

## ORIGINAL ARTICLE

# KNOWLEDGE OF MOTHERS REGARDING TRADITIONAL METHODS OF NEONATAL JAUNDICE TREATMENT

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## ABSTRACT

**Background:** Neonatal jaundice (NNJ) is a common condition globally, posing serious risks like neurological damage, physical impairments, and even mortality if untreated. Maternal knowledge and timely intervention play a crucial role in improving outcomes. This study aimed to assess the awareness level of mothers regarding NNJ and the initial treatments they administer to affected newborns before seeking formal healthcare.

**Materials & Methods:** This study was conducted as a cross-sectional, descriptive study at Salah Al-Din General Hospital in Tikrit, Iraq, during the period from September 1<sup>st</sup>, 2023 to June 15<sup>th</sup>, 2024, it included 283 mothers who had recently delivered a live newborn. Participants were selected randomly, and data was collected through direct interviews using a structured questionnaire. The collected data were analyzed using SPSS ver23 software and descriptive statistical tests, including the frequency and percentage scores of the different domains of the questionnaire.

**Results:** The results revealed that a significant proportion of mothers relied on family or traditional beliefs as primary sources of information regarding NNJ, with only 21% of the study group actively seeking medical assistance, while the majority (78.4%) preferred traditional remedies. Mothers with higher education levels and employment status demonstrated a better understanding of NNJ and its risks.

**Conclusion:** These findings reveal significant gaps in maternal understanding of NNJ, shaped by cultural beliefs. Targeted prenatal education is essential to correct misconceptions, enhance awareness of NNJ symptoms, and promote safer treatment practices, enabling mothers to recognize jaundice early and seek timely medical care.

**KEY WORDS:** Neonatal jaundice; Cultural beliefs; Healthcare.

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## INTRODUCTION

Neonatal jaundice is a prevalent health concern globally, marked by yellowing of an infant's skin and sclera due to bilirubin accumulation.<sup>1</sup> Neonatal jaundice includes two types: physiological, which occurs naturally and resolves without intervention, and pathological, which requires medical attention due to underlying conditions.<sup>2</sup>

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Affecting over 60% of full-term and 80% of preterm infants, NNJ contributes significantly to hospital re-admissions within the first week of life.<sup>2,3</sup> Jaundice in the newborn is serious condition, can result in death or numerous lifelong neurological sequelae. Undoubtedly, these disorders provide significant impairment to the afflicted persons and induce considerable psychological burden in their families and caregivers.<sup>4</sup> The brief hospitalization after child-birth and prompt discharge of the newborn lead to bilirubin levels reaching their highest point at home instead of in the hospital. This shifts the main duty for early diagnosis and seeking medical care with the mothers. Hence, parents have a crucial part in determining the ultimate outcomes of jaundice. It is vital for the mothers to possess accurate understanding of identifying infant jaundice and reacting suitably.<sup>1,5</sup>

Lack of maternal understanding of jaundice is likely to lead to harmful neonatal practices, hazardous delays,

mismangement, and difficulties for the sick kid.<sup>6</sup>

Therefore, this research aimed to determine the amount of awareness among mothers about jaundice and the treatment they provide to afflicted newborns, particularly before the time they arrive at a healthcare institution.

## MATERIALS & METHODS

This descriptive cross-sectional study was conducted at the pediatric ward of Salah Al-Din General Hospital, focusing on 283 mothers who had recently delivered live newborns.

The study included a total of 283 women who had recently delivered a live newborn between September 1, 2023, and June 15, 2024. Using a census sampling approach, all eligible women who visited the facility during this period were recruited.

Data collected by direct interview with newly delivered mothers utilizing a questionnaire form designed for the study.

Participants were chosen at random using a simple random sampling method and asked to take part after being informed about the study's objectives and ensuring strict anonymity. Willing participants provided verbal permission and completed a detailed self-structured questionnaire that had been prepared in advance.

The questionnaire comprised three sections:

First section: Contained questions to describe some sociodemographic characteristics of the mothers.

Second section: Assesses mothers' knowledge about various aspects of NNJ.

