Original Paper

Knowledge and Attitudes of Mothers towards Neonatal Jaundice in Karbala Teaching Hospital for Children

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Abstract

Background: Neonatal jaundice (NNJ) is one of the most common disorder of newborns worldwide. Delay in the detection of NNJ and improper treatment could lead to neonatal morbidity and mortality. The mother's knowledge and health-seeking behaviors play an important role in the fate of this hazard.

Objectives: To determine the level of knowledge and attitude of mothers in Karbala city towards NNJ, and its correlates.

Subject and methods: A Cross-sectional study had been taken in Karbala Teaching Hospital for Children. A convenient sample of a total 164 mothers of neonate with jaundice. The data were collected through direct interview with the mothers, using a special designed questionnaire. Statistical Package for Social Sciences program was used for statistical analysis .

Result : The mean knowledge score was good. Where (51.2%) of mothers had good knowledge and (48.8%) had fair knowledge. Although knowledge of mothers about onset, duration, causes and treatment of jaundice was acceptable (fair), it was good about definition and symptoms, complications and way of diagnosis. Knowledge level had a significant association with urban resident mothers (P=0.032). The mean attitude score was positive attitude (0.70 out of 1). A significant association between positive mother's attitudes towards NNJ and being older mother (P=0.034), multiparty (P=0.032) and good Antenatal care (P<0.001). Higher knowledge score was significantly correlated with higher attitude score, (R=0.179, P = 0.022).

Conclusion: The overall knowledge of mothers is good, and the overall attitude is good (positive attitude). However, cultural beliefs and traditional baby care still have an impact on mothers.

Keywords: Neonatal jaundice, knowledge, attitude, mothers

Introduction

Jaundice refers as a yellowish discoloration of the skin and the sclera due to accumulation of bilirubin (yellow pigment) in the skin and mucous membranes. A total serum bilirubin (TSB) level of more than 85 µmol/L (5 mg/dL) manifests clinical jaundice in neonates while in adults a level of 34 µmol/L (2 mg/dL) would look icteric [(1,2)].

Globally, newborn jaundice (NNJ) occurs in 60% of full term and 80% of preterm neonates, the majority of which resolves without any treatment [(3)]. It is a common disorder worldwide and accounts for 75% of hospital re-admissions in the first week of life[(4)] .

Neonatal jaundice is a serious disease, and if treated improperly and promptly, it may lead to fatal complications.

Physiological jaundice occurs on the 2nd and 3rd day after birth [(5)], due to the breakdown of fetal hemoglobin and the immature liver metabolic pathways that cannot fully excrete bilirubin [(6)].

Development of pathologic jaundice can be attributed to perinatal, neonatal and genetic factors as well as administration of some drugs[(7)] .

Neonatal jaundice has a significant impact on neonatal morbidity and mortality.

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Possible complications of unconjugated hyperbilirubinemia include acute bilirubin encephalopathy, kernicterus, epilepsy, cerebral palsy, mental retardation, and deafness [8].

Kernicterus involves staining of basal ganglia by bilirubin and is associated with diffuse damage of neurons, total serum bilirubin levels more than 20 mg/dl in normal weight, otherwise healthy infants are associated with high incidence of kernicterus [9]. Kernicterus has at least 10% mortality and 70% morbidity[10] , it is incurable, but if jaundice is detected early with effective therapy started soon, kernicterus is preventable [4].

Severe jaundice and kernicterus in elderly babies or babies born at home have a higher incidence, which highlights the importance of mothers' understanding of jaundice [11].

Recently, newborns have been discharged early, so parents are primarily responsible for detecting jaundice early and seeking appropriate treatment in the right place. Therefore, it is important for parents to be able to correctly recognize neonatal jaundice and know how to respond appropriately, because often the delay in seeking medical advice usually due to parents' action and sometimes their use of self-medication with herbal medicines and homemade remedies due to inadequate knowledge can lead to unfavorable outcomes[12] .

Objective of study

This study aims to assess mother's knowledge and attitude toward NNJ and also to find out whether there are any association between mother's knowledge and attitude with age, educational level, residential area and occupation and other sociodemographic factors. Also, this study was conducted to identify misconceptions which is prevalent in our community about NNJ.

