



Knowledge and Practices of Postpartum Women Regarding Neonatal Care in El-Beheira Governorate

Doaa Mohamed El- Naggar⁽¹⁾, Abeer Abd Elaziz Madian⁽²⁾, Ebtsam Salah Yonis Mahrous.⁽³⁾

(1) Clinical Instructor, Faculty of Nursing, Damanshour University, Egypt.

(2) Professor of Community Health Nursing, Faculty of Nursing, Damanshour University, Egypt.

(3) Assistant Professor, Pediatric Nursing, Faculty of Nursing, Damanshour University, Egypt.

corresponding author: Ebtsam Salah Yonis Mahrous - e-mail/ ebtsam.salah@nur.dmu.edu.eg

ABSTRACT

Background: Neonatal morbidity and death are significantly influenced by the postpartum care practices of mothers. WHO recommends essential neonatal care practice, a comprehensive strategic approach intended to improve the health of mothers and newborns by implementing recommended interventions, in order to reduce neonatal mortality and morbidity. **Aim of study** is to assess the knowledge and practices of postpartum women regarding neonatal care. **Design:** A cross sectional descriptive design was used. **Setting:** The study was conducted on 4 out of 16 directorates in El-Beheira governorate, namely; Itay Elbaroud, Kom Hamada, El Rahmania and Shubrakhit. Eight primary health care centers selected randomly, one from urban and one from rural area to constitute the setting of study. Convenient sample of 352 postnatal mothers were selected. **Tool for data collection:** A structured interview questionnaire, which included three parts; (I) demographic characteristics; (II) mothers' knowledge and (III) the reported practice regarding essential neonatal care. **Results:** the study revealed that (67.9%) of the studied mothers had fair knowledge level regarding essential neonatal care and (51.1%) of the studied mothers had fair practice regarding essential neonatal care. There is positive significant correlation between total knowledge score and total practices level ($R= 0.794$ at $p. value < 0.000$). **Conclusion:** More than two thirds of the studied mothers had fair knowledge about essential neonatal care where more than half of them had fair practice; there are many factors that affect neonatal care negatively or positively. **Recommendations:** Instructional guidelines and health education programs should be executed to increase mothers' awareness and reduce traditional false practices about neonatal care.

Keywords: Neonatal care, Knowledge, Practice, postpartum women

Introduction

Children are the future and most precious resources of any nation. Health of the future children depends on the nurturing practice adopted by the family (Mall, Mohanta & Pareek, 2021). For a baby's survival, healthy development, and healthy life, proper neonatal care is crucial. In addition to maternal and neonatal care services, the woman's socioeconomic position, health, and at-home care practices for both the mother and newborn

have a significant impact (Eraky & Hassan, 2018).

Children face the highest risk of dying in their first month of life at an average global rate of 17 deaths per 1,000 live births in 2020. The World health organization (WHO, 2019) estimated that, globally 2.4 million children died in the first 28 days of life. There are approximately 6700 neonates die every day, amounting to 47% of all child deaths under the age of 5-years with about one third dying on the day of birth and close to three quarters

dying within the first week of life. Ninety-nine percent of these deaths occur in middle- and low-income countries with half of deliveries occurring at home beside a background of poverty, suboptimum seeking care and weak health systems (**Daba et al., 2019**).

In order to promote the health of neonates, the world health organization defined essential neonatal care as a comprehensive strategy that includes interventions prior to conception, during pregnancy, at and shortly after birth, and in the postnatal period. These low cost, high impact interventions can be used by both health care providers and the mothers to reduce neonatal mortality and morbidity both in developed and developing countries. Essential neonatal care comprises thermoregulation, clean delivery, cord care, breastfeeding, immunization, eye care, recognition of danger signs, care of the preterm/low birth weight infant and management of neonatal illnesses (**Abebe, Adane & Shitu, 2021; Getachew et al., 2022; Teferi, Teferi & Ayalew, 2020**).

As mothers will have the necessary confidence and knowledge to care for their newborn children, who help to provide quality care, prevent deviations from normal health, and reduce traditional false beliefs about neonatal care, neonatal care of mothers plays a significant role in reducing neonatal morbidity and mortality. To improve the delivery of neonatal care, skilled professional care during pregnancy, labour, and delivery, as well as during the postpartum period, is crucial (**Bhattarai et al., 2021**).

