

Perception of Mothers regarding their Neonatal Hyperbilirubinemia

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Abstract:

Background: Worldwide, neonatal hyperbilirubinemia is a common neonatal disorder. **Aim:** The study aimed to assess perception of mothers regarding their neonatal hyperbilirubinemia. **Research design:** Descriptive study design was utilized to conduct the study. **Setting:** The study was conducted in Neonatal Follow-up Clinics and Immunization Clinics at Benha University Hospitals, Family Health Care Center and Central Hospital in Al-Shouhada City. **Sample:** A purposive sample was used to conduct the study, included (300) mothers who fulfill the inclusive criteria. **Tools:** There were four tools used in the study. Tool (I): Structured interviewing questionnaire that includes socio-demographic data and current obstetrics history. Tools(II): Assessment of mother's knowledge regarding neonatal hyperbilirubinemia. Tools (III): Self-report practices regarding neonatal hyperbilirubinemia and tool (IV): Modified Likert Scale to assess attitude of mothers regarding neonatal hyperbilirubinemia. **Results:** Less than three-quarters of the studied women had poor knowledge regarding neonatal hyperbilirubinemia, majority of mothers had unsatisfactory self-report practices and minority of them had satisfactory self-report practices. About two-thirds the studied women had negative attitude regarding neonatal hyperbilirubinemia. **Conclusion:** The studied women had poor knowledge and negative attitude regarding neonatal hyperbilirubinemia especially among primipara. Regarding self-report practices of mothers, majority of mothers had unsatisfactory self-report practices and minority of them had satisfactory self-report practices **Recommendedations:** Targeted public enlightenment and educational program should be done to improve the level of awareness regarding neonatal hyperbilirubinemia.

Key words: Mothers, Neonatal Hyperbilirubinemia, Perception.

Introduction:

Neonatal period define as the time of birth up to 28th day of life. Neonatal period is the most critical time for the survival of an infant. Approximately 60% of term and 80% of preterm newborns during the first week suffered from most common and important conditions needing medical attention in neonates called neonatal hyperbilirubinemia and about 10% of breastfed babies are still

jaundiced at 1 month (**Erlichman and Loomes, 2019**).

Neonatal hyperbilirubinemia is yellowish discoloration of eyes and skin as result of an increase in total serum bilirubin level. Bilirubin formed when the body breaks down old red blood cells. The liver usually processes and removes the bilirubin from the blood. Jaundice in babies usually occurs because of a normal

increase in red blood cell breakdown and the fact that their immature livers are not efficient at removing bilirubin from the bloodstream (**Blair , 2018**).

Therefore, the baby's liver plays the most important part in bilirubin breakdown. The type of bilirubin that causes the yellow discoloration of jaundice is called unconjugated or indirect bilirubin. This form of bilirubin is not easily removed from the baby's body. The baby's liver changes this unconjugated bilirubin into conjugated or direct bilirubin, which is easier to excrete. The liver of a newborn baby is immature, so the job of conjugating and removing bilirubin is not done completely well (**Bhattacharyya , 2017**).

The nurses play pivotal role in equipping the mother by knowledge about neonatal hyperbilirubinemia and positively change their attitude (**Wells, 2018**). Increasing, the nurses are the key stone in caring and monitoring hospitalized babies with jaundice during phototherapy, exchange transfusion and intravenous immunoglobulin (**Bhandari, 2020**). Mothers play a very important role in final results of jaundice after discharging the babies from hospital (**Mendoza, 2016**). Therefore, the nurse should ascertain the knowledge level of the mothers about NNJ and the care offered by them to their babies.

Significance of the study

Neonatal Jaundice (NNJ) is a transitional phenomenon affecting most newborns with largely benign consequences in the first week of life. Worldwide, incidence of (NNJ) considers 55% of term babies and up to 75% of preterm babies (**Goodman, et al, 2016**). Incidence of neonatal jaundice in Egypt is present in 60% of term babies and up to 80% of premature babies (**Slusher, et al, 2015**).

Neonatal jaundice leads to serious complication that affect newborn such as acute bilirubin encephalopathy and kernicterus. And also consider a major contributing cause for cerebral palsy in Egyptian infants. Kernicterus was the third most common cause of developmental delay in Egyptian's newborn composing 9% of the whole etiologies (**Mostafa, et al, 2019**). In Cairo University Children's Hospital, severe neonatal hyperbilirubinaemia accounted for 33% of total admission diagnoses to the out born Neonatal Intensive Care Unit (NICU) in 2016 with about 10 cases of kernicterus occurring each year (**Bosschaart et al, 2016**). Therefore, the aim of this study was to assess perceptions of mothers related to neonatal hyperbilirubinemia.

