MERIT RESEARCH JOURNALS
www.meritresearchjournals.org

Merit Research Journal of Medicine and Medical Sciences (ISSN: 2354-323X) Vol. 10(4) pp. 125-134, April, 2022
Available online http://www.meritresearchjournals.org/mms/index.htm

DOI: 10.5281/zenodo.6478595

Original Research Article

Knowledge, Attitude and Practices of Women Towards the Neonatal Jaundice in Pakistan

Muhammad Qumer*, Tayyaba Fatima, Anosh Albert, Sumaira Riaz

Lahore School of Nursing, Faculty of Allied Health & Sciences The University of Lahore, Lahore, Pakistan.
Student, Department of Nursing

***Corresponding Author E-mail: alizar421@gmail.com**
Tel.: +92 301 4124704

Abstract

Neonatal Jaundice is a significant worldwide common condition that occurs in almost 80% of preterm and 50-60% of full-term newborn infants. NNJ is a significant contributor to infant morbidity and mortality in many regions of the world. NNJ can cause many significant complications including irreversible brain damage and even cause death in severe cases. The descriptive cross-sectional study was carried out on 107 women in the rural community of Sharqpur, Sheikhupura district, Punjab province of Pakistan. A self-administered questionnaire was used to assess the knowledge, attitude, and practice of women towards Neonatal jaundice. Data was analyzed using SPSS version 21. The result of the study showed that only 37.38% participants had good knowledge about Neonatal Jaundice. There was no statistically significant association between their age and their knowledge about Neonatal jaundice. Only 10.2% participants knew that it can cause brain injury. Only 11.21% participants heard about neonatal jaundice from a physician, while the majority of respondent's source information was old aged family members and friends. The attitude of participants towards seeking medical consultation was 83.98%. Results show that participants widely believe that putting a baby under early morning sunshine and giving glucose water is the most effective treatment of Neonatal jaundice, 90.6 and 75.7% respectively. This study reveals that women of community Sharqpur have enough knowledge related to recognition of Neonatal jaundice. However, I had poor knowledge about many aspects of the condition. This study reveals that participants have a good attitude towards Neonatal jaundice, but their management measure and practice of it is ineffective with a lot of misconception.

Keywords: Attitude, Hyperbilirubinemia, Kernicterus, Knowledge, Neonatal Jaundice, NNJ Sharqpur, Practice

INTRODUCTION

Neonatal jaundice (NNJ) is a dangerous condition which if not treated appropriately and promptly can cause fatal complications. It is a pale discoloration of the skin and sclera induced by bilirubin accumulation in the tissues (Almudeer et al., 2019). It is a common condition that occurs in almost 80% of preterm and 50-60% of full-term newborn infants (Behrman et al., 2005; Moawad et al., 2016). In the absence of comorbid premature birth, septicemia or hemolytic conditions, it normally recovers within three to five days without substantial deterioration (Olusanya et al., 2016). This triggers critical neonatal morbidity around the world and is expected to exist in 60% of term neonates and 80% of preterm infants (Bahgat et al., 2016). In Asia, Latin America, and Sub-Saharan Africa neonatal jaundice has also been a significant contributor to neonatal morbidity and death

(Onyearugha et al., 2016). Farha and Kuddus (2018) stated there are two causes that contribute to jaundice progression in an infant, such as the impaired process of liver metabolism and the degradation of foetal hemoglobin that contributes to bilirubin build up in the blood which cause discoloration of sclera, skin and mucus membrane as symptoms of jaundice. Rate > 5 mg / dl of bilirubin indicates the neonatal jaundice. The Jaundice is typically attributed to increase unconjugated bilirubin level which is neurotoxic and proceed to kernicterus or even death to newborn (Muniyappa and Kelley, 2020).

