

Mothers' knowledge and practices during the first 48 hours postpartum about neonatal jaundice in two general hospitals in Baghdad

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ABSTRACT

INTRODUCTION: Neonatal jaundice is a common disorder worldwide, and many affected babies develop a brain injury due to delays in seeking medical consultation. Assessment of mother knowledge and practice is very important to prevent the complications.

OBJECTIVE: To assess the level of knowledge and practice of mothers in the first 48 hours postpartum about neonatal jaundice in Al-Kadhymia and Al-Hakeem Hospitals in Baghdad. And to study the association between mothers' practices with their educational levels and employment status.

METHODS: An observational cross-sectional study was done on 360 mothers during the first 48 hours post-delivery at Al-Kadhymia and Al-Hakeem general hospital in Baghdad from 1 April to July 2018. Mothers were interviewed using a structured questionnaire prepared for this purpose. The data were analysed descriptively and analytically by Chi-square X^2 using SPSS (version 16).

RESULTS: The mean age of mothers was 26.7 ± 5.7 years. Although knowledge of mothers about definition and duration, diagnostic and therapeutic methods of neonatal jaundice was acceptable, it was insufficient about the onset, causes and complications. Still many mothers 251 (69.7) using herbs to treat their children when get neonatal jaundice.

CONCLUSION: The rate of knowledge about neonatal jaundice among postpartum mothers was fair. There was a significant association between mothers' practices to treat NNJ and their level of education and employment status. The majority of women treat neonates with jaundice by phototherapy and would not stop breastfeeding, still, half of them practice unaccredited ways to treat NNJ like using herbs and exposing neonates to sunlight.

Key words: Neonatal Jaundice, Knowledge, practice, postpartum, Iraq.

INTRODUCTION

The neonatal period is the first 28 days of life when the neonate is at maximum risk.¹ Neonatal morbidity and mortality are still high in developing countries. Jaundice is one of the most important risks in neonates, and it is estimated to present in 60 % of neonates and 80% of preterm babies.^{1,2} Neonatal jaundice is a common condition paediatricians encounter in their practice.¹ Although transient, the condition accounts for up to 75% of hospital readmission in the first week after birth.^{3,4,5} Neonatal jaundice (NNJ) was first described in a Chinese textbook 1000 years ago; medical theses, essays, and textbooks from the 18th and 19th centuries contain discussions about

the causes and treatment of neonatal jaundice.⁶ Several of these texts also describe a lethal course in infants who probably had Rh isoimmunization. In 1875, Orth first described yellow staining of the brain, in a pattern later referred to as kernicterus.^{6,7} Kernicterus is a German term for jaundice of the brain's basal ganglia, and it is sometimes seen in infants dying with extreme jaundice.⁷ This complication was primarily seen in infants with severe hyperbilirubinemia accentuated by haemolysis as in Rhesus-negative immunization.^{8,9}

Neonatal jaundice or neonatal hyperbilirubinemia is a yellowing discolouration of the skin and sclera of a newborn infant. A total serum bilirubin (TSB) level of more than 85 $\mu\text{mol/L}$ (5

mg/dL) manifests clinical jaundice in neonates, whereas in adults, a level of 34 $\mu\text{mol/L}$ /l (2 mg/dL) would look icteric.^{6,10} Significant jaundice was defined according to gestational and postnatal age and levelled off at 14 mg/dL (240 $\mu\text{mol/L}$) at four days in preterm infants and 17 mg/dL (290 $\mu\text{mol/L}$) in the term infants.¹¹

Prevention of severe hyperbilirubinemia is essential in avoiding acute bilirubin encephalopathy and kernicterus.¹² A structured and practical approach to identifying and caring for infants with jaundice can facilitate prevention, thus decreasing the rate of morbidity and mortality.^{13,14} All Neonates should be examined visually for jaundice every 8 to 12 hours during the initial 3 to 5 days of life. TSB can be used as an aid for initial screening of infants. Visual assessment when performed properly and TCB have reasonable sensitivity for initial assessment of jaundice.¹²

Parents should understand the risk of hyperbilirubinemia and the importance of close follow up. Parents should examine their neonates daily for jaundice that appears as yellowish discoloration of the skin, especially in the white babies, and sclera and mouth, especially in babies with dark skin.