Subject and methods

A Cross sectional study which had been taken in Karbala Teaching Hospital for Children in Karbala city during the period from first of April to first of July 2019. A convenient sample of a total 164 mothers of jaundiced neonates whom required admission to phototherapy unit were included in the study. Mothers who are paramedical personnel or mothers who oppose enlistment were excluded from the study.

The data was collected through direct face-to-face interviews with the mothers, using a specially designed questionnaire extracted from a previous paper and reviewed by two experts [10, 13]. The questionnaire consists of three parts, recording information on sociodemographic data of the mother and information related to their knowledge about:

-Definition of NNJ {yellowish discoloration of the skin and sclera}.

-Duration of NNJ {abnormal duration lasting more than 2 weeks}.

-Onset of NNJ {abnormal onset during first 24 hours}.

-Common symptoms of NNJ: {refusal of feeding, fever, lethargy and sleep more than usual, abnormal body movements (spastic posture), crying loudly and screaming}.

-Causes of NNJ {Physiological condition, blood group and Rh. Difference between mother and father blood groups, prematurity, breast feeding, hereditary, maternal disease, drugs during pregnancy}.

-Complication of NNJ: {hearing loss, brain insult, growth retardation and delay development, neonatal death}.

- Treatment of NNJ: {herbal medicine, drugs, phototherapy & breast feeding, blood exchange}.

And their answer formed as (Yes, No, Don't know).

The last part of the questionnaire is about their attitude toward NNJ, which include:

-Agree using medicinal herb (including glucose water, Garlic, Bead…).

-Agree bringing the neonate to the hospital.

-Agree using Fluorescent at home.

-Agree exposure to sunlight.

-Agree the importance of continuity of breast feeding.
- Agree bathing the infant frequently.
And their answer formed as (Yes, No).
A pilot study was conducted on a sample of Karbala Children's Teaching Hospital; 10 mothers were randomly selected and interviewed to test the questionnaire, but they were not included in the final study sample. The purpose of the pilot study was to understand the time required for the interview and difficulties or unclear questions might present with modification done to the questionnaire.
Responses of the study participants towards the items of Knowledge about NNJ scored according to Likert scale as:
Correct response 3 points
Don't know 2 points
Incorrect response 1 point
For the attitude the scoring was different than that of knowledge
Positive attitude scored 1 and
Negative attitude scored zero
The mean knowledge score was calculated out of 3 and the percent score was calculated as the product of division of the mean score by 3.
The evaluation of knowledge was categorized as followed:
Poor knowledge: Mean score = 1 – 1.667
Fair knowledge: Mean score = 1.67 – 2.33
Good knowledge: Mean score = 2.34 – 3.00
The mean attitude score was calculated out of one and the percent score was calculated as the product of division of the mean score by one.
The evaluation of attitude was categorized as followed:
Positive attitude: Mean score > 0.50
Negative attitude: Mean score ≤ 0.50
The data were entered and analyzed using the statistical package for social sciences (SPSS), IBM, US, version 25. Descriptive statistics for the variables presented as frequencies and percentages for categorical variables including the demographic characteristics and the responses of the 164 participant women as mean, median and correlation coefficient for continuous variables and the generated scores. A p value of < 0.05 was considered as statistically significant.

Ethical consideration

The study protocol has been reviewed and approved by the council of Family Medicine at the Arab Board of Health Specialization\ Iraq office. And approved by the Karbala Teaching Hospital for Children after explaining the purpose of the research and ensuring data privacy, the oral consent of each participant was obtained.

