

Mothers' Knowledge and Caring Practices for Neonatal Physiological Jaundice: a multisite cross-sectional study in El-Beheira Governorate, Egypt.

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Abstract

Background: Neonatal physiological jaundice is among the most prevalent disorders worldwide. It can occasionally worsen into dangerous complications and probable death in newborns if high bilirubin levels are not treated appropriately. Adequate mothers' knowledge and good caring practices are essential elements for successful management of neonatal physiological jaundice. Accordingly, this study aimed to determine mothers' knowledge and caring practices for neonatal physiological jaundice in El-Beheira Governorate. **Methods:** This was a descriptive cross-sectional study included 300 mothers who have infants under the age of six months from twelve family health centers/units and maternal and child health care centers in El-Beheira Governorate, Egypt. **Results:** The total percent score of mothers' knowledge was 65.57 ± 14.42 , whereas the total percent score of their caring practices was 77.18 ± 11.72 . There was a statistically significant correlation between the mothers' mean score of knowledge and their caring practices ($p < 0.001$). There was a statistically significant association between mothers' education, working status, and family income and their mean score of knowledge and practices for neonatal jaundice. **Conclusion:** Mothers in El-Beheira Governorate lacked awareness of several essential aspects of knowledge and caring practices regarding neonatal physiological jaundice. Thus, educational programs to increase mothers' knowledge and improve their caring practices for neonatal physiological jaundice are recommended.

Keywords: Physiological Jaundice, Neonatal Hyperbilirubinemia, Neonatal Jaundice, Caring Practices.

Introduction

Neonatal jaundice (NNJ) is a major public concern in newborn care. The term "neonatal jaundice" describes the yellowish appearance of a neonate's skin and sclera. It results from high bilirubin levels due to imbalance between bilirubin production and conjugation (Brits et al., 2018; Murray & Mckinney, 2020).

For the majority of newborns, jaundice is not caused by an underlying pathological condition, and it is referred to as "physiological jaundice" (Abdul Hussein & Aziz, 2016).

Physiological jaundice accounts for seventy-five percent of hyperbilirubinemia in newborns. It usually develops 24 hours after birth, reaches its peak in nearly two or three days,

and recovers within three weeks (Obeagu & Katya, 2022).

Although NNJ is frequently considered a normal condition during the first week of life affecting up to 85% of all live births, it can occasionally worsen into dangerous complications if high bilirubin levels are not treated appropriately (Basheer et al. 2017). Severe hyperbilirubinemia can cause long-term complications such as cerebral palsy, auditory neuropathy, deafness, learning difficulties, and even death (Slusher et al. 2017).

Severe neonatal jaundice is one of the top ten causes of mortality among newborns in countries with the highest rates of neonatal mortality (Collaborators GCM 2016). The worldwide prevalence of severe NNJ among

hospital admissions was the subject of a recent systematic review conducted by **Diala et al. (2023)**. This study revealed that the prevalence of severe neonatal jaundice ranged between 8.31% and 31.49% among neonates who had jaundice, with the highest prevalence reported in Africa. Also, jaundice-related deaths varied from 0.07% to 13.02%, with the Eastern Mediterranean and African regions registering the highest rate.

In Egypt, Severe jaundice and bilirubin encephalopathy continue to be recorded at unconscionable rates (**Basheer et al. 2017**). In 2011, a study conducted at Cairo university Children's hospital neonatal intensive care unit found that 17.7% of newborns who were admitted with a total serum bilirubin level of 25 mg/dL or more had moderate or severe acute bilirubin encephalopathy (**Gamaleldin et al., 2011**).

A later study conducted at the same hospital (**Iskander et al., 2014**) revealed that 58 (30%) of 193 neonates admitted with severe jaundice developed acute bilirubin encephalopathy. A more recent study in El Galaa teaching hospital (**Basheer et al. 2017**) screened 3834 neonates for jaundice concluded that 73 cases had serum bilirubin levels in the high-risk zone, necessitating referral for a serum bilirubin measurement with or without phototherapy and 1.2% of all studied newborns required admission.

Iskander et al. (2012) found that inadequate parents' knowledge about jaundice complications, postponing seeking medical care, treating jaundice at home with neon lamps, and having trouble accessing quality healthcare, particularly in remote areas are the main causes for delayed diagnosis of severe NNJ in Egypt.