Aim of the study:

The aim of the present study was to assess perception of mothers regarding neonatal hyperbilirubinemia.

Research question:

- What is the level of mother's knowledge regarding neonatal hyperbilirubinemia?
- What about mother's self-report practices regarding neonatal hyperbilirubinemia?
- What is the mother's attitude toward neonatal hyperbilirubinemia?

Subjects and Method:

Research Design:

A quasi- experimental design was used to fulfill this study.

Research setting:

This study was conducted in neonatal follow-up clinics and immunization clinics at Benha University Hospital (165 mother), family health care center in Al-Shouhada

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city(20 mother) and central hospital at Al-Shouhada (115 mother). The family health center and central hospital in Al-Shouhada were added to study setting to complete the predetermined sample size, because Benha University Hospital is transformed to isolation hospital due to breakout covid-19.

Sampling:

Sample type: A purposive sample was used.

Sample size:

The total number of mothers at neonatal follow-up clinics and immunization clinics at Benha University Hospital at (2019) was 4055 mothers (Benha University Hospital Census Report, 2019). The sample size as calculated by the following formula was (300) mothers

$$n = \frac{N}{1 + N(e)^2}$$

n= sample.

N= population

e= margin error (.05).

Inclusion criteria:

- Different age of mothers.
- Different parity.
- Normal delivery.
- Normal newborn.
- Willing to participate in the study.

Exclusion criteria:

- Mothers who had mental disorders.
- Abnormal labor.
- Mothers who refused to participate in the study.

Tools of data collection:

Three tools were used for collecting data.

The following four tools were designed after reviewing related literature and under supervision of the supervisors of the study.

Tools I: Structured interviewing questionnaire: that includes two parts:

Part (1): Personal characteristics of studied women such as (age, level of education, occupation, residence).

Part (2): Current obstetrics history as (number of pregnancy, number of labour, current gestational age, type of last delivery, previous history of a newborn baby suffering from jaundice, presence of complications in last pregnancy and preterm labour)

Tools II: Assessment of mother's knowledge regarding neonatal hyperbilirubinemia:

This sheet includes 25 questions.

Scoring system:

All knowledge variables were weighted according to items included in each question. The answers of the question were classified into 2 categories. The answers would have score (1) for correct answer and (0) for incorrect answer or don't know.

Total knowledge score was converted into percentage and classified as the following:

Good: (≥ 75 % correct answers).

Average: (60 - < 75 % correct answers)

Poor: (< 60 % correct answers).

Tools (III): Mother's self-report in relation to their practice regarding their neonates with hyperbilirubinemia, such as: It included 12 items.

Scoring system:

All self-report practices variables were weighted according to items included in each statement. The practices were classified into 2 categories (1) score for correct practices and (0) score for incorrect practices.

Total self-report practices score was (12) and classified as the following:

Satisfactory self-report practice ($\geq 10\%$ correct answers).

Unsatisfactory self-report practice ($<10\%$ correct answers).

Tool IV. Modified Likert Scale:

It was adopted from (Moawad, 2016) and modified by the researcher and the guidance of the supervisors of the study to have broader study about mother's attitude. The scale was implemented by the researcher to assess attitude of the studied mothers as regarding neonatal hyperbilirubinemia. The scale was consisted of (13) statement from three –point (likert scale type) about several issues constructed to measure attitude of studied mothers regarding neonatal hyperbilirubinemia.

Scoring system:

To obtain the outcome of attitude scale, each statement scored as following; (2) if the response was "agree", (1) if it was 'some times', and (zero) if it was "disagree" .The total score is expressed as apercentage.

Total attitude score was converted into percentage and classified into:

Highly positive attitude: $>75\%$

Positive attitude: $60\% < 75\%$

Negative attitude: $75 < 60\%$

Ethical consideration:

Each studied woman was given explanations about the purpose of the study and informed that participation was voluntary. They have free to withdraw from the study at any time before the completion of it. The woman who was agreeing to complete in this study was asked to sign consent from before starting the data collection. Confidentiality was ensured throughout the study process and the women were assured that all data was used only for study purpose.