Third section: It considered with mothers' traditional methods of NNJ treatment. It consists of two questions with multiple-choice answers to explore mother's behaviour regarding management of NNJ.

Mothers' traditional methods were categorized as appropriate if mother had only correct behaviour, while categorized inappropriate if she had incorrect behaviour or combination of both correct and incorrect behaviours.<sup>7</sup>

A statistical analysis was conducted using frequency and percentages to examine the replies to each question. A score of 3 was assigned to each affirmative answer, 2 for responding don't know, and 1 for responding No.

The percentage score for mothers' replies in each individual item was computed using the following formula:

Aggregate scores for all participants in item X 100 divided by the highest achievable score for all participants in the same item.

For each item, only responses from participants who answered were considered. Scoring followed a Triple Likert scale approach, with each 'Yes' receiving

a score of 3, 'Don't know' a score of 2, and 'No' a score of 1.

The maximum scores for all participants who responded to the same item were calculated using the Triple Likert Scale. Furthermore, a comprehensive percentage score was calculated for each domain, which is the mean percentage score for all replies associated with each domain. After approximation, the percentage score was categorized as follows: mothers with scores less than 60% were classified as poor, those with scores between 60% and 69% were classified as fair, those with scores between 70% and 79% were classified as good, and those with scores between 80% and 89% were classified as very good.<sup>8</sup>

## RESULTS

The overall number of mothers involved was 283. The age group with the largest proportion, 43.8%, was between 20-29 years old. Among them, 67.8% were housewives, 14.8% had a secondary level of education, 69.3% were delivered by normal vaginal delivery, 38.9% had prior kids with a positive history of NNJ, and 54.8% had parity >5 (Table 1).

**Table 1: Socio-demographic characteristics and NNJ-related features (N=283)**

Variable	Category	Count (N)	%age
Age Group	Under 20	50	17.7
	20-29	124	43.8
	30-39	89	31.4
	40+	20	7.1
Employment	Worker	91	32.2
	Homemaker	192	67.8
Education	Illiterate	49	17.3
	Basic Literacy	94	33.2
	Primary Education	98	34.7
	Secondary Education	42	14.8
Birth Method	Vaginal	196	69.3
	Cesarean	74	26.1
	Other	13	4.6
Previous NNJ Experience	Yes	110	38.9
	No	173	61.1

As seen in Table (2), the primary source of information on NNJ was family/relatives at 37.8%, followed by health workers at 28.6%.

**Table 2: Primary information sources for NNJ (N=283)**

Source of Information	Count (N)	Percentage
Health Workers	81	28.6
TV/Radio	36	12.7
Family/Relatives	107	37.8
Internet	41	14.5
Others	18	6.4

The mothers' accurate knowledge replies about the definition of NNJ were greatest at 66.8% and 57.6%, with a percent score of 85%. Additionally, 78% of mothers understood that the presence of jaundice on the first day after birth requires rapid medical consultation. The cumulative percentage score for this domain was 74%, as seen in Table 3.

The levels of knowledge shown by mothers about the problems of NNJ were unsatisfactory. The greatest proportion of accurate answers was 46.3% with a percentage score of 76% in relation to mortality, followed by 42.4% with a percentage score of 69% for brain injury, and the lowest proportion of right replies, 27.2% with a percentage score of 61%, associated with deafness. As seen in Table 4, the domain achieved an overall percentage score of 68%.

The mother's health seeking behaviour regarding management of NNJ is illustrated in table-5. It showed that only (21.6%) mothers stated that they were seeking medical help, while (78.4%) were using different traditional methods for management of NNJ.

**Table 5: Health-seeking behaviors in NNJ management (N=283)**

Health-Seeking Behavior	Number (N)	%age
Seeking Medical Care	61	21.6
Using Traditional Methods	222	78.4
Total	283	100

Table 6 demonstrates the various traditional methods used by study participants. It was appeared that 12.7% used combination of traditional methods. (24.4%) of mothers used necklace of seven garlic and the least method used by mothers was exposing the baby to sun light (5.5%).