Significance of the problem:

Because mothers and their newborns often depart hospitals shortly after giving birth, neonatal physiological jaundice typically manifests at home, and it is mostly the mother's responsibility to recognize it early and seek medical assistance. For this reason, it's critical that mothers have correct knowledge about neonatal jaundice and know how to manage it (**Abdul Hussein & Aziz, 2016**).

Aim of the study:

This study was conducted to determine mothers' knowledge and caring practices for neonatal physiological jaundice in El-Beheira Governorate.

Research questions:

- What are the mothers' knowledge about neonatal physiological jaundice?
- What are the mothers' caring practices for neonatal physiological jaundice?

Subjects and methods

Study design and setting

This was a descriptive multisite cross-sectional study conducted at twelve family health centers, family health units, and MCH centers in El-Beheira Governorate, Egypt.

Participants

Mothers who have an infant under six months old with a history for neonatal physiological jaundice.

Sample size calculation

Sample size was calculated according to Pourhoseingholi et al., (2013) using the following equation:

$$N = \frac{(Z\alpha)^2 * P(1 - P)}{(d)^2}$$

N = Total sample size,

Z α = Standard normal variant and it equals 1.96 at P < 0.05,

P = Prevalence,

d = Absolute error or precision

Z α	P	D
1.96	17	2

$$N = \frac{(1.96)^2 * (17)^2}{(2)^2} = 261.228$$

Based on the previous equation, a total sample size of 261 subjects was adequate to detect a prevalence of 17% (Allahonya et al., 2016) and Z of 1.96 at d precision and effect size of 2 (Daniel, 1999; Naing et al., 2006). The researchers increased the study sample to 300 mothers.

Sampling technique

A multi stage sampling technique was adopted to recruit the study sample. El-Beheira Governorate encompasses sixteen health directorates, 25% of these directorates (Damanhour, El-Mahmoudia, Kom Hamada, and Kafr El-Dawar) were selected randomly by lottery. From each of the selected directorates, one family health center/ unit, and one maternal and child health care (MCH) center were selected randomly by lottery. From each unit/center, a purposive sample of 25 mothers was involved in the sample.

Data collection

Data were collected over a period of 8 months (from the beginning of October 2022 to the end of May 2023). Three tools were developed by the researchers to collect the necessary data:

Tool (I): Mothers' Socio-Demographic Characteristics Structured Interview sheet. It included data about mother's age, residence, education, working status, and income adequacy.

Tool (II): Mothers' Knowledge Regarding Neonatal Physiological Jaundice Structured Interview Sheet. It included 25 questions about: prevalence of the problem, signs and symptoms, risk factors, disease course, treatment, complications, and prevention. All items were scored by giving "1" to the correct response and "0" for the wrong /don't know' response. The sum of the scores for all questions comprises the total knowledge score of the mothers.

Tool (III): Mothers Caring Practices for Neonatal Physiological Jaundice Structured Interview Sheet. It included 20 questions about caring practices that mothers performed when their infants had jaundice, such as: feeding during the illness, ways of monitoring, seeking medical advice, use of medications or herbals without medical prescription, some traditional practices and myths such as exposure to home conventional lights, ...etc. All items were scored by giving "1" to the correct practice and "0" for the wrong practice. The sum of the scores denotes the mothers' total caring practices' score.

Validity of the study tools

A panel of five experts in the fields of pediatric and community health nursing evaluated the study tools' content validity, and necessary modifications were made in response to their suggestions.

Reliability of the study tools

The reliability of the study tools (II & III) was tested by using Cronbach alpha coefficient test ($\alpha = 0.83$, $\alpha = 0.85$, respectively)

Pilot study

A pilot study was carried out on 30 mothers, representing 10% of the total sample, who weren't involved in the study, to evaluate the applicability and comprehension of the study tools. Accordingly, the study tools were modified.

Ethical considerations

Ethical approval was obtained from the ethics committee of Faculty of Nursing, Damanhour University (code: 62, date:15thSeptember, 2022). Permission to conduct the study was obtained from the representative of El-Beheira Governorate health directorate. Informed written consents were obtained from the participants after explanation for the purpose of the study. Also, mothers were reassured that the collected data will be used only for the study purpose. Mothers' privacy was maintained. Confidentiality and anonymity of

individual responses were guaranteed by a statement in the cover letter and using code numbers instead of names.