Tools validity:

Tools were developed by the researcher after the review of literature. The tool was tested for its content validity by panels of three experts in the field of Obstetrics and woman's health nursing and pediatric medicine at Faculty of Benha University to test content validity.

Tools reliability:

The reliability was done by cronbach's Alpha coefficient test which revealed that each of the tools consisted of relatively homogenous items as indicated by the moderate to high reliability of tools. Cronbach's Alpha of knowledge was (.76).

Pilot study:

A pilot study was carried out on 10% of total sample size which was (30) women. It was conducted to test the simplicity, clarity and applicability of the developed tools, also to find out the possible obstacles and problems that maight face the researchers and interfere with data collection, and to estimate the time needed for data collection. According to the results of pilot study, required modifications were done. The women involved in the pilot were be excluded from the study

Field work:

- Data were collected through a period of six months from the begning of March 2020 to the end of August 2020 in neonatal follow-up clinic and immunization clinic at Benha University Hospitals, to select mothers that their babies have hyperbiliruninemia.

- The researcher visited the previously mentioned study settings 2 days/week from 9 am to 2 pm (Mondays and Thursdays).The researcher started to collect data from Banha University Hospital from beginning of March to the end of April because Banha University

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Hospital was transformed into isolation hospital. So, the researcher had to seek help from other places to complete the sample collection, these places were Family Health Center and Central Hospital at El-Shouhada City. The collection took place from the beginning of May to the end of August.

- The researcher met (4-6 women/day). The researcher introduced herself, greet women, the purpose of study was explained by the researcher and oral consent was taken to participate in study.
- The researcher interviewed the mothers to collect personal characteristics of study sample.
- The researcher introduced structured interviewing questionnaires to the studied sample (Tool II) to assess personal characteristics of study sample & current obstetric data. This tool takes about 10-15 minutes to fulfill.
- Then, the researcher continued interviewing the mothers to fulfill (Tool II, III) which assess the mother's knowledge and self-report regarding neonatal hyperbilirubinemia.
- The time required to fulfill (Tool II, III) was 15-20 minutes.
- Finally, the mother's attitude regarding (NHB) was assessed through (Tool IV). The time required to fulfill (Tool IV) was 15 minutes
- The previously mentioned steps were repeated for each mother until the previously mentioned sample size completed.

Statistical analysis:

- Data were verified prior to computerized entry. The statistical package for

social sciences (SPSS version 20) was used for that purpose, followed by data tabulation and analysis. Descriptive statistics were applied (e.g., mean, standard, deviation, frequency and percentage). Test of significance (t-test, chi-square). A significant level value was considered when $p \leq 0.05$. In addition, a highly significant level value was considered when $p < 0.01$.

Results

Table (1): Shows the personal characteristics data of the studied women, it was cleared that more than half (58.7%) of the studied sample was in the age group of 18-24 years with a mean age of 22.81 ± 6.90 years. Also, about two-thirds (61.7%) of women lived in rural areas. Regarding educational level, about half of them (49.7%) had secondary education. In addition; regarding occupation, more than two-thirds (69.3%) of them were housewife.

Table (2): Illustrates that, more than half of the studied sample (54.7%) was primigravida. Furthermore, less than two-thirds of them (60.0%) were primipara. As regards the current gestational age, the mean gestational age of them was 38.72 ± 1.43 weeks. Also, minority of them (8.0%) had preterm labour and less than two thirds of them (62.7%) delivered by C.S.

Figure (1): Shows that 62.3% of studied women's had poor total knowledge regarding neonatal hyperbilirubinemia.

Table (3): Illustrates that the majority of mothers (76.3%) had unsatisfactory self-report practices and minority of them (23.7) had satisfactory self-report practices.

Figure (2): Shows that 66.0% of studied women's had poor total attitude regarding neonatal hyperbilirubinemia.

Table (1): Personal characteristics of the studied women (n = 300).

Personal characteristics	No	%
Age in (years)		
18-	176	58.7
25-	62	20.7
30-	31	10.3
≥35	31	10.3
Mean ± SD = 22.81±6.90		
Residence:		
Rural	185	61.7
Urban	115	38.3
Level of Education		
Read & write	21	7.0
Basic education	36	12.0
Secondary education	149	49.7
University education	94	31.3
Occupation		
Housewife	208	69.3
Employer	92	30.7

* Results not mutually exclusive

Table (2): Distribution of the studied women according to their current obstetrical history (n=300).