It is essential to measure the knowledge and practice of women towards neonatal jaundice to design training programs to provide mothers with the necessary knowledge and skills to early diagnose neonatal jaundice and secure proper treatment to prevent inevitable complications. So, this study was designed to assess mothers' knowledge and practices during the first 48 hours postpartum admitted to Al-Kadhymia and Al-Hakeem general hospitals in Baghdad and to study the association between mothers' practices with their educational levels and employment status.

METHODS

Setting and study design: A Cross-sectional observational study was conducted at the department of gynaecology and obstetrics at two hospitals in the Al-Karkh Health Directorate, Al-Kadhymia Teaching Hospital and Al-Hakeem

General Hospital, Data assessed in 2018.

Ethical consideration: The study protocol was reviewed and approved by the ethics research committee at the Al-Karkh Health Directorate. The necessary permission was taken from the administration of the two hospitals. Verbal consent from each participant was taken after explaining the study's objectives to them.

Inclusion and exclusion criteria: We included mothers who delivered within 48 hours and were admitted to the obstetric wards in the hospitals during the studied period. We did not exclude any mothers apart from those who refused to participate.

Sampling: We collected the sample from the hospitals conveniently; three days a week, two hours in each day. The total sample included was 360 mothers.

Data collection: The researcher designed the questionnaire and reviewed and approved it by a committee of a few paediatricians and community physicians experts in designing the questionnaire. The questionnaire form was filled out via direct face to face interview with the participants; the researcher read each question and ticked the proper answer the mother said. The questionnaire consists of three parts. **The first one** included questions about socio-demographic data of the mother like age, employment status; educational level, illiterate, primary, secondary or higher education; attending antenatal care during the pregnancy more than four visits and above and less than four visits; parity into prime or multi; and type of delivery into normal vaginal, caesarean section, or others. **The second part** included questions testing the knowledge of the mother about neonatal jaundice; definition; duration of abnormal neonatal jaundice into two weeks and above and less than two weeks; the onset of neonatal jaundice in the first 24 hours or after that; knowing common symptoms like refusal feeding, fever, sleepiness; knowing the causes of neonatal jaundice like Physiological, mismatch of blood groups between the mother and neonate, infection, prematurity, breastfeeding, hereditary, maternal disease, drugs used by the mother during pregnancy, and baby's gen-

der; knowing the complications of jaundice like hearing loss, mental retardation, and neonatal death; knowing treatment options, ways of diagnosis, and preventive measures. The answers were divided into “yes” when the mother answered the question correctly, “No” when she answered wrongly, and “do not know” if she was unsure of the answer. **The third part** of the questionnaire included questions about mothers’ practices for neonatal jaundice like using medicinal herbs, fluorescence at home, exposure to sunlight, stopping breastfeeding, and washing the baby frequently.

Outcomes: We recorded the mothers’ knowledge and practice for each question. Then we calculated the rate of each answer for all women. Ultimately, we measured any association between mothers’ practice, their educational level, and employment status.

Statistical analysis: The tables showed the results as frequencies and ratios, and continuous variables like age were shown as mean±standard deviation. For testing the statistical significance of the participants’ answers to questions measuring the practice, we used the X², and P values of < 0.05 were considered statistically significant.

RESULTS

The total sample included in this study was 360 mothers; the mean age was 26.75 ± 5.79 years, with a range of 16-42 years. Most of the women, 290 (80.6%), were unemployed. About 2/3 of the study sample, 237(65.8%), had antenatal care. Most of the mothers were multiparas 299 (83.1%). (Table 1)

Of all participants, 297(82.5%) knew the correct definition of NNJ, 167 (46.4%) knew that NNJ lasting more than two weeks is usually pathological; however, about two-thirds, 226 (62.8%), did not know that onset of jaundice was pathological if occurred during the first 24 hours of life. Although 294 (81.6%) mothers recognized physiological jaundice, about half of them did not know that mismatch of blood group between mother and neonate, blood infection, prematurity, hereditary causes, mater-

Table 1 | Socio-demographic and maternal characteristics of the study sample

Variable		No.	%	
Age (years)	< 20	43	11.9	
	20 – 29	181	50.3	
	30 – 39	128	35.6	
	40 +	8	2.2	
Employment status	Employed	70	19.4	
	Unemployed	290	80.6	
Level of Education	Illiterate	48	13.3	
	Primary School	161	44.7	
	Secondary school	96	26.7	
Higher education		55	15.3	
	Anti-natal care visit	Yes	237	65.8
		No	123	34.2
Parity	Primi	61	16.9	
	Multi	299	83.1	

nal infections, using drugs during pregnancy, breastfeeding and male gender could cause NNJ. See table 2 for the exact figures. Most of the mothers, 235 (65.3%), knew that NNJ might cause death; however, only 11 (3.1%) and 30 (8.3%) knew that it might cause hearing loss and mental retardation, respectively.