Data analysis

Data were analyzed using IBM SPSS software package, version 23.0. Quantitative data were described by mean and standard deviation. Pearson coefficient was used to correlate between normally distributed quantitative variables. Student t-test was used for comparing between two categories for normally distributed quantitative variables. One-way ANOVA test was used to compare between more than two categories for normally distributed quantitative variables. The level of significance for the results was judged at the 5%.

Results

Table (1): Shows that more than half of the studied mothers (59.7%) were between the ages of 20 and 30 years with a mean of 28.04 ± 5.50 years. The same table clarified that more than two-thirds of the mothers (69.7%) lived in rural areas. Regarding mothers' education, 38.0% of the studied mothers were through their university education. In addition, mothers who were housewives constituted 78.3% of the study subjects. More than three-quarters of studied mothers (78.7%) had enough income.

Table (2): Clarifies that the total percent score of mothers' knowledge was 65.57 ± 14.42 , where most of the studied mothers had an idea that neonatal jaundice is a common problem and it causes a yellowish discoloration of skin and eyes (96.0% & 93% respectively). Only 28.7% of the studied mothers knew that if newborn has delivered with jaundice, this is considered dangerous and requires immediate hospitalization. More than half of the mothers (60.7%) didn't know that jaundice may lead to improper breastfeeding. Slightly less than three-quarters (73.7%) of mothers were aware that severe NNJ can cause death in neonates. The majority of studied mothers (89.0%) knew that early initiation of breastfeeding can prevent neonatal jaundice.

Table (3): Illustrates that the mother's practices' overall percentage score was 77.18 ± 11.72 . The majority of mothers in the study sought medical advice when jaundice appeared and checked the color of the eye sclera (85% & 86% respectively). Slightly less than three-quarters (73.3%) of them performed laboratory investigations for their infants and about two thirds monitored the color of urine and stool (65, 7% & 64.7%) respectively. More than one third of the mothers (39.7%) increased breast feeding during the disease. Unfortunately, 24.7% only of the mothers exposed their newborns to the sunlight cautiously.

Moreover, the majority of studied mothers gave glucose water to their newborns, used mothballs at home and kept the infants in a dark room (81.3%, 87% and 85 %) respectively. Over fifty percent of mothers in the study (55.7% and 59.7%) exposed their infants to home conventional lights and fluorescent light.

Table (4): Shows a statistically significant relation between the mean scores of mothers' knowledge and practices ($p < 0.001$). There were statistically significant relations between the mean score of mothers' knowledge about the risk factors, complications and prevention of the disease and their mean score of practices ($p < 0.001$). Also, a statistically significant relation found between the mean score of mothers' knowledge about the duration and treatment of disease and their mean score of practices, where P was 0.005 and 0.011 respectively.

Table (5): Demonstrates that mothers with university education had the highest mean score of knowledge and practices about NNJ and the relation was statistically significant ($p < 0.001$). Concerning mothers' working status and family income, it was clear that working mothers and those who had enough income and exceed had the highest mean score of knowledge and practices and the relation was statistically significant as p was < 0.001 . No statistically significant correlation was found between mothers' age, residence and their mean score of knowledge and practices about NNJ ($p = 0.106$, $p = 0.573$, $p = 0.644$, & $p = 0.055$ correspondingly).

Table (1): Distribution of the studied mothers according to their socio-demographic characteristics (n = 300).

Socio-demographic characteristics	No.	%
Age (years)		
<20	4	1.3
20<30	179	59.7
30< 40	97	32.3
40+	20	6.7
Mean \pm SD	28.04 \pm 5.50	
Residence		
Rural	209	69.7
Urban	91	30.3
Education		
Illiterate	13	4.3
Read and write	23	7.7
Preparatory	47	15.7
Secondary	103	34.3
University	114	38.0
Working status		
Not working	235	78.3
Working	65	21.7
Income		
Enough and exceed	36	12.0
Enough	236	78.7
Not enough	28	9.3

Table (2): Distribution of the studied mothers according to their knowledge. (n = 300)