According to Muniyappa and Kelley (2020) Bilirubin stains the basal ganglia are a hallmark of Kernicterus, which cause dispersed neuronal damage. The precise value of unconjugated bilirubin in the blood that can be lethal for an infant is unknown (Onyearugha et al., 2016; Zupan, 2005). Kernicterus leads to Cerebral dysfunction, speech impairment, deafness, intellectual disorders and learning difficulties (Almudeer, et al., 2019). Nevertheless, in average born baby weights who are otherwise stable, occurrence of kernicterus is correlated with elevated serum Bilirubin rates over 20 mg/dl (Muniyappa and Kelley, 2020). Kernicterus can be preventable by early detection of jaundice and timely initiation of therapy, however there is no cure of Kernicterus dl (Muniyappa and Kelley, 2020). In the second or third day, physiological jaundice will typically occur, and be elevated to 5- 6 mg/dl between 2 and 4 days and will decline below 2 mg/dl between the 5th and 7th days of age. And yellow discoloration is the only physical findings in assessment (Onyearugha et al., 2016). Omar et al. (2018) stated that Cophalohematoma, positive Coomb test, ABO incompatibility of blood community, Rhesus isoimmunization and G6PD deficiency have been identified as risk factors for severe unconjugated hyperbilirubinemia.

According to Barfield (2018), the probability of extreme neurotoxicity with or without bilirubin induced jaundice (less than 37 weeks of gestation age) is greater for preterm babies than that of full-term babies (over or equivalent to 37 weeks), primarily due to increased output of bilirubin, liver immaturity in bilirubin uptake and conjugation and elevated bilirubin circulation enterohepatic because of intestinal immaturity and delayed feeding. However, with the increasing gestational age the risk decreases, still late-term (34–36 weeks) and early-term (38 weeks) babies remain at greater risk of extreme jaundice and neurotoxicity than full-term babies (Barfield 2018).

Besides, Kernicterus Boskabadi et al (2018) stated that auditory pathways of the nervous system are susceptible to the toxic effect of bilirubin. In developing countries, neonatal jaundice is the major cause of early hearing loss in infants, and elevated indirect bilirubin can pledge in the auditory ventricular cell by crossing the blood brain barrier.

According to Vaez (2016), In countries such as the United States with exposure to specialized technologies and supplies, the risk of complications associated with neonatal jaundice is fairly small. Numerous hospitals in USA are availed with facility of phototherapy, Because of this easy accessibility, very few babies experience jaundice while in the hospital. However, in countries and regions with limited exposure to specialized medical facilities there are higher levels of complications. Neonates may be sent home sooner than when jaundice starts, thereby significantly limiting access to medication. Even though mothers know that jaundice may become dangerous and urgently needed care, their hospitals may not be able to undergo phototherapy.

Neonatal jaundice is the very common health associated issue in Pakistan. A recent report from the neonatal unit of Karachi, 13.5% of all admissions were in neonatal jaundice, making it the third most leading reason which require hospital admission of neonates. In Pakistan, 39.7/1000 live births were recorded by NNJ (Tikmani, et al., 2010). Nowadays, mothers' liability for identifying jaundice has risen due to the early discharge from health centre of neonates and mothers. Therefore, mothers play a crucial role in early detecting and avoiding complications of NNJ (Bahgat et al., 2016).

As a primary caregiver, the mother needs to have a good sense of how to recognize NNJ and how to react correctly such that early detection and prompt treatment reduces the risk that the possibly irreversible condition may occur (Farha and Kuddus 2018).

Research revealed that insufficient research has been done, particularly in Pakistan, in the field of nursing, to assess the knowledge, attitude and practice of women towards neonatal jaundice. Researchers are therefore ambitious in working in this field to determine the relationship between these indicators. Consequently, our present research has explored Pakistani Mothers' Knowledge, behaviors and frame of mind about neonatal jaundice (NNJ) which may lead to delayed deployment and unsuitable management of serious hyperbilirubinemia. After the completion of study, participants got the true facts of neonatal jaundice. This enables them to increase their cognitive ability by enhancing their knowledge of neonatal jaundice, their attitude and practice. The detailed findings were shared with the respective authorities of the Institution, which enabled them to recognize the neonatal jaundice knowledge, attitude and practice of women. The research serves as a paradigm for researchers' own understanding of NNJ knowledge, behavior and practice.

Purpose of the study

The aim of study is to evaluate the Knowledge, Attitude, and Practice of women towards Neonatal Jaundice.