Results

During the study period, 164 mothers, who gave birth in <1 month before commencing the study, were interviewed using a structured questionnaire. Sociodemographic characteristics of the study participants are shown in (Table 1). The age distribution of the participant women revealed that majority of mothers was between 20 and 30 years old.
And majority of women (78.7%) were housewives, (83.5%) were from urban resident. And nearly one third (33.5%) had primary school level of education. Consanguinity was positive in 87 (53%), and 121 (73.8%) were multiparous.
The knowledge of participant women about different domains of knowledge about NNJ are summarized in **table 2**. The highest score was for the knowledge of the way of diagnosis of NNJ 2.54 with a percent score of (84.8%). And the overall knowledge score for all domains and items was good with a mean score of 2.36 and a percent score of 78.5%.
More than half of participant women, (51.2%), had good overall knowledge about NNJ while 48.8% had fair knowledge and fortunately, none had poor knowledge as shown in **Figure 1.** The attitude of participants was strongly positive towards bringing the neonate to the hospital, and the importance of continuity of breast feeding with a mean score of 0.96, and 0.95, respectively. While negative attitude was

reported by the participant women towards using fluorescent at home and using medicinal herb. However, the overall attitude of the participant women was positive with a mean score of 0.70 out of one. As shown in **table 3**

The results of bivariate analysis revealed that none of the participants' characteristics had significantly associated with their overall knowledge scores except the residence (p value =0.032), in which Urban resident had higher knowledge score than rural and slum quarters area as shown in **table 4.**

Older women, multiparous and those having Good antenatal care (ANC) were significantly correlated with higher attitude score as shown in **table 5**. Furthermore, the positive attitude score was significantly correlated with Knowledge score. Figure 2 shows that nearly three quarter of women had positive attitude.

Discussion

One of the strategies to limit the increase in health care costs is to counsel families about neonatal jaundice. Assessing the mother's level of knowledge is essential for programs aimed at educating parents [(14)].

In the present study most of mothers 93.3% defined NNJ correctly as a yellowish discoloration of newborns skin. It is similar to a study in Malaysia [(15)], Iran [(10)]. The mothers had a good knowledge about definition of NNJ but only 42.7 % of mothers knew that if jaundice lasting more than 2 weeks is abnormal and nearly half of them 45.1% were aware that NNJ of early onset was abnormal and needed urgent treatment. And 21.3% of the respondent mothers believed that normally NNJ appears at the first hours of birth; if not, the baby will never be affected. This result lower than a study done in Malaysia, show Malaysian mothers were more knowledgeable about these facts than the mothers in the present study [(15)].

Table 1. Demographic Characteristics of the participant women (N = 164).

		No.	%
Maternal Age / years	15-20	23	14.0
	21 - 25	49	29.9
	26 - 30	48	29.3
	31 - 35	22	13.4
	> 35	22	13.4
Employment status	Employed	32	19.5
	Housewife	129	78.7
	Student	3	1.8
Residence	Urban	137	83.5
	Rural	26	15.9
	Slum quarters	1	0.6
Level of education	Illiterate	30	18.3
	Primary	55	33.5
	Secondary	43	26.2
	Institute	9	5.5
	College or higher	27	16.5
Consanguinity	Positive	87	53.0
	Negative	77	47.0
Parity	Primiparous	43	26.2
	Multiparous	121	73.8
Median Number of previous children		2	-
Median Number of boys		2	-
Median Number of girls		2	-

Table 2. Summary of knowledge scores for domains of knowledge about neonatal jaundice.

Knowledge Domain	Mean score out of 3	Score percent	Evaluation
Definition and symptoms of neonatal jaundice	2.46	81.9%	Good
Onset and duration of neonatal jaundice	2.23	74.2%	Fair
Causes of neonatal jaundice	2.19	73.1%	Fair
Complication of neonatal jaundice	2.45	81.6%	Good
The way of diagnosis of neonatal jaundice	2.54	84.8%	Good
Treatment of neonatal jaundice	2.27	75.8%	Fair
Overall knowledge score for all items	2.36	78.5%	Good

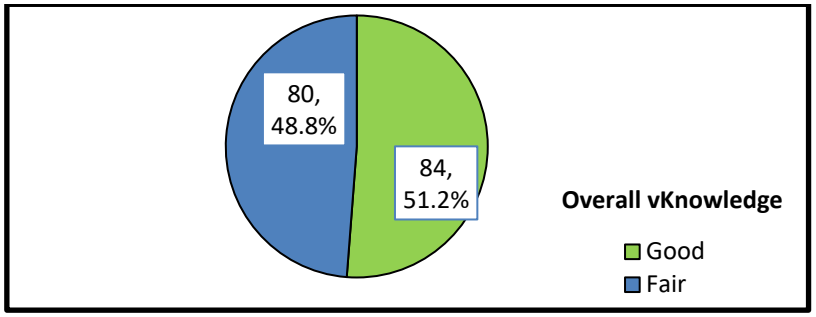

Figure 1. Distribution of study participants according to the overall knowledge about neonatal jaundice (N = 164).