	Items	Correct		Incorrect	
		No.	%	No.	%
1	Incidence-prevalence of the problem Neonatal Jaundice is a common problem.	288	96.0	12	4.0
2	Signs &Symptoms Jaundice causes a yellowish discoloration of skin and eyes.	279	93.0	21	7.0
3	If newborn has delivered with jaundice, this is considered dangerous and requires immediate hospitalization.	86	28.7	214	71.3
4	Jaundice is associated yellowish discoloration of urine.	214	71.3	86	28.7
5	Jaundice changes the color of stool.	184	61.3	116	38.7
6	Jaundice makes newborn sleepier.	252	84.0	48	16.0
7	Jaundice may lead to improper breastfeeding.	118	39.3	182	60.7
8	Risk factors Prematurity is a risk factor of NNPJ.	194	64.7	106	35.3
9	Improper breastfeeding practices may be a cause for NNPJ.	221	73.7	79	26.3
10	Occurrence of infections during neonatal period is one of the risk factors for NNPJ.	128	42.7	172	57.3
11	Breast milk can be a risk factor for NNPJ.	131	43.7	169	56.3
12	Disease course If jaundice persists for longer than two weeks, it is abnormal.	218	72.7	82	27.3
13	Proper breastfeeding practices can shorten the duration of jaundice.	259	86.3	41	13.7
14	Vitamin supplementation can shorten the duration of jaundice.	233	77.7	67	22.3
15	Treatment NNPJ require immediate doctor visit.	183	61.0	117	39.0
16	NNPJ may require phototherapy.	158	52.7	142	47.3
17	NNPJ can be treated with blood exchange transfusion.	219	73.0	81	27.0
18	NNPJ can be treated only by increase in breastfeeding.	196	65.3	104	34.7
19	Complications Severe jaundice may cause high pitched crying.	145	48.3	155	51.7
20	Severe jaundice may cause convulsions.	158	52.7	142	47.3
21	Severe jaundice may cause deafens.	132	44.0	168	56.0
22	Severe jaundice may cause long life irreversible brain damage such as mental retardation and cerebral palsy.	186	62.0	114	38.0
23	Severe jaundice may cause death in neonates.	221	73.7	79	26.3
24	Prevention Early initiation of breastfeeding can prevent neonatal jaundice.	267	89.0	33	11.0
25	Avoidance of cold water drinking during pregnancy can prevent NNPJ.	248	82.7	52	17.3
	Mean ± SD	16.39±3.60			
	Mean Percent score	65.57±14.42			

Table (3): Distribution of the studied mothers according to their caring practices for neonatal jaundice (n = 300)

	Items	Yes		No	
		No.	%	No.	%
Correct practices					
1	The mother exposed her newborn to the sunlight cautiously.	74	24.7	226	75.3
2	The mother monitored the color of urine.	197	65.7	103	34.3
3	The mother monitored the color of the stool.	194	64.7	106	35.3
4	The mother checked the color of the eye sclera.	258	86.0	42	14.0
5	The mother sought medical advice when jaundice appeared.	255	85.0	45	15.0
6	The mother performed laboratory investigations	220	73.3	80	26.7
7	The mother increased breast feeding during disease.	119	39.7	181	60.3
Incorrect practices					
8	The mother gave glucose water to infant.	244	81.3	56	18.7
9	The mother exposed her newborn to the fluorescent light.	179	59.7	121	40.3
10	The mother bathed the infant well.	65	21.7	235	78.3
11	The mother used mothballs at home.	261	87.0	39	13.0
12	The mother retained her infant in a dark room.	255	85.0	45	15.0
13	The mother gave medications or herbals without medical prescription	75	25.0	225	75.0
14	The mother exposed infant to home conventional lights.	167	55.7	133	44.3
15	The mother used neck lac made of yellow bead around the newborn neck.	17	5.7	283	94.3
16	The mother put a ring around her finger.	16	5.3	284	94.7
17	The mother refrained from wearing the yellow clothes.	38	12.7	262	87.3
18	The mother used garlic as a necklace.	10	3.3	290	96.7
19	The mother avoided the yellow colors in newborn's utensils and clothes.	33	11.0	267	89.0
20	The mother avoided the yellow colors in the infant's room.	46	15.3	254	84.7
Mean ± SD		15.44 ± 2.34			
Mean percent score		77.18 ± 11.72			

Table (4): Correlation between mean score of mothers' knowledge and caring practices.

Mean score of mothers' knowledge	Mean score of mother's practices	
	R	P
Prevalence of the problem	0.053	0.364
S&S	0.062	0.281
Risk factors	0.194*	0.001*
Disease course.	0.163*	0.005*
Treatment	0.147*	0.011*
Complications	0.183*	0.001*
Prevention	0.212*	<0.001*
Mean score of Mothers' Knowledge	0.277*	<0.001*

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

Table (5): Relation between Mothers' socio-demographic characteristics and their knowledge and practices regarding neonatal jaundice.