**Table 6: Traditional treatments used by mothers for NNJ (N=283)**

Traditional Treatment Method	Number (N)	%age
Fluorescent Light Exposure at Home	27	9.7
Sunlight Exposure	16	5.5
Glucose Use	31	11.0
Ear Piercing	19	6.7
Neonate Bathing	24	8.5
Small Pillow Under the Neonate	23	8.1
Seven-Garlic Necklace	69	24.4
Yellow Bead Use	17	6.0
Herbal Remedies	21	7.4
Combination of Methods	36	12.7
Total	283	100

**Table 3: Maternal knowledge of NNJ definition (N=283)**

Definition of NNJ	Correct (Yes)	Incorrect (No)	Don't Know	Percent Score (%)
Yellowish coloring of face and eyes	163 (57.6%)	65 (23.0%)	55 (19.4%)	78
Prevalence among newborn infants	146 (51.6%)	45 (15.9%)	92 (32.5%)	72
Urgency of medical attention if jaundice appears on day one	189 (66.8%)	38 (13.4%)	56 (19.8%)	85
Normality of NNJ duration up to 8 weeks	57 (20.3%)	117 (41.2%)	109 (38.5%)	61

**Table 4. Knowledge of mothers of the complications of NNJ (N=283).**

Complication	Recognized	Uncertain	Not Recognized	Knowledge Score (%)
Brain Damage	120 (42.4%)	66 (23.3%)	97 (34.3%)	69
Seizures	103 (36.4%)	88 (31.1%)	92 (32.5%)	68
Intellectual Disability	76 (26.9%)	107 (37.8%)	100 (35.3%)	65
Hearing Loss	77 (27.2%)	82 (29.0%)	124 (43.8%)	61
Physical Disability	102 (36.0%)	70 (24.8%)	111 (39.2%)	66

## DISCUSSION

Neonatal jaundice has a high incidence world-wide. Early and appropriate care to reduce the risk of serious neurological sequelae depends on the mother's knowledge and beliefs about NNJ.

The age groups that were observed among the mothers varied from 20-29 years, taking precedence with a total of 43.8%.<sup>9</sup> Other findings from elsewhere revealed a very small rate: 35.9%.<sup>1</sup> It was found that 67.8% of the included mothers were housewives, while in a study conducted by Kasemy, the percentage was 79.5%<sup>10</sup>, while in another study, it was reported to be 73.2%.<sup>11</sup>

These findings again highlight the regional variation in maternal demographics and underscore the need for specific educational interventions to improve maternal knowledge and practices in the management of NNJ. Of the women in this study, 34.7% had completed elementary-level education while 14.8% completed secondary-level education. This compares with a 12% rate of secondary education in a similar study done by Salia<sup>1</sup> in Ghana while 48% of respondents had acquired primary level education and 13.5% had acquired high school education in Egypt.<sup>10</sup> Among the studies conducted in Iraq, 72.88% of mothers had a positive history of NNJ<sup>11</sup>, while in Ghana, the corresponding percentages were 55.7%, 72.88%, and 23%, respectively.<sup>1</sup> These results depict the discrepancies in educational background and maternal knowledge of NNJ in different regions and pinpoint the need for health education on neonatal care practices.

Of the women surveyed here, 34.7% had completed elementary level education and 14.8% had completed secondary level education. In comparison Salia<sup>1</sup> found in Ghana that 12% of the women had attended secondary school while in Egypt, 48% of the respondents had completed primary level education and 13.5% had completed high school education.<sup>10</sup> It was further demonstrated in the United States that breastfeeding education forms part of the curricula of midwifery and, as such may influence maternal knowledge.

Of studies conducted in Iraq, 72.88% of mothers reported a positive history of NNJ<sup>11</sup>, while in Ghana the respective rates were 55.7%, 72.88%, 23%.<sup>1</sup>

These findings have highlighted the differences in educational background and maternal awareness of NNJ in various regions and have stressed that targeted health education programs are required to enhance neonatal care practices.