Research Objective

The objective of this study is to assess the Knowledge, Attitude, and practice of women towards the management of Neonatal jaundice.

Variables

Independent variable

Sociodemographic characteristics, Attitude, and Practice are independent variables of this study.

Dependent variable: Dependent variable is knowledge of women towards neonatal jaundice.

METHODOLOGY

Research Design

The descriptive cross-sectional study was carried out in the rural community of Sharqpur, Sheikhupura district, Punjab province of Pakistan.

Statistical Analysis

For statistical research, the Social Science Statistical Package (SPSS) version 21 was used. Chi- squares is used to evaluate categorical variables and Student t check or single-way variance analysis (ANOVA) to examine the standard distribution of continuous variables. Participant's knowledge was determined by assigning '1' to the right answer and '0' to either "Don't know" or "Wrong replies" for all participants' knowledge questions pertaining to the jaundice. The number of babies born by participants was assessed as nulliparous (without having any delivery), primiparous one delivery, multiparous two to four deliveries questions were included to determine the obstetric experience of participants. Total 27 standardized questions in which 20 predefined responses (Yes, No and Don't Know), 7 multiple choice questions and participants allowed to encircle all possible answers were used to assess the knowledge of participants towards neonatal jaundice, in which their knowledge about causes was assessed by five questions. Their knowledge about the complication was assessed by six questions. Their attitude was assessed by five questions. Participants' knowledge towards the danger sign of neonatal jaundice was assessed by four questions. Their practice related to the neonatal jaundice management was assessed using seven questions. Answers of participants to questions on NNJ information were categorized as correct and incorrect, and the cumulative score of the right answers was used to determine participants as follows; Poor Knowledge (0-13 questions correctly answered), Good Knowledge (14-22 questions Correctly answered), and very good knowledge (22-27 question perfectly answered). The chi-square statistical test, same Fisher method, and the student t test or one-way analysis of variance (ANOVA) were used to evaluate correlations between the participants' knowledge and attitude and their socio-demographic characteristics towards neonatal jaundice. $P<0.05$ was set as a significance level and 95% level of confidence was set.

Study population

The target population for study consisted of women of different age groups, educational level, and parity in the community of Sharqpur.

Sample size

The final sample size calculated for this study was 107 using Cochran's formula.

Sampling technique

Convenient, non-probability randomized sampling technique was used in sample selection.

Inclusion Criteria

Following inclusive strategies were used in the study:

- Only female gender was included.
- Women of age ranging between 18 to 55 years were included irrespective of their education level.
- Only one eligible woman was chosen for the questionnaire from a single family.
- Women willing and signed the consent were included.

Exclusion Criteria

Following participants were excluded from the study:

- Those participants, who refuse to be part of the study.
- Participants less than 18 years old.
- Participants are more than 55 years old.
- Unmarried females (even of reproductive age)

Data collection method

Prior to conducting the survey, written informed consent were obtained from all candidates. A self-administered

Table 1. Socio-demographics of participants

Variables	Frequency (n=107)	%
Age (Years)		
15-25	17	15.9
26-35	64	59.8
36-45	23	21.4
46-55	3	2.8
Total	107	100
Education Level		
Graduate	13	12.2
Higher	23	21.5
Middle	20	18.6
Primary	41	38.4
Illiterate	10	9.3
Total	107	100
Parity		
Nullipara	16	14.9
Primipara	25	23.4
Multipara	66	61.7
Total	107	100
NNJ is a common condition?	68	63.6
Is it possible to cure NNJ?	98	91.5

questionnaire was used as way to collect data from participants. The sample contains 25 standardized questions in which 18 predefined responses (Yes, No and Don't Know), 7 multiple choice question and participants allowed to encircle all possible answer, and was split into three key areas appraising respondent's knowledge, attitudes and practice towards neonatal jaundice. To make smooth and easier understanding of questions for the participants, a questionnaire was prepared in 2 different languages- English and Urdu. Questionnaire was made after careful analysis of past research work and review of literature. The questionnaire inquired the participants, if they ever heard about NNJ, its causes, related complications, practices to manage the NNJ condition, source of knowledge, and their attitude towards seeking hospital.