Obstetrical data	No	%
Number of pregnancy		
Primigravida	164	54.7
Multigravida	136	45.3
Number of parity		
Primipara	180	60.0
Multipara	120	40.0
Mean ± SD =38.72±1.43		
Current gestational age:		
Preterm	24	8.0
Full-term	276	92.3
Type of last delivery		
Vaginal delivery with episiotomy	112	37.3
C.S	188	62.7
Previous history of a newborn baby suffering from jaundice (n=120)	34	28.3
Presence of complications in last pregnancy	108	36.0

* Results not mutually exclusive

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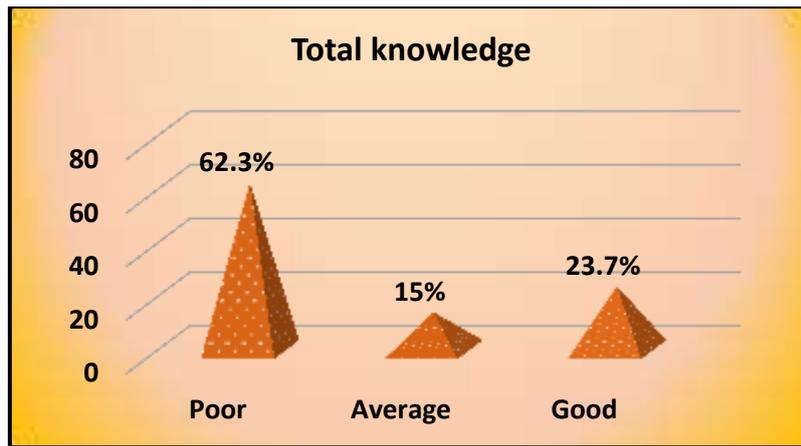


Figure (2): Distribution of studied women's total knowledge regarding neonatal hyperbilirubinemia (N = 300).

Table (3): Percentage distribution of studied women's total self_report practices regarding dealing with neonatal hyperbilirubinemia (N = 300).

Total self-report practices	No	%
Satisfactory self-report practices	71	23.7
Unsatisfactory self-report practices	229	76.3

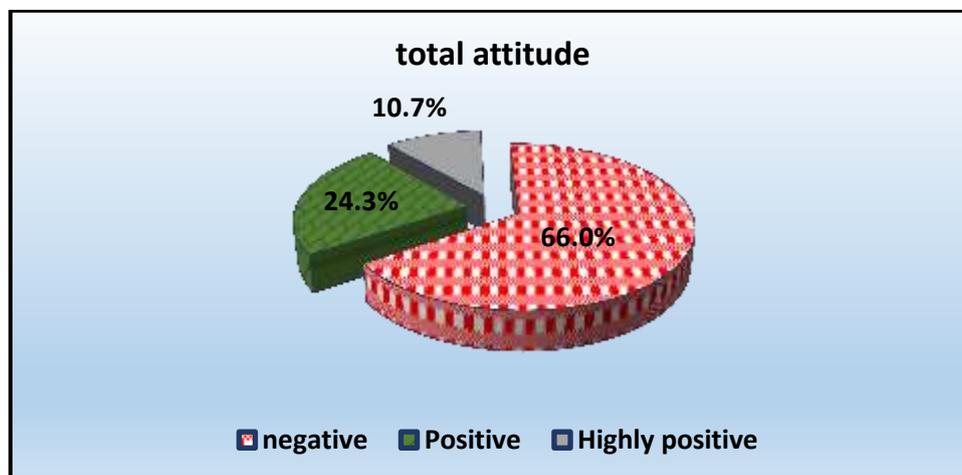


Figure (3): Distribution of studied women's total attitude regarding neonatal hyperbilirubinemia (N = 300).

Discussion

Neonatal hyperbilirubinemia is a common condition in newborn infant, result from an elevated level of bilirubin in the blood, characterized by yellowish discoloration of the skin, mucous membranes and the eyes. Worldwide, neonatal hyperbilirubinemia is occurring in up to 60% of term and 80% of preterm newborns in the first week of life. Newborns show clinical signs which tend to start on the head and face and then spread down the trunk and limbs as a result of high serum levels of bilirubin (Nassar, et al, 2015). Increasingly, in Egypt the incidence of NNJ 55% of term infant and 75% of preterm infant (Haque and Rahman, 2018). The current study aimed to assess perception of mothers regarding their neonatal hyperbilirubinemia. This aim was significantly achieved through descriptive research design.