Socio-demographic characteristics	Mothers' knowledge		Mothers' practices	
	Mean± SD	Test of sig.	Mean± SD	Test of sig.
Age (years)				
<20	19.0±3.46	F =2.059 , p = 0.106	15.75±2.06	F = 0.556, p =0.644
20<30	16.52±3.69		15.45±2.36	
30< 40	15.85±3.47		15.28±2.34	
40+	17.40±3.15		16.0±2.32	
Residence				
Rural	16.32±3.72	t = 0.564, p = 0.573	15.61±2.23	t = 1.923, p = 0.055
Urban	16.57±3.33		15.04±2.56	
Education				
Illiterate	16.54±2.30	F =7.710* , p <0.001*	13.69±2.56	F = 5.282* , p <0.001*
Read and write	15.0±3.32		15.17±2.39	
Preparatory	15.77±2.71		15.32±2.05	
Secondary	15.46±4.25		15.03±2.46	
University	17.76±3.03		16.11±2.14	
Working status				
Not working	16.03±3.67	t =3.379* , p = 0.001*	15.26±2.39	t = 2.448* , p = 0.001*
Working	17.71±3.04		16.06±2.08	
Income				
Enough and exceed	18.44±3.54	F =10.063* , p <0.001*	16.92±1.61	F =8.729* , p <0.001*
Enough	16.30±3.12		15.21±2.36	
Not enough	14.57±5.82		15.46±2.35	

F: One Way ANOVA test t: Student t-test

*: Statistically significant at $p \leq 0.05$

Discussion

Neonatal jaundice is one of the most common disorders occurring during the first month of life. Appropriate treatment to lessen severe neurological issues resulting from neonatal jaundice depends on mothers' knowledge and practices about it (**El-Kurdy et al., 2021**).

Studying mothers' knowledge regarding neonatal jaundice in the current research revealed that most of mothers possess some knowledge about the different aspects of neonatal jaundice. However, there are a lot of false beliefs as total percent score of mothers' knowledge was 65.57 ± 14.42 . Findings of **Moawad et.al (2016)** in their study about the perceptions, practices, and traditional beliefs related to neonatal jaundice among Egyptian mothers were in harmony with these findings. On the other hand, findings of **Tawfik et.al (2022)** were contradictory to the present study findings where they reported less than three-quarters of the studied mothers knew very little about neonatal jaundice.

Mothers who made up the largest percentage had an idea that Jaundice is a common issue among newborns and it causes a yellowish discoloration of the skin and eyes. This may be attributed to that more than half of the studied mothers aged from 20 to less than 29 years old. They are commonly using technology and gain information about jaundice from internet and social media groups. Similar findings were reported by **Shrestha et.al (2019)** who found that 87% of the mothers knew that NNJ was eye yellowness

One of the common knowledge misconceptions in the study that only 28.7% of the studied mothers knew that if newborn has delivered with jaundice, this is considered dangerous and required immediate hospitalization. Findings of **Thabit (2019)** weren't in the same row with the results of the current study where they stated that 66.7% of the mothers were aware that if jaundice appears on the first day, medical consultation should be immediate.

Considering mothers' caring practices, the current study findings showed that the mothers overall percentage score was 77.18 ± 11.72 . The majority of the studied mothers sought medical advice when jaundice appeared and checked the color of the eye sclera. Slightly less than three-quarters of them performed laboratory investigations for their infants and less than two thirds monitored the color of urine and stool. These results are consistent with those of Shrestha et.al (2019) and Goodman (2015) as they reported that that majority of respondents had willingness to take the infants to hospital once jaundice appeared. Findings of **Omar et.al (2018)** were contradictory to findings of the present study where they stated that 56% of mothers don't know the investigation required for diagnosis of neonatal jaundice and only 29.1% of mothers using the color of stool or urine of the baby to detect jaundice.

Breastfeeding practices is essential in prevention and management of neonatal jaundice. Increased breastfeeding frequency can help the mother produce more milk, which will increase the baby's calorie intake and hydration and lower the elevated bilirubin levels (**Wambach & Riordan, 2015**). In this respect, the current study found that slightly less than two-fifths of the mothers increased breast feeding during the disease. The finding of **Hameed et.al (2019)** in their study to asses mother's knowledge, practices and beliefs toward home management of neonatal jaundice was in the same line with this result.