Ethical Considerations

Information provided by the participants was kept confidential and was used for this study solely.

RESULTS

A total of 107 women were interviewed in the community of Sharqpur. The characteristics of participants are given in (table 1). About 63.6% of participants have heard about neonatal jaundice and the majority 91.5% of participants respond that NNJ is treatable. A majority of them, 64 (59.8%) were in the age group of 26-35 years, while 23 (21.4%) were in the age group of 36-45 years.

Seventeen (15.9%) of them were in the 15-25 age group. Dominant of them achieved primary education, 41 (38.3%), while only 13 (12.1%) graduated. A greater number of them 66 (61.7%) were multiparous (Table 1).

The participant's knowledge showed that 67 (62.62%) had poor knowledge, whereas 40 (37.38%) had good knowledge (Figure 1).

In multiple responses about causes of neonatal jaundice, 88 (82.2%) respond that inappropriate breastfeeding can cause. Only six (5.7%) knew that disparity between mother blood group and that of baby can cause neonatal jaundice. Eighteen (16.8%) knew that premature birth could cause NNJ. Nineteen (17.7%) knew that sepsis could be cause of NNJ, while 53 (49.5%) have misconception about the neonatal jaundice that it transfers from mother to baby, diabetic mother, drinking cold water during pregnancy, and eating food that produce heat in blood can cause neonatal jaundice[Table 2]. Only Eleven (10.2%) of participants were aware that severe NNJ can cause brain damage, which is the main complication of NNJ, and only 4 (3.7%) knew about hearing loss, which is a common sequel. Majority of participants, seventy-eight (72.8%) knew that NNJ can cause delayed development in later life, while thirty-two (29.9%) of respondents were aware that NNJ can cause convulsion. Besides above-mentioned complication about 78.5% participants Knew that severe

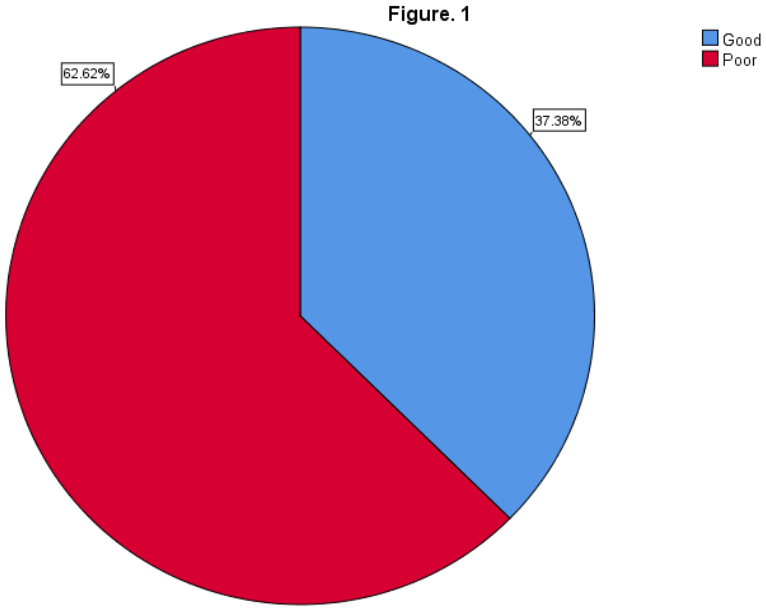

Figure 1. Shows the overall knowledge of mothers towards Neonatal Jaundice

Table 2. Causes and Complication of neonatal jaundice described by mothers

Variables	Frequency(n=107)	%
Causes		
Blood incompatibility	6	5.7
Prematurity	18	16.8
Infection	19	17.7
Breastfeeding	88	82.2
Others	53	49.5
Complication		
Brain damage	11	10.2
Delayed development	78	72.8
Deafness	4	3.7
Convulsion in later life	32	29.9
Nothing happens	16	14.9
Death	84	78.5

Multiple responses; Other causes include; Transfer from mother to baby, diabetic mother, drinking cold water during pregnancy, and eating food that produce heat in blood.