In order to promote health and prevent disease, community health nurses play a crucial and significant role. They play a vital role in educating women, offering direction, advice, information, and counselling on newborn care and avoiding the use of hazardous traditional practices to enhance the neonatal health of the infants. As well, they play a pivotal role in facilitating continuity of care and acting as the bridge between the mothers and health care system to meet their neonatal needs (**Eraky & Hassan, 2018; Phakathi et al., 2018**).

Significance of the study:

Egypt is one of low-and middle-income countries with a high maternal and child mortality burden. In 2020, Egypt had a newborn mortality rate of 10 per 1,000 live births. Neonatal mortality account two thirds of all infant deaths and half of all children under-five deaths (**UNICEF, 2021**). Many of these fatalities take place in the home, away from the view of medical professionals. Neonatal survival is significantly impacted by some incorrect procedures, including inexperienced labour assistants, harmful birth methods, and superstitious neonatal care (**Baih, 2020**). However, there is a lack of national studies that have examined the knowledge and reported home care practices toward neonates within postpartum mothers in Egypt. Therefore, this study aimed to assess the knowledge and practices of postpartum women regarding essential neonatal care.

Aim of the Study:

The present study aimed to assess the knowledge and practices of postpartum women regarding neonatal care in El-Beheira governorate.

Research questions:

1. What is the mother's knowledge regarding neonatal care in EL-Beheira governorate?
2. What are the mother's practices regarding neonatal care in EL-Beheira governorate?

Operational definitions

Postpartum period

The postpartum phase is the first six weeks following giving birth. This is a demanding time when both mother and infant need a variety of care (**World Health Organization, 2020**)

Neonatal care

The critical care for all babies in the first days after birth, it is needed both in the health facility and at home (**World Health Organization, 2014**)

Materials and Methods:

Research design:

A cross-sectional descriptive research design was used.

Setting:

- The study was conducted on 4 out of 16 directorates in El-Beheira governorate, namely; Itay Elbaroud, Kom Hamada, El Rahmania and Shubrakhit. Eight primary health care centers selected randomly, one from urban and one from rural area to constitute the setting of study.

Subjects:

The target population of this study was postnatal mothers attending primary health care centers in pre mentioned setting who met the following inclusion criteria:

- 1- Postnatal mothers within 2 months after delivery without complications.
- 2- Well form baby (gestational age 38-42 weeks) without any congenital anomalies or disability.
- 3- Willing to participate in the study.

Sampling:

A multi stage sampling technique was used to select the required sample of 352 as the following: four health directorates (25%) out of the total (16) health directorates in El-Beheira governorate were selected randomly by using lottery method namely: Itay Elbaroud, Kom Hamada, El Rahmania and Shubrakhit and from each directorate, one urban maternal and child health center& one rural health unit were selected randomly. By using equal allocation method, convenient sample of 88 postpartum women were selected from previously mentioned four settings in both maternal and child health center (44) and rural health unit (44), giving a total number of study samples. So, the total number of study sample was 352 postnatal mothers.

Tool for data collection:

Based on relevant literature and research, the researcher developed and used a structured interview questionnaire (**Getachew et al., 2022; Teferi & Ayalew, 2020**) to collect the necessary data from mothers. It consisted of **three parts** as following: -

Part I: Personal data of mothers and neonate assessment sheet. It was concerned with:

- Mothers' data: as age, marital status, occupation, educational level, residence, monthly income, family type, distances from near health center and methods of transportation.
- Medical and obstetric history.
- Neonate's characteristics: as age, gender, birth weight and birth order.

Part II: Mother's knowledge structured interview sheet regarding neonatal care:-

It concerned with assessing mothers' knowledge regarding neonatal care according to the **world health organization guidelines (2014)** regarding essential neonatal care including breast feeding, cord care, cleanliness, thermoregulation, eye care, immunization and neonatal danger signs.

Scoring system:

There were 43 questions about mothers' knowledge of essential newborn care. The responses were assessed in the following ways: The correct answer that was both comprehensive and accurate received a score of (2), the correct but incomplete answer received a score of 1, and the incorrect or unknowing response received a score of (0). After that, the total scores, which may vary from 0 to 86, were determined and further divided into the following categories:

Poor knowledge	< 50% (< 43points)
Fair knowledge	50% < 75% (43 < 65 points)
Good knowledge	75% - 100% (65 - 86 points)

Part III: Mothers' reported practices interview sheet regarding neonatal care.