Importantly, our study highlighted that there are still many incorrect practices were done by mothers. The majority of studied mothers gave glucose water to their newborns, used mothballs at home and retained them in a dark room. This is clearly understood, as more than two thirds of the studied mothers are from rural areas and they are influenced by traditions, customs and cultural behavior of the Egyptian rural society through family influencing decision. Findings of **Kassim et.al (2021)** were in harmony with these findings where they stated that nearly 79% of the mothers using mothballs at home. On the other hand, findings of **Salia et.al (2021)** were contradictory to the present study findings where they reported that 83.2% complied with good practices by

avoiding placing their jaundiced infants in dark room.

More than half of the studied mothers exposed their infants to home conventional lights and fluorescent light. This could be attributed to mothers may believe that phototherapy, which is utilized in hospitals, is comparable to fluorescent light. The same findings were reported by **Hameed et.al (2019)** **Kassim et.al (2021)** and **Allahony (2016)**.

Concerning the relationship between mothers' knowledge and their caring practices regarding jaundice, the present findings revealed that the mean score of mothers' practices and their knowledge showed a statistically significant relationship. This was in line with the 'knowledge, attitude and practices' (KAP) paradigm (**Badran, 1995**) which suggests greater knowledge is the basis for good attitudes and practices. Moreover, this finding is supported by **Huang et.al (2022)** as they reported that mothers were more likely to have positive attitudes and behaviors if they had enough understanding regarding neonatal jaundice.

Studying the relationship between mother's characteristics and their knowledge and practices revealed a relationship that is statistically significant between mothers' education, and their mean score of knowledge and practices. Mothers with university education possessed a higher knowledge and practice mean score. This means that education enables mothers to update their information regarding neonatal jaundice through sharing experience and advice. Education also raises mother's awareness about the importance of having adequate knowledge and practices regarding jaundice because they know that will prevent further complications. Findings of **Moawad et.al (2016)** and **Huang et.al (2022)** were consistent with the findings of the present study

Concerning mothers' working status and family income, it was evident that working mothers and those who have higher income had higher mean score of knowledge and practices and the relation was statistically significant. This can be explained in the light of that working mothers had financial standard could give them more chance for seeking desired care to their

infants and they may have the ability to attend health education programs and courses regarding neonatal jaundice. Findings of **Hameed (2019)** were contradictory to findings of the present study where they stated that there is no association between mothers' knowledge and their working status. Also, findings of **Radha (2013)** were not consistent with the findings of the present study where they stated that no significant relationship between working status of the mothers with their practice.

Conclusion:

Based upon the results of the present study, it could be concluded that mothers have some knowledge about neonatal physiological jaundice. However, they lacked knowledge about risk factors, complications, and treatment. Moreover, there are many incorrect caring practices mothers used while they were caring for their newborns with jaundice.

Recommendations:

In the light of the current study's findings, the following recommendations are proposed:

1.Targeted Educational Programs:

Develop and implement educational programs aimed at improving mothers' understanding of neonatal jaundice, its risk factors, causes, symptoms, potential complications, and management. These programs should be tailored to address common misconceptions, such as the urgency of seeking medical attention for jaundiced newborns.

2.Accessible Information Resources:

Utilize modern technological communication means to disseminate accurate and easily understandable information about neonatal jaundice. This could include mobile applications, websites, and social media platforms, ensuring accessibility to mothers in both urban and rural areas.

3.Community Workshops: Organize community workshops led by healthcare professionals to provide hands-on training and support for mothers. These sessions should cover topics such as proper breastfeeding techniques, safe sunlight exposure, and the dangers of

harmful practices like giving glucose water or using mothballs.

4.Educational Campaigns: Develop and implement targeted educational campaigns aimed at expectant mothers and new mothers to enhance their understanding of neonatal jaundice, its causes, symptoms, potential complications, and management. These campaigns could utilize mass media channels such as television, radio, and social media platforms to reach a wide audience.

5.Enhanced Healthcare Access:

Improve access to healthcare services for mothers and newborns, particularly in rural areas where access may be limited. This could involve establishing mobile clinics or community health centers offering screening, diagnosis, and treatment for neonatal jaundice.

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