NNJ can lead to death, while 16(14.9%) responded that there is nothing to worry about, it heals on its own after a few days (Table 2).

Only 11.21% participants heard about neonatal jaundice from a physician, while the majority of respondent's source information was other than mentioned in the questionnaire. In others, almost all people respond that they heard about NNJ from their old family and friends. Only 5.61% respond that they get to know about NNJ from TV while, 3.2% get to know about NNJ while browsing on internet (Figure 2).

Most (90.6%) of the participants knew that NNJ could be treated by exposure of the baby to sunlight, while 81 (75.7%) respond that Give glucose water at home a form of treatment for NNJ, and 58 (54.2%) had misconception of avoiding oil massage to baby in NNJ, even studies show that massaging the baby is beneficial for jaundice [Table 3]. On the other hand,49(45.8%) knew that massaging oil is beneficial as treatment of NNJ. Seventy-four (69.1%) of the respondent's misbelieve that NNJ is communicable and it can spread from one person to other, 85 (79.4%) knew that NNJ persist more than 2 weeks is abnormal and it may cause a lot of complication to baby, and 18 (16.8%) believed that glucose drink is

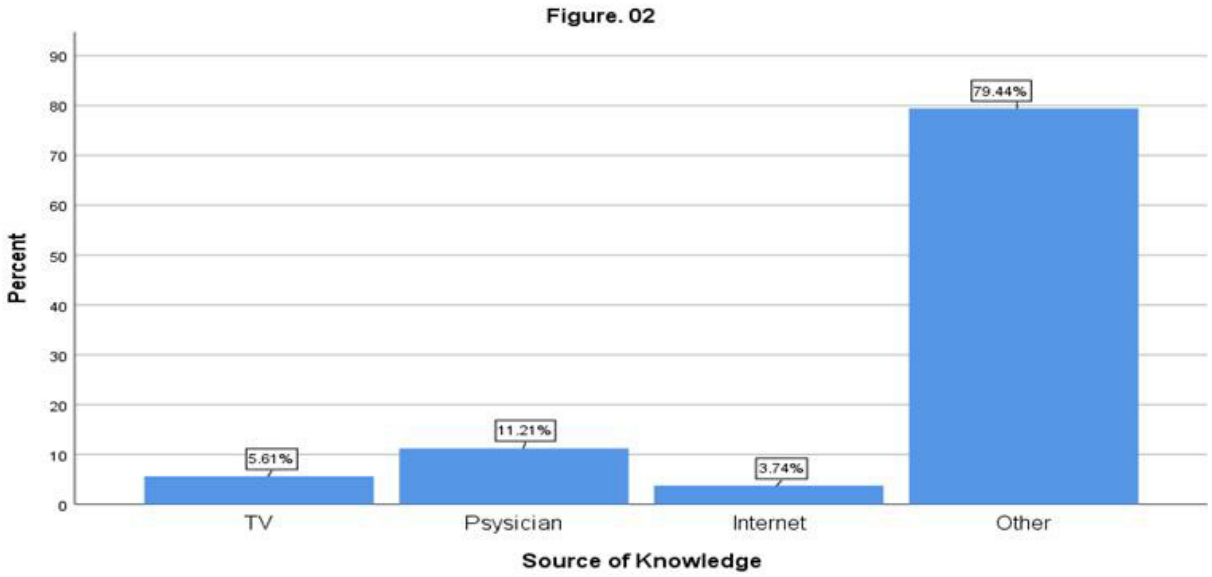

Figure 2. Shows different sources of participants' knowledge of Neonatal Jaundice

Table 3. Participants' practice and Management towards NNJ

Variable	Frequency(n=107)	%
Jaundice is a communicable condition	74	69.1
Is it abnormal if it persists more than 2 weeks	85	79.4
Give glucose water at home	81	75.7
Expose baby to sunlight at home	97	90.6
Avoid oil massaging	58	54.2
Herbs	18	16.8
Worry	61	57

Table 4. Participants' knowledge and perception about danger sign of NNJ

Indication of danger	Frequency (N=107)	Percentage frequency
Pale skin	82	76.6
Yellowing of sclera	87	81.3
Refusal of feed	65	60.7
High pitched cry	73	68.2
Fever	16	14.9
Don't know	24	22.4

used for herbs is treatment of NNJ (Table 3).