Regarding mothers’ knowledge about the ways of diagnosis of NNJ, the majority, 351 (97.5%), have an idea about the clinical diagnosis of NNJ by the appearance of the neonate, and 260 (72.2%) knew the role of blood analysis in the diagnosis. Still, only 71 (19.7%) knew the role of urine analysis in its diagnosis. Most mothers knew that NNJ could be treated effectively by phototherapy 315(87.5%) and 302 (83.9%) knew that starting breastfeeding as early as possible had an excellent role in prevention. Table 2 shows details of mothers’ knowledge about NNJ.

Regarding the practices of mothers toward NNJ, more than two-thirds of mothers tend to use medicinal herbs, 251 (69.7%), and fluorescent at home, 295 (81.9%), to treat NNJ. At the same time, about half of them (53.6%) wouldn’t expose their infants to sunlight, 325 (90.3%) wouldn’t stop breastfeeding, and 155 (43.1%) didn’t know if bathing infants frequently might be helpful. See table 3.

Table 4 shows the association between

Table 2 | Distribution of mothers regarding knowledge about the definition, duration, onset and common symptoms of NNJ.

Questions of Knowledge	Yes (%)	No (%)	Don't know (%)
Definition of Jaundice: Yellowish discolouration of skin and sclera	297 (82.5)	54 (15)	9 (2.5)
Duration of jaundice: Pathological if it lasts more than 2 weeks	167 (46.4)	29 (8.1)	164 (45.6)
Onset of Jaundice: Pathological if it develops during the first 24 hours	91 (25.3)	43 (11.9)	226 (62.8)
General symptoms:			
1. Feed refusal	271 (75.3)	13 (3.6)	76 (21.1)
2. Fever	132 (36.7)	125 (34.7)	103 (28.6)
3. Sleep more than normal	288 (80)	12 (3.3)	60 (16.7)
Causes of jaundice:			
1. Physiological	294 (81.6)	21 (5.8)	45 (12.6)
2. Mothers/ neonate blood group mismatch	114 (31.7)	54 (15)	192 (53.3)
3. Infection in blood	152 (42.2)	48 (13.3)	160 (44.4)
4. Prematurity	88 (24.4)	43 (11.9)	229 (63.6)
5. Breast feeding	86 (23.9)	233 (64.7)	41 (11.4)
6. Hereditary causes	53 (14.7)	132 (36.7)	175 (48.6)
7. Maternal infections	87 (24.2)	106 (29.4)	167 (46.4)
8. Drugs during pregnancy	80 (22.2)	90 (25)	190 (52.8)
9. Sex of baby (male)	23 (6.4)	190 (52.8)	147 (40.8)
Complications of jaundice:			
1. Hearing loss	11 (3.1)	151 (41.9)	198 (55)
2. Mental retardation	30 (8.3)	56 (15.6)	274 (76.1)
3. Neonatal death	235 (65.3)	3 (0.8)	122 (33.9)
Diagnosis of jaundice:			
1. Appearance	351 (97.5)	0 (0.0)	9 (2.5)
2. Urine analysis	71 (19.7)	105 (29.2)	184 (51.1)
3. Blood analysis	260 (72.2)	2 (0.6)	98 (27.2)
Effective treatment:			
1. Herbal medicine	264 (73.3)	51 (14.2)	45 (12.5)
2. Drugs	102 (28.3)	109 (30.3)	149 (41.4)
3. Phototherapy	315 (87.5)	6 (1.7)	39 (10.8)
4. Blood exchange	250 (69.4)	11 (3.1)	99 (27.5)
Prevention of jaundice:			
1. Consumption of special food during pregnancy	72 (20)	137 (38.1)	151 (41.9)
2. Start breastfeeding as early as possible	302 (83.9)	11 (3.1)	47 (13.1)

mothers' practices in treating NNJ and their educational level and employment status.