Personal characteristics of studied women such as age, residence, occupation and educational level mainly affect women's knowledge and attitude regarding neonatal hyperbilirubinemia. So, these factors should be determined for the studied sample. The finding of the current study revealed that more than half of the studied sample was in the age group of 18-24 years with a mean age of 22.81 ± 6.90 years. Also, about two-thirds of women lived in rural areas. Regarding educational level, about half of them had secondary education. In addition; regarding occupation, more than two-thirds of them were housewife.

This result was in accordance with **Maisels (2016)** who studied "Home Practices of Kurdish Mothers Regarding Management of Jaundice among Newborns in Erbil City", showed that the highest percentage of them was (81.5%) among 23-35 years. Regarding

the mother's occupation, the majority of mother's were unemployed, which presents (83.1%) and in respect to residential area, most of mother's were from suburban areas. This similarity in results might be related to the similarities of community features. On the other hand, **Maisels (2016)** cleared that the level of mother's education, the highest percentage was primary education (41.5%). In addition, the results of the present study came nearly in the same line with **Olusanya et al (2016)** who studied "Assessment of Mothers' Knowledge and Beliefs toward Care of Neonatal Jaundice in Pediatric Teaching Hospital in Holy Karbala City" cleared that the most of mothers (42.3%) within age group (26-30) years old, (80%) of the mothers in current study were housewife and most of the mothers (30.2%) were housewife. On the other hand, **Olusanya et al (2016)** indicated that the most of the mothers (65%) living in urban areas.

In contrast to the results of present study, **Daniel, et al (2017)** who conducted "Knowledge Regarding Neonatal Jaundice Management among Mothers: A Descriptive Study Done In a Tertiary Level Hospital of Dhaka City", showed that 64% of the mothers completed primary level of education.

As regards obstetric history, the current study finding revealed that more than half of the studied sample was primigravida. Furthermore, less than two-thirds of them was primipara. As regards the current gestational age, the mean gestational age of them was 38.72 ± 1.43 weeks. Also, minority of them had preterm labour and less than two thirds of them delivered by C.S. regarding complications in last pregnancy.

The results of present study agreed with **Shrestha, et al (2019)** who studied "Knowledge about Neonatal Jaundice among Nepalese Mothers", showed that more than half of the mothers (55%) were primiparous.

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In contrast to the results of present study **Olusanya and Slusher (2019)** who studied "Neonatal Jaundice: awareness, perception and preventive practices in expectant Mothers", illustrated that only (36.0%) were nulliparous.

Knowledge is a familiarity, awareness, or understanding of someone or something, such as facts (propositional knowledge), skills (procedural knowledge), or objects (acquaintance knowledge). By most accounts, knowledge can be acquired in many different ways and from many difference sources, including but not limited to perception, reason, memory, scientific inquiry, education, and practice (**Maisles,2016**). So, the mothers should understand all knowledge associated with neonatal jaundice and the complications that might occur to the baby.

The finding of this study illustrated that, less than three-quarters of the studied women had poor knowledge regarding neonatal hyperbilirubinemia, while one quarter of them had good knowledge.

The results of current study agreed with **Stockman, (2016)** who studied "Mothers' perception of neonatal jaundice in Lagos, Nigeria: An urgent need for greater awareness", demonstrated that majority of mothers had poor knowledge about neonatal hyperbilirubinemia.

The results of current study matched with **Allahony, et al. (2016)** who studied "Mothers' perception of neonatal jaundice in Jazan Region, KSA", showed that there was poor level of knowledge about neonatal jaundice among mothers, whereas 60.4% had poor knowledge and only 39.6% had good knowledge. This similarity in results because most of mothers not attending educational courses or workshop.

In addition to this, **Ogunlesi and Abdul (2015)** who studied "Neonatal Jaundice: Knowledge, Attitude and practices of mothers in Mosan-Okunola community, Lagos, Nigeria", showed that up to 70% of the mothers had poor knowledge.

The result of current study disagree with **Boo et al. (2016)** who studied "Mothers' perception toward neonatal jaundice in Kafr El-batanoon village, Menoufia, Egypt", indicated that an overall 74% of mothers had good knowledge. These differnces maight be due to difference level of education and available technology.

Regarding to total self-report practices of mothers to their newborns with hyperbilirubinemia, the finding of this study illustrated that majority of mothers (76.3%) had unsatisfactory self-report practices and minority of them (23.7%) had satisfactory self-report practices.