Majority of participants 87(81.3%) were aware that yellowing of sclera is the danger sign of NNJ, while 82(76.6%) respond that besides yellowing of white part of eyes, yellowing discoloration of skin is another danger sign of NNJ (Table 4). Sixty-five (60.7%) responded that refusal to feed is a danger sign of NNJ, while seventy-three (68.2%) knew that it could be a danger sign of NNJ. Sixteen (14.9%) responded that fever with yellowing of skin and eyes is an extreme danger sign of NNJ, and require hospitalization as soon as possible (Table 4).

A correlation of the characteristics of participants and their knowledge of NNJ [Table 5] shows that the statistical association between education level (P = 0.001, parity (P = 0.001) and number of the previous babies with NNJ experience (P = 0.04) was statistically significant. There was no statistically significant association between the age (P = 0.721), and their knowledge of NNJ (Table 5). Figure 3

Table 5. Correlation of socio-demographics and knowledge of participants towards NNJ

Variables	Knowledge, n (frequency)		Total	F value	P
	Good (n=40)	Poor (n=67)			
Age (Years)					
15-25	6(35.3%)	11(64.7%)	17(100)	0.446*	0.721
26-35	22(34.4%)	42(65.6%)	64(100)		
36-45	11(47.8%)	12(52.2%)	23(100)		
46-55	1(33.3%)	2(66.7%)	2(100)		
Total	40(37.38)	67(62.62)	107(100)		
Education level					
Primary	9(22%)	32(78%)	41(100)	5.496*	0.001
Middle	7(35%)	13(65%)	20(100)		
Higher	11(47.8%)	12 (52.2%)	23(100)		
Graduate	11(84.6%)	2(15.4%)	13(100)		
Illiterate	20(20%)	8(80%)	10(100)		
Total	40(37.38)	67(62.62)	107(100)		
Parity					
Nulliparous	2(12.5%)	14(87.5%)	16(100)	8.312*	0.001
Primipara	4(16%)	21(84%)	25(100)		
Multipara	(51.5%)34	32(48.5%)	66(100)		
Total	40(37.38)	67(62.62)	107(100)		
Did your any child have had NNJ					
Yes	29(49.2%)	30(50.8%)		8.236*	0.04
No	11(22.9%)	37(77.2%)			
Total	40(37.38)	67(62.62)	107(100)		