Table 3. Responses of participant women about attitude questionnaire items

Item	Positive		Negative		Mean score	Attitude Evaluation
	No.	%	No.	%		
Sun exposure	120	73.2	44	26.8	0.73	Positive
Bringing the neonate to the hospital	157	95.7	7	4.3	0.96	Positive
Using Fluorescent at home	64	39.0	100	61.0	0.39	Negative
Using medicinal herb (including glucose water, Garlic, Bead …).	77	47.0	87	53.0	0.47	Negative
Bathing the infant frequently	113	68.9	51	31.1	0.69	Positive
Continuity of breast feeding	155	94.5	9	5.5	0.95	Positive
Overall attitude score					0.70	Positive

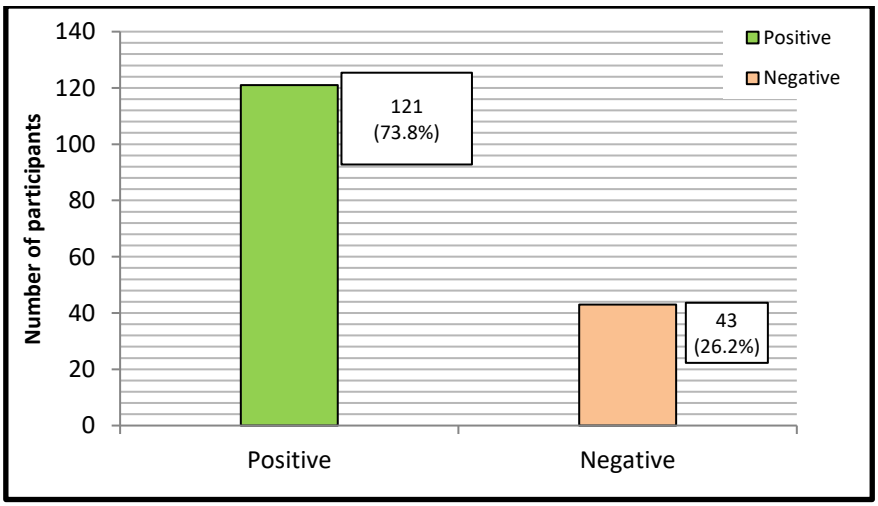

Figure 2. Distribution of the study participants according to the overall Attitude (N = 164).

Table 4. Results of Bivariate correlation analysis between overall knowledge scores and participants' characteristics.

Variable	Correlation with Overall mean knowledge score	
	Correlation coefficient	**P. value**
Maternal Age	-0.076	0.331
Employment status	0.137	0.081
Residence (Urban)	**0.168**	**0.032**
Education level	0.041	0.605
Consanguinity	0.088	0.265
Parity	0.007	0.978
Total Numbers of previous children	-0.167	0.068
Numbers of Boys	-0.182	0.075
Numbers of Girls	-0.174	0.086
History of jaundice in her previous children during their neonatal periods	0.040	0.660
Good antenatal care (ANC) visit	-0.077	0.393
No. of visits	0.097	0.219
Mode of delivery	0.153	0.151
Neonatal age	0.094	0.233

Table 5. Results of Bivariate correlation analysis between overall Attitude scores and participants' characteristics.

Correlation with Overall mean attitude score		
Maternal Age	0.192	**0.034***
Employment status	-0.017	0.826
Residence	-0.070	0.374
Education level	0.064	0.418
Consanguinity	-0.035	0.658
Parity (higher number of parities)	**0.167**	**0.032***
Total Numbers of previous children	-0.006	0.953
Number of boys	0.079	0.510
Number of girls	-0.090	0.457
History of jaundice	-0.016	0.862
Good Antenatal care	**0.288**	**0.0001***
Mode of delivery	0.134	0.081
Neonatal age	0.119	0.129
Overall knowledge	**0.189**	**0.015**
*Significant correlation at P<0.05		

The present study shows 62.8 % of mother does not agree that breastfeeding can cause jaundice in the newborn. They think this is the best food for newborns, and it is unlikely to cause disease. This is could be because of the increasing awareness of breastfeeding in our country, especially in recent years.