It concerned with mothers' reported practices regarding neonatal care according to the **world health organization guidelines (2014)** regarding essential neonatal care including the same categories in mother's knowledge.

Scoring system:

Mothers' reported practices regarding essential neonatal care included 40 questions. The responses were evaluated as follow: The correct answer that was also complete received a score of (2), the correct answer that was only partially complete received a score of 1, and the incorrect or unknowing response received a score of (0). The final results, which varied from 0 to 80, were then calculated and further categorized as follows:

Poor practice	< 50% (< 40points)
Fair practice	50% < 75% (40 < 80 points)
Good practice	75% - 100% (60 - 80 points)

Methods:

- An official letter from Dean of the faculty of Nursing in Damanhour University was directed to the representative of the Ministry of Health and Population in El Beheira governorate to inform them about the study aims and obtain permission to conduct this study in the selected settings.
- The administrators of the El-Beheira Governorate's health affairs granted permission for the study to be carried out.
- Permission from directors of the selected maternal and child health centers was obtained.

Ethical considerations:

Ethical approval was obtained from the research ethical committee of the Faculty of Nursing, Damanhour University (19 Nov 2020, no42). The participants were given a brief explanation of the questionnaire sheet, and each mother provided her verbal agreement. During the data collection process, privacy was upheld. During the course of the study, moms' responses were kept confidential.

Development of study tool:

The researcher used and created one tool based on a relevant literature review. Five experts from Damanhour University's nursing faculty who specialize in pediatric nursing and community health nursing formed the jury, which evaluated the tool's contents for thoroughness, accuracy, clarity, and relevance. Cronbach Alpha Equation used to measure the reliability of the tool and to test the consistency of the knowledge and practices assessment. The reliability was (0.92 and 0.88), respectively.

Pilot study

In order to ensure the clarity, application, and comprehension of the tool and identify potential difficulties and problems during data collection, a pilot study was conducted on 35 women who made up 10% of the sample and were chosen at random from the study population. The essential adjustments were therefore taken into account.

Collection of data:

Data collection was done over a period of 4 months (from January to April 2021). The data was collected individually by interviewing every mother and each interview consumed approximately from 20 to 30 minutes.

Data analysis:

- Following data gathering, the obtained data was coded and converted into a format that was specifically created to be fed into a computer. Using the social science statistical

program, data was entered and examined (IBM-SPSS version 25). Frequency analysis, cross tabulation, and manual revision were used to review and examine the data after entering to find any entry errors.

- Chi-square and Fisher exact test were used to examine the differences between categorical variables. The Pearson correlation coefficient (Pearson's r) is used to measure the linear correlation between two sets of data. The level of significance selected for this study was $p \leq 0.05$.

Results:

Table (1): Shows that, (69.3%) of the studied mothers aged from 20 to less than 30 years, (51.4%) of them had secondary education and (80.7%) of them were house wives. Additionally, (54.8% & 58%) of them had enough income and belonged to nuclear families, respectively. Moreover, (97.7%) of them arrived the nearest health facilities within 30 minutes or less and (58.8%) of them didn't use transportation.

Table (2): Displays that, (51.1% & 61.4%) of the studied mothers were pregnant and delivered between 1-2 times, respectively. Concerning antenatal care, (94.3%) of them visited antenatal clinic. (47.9% & 51.5%) of them attended 4-7 visits and started antenatal visit in the second trimester of pregnancy, respectively. Also, (78.4%) of them delivered by caesarean section, (94.9%) of these deliveries were in hospital and (57.7%) of them discharged from hospital between 6 to less than 12 hours after delivery.

Table (3): Clarifies that, (82.1%) of the studied neonates aged from 30 to 60 days and (50.9%) of them were girls. Furthermore, (31.8%, 31.3% & 26.9%) of them arranged as second, first and third child to their mothers, respectively.

Table (4): reveals that, mothers obtained highest percent related to poor score of knowledge (43.2%) concerning with thermoregulation while the highest percent related to fair score of knowledge concerning with immunization, neonate's hygiene and

breastfeeding (75.3%, 44.6% & 42.3%), respectively. Moreover, the highest percent observed related to good score of knowledge concerning with knowledge about eye care, neonatal danger signs and cord care (86.7%, 83.2% & 76.1%), respectively. Regarding total knowledge score, (67.9%) of them had fair knowledge while (26.7%) of them had good knowledge.