NNJ: Neonatal jaundice

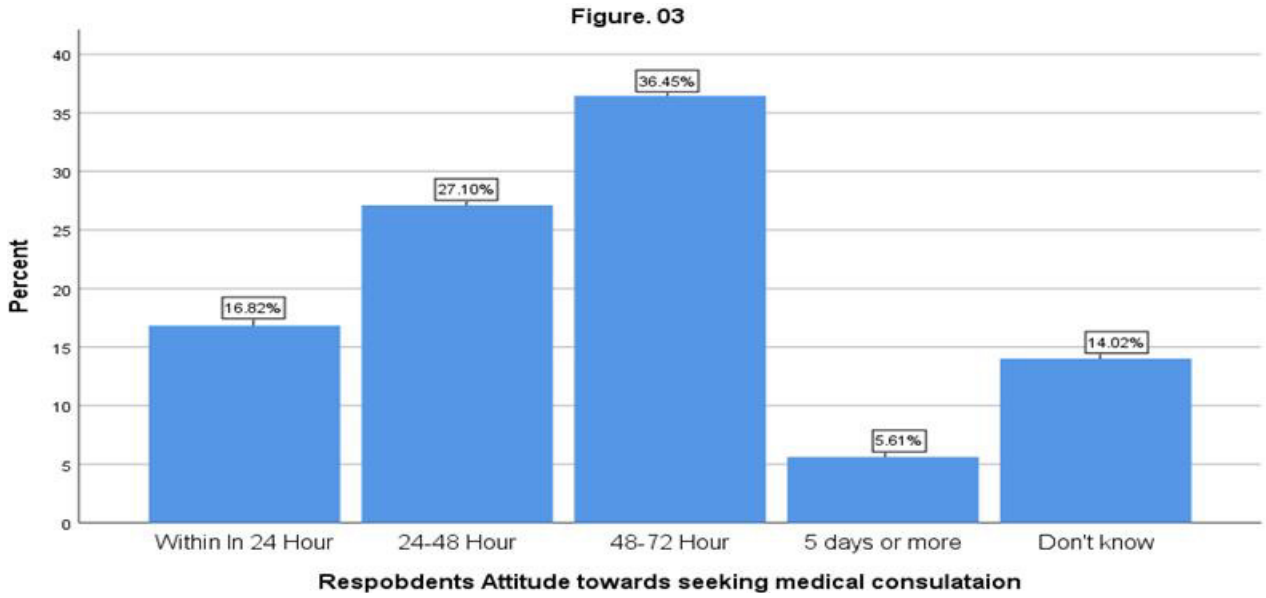

Figure 3. Shows the attitude of participants towards seeking medical consultation.

DISCUSSION

One advantage of this study is that it is community centered, and that it is a very rare study done assessing the mother knowledge towards NNJ in Pakistan. This may contribute to providing healthcare professionals with

a more detailed view of mothers' knowledge of the NNJ and support them in preparing more appropriate interventions. Furthermore, this study will encourage other researchers to work on knowledge of mothers towards NNJ. The knowledge of mothers about NNJ in this study was very less37.38% only, as compared to other international studies. This research shows a poor knowledge of NNJ, compared to findings from related surveys in South-West Nigeria, Port Harcourt and Malaysia with 189 (100%), 225 (88.2%) of mothers (93%) of the 400 participants were being aware of NNJ respectively (Omar., et al 2018; Eneh and Ugwu, 2009; Boo et al., 2011). Majority of participants were not aware of the causes of NNJ. 49.5% of participants had misconceptions about the causes of NNJ like, drinking cold water in pregnancy, mother with diabetes, and eating food which creates heat in blood are the causes of NNJ. The only fairly well-known cause of NNJ in this study was Inappropriate breastfeeding (82.2% of mothers) on the contrary knowledge related to Infection, prematurity, and parity of blood between mother and baby was extremely low. A majority of the participants who had knowledge of NNJ had their source of information from old family and friends who have experienced NNJ in their life, while very few had source of knowledge from physicians or health care workers, the mass media, school, or books. On the other hand, in the study done in South Western Nigeria and in Port Harcourt, where a large proportion of the mothers had their source of information from health workers (Omar., et al 2018; Eneh and Ugwu, 2009). It is crucial to note that the mother source of knowledge about NNJ is not sufficient, it may be because about 51.6% of women give birth at home and rates of home birth are significantly higher in rural areas (Zainab et al., 2017). About 15% of participants (14.9%) believe that NNJ have no significant complication and it cure on its own after few days. Concerning complication knowledge, it was observed that only 10.2% of the participants were informed that severe NNJ might trigger brain injury, which is the one of the most major complications of NNJ, and only 3.7% recognized that hearing impairment can also be complication of NNJ. In a similar study in Nepal, found that only 10% of participants were aware of brain injury as a complication of NNJ (Shrestha et al., 2019). Results showed that the majority of participants only knew that NNJ can cause delayed development and death in severe cases, 72.8% and 78.5% respectively.

The respondent attitude towards seeking medical consultation was pretty good as 83.98% of participants showed willingness to take their babies to hospital. However, the initial likely behavior of the mothers exhibited a significant reluctance to pursue treatment in hospitals, since 36.45% of the participants stated that they would wait three to four days before attending hospital, moreover, 5.61% of participants even stated that they would wait for more than five days. Similar studies in Nigeria showed the same statistics, where 90.4% of participants showed willingness to seek hospital while 56% of participants reported that they will wait for a few days before attending hospital (Ogunlesi and Abdul, 2015). Delayed hospitalization is a major cause of developing kernicterus. A study in Nigeria shows, there were 26 out of 27 babies who had kernicterus before admission in hospital (Owusu et al., 2021). In a further analysis in Nigeria, 73 out of 75 newborns presented in hospital had already acquired the acute bilirubin encephalopathy (Usman et al., 2018).