As a causes of NNJ, 44.5% of the mothers stated that they know it as physiological condition and 42.1 % knew prematurity as a risk factor for NNJ. It was nearly similar to study done in Iran [10], and more than a study in Nigeria and Sri Lanka [13, 16].

In the present study show, 66.5 %and 48.8 % of mother knew that the severe NNJ could cause brain insult (mental retardation) and death respectively. But only 30.5% of mother knew deafness could occur as a sequel of severe NNJ. These results are similar to neighbor country like Iran [10], and unfortunately is lower than study in Malaysia [15].

About 93.3% of respondents know phototherapy as a treatment of NNJ. And these results were higher than a study in Iran which shows that 30 % of mother did not know phototherapy as treatment of NNJ

[10], this difference may be related to good education by health worker and also available phototherapy device in some private clinic and medical instrument centers.

Nearly 50 % of mothers use herbal and some food like garlic to treat NNJ. These misconceptions lead to delay jaundice management and may cause some complications to the baby.

In the present study 73.8% had positive attitude (right attitude) toward NNJ, for example, the attitude that bring pleasure is that 95.7 % of the mothers agree to consult a physician if jaundice appear on their neonates, and hospitalizing them, if necessary, which is higher than in Egypt in which 88.3% of participants strongly agree seeking medical care if their babies developed NNJ [17].

The present study revealed that exposing infant to sunlight was refused by more than half of mothers 73.2%, in which sunning a jaundiced infant increased the risk of dehydration and the severity of jaundice become worse.

The results of present study showed that 61% used fluorescent at home. This result agreed with similar study done in Malaysia [15], and contrast to study done in Egypt in which only 14.5% of mothers used fluorescent at home [17].

Despite the association between the breast feeding and development of NNJ, the majority of mothers in present study 94.5% wouldn't stop breast feeding for jaundiced babies.

This research shows that traditional beliefs (glucose water, garlic, a piece of gold on his bed, beads) are still accepted by 53% of mothers. Some mothers said that they would consult a doctor and would use traditional treatment methods, they don't know which is better. However, some people say that this attitude is not good, but we use it in accordance with traditional beliefs. This negative attitude is higher than that of a study conducted in Iran in which 67.5% agree that these concepts will harm the jaundiced infants [10], and lower than in Egypt [17].

Regarding maternal socio-demographic factors (maternal age, education, work status, fertility rate, and place of residence) that affect Iraq's NNJ-related knowledge and attitudes, although they are not statistically significant (Except for residence). More accurate understanding and relatively safe behavior of mothers of the same age, gestational age, urban residents, and education level.

In terms of mother attitude, this study found that older age mothers, multiparty, good ANC and higher overall knowledge were significantly ($P < 0.05$) more likely to have better perception and attitudes. This because, with the increment of mothers age and parity the experience plays a vital role in good attitude about NNJ, in which they found there is no benefit from the non-healthy and bad attitude that was carried out previously.

Limitation of the study: It was hospital-based study so it may limit the representation of maternal knowledge and attitudes towards NNJ in the general population.

Conclusions

The overall knowledge of mothers regarding NNJ is good, and the overall attitude is good (positive attitude). However, the knowledge and attitude related to NNJ is satisfactory. Cultural beliefs and traditional baby care habits, such as the use of fluorescent lights and the use of herbs (including glucose water, garlic, beads...) at home, still have an impact on mothers, regardless of their education level .

Urban resident mothers showed higher knowledge score than rural residents. And a positive attitude was significantly correlated with the mother's age, parity and prenatal (good ANC) and their attitude Correlation. Further a significant correlation between the mother's attitude scores and knowledge scores. Finally

maternal knowledge regarding neonatal care and NNJ is important and need to be raised and targeted in health education and promotion programs for their valuable effect on their children.

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