The results of present study agreed with **Rodrigo and Cooray, (2015)** who studied "the knowledge, attitude & behaviour on neonatal jaundice of postnatal mothers in Provincial General Hospital, Badulla", showed that majority (about 90%, n=345) of mothers had unsatisfactory self-report practices for neonatal jaundice.

Attitude is emotional, motivational, perceptive and cognitive beliefs that positively or negatively influence the behavior or practice of an individual. Pertaining to the studied sample's attitude regarding neonatal jaundice, the results of present study showed that about two-thirds the studied women had negative attitude regarding neonatal hyperbilirubinemia, and minority of them had positive attitude

The results of current study were in consistence with **Rodrigo and Cooray**

(2015), showed that majority of mothers had poor level of attitude about NNJ. On the opposite to finding of present study **Rodrigo and Cooray (2015)**, showed that about (55%) of mothers had a high level of attitude about neonatal jaundice.

Conclusion

Less than three-quarters of the studied women had poor knowledge regarding neonatal hyperbilirubinemia, while less than one-quarter of them had good knowledge. Regarding to self-report practices of mothers, majority of mothers had unsatisfactory self-report practices and minority of them had satisfactory self-report practices. Regarding total attitude, about two-thirds the studied women had negative attitude regarding neonatal hyperbilirubinemia, and minority of them had positive attitude. Moreover, there was a highly statistically significant relation between total knowledge scores, total attitude regarding neonatal hyperbilirubinemia and educational level and residence. Additionally, there was a highly statistically significant relation between total knowledge scores, total attitude regarding neonatal hyperbilirubinemia and parity of the studied women ($p \leq 0.001$). Also, there was a highly statistically significant relation between total self-report practices scores regarding neonatal hyperbilirubinemia and educational level. Also, there was a highly statistically significant positive correlation between total knowledge scores and total attitude scores regarding neonatal hyperbilirubinemia ($p \leq 0.001$). Finally, the finding of the current study were answered the study questions and achieved the aim of the study.

Recommendations

- Targeted public enlightenment and educational program should be done to

mothers to improve the level of awareness regarding neonatal hyperbilirubinemia.

- Health education topics during antenatal visits must include NNJ using colored posters, booklets and brochures to enhance women's perception regarding neonatal hyperbilirubinemia.

Further study need to be performed:

- Comparative study that can be conducted to evaluate mothers' awareness between urban and rural areas.
- Integrating neonatal hyperbilirubinemia in curriculum of nursing students.

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إدراك الأمهات فيما يتعلق بارتفاع مستوى بيليروبين الدم عند الأطفال حديثي الولادة

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يعتبر ارتفاع بيليروبين الدم عند الأطفال مشكلة شائعة خلال فترة حديثي الولادة. ويعرف اليرقان الوليدي بأنه تغير لون الجلد ولون الجبين إلى اللون الأصفر عند حديثي الولادة بسبب ارتفاع مستوى البيليروبين في الدم علي مستوي العالم ، يصاب ما بين 60% إلى 80% من الأطفال الأصحاء باليرقان الوليدي مجهول السبب .هناك نوعان شائعان من ارتفاع بيليروبين عند حديثي الولادة وهما اليرقان المرضي والفسولوجي و اللذين يسببان اليرقان الدماغي الحاد والبيليروبين إذا لم يتم علاجهما مبكرًا. ولذا هدفت هذه الدراسة إلى تقييم إدراك الأمهات فيما يتعلق بارتفاع مستوى بيليروبين الدم عند الأطفال حديثي الولادة. وأجريت هذه الدراسة في عيادات متابعة حديثي الولادة و عيادات التطعيم بمستشفى بنها الجامعي ومركز رعاية الأمومة والطفولة بمدينة الشهداء والمستشفى المركزي بمدينة الشهداء وبلغت العينة الكلية (300) أم تم اختيارهم من خلال العينة الهادفة. كما أوصت الدراسة على انه ينبغي تطبيق البرامج التعليمية لتحسين مستوى الوعي بشأن ارتفاع بيليروبين الدم عند الأطفال حديثي الولادة ويجب دعم العيادات الخارجية لمتابعة الحمل وزيارات ما بعد الولادة بـ صور ملونة وكتيب وبروشورات توضيحية لتعزيز تصور المرأة فيما يتعلق بارتفاع بيليروبين الدم عند الأطفال حديثي الولادة.