DISCUSSION

The mean age of mothers was (26.75 ± 5.79 years) with a range of 16 to 42 years; this mean was similar to that reported by other studies from Iran 2006, 12 Malaysia 2008, 13 and Sri

Lanka 2011.¹⁴

We found that 290 women (80.6%) were unemployed, a ratio similar to that of a study done in Sri Lanka in 2011 in which 73% of the participants were unemployed.¹⁴ We also found that unemployed mothers use medicinal herbs, fluorescent at home, expose neonates to sunlight, and frequently bathe neonates once they develop jaundice more commonly than the employed mother. This difference was statistically

Table 3 | Distribution of mothers regarding their practices to treat neonatal jaundice.

Practice	Yes (%)	No (%)	Don't know (%)
Using medicinal herb	251 (69.7)	94 (26.1)	15 (4.2)
Fluorescent use at home	295 (81.9)	50 (13.9)	15 (4.2)
Exposure to sunlight	60 (16.7)	193 (53.6)	107 (29.7)
Stop breastfeeding	31 (8.6)	325 (90.3)	4 (1.1)
Bathing infant frequently	89 (24.7)	116 (32.2)	155 (43.1)

Table 4 | Association of mothers' practices towards neonatal jaundice with educational level and employment status.

Practice Questions		Educational Level				Employment status	
		Illiterate, No (%)	Primary, No (%)	Secondary, No (%)	Higher, No (%)	Employed No (%)	Unemployed No (%)
Using medicinal herb	Yes	38 (79.2)	135 (83.9)	62 (64.6)	16 (29.1)	37 (52.9)	214 (73.8)
	NO	7 (14.6)	15 (9.3)	33 (34.3)	39 (70.9)	33 (47.1)	61 (21)
	Don't know	3 (6.2)*	11 (6.8)	1 (1.1)	0 (0.0)	0 (0.0)	15 (5.2)
<i>X² (p -value)</i>		<i>91.015 (0.000)</i>				<i>21.886 (0.000)</i>	
Fluorescent using at home	Yes	47 (97.9)	130 (80.7)	91 (94.8)	27 (49.1)	51 (72.8)	244 (84.1)
	No	0 (0.0)	17 (10.6)	5 (5.2)	28 (50.9)	16 (22.9)	34 (11.7)
	Don't Know	1 (2.1)*	14 (8.7)	0 (0.0)	0 (0.0)	3 (4.3)	12 (4.2)
<i>X² (p -value)</i>		<i>86.177 (0.000)</i>				<i>16.787 (0.000)</i>	
Exposure to sunlight	Yes	15 (31.2)	34 (21.1)	11 (11.5)	0 (0.0)	0 (0.0)	60 (20.7)
	No	13 (27.1)	64 (39.8)	67 (69.8)	49 (89.1)	66 (94.3)	127 (83.8)
	Don't know	20 (41.7)	63 (39.1)	18 (18.5)	6 (10.9)	4 (5.7)	103 (35.5)
<i>X² (p -value)</i>		<i>65.977 (0.000)</i>				<i>58.150 (0.000)</i>	
Stop breast feeding	Yes	7 (14.6)	16 (9.9)	8 (8.3)	0 (0.0)	8 (11.4)	23 (7.9)
	No	41 (85.4)	145 (90.1)	84 (87.5)	55 (100)	62 (88.6)	263 (90.7)
	Don't know	0 (0.0)*	0 (0.0)	4 (4.2)	0 (0.0)	0 (0.0)	4 (1.4)
<i>X² (p -value)</i>		<i>5.748 (0.125)</i>				<i>2.516 (0.284)</i>	
Bathing infant frequently	Yes	16 (33.3)	57 (35.4)	16 (16.7)	0 (0.0)	0 (0.0)	89 (30.7)
	No	7 (14.6)	42 (26.1)	31 (32.3)	36 (65.5)	40 (57.1)	76 (26.2)
	Don't know	25 (52.1)	62 (38.5)	49 (51)	19 (34.5)	30 (42.9)	125 (43.1)
<i>X² (p -value)</i>		<i>54.382 (0.000)</i>				<i>38.232 (0.000)</i>	

significant, P-value <0.05.

In our study, 161 (44.7%) participants had primary education, and 48 (13.3 %) were illiterate. In contrast, a study in Sri Lanka reported that 64.7% had secondary education, and only 1.2% were illiterate.¹⁴ High rate of low education in our sample might be explained by the fact that such mothers are from low-income families that prefer to give birth at governmental hospitals where we chose to conduct the study for economic reasons. In contrast, mothers with a high education level may prefer to give birth at private hospitals. Also, it might be a clue that women in our society were not given a chance to complete their education.

