0(5.6-17.9)
	Yes	27 (31.0)	60 (69.0)	<0.0001
Mothers often seek information on caring for jaundice new-borns	No	136 (91.3)	13 (8.7)	17.5(8.9-34.2)
	Yes	49 (37.4)	82 (62.6)	<0.0001
Number of children	First child	92 (79.3)	24 (20.7)	2.9 (1.7-5.1)
	Second child onwards	93 (56.7)	71 (43.3)	<0.0001
History of previous jaundice neonatal	No	131 (80.9)	31 (17.1)	5.0 (2.9-8.5)
	Yes	54 (45.8)	64 (54.2)	<0.0001

Discussion

Mothers' practices on neonatal jaundice

Mothers' correct practices in caring for newborns with jaundice to bring them to the doctor and get them treated early are important factors affecting the treatment outcome. The study showed that the rate of mothers with correct practices regarding neonatal jaundice ranged from 15.7% to 66.8%. Basic practices such as "In the first 2 weeks after birth, pay attention to the baby to see if the baby has jaundice" (66.8%) and "Look at the baby's skin color in the facial area" (64.3%) achieved quite high rates. This shows that mothers have a general awareness of observation. However, other important practices had very low rates. Notably, only 44 (15.7%)

mothers performed "Press the baby's skin and look to see if the baby has jaundice". This rate is much lower than the study by Thi Hang Pham, et al., where 53.5% of mothers practiced this correctly [16].

This large difference shows a significant gap between recommended knowledge and actual practice. The practice rate related to medical measures such as "When detecting jaundice, take the child to see a doctor immediately" (44.3%) and "Take the child to see a doctor within 12 hours when requested by medical staff" (44.6%) is also below 50%. This rate is worrying because delay in going to see a doctor can lead to serious complications. This situation is demonstrated by the fact that the Department of Pediatrics, Tuyen Quang General Hospital received 03 newborns with jaundice who arrived late and could not be replaced with blood in 2024, showing the real consequences of this delay. This result is higher than the study of Do Thi Tham with the correct practice rate of mothers being only 34.8% [7]. However, research results in Gana found that less than half of the caregivers demonstrated good knowledge (45.5%) and attitude (47.5%) but 58.9% had good practices regarding neonatal jaundice [10]. Nguyen Thi Bong's study also had similar results as in Ghana with the correct practice rate of mothers being 58.57% [5]. West BA, et al. found that only 25(16.8%) pregnant women had had child with neonatal jaundice, of which 20(80.0%) took child to the hospital and 12(60.0%) presented to the hospital within 24hours in Nigeria [17]. In Uttarakhand, India, 20% mothers were willing to take the baby to the hospital within 24h on recognition of jaundice, and almost 91% of those seeking medical advice were ready to follow it [18].

Factors associated with maternal practices on neonatal jaundice

Age: The study showed that mothers under 25 years old were more likely to have incorrect practices than those ≥ 25 years old (OR=5.3; 95%CI=2.9-9.6; $p<0.0001$). Goodman OO, et al. founded that increasing maternal age had a significant association with an appropriate treatment practice ($P < 0.05$), the association was negative ($r = -0.32$) [19].

Ethnicity: Ethnic minorities are 5.2 times more likely to practice incorrectly than the Kinh group (OR=5.2; 95%CI: 3.1-8.9; $p<0.0001$). In Tuyen Quang, Vietnam, with many ethnic groups living in remote mountainous areas, there are many traditional newborn care practices that are not good for jaundiced newborns. In addition, language barriers and poor access to health education information also directly affect correct practice. Eman ARE, et al. also noticed that there were 24.7% of the mothers exposed their newborns to the sunlight cautiously and the majority of studied mothers gave glucose water to their newborns, used mothballs at home and kept the infants in a dark room (81.3%, 87% and 85 %) respectively. Over fifty percent of mothers in the study (55.7% and 59.7%) exposed their infants to home conventional lights and fluorescent light [20].

Education level: The group of mothers with education from

high school or less has incorrect practice of newborns jaundice higher than the group of mothers with university or higher level (OR=7.5; 95%CI: 3.8-14.5; $P < 0.0001$). Higher education not only helps mothers gain knowledge but also improve the ability to solve problems and apply medical instructions to practice more effectively. Binary logistics analysis shows good knowledge of jaundice related to high education level (meaning masters or higher). That may be related to good newborn jaundice practices thanks to previous education about neonatal jaundice [4].

Accommodation: The proportion of mothers living in rural areas with incorrect practices was higher than that of the urban group (OR=5.0; 95%CI: 2.9-8.6; $p<0.0001$). This reflects the clear differences in access to health services, health education programs, physical conditions (such as transportation to take children to see a doctor in time) and support from the medical community between the two areas.

Occupation: Manual workers had higher odds of incorrect practices than white-collar workers (OR=10.8; 95%CI: 5.8-20.1; $p<0.0001$). This suggests that occupational characteristics, work environment, and access to information may influence maternal practices. The Eman ARE study in Egypt also found a statistically significant association between employment status and the mean score of maternal practices in caring for newborns with jaundice [20].

Average income per capita/month: Mothers in families with income ≤ 3 million VND/month tend to have a higher tendency to have poor practice than those in higher income groups (OR=5.2; 95%CI: 2.8-9.6; $p<0.0001$). Higher income can help mothers afford to buy necessary items for child care, access quality health services, and spend more time taking care of their children comprehensively. Eman ARE et al., in Egypt, also noted a statistically significant relationship between mothers' family income and practice of caring for newborn jaundice [20].

Relatives/close friends who are health care workers: This is one of the factors that has the strongest influence on practice. The group of mothers without relatives working in the medical profession had a higher rate of poor practice than the group with relatives working in the medical profession (OR=10.0; 95%CI: 5.6-17.9; $p<0.0001$). This once again confirms the role of providing accurate medical information and advice from relatives in the medical profession is often trusted and applied correctly in real-life situations.

Other factors such as mothers with second or subsequent children, history of having children with neonatal jaundice, and mothers who frequently seek medical information have better practices in caring for newborn jaundice than mothers in other groups.

Although our research is not found any relationship between gender, ways of birth, gestational age, weight at birth and in tolerance with blood and blood and jaundice of babies. However, Ayalew T realized that male, premature birth and maternal blood

tolerance - incompatible children are important factors determined to be jaundice in newborns. In contrast, the caesarean section is related to the ability of the baby's jaundice to be 76% lower than the vagina [21].

Conclusion

The proportion of mothers practicing the right care of jaundice in newborn is still low. Demographic and social factors such as young mothers, ethnic minorities, low education, rural areas, low income, working manual work, no relatives of medicine, giving birth first, mothers lack information and not find information, increase the risk of practice incorrectly.

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