In the current study, 20.3% of mothers mistakenly believed that jaundice lasting for 8 weeks is normal. However, another survey found that more than 60% of mothers believed that jaundice persisting beyond 2 weeks is not abnormal. Additionally, 75% were unaware that the early onset of non-NNJ is abnormal.<sup>10</sup>

Kasemy also reported similar misunderstandings among most mothers about the duration of jaundice and its consequences on health status.<sup>10</sup>

The current study found that 46.4% of the respondents acknowledged death, 42.2% acknowledged brain damage, 29.4% appropriately identified mental retardation, and 27.2% could appropriately identify deafness as a possible health outcome variable of NNJ, related to the neurological consequences of unconjugated hyperbilirubinemia.<sup>12</sup> In Salia's study, 66.2% of the mothers said that mortality was a possible consequence, 42.9% could recognize deafness and 51.3% had identified mental retardation in this context of NNJ.<sup>1</sup> Another Malaysian study found that 71.7% and 69.7% of mothers understood that severe jaundice could result in death and brain impairment, respectively.<sup>13</sup> Additionally, a significant portion of the population at Provincial General Hospital in Badulla -5.4%- has cognitive impairment, and the neonatal mortality rate stands at 6.5%.<sup>9</sup> Most of the inappropriate health-seeking behavior among the mothers in the current study can be attributed to a lack of knowledge about neonatal jaundice<sup>14</sup>, where inappropriate care-seeking behaviors were identified among the mothers. This present study indicated that most mothers were still reliant on the use of traditional and harmful therapies for the management of NNJ, meaning the risks involved with such practices are not yet well appreciated within the community.<sup>15,7,16</sup>

Traditional practices used by mothers represent a potential barrier to seeking care, sometimes causing harm to children and increasing bilirubin levels, leading to higher rates of hospitalization. Therefore, health education on the issue of NNJ must emphasize the necessity for mothers to take affected children to hospitals for prompt management.<sup>17</sup> The knowledge and practice have been improved.<sup>7,18</sup> In fact, maternal education significantly affected the knowledge, attitude, and health-seeking behavior regarding NNJ.<sup>17,18,19</sup> This shows that the mother's education is directly related to the development of better knowledge and health-seeking behavior among mothers.

Maternal employment was one of the factors determining her level of knowledge, attitude, and health-seeking behavior regarding NNJ. Better knowledge and appropriate behavior were reported among employed mothers.<sup>20,18</sup> Multiparous women had a higher level of knowledge on NNJ compared to first-time mothers<sup>21,7</sup>, which concluded that an increased number of children was one of the predictors of mothers' knowledge regarding NNJ.

The most important conclusion from the knowledge responses of mothers regarding the treatment of NNJ was that mothers still use various traditional methods for its management.

## CONCLUSION

There are gaps in the understanding and health-seeking behavior of mothers, particularly about NNJ. Specialized instruction provided by healthcare experts during prenatal care is necessary to assist mothers in identifying NNJ, avoiding potentially dangerous home interventions, and swiftly seeking medical attention.

In general, the mean percentage score of the mothers' knowledge of NNJ was satisfactory. Excellent for elucidating the definition and complexities, satisfactory for the management of NNJ.

## Ethics Approval and Consent to Participation

The research ethics committee was consulted for ethical guidance. Each subject provided informed consent. The data collection followed the guidelines set by the World Medical Association (WMA) declaration of Helsinki for the Ethical Principles for Medical Research Involving Human Subjects, 2013. All participant information and privacy were maintained in strict confidence.

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**CONFLICT OF INTEREST**

Authors declare no conflict of interest.

**GRANT SUPPORT AND FINANCIAL DISCLOSURE**

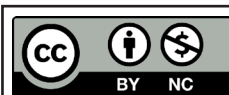
None declared.

**AUTHORS' CONTRIBUTION**

The following authors have made substantial contributions to the manuscript as under:

Conception or Design:	EMTA, AMN
Acquisition, Analysis or Interpretation of Data:	EMTA, AMN, ASR, MAY
Manuscript Writing & Approval:	EMTA, AMN, ASR, MAY

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.



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