Mothers who attended regular antenatal care visits had significantly better knowledge about the definition and duration of NNJ than mothers with irregular visits ($p < 0.05$). This is because primary health care centres are suitable for offering good education for mothers about different health issues. In our study, most mothers were multipara 299 (83.1%), making

them presumably more experienced with neonatal jaundice than mothers who delivered for the first time. This percentage is higher than others reported by studies from Malaysia, 44.5%,¹³ and Sri Lanka, 58%.¹⁴

Knowledge: Mothers' knowledge about general symptoms of NNJ like refusal of feeding and sleepiness was fair and nearly similar to that reported by a study from Iran in 2006.¹²

Our study showed that most mothers, 294 (81.6%), knew that NNJ could be a physiological condition. On the contrary, an Iranian study¹² found that only 20 % of Iranian women included in the study knew that neonatal jaundice may be physiological. We also found that 24 % of mothers knew that breastfeeding could cause jaundice, a result nearly similar to that reported by a Malaysian study in 2008,¹³ however, it was lower than the rate reported in an Iranian survey.¹² Only 23 (6.4%) of mothers in our series knew that gender could play a role in developing jaundice.

Although 235 (65.3%) of mothers in this

study knew that severe jaundice could cause death, only 11 (3.1%) and 30 (8.3%) were aware that it could result in hearing loss and mental retardation. Lack of such knowledge could impact how mothers perceive the severity of NNJ and react to it. Many Asian countries showed similar results; women were aware of mortality but not morbidity of severe NNJ jaundice.^{12,13,14}

In the present study, 351 (97.5%) and 260 (72.2%) knew that we could diagnose NNJ by the clinical appearance of the baby and blood analysis, respectively. These results were higher than a study from Sri Lanka¹⁴ but similar to that reported from Iran.¹²

Most of the mothers in our study, 315 (87.5%), were aware of phototherapy as a method to treat NNJ, and about 250 (69.4%) knew that blood exchange might be used for the treatment of NNJ. These results were much higher than that reported by a Sri Lankan study; 44% knew phototherapy, and 14.2% knew blood exchange as treatment options for NNJ.¹⁴ Ogunfowora and Danial in their study in 2006; have justified that phototherapy and exchange transfusion remained the standard treatment of NNJ.¹⁵ We also found that 264 (73.3 %) of the mother believe that herbals can treat NNJ. However, no empirical data have justified the role of traditional remedies like herbals in treating NNJ and most are mainly based on the wrongly-held traditional community beliefs. Similarly, In Iran, most of the Iranian mothers enrolled in Khalesi study¹² in 2006 believe in herbal medicine to treat NNJ.

Practice: In 251(69.7%) mothers used medicinal herbs, and 295 (81.9%) used fluorescent at home. These results agreed with similar studies done in Malaysia (2011) and China (2007).^{13,19} The present study revealed that exposing a neonate to sunlight was refused by more than half of mothers, 193(53.6%), and this was the opposite of the practice of Malaysian mothers, where most of them were unaware that this was not a safe and effective practice.¹³ Many mothers were unaware that sunning a jaundiced infant increased the risk of dehydration and worsened the severity of jaundice.¹³ An Australian study found that most postpartum

Australian mothers sunned their infants when they suspected their infants had jaundice.²⁰ In Turkey, exposing jaundiced infants to the direct sun was based on cultural health beliefs.²¹

Despite the association between breastfeeding and the development of NNJ, most mothers in this study, 325 (90.3%), wouldn't stop breastfeeding for jaundiced babies. This result was similar to Malaysian and Chinese studies.^{13,19}

About 155 (43.1%) of mothers didn't know if bathing their infant frequently might reduce jaundice. A study about this behaviour was done among Malaysian and Chinese the result was more common among the Chinese than the Malaysian mothers.¹³

CONCLUSION

A good number of the participants know what is NNJ, however, the knowledge about the role of onset and duration in expecting pathological causes of jaundice is insufficient. More than 50 % of the mothers knew the causes of Jaundice apart from breastfeeding and the male gender. The majority of women treat neonates with jaundice by phototherapy and would not stop breastfeeding, still, half of them practice unaccredited ways to treat NNJ like using herbs and exposing neonates to sunlight. Apart from frequent bathing of neonates, all other practices used by mothers to treat NNJ are statistically affected by mothers' level of education and their employment status.

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Abbreviations list: Neonatal jaundice (NNJ), Total serum bilirubin (TSB).

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