Figure (1): Shows that, the ranking of the studied mothers' knowledge domains observed that, danger signs domain was the highest percentage with a mean percent (91.3±19.7) followed by eye care with a mean (84.8±16.7), cord care with a mean (79.7±15.4), hygiene (65.6±17.0), immunization with a mean (61.3±18.0), breastfeeding with a mean (59.0±20.1) and lastly thermoregulation with a mean (46.8±24.0).

Table (5): Demonstrates that, the highest percent score of practice obtained by the studied mothers as good practice observed in items related to immunization, thermoregulation, neonatal danger signs, eye care and cord care (99.7%, 67%, 64.8%, 64.2% & 56.8%), respectively. On the other hand, the highest percent observed related to fair score of practice concerning with breastfeeding and neonatal hygiene (54% & 50%), respectively. Regarding total practice score, (51.1%) of the studied mothers had fair practice followed by (45.5%) had good practice.

Figure (2): displays that, the ranking of the studied mothers' reported practices domains observed that, immunization practice was the highest percentage with a mean percent (99.9±1.7) followed by eye care with a mean (83.8±24.3), thermoregulation with a mean (73.9±10.7), cord care with a mean (73.1±20.0), hygienic practice with a mean (68.2±17.6), danger signs with a mean (64.8±47.8) and lastly breastfeeding with a mean (62.8±14.7).

Table (6): illustrates that, the most independent factors associated with poor essential neonatal care practice was mother's age ($P=0.017$, $OR=6.435$) in which young age are more risk for poor essential neonatal care practice six fold than old age followed by

gravida ($P=0.019$, $OR=2.208$) in which mothers who had gravida 1-2 times are more risk for poor essential neonatal care practice two fold than multigravida as well as time of first antenatal visits ($P= 0.014$, $OR=3.227$) in which mothers who delayed antenatal visit during first trimester was more risk for poor essential neonatal care practice three fold than those who started visit in first trimester. On the other hand, mother's education was the most independent factor associated with good, essential neonatal care practices ($P=0.001$,

$OR=0.304$) in which higher educated had (30%) significance good practice than lower educated followed by residence ($P=0.001$, $OR=0.351$) in which mothers who live in urban area had (30%) significance good practice than those who live in rural area.

Table (7): reveals that there was a statistically significant positive relationship between the mothers' overall knowledge score and their overall practice score where $R= 0.794$ at P value > 0.001 .

Table (1): Distribution of the studied mothers along with their socio demographic characteristics

Personal data of mothers	Total n= 352	
	No	%
Mother's age (Years)		
< 20	20	5.7
20 < 30	244	69.3
≥ 30	88	25.0
Mean ± SD	26.3±4.7	
Mother educational level		
Illiterate	10	2.8
Read and write	5	1.4
Primary school	10	2.8
Preparatory school	30	8.5
Secondary school	181	51.4
University education	116	33.1
Mother occupation		
Housewife	284	80.7
Working	68	19.3
Muslim	349	99.1
Christian	3	0.9
Residence		
Urban	176	50.0
Rural	176	50.0
Monthly income		
Not enough	67	19.0
Enough	193	54.8
Enough and save	92	26.2
Family type		
Nuclear	204	58.0
Extended	148	42.0
Distance from home to nearby health facility		
Less than 30 min	344	97.7
More than 30 min	8	2.3
Methods of transportation		
Didn't use transportation	207	58.8
Public	140	39.8
Private	5	1.4

Table (2): Distribution of the studied mothers along with their medical and obstetric history (N=352)

Medical and obstetric history	No.	%
Chronic diseases		
Yes	7	2.0
No	345	98.0
Type of chronic disease	No.7	%
Respiratory	2	28.6
Hypertension	4	57.1
Diabetes	1	14.3
No of gravida		
1-2	180	51.1
3-4	150	42.6
5 and more	22	6.3
No of Para		
1-2	216	61.4
3-4	129	36.6
5 and more	7	2.0
Attend antenatal clinic		
Yes	332	94.3
No	20	5.7

No of ANC visits	No.332	%
1-3	135	40.7
4-7	159	47.9
8 and more	38	11.4
Time of first ANC visits		
First trimester	86	25.9
Second trimester	171	51.5
Third trimester	75	22.6
Type of delivery		
Normal delivery	76	21.6
Caesarean section	276	78.4
Place of birth		
Home	16	4.5
Health Center	2	0.6
Hospital	334	94.9
Discharge after hospital delivery	No.336 (Hospital and health center)	%
Less than 6 hours	15	4.5
6 to less than 12 hours	194	57.7
12 hours and more	127	37.8