The research showed the traditional faith and tradition among a vast number of mothers of putting a child in jaundiced, either fully naked or clothed, right under the neon light. Moreover, the treatment of NNJ is believed to be the administering of pharmaceutical drugs such as vitamins or hepatic enzymes activators (Allahony et al., 2016).

Furthermore, in another study, it was found that 87 parents (79.8%) were advised to put the infant under neon light' at home and 15 babies were administered a variety of medications, including vitamins before admission, leading to further delays in the adequate treatment of severe neonatal hyperbilirubinemia. It has been noticed that it is a most inefficient method of phototherapy to put babies under new lamps at home. In comparison, supplements and other NNJ drugs were not only ineffective but parents were often offered a misleading reassurance that their child was jaundiced (Iskander et al., 2012).

This majority of participants recognize that yellowing of sclera and skin is danger sign of NNJ, 81.3% and 76.6% respectively. These figures are similar to study in Iran, where 91.5% of participants was aware of that pale sclera is sign of NNJ and 87% of participants stated that eye is the first part of body where jaundice identified first (Abdulkadir et al., 2018). On the contrary, 78(72.8%) correctly identified that eyes are the first part of the body where jaundice can be noticed.

The majority 90.6% of participants in this study would affirm that putting a baby under sunlight is beneficial. Sunlight treatment of jaundice was also popular in Sub-Saharan Africa (Onyearugha et al., 2016; Ogunlesi and Abdul, 2015). Furthermore, they respond that giving glucose water and avoiding massage to babies with oil is very efficient; 75.7% and 54.2% respectively. Moreover, 57% of participants affirmed that NNJ doesn’t require any special treatment, while 16.8% encouraged the herbs as the treatment of NNJ. In contrast, a similar study in Vietnam shows a significantly high number of participants (78%) to use herbs as NNJ treatment (Le et al., 2014). There was significant correlation between mother education level, parity, and those who had past experience with having a baby with NNJ, while there was no statistically significant association between the age and their knowledge of NNJ.

CONCLUSION

In conclusion, this study reveals that women of community Sharqpur have enough knowledge related to recognition of NNJ. However, I had poor knowledge about many aspects of the condition. This study reveals that participants have a good attitude towards NNJ but their management measure and practice of NNJ is ineffective with a lot of misconception. However, a large number of people showed willingness to seek medical consultation However, their early likely participants' action showed significant hesitation to seek medical care. This study shows that participants' knowledge about causes and complications of NNJ was very poor. Knowledge of participants was significantly influenced by their education level, parity and previous experience with neonatal jaundice. Poor knowledge about causes, complication, and practice can lead to severe health complications and late presentation of NNJ.

RECOMMENDATION

Healthcare providers should actively educate the women presetting in antenatal care; health care providers should provide a wide range of information and utilize all possible contact to women of reproductive age, especially related to causes, complication, and practice, as this study shows that only few participants report that their source of knowledge was physicians. Moreover, government funded mass media awareness campaigns can significantly reduce the complication and increase knowledge of local community people. In addition to that, a correlational study is recommended. moreover, broader research with large sample size would validate the findings.

ACKNOWLEDGEMENT

We want to say thanks to everyone who has helped us in this study. Firstly, we would like to thank Mr. Muhammad Afzal (The Principal of Lahore School of Nursing) who gave us opportunity to undertake this study. We would like to thank Ms. Sumaira Riaz for being our mentor and for her commendable guidance and thoughtful critique. We are under the debt of an honorable principal and respected preceptor for their unending assistance and useful suggestions. We are also thankful to the management of University of Lahore. We are grateful to all the participants who fill the survey form whose participation made this study possible.

Conflicts of Interest

All authors declare no conflicts of interest.

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