Table (3): Distribution of the studied mothers along with their neonatal characteristics

Neonatal characteristics	No.352	%
Neonate's age in days		
Less than one month (10 to 28 days)	63	17.9
One month and more (30 to 60 days)	289	82.1
Mean \pm SD	42.7 \pm 14.2	
Neonate's gender		
Boy	173	49.1
Girl	179	50.9
Neonate's birth weight in kilograms		
Mean \pm SD	2.9 \pm 0.3	
Min-Max	2.3-4	
Birth order		
1	110	31.3
2	112	31.8
3	95	26.9
4	28	8.0
5	7	2.0

Table (4): Distribution of the studied mothers along with their total knowledge domains regarding essential neonatal care (N=352)

Knowledge domains regarding neonatal care classification	Poor		Fair		Good	
	No.	%	No.	%	No.	%
Thermoregulation knowledge	152	43.2	133	37.8	67	19.0
Cord care knowledge	7	2.0	77	21.9	268	76.1
Knowledge about newborns hygiene	46	13.1	157	44.6	149	42.3
Breast feeding knowledge	112	31.8	149	42.3	91	25.9
Eye care knowledge	6	1.7	41	11.6	305	86.7
Immunization knowledge	41	11.6	265	75.3	46	13.1
Danger signs in neonate knowledge	2	.6	57	16.2	293	83.2
Total knowledge score	19	5.4	239	67.9	94	26.7

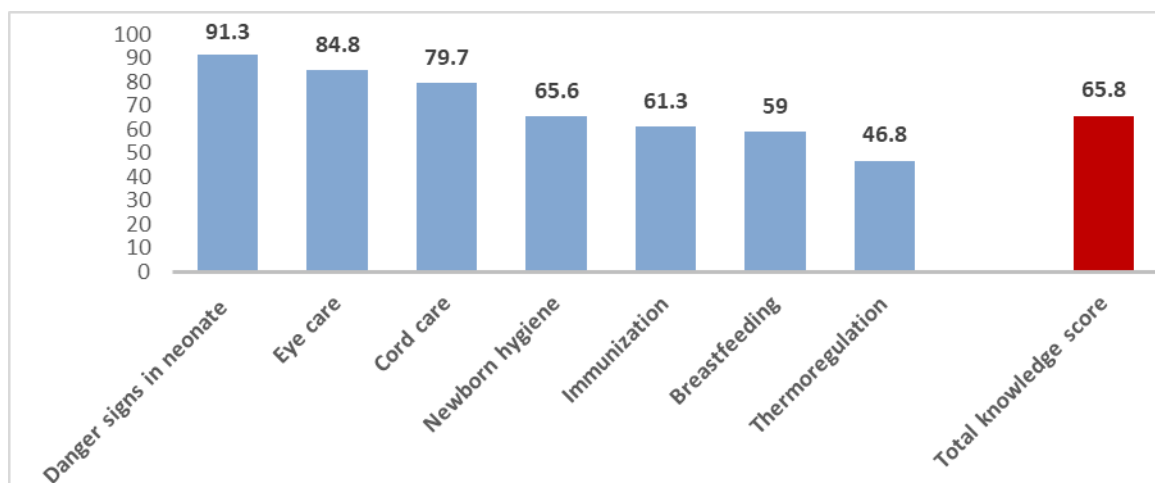


Figure (1):

Distribution of mean percent score of total knowledge domains regarding essential neonatal care among studied mothers

Table (5): Distribution of the studied mothers along with their total reported practices domains regarding essential neonatal care (N=352)

Practice domains regarding essential newborn care	Poor		Fair		Good	
	No.	%	No.	%	No.	%
Thermoregulation	0	0.0	116	33.0	236	67.0
Newborn hygiene	45	12.8	176	50.0	131	37.2
Cord care	47	13.4	105	29.8	200	56.8
Breast feeding	67	19.0	190	54.0	95	27.0
Eye care	40	11.4	86	24.4	226	64.2
Immunization	0	0.0	1	.3	351	99.7
Danger signs in neonate	124	35.2	0	0.0	228	64.8
Total Practice score	12	3.4	180	51.1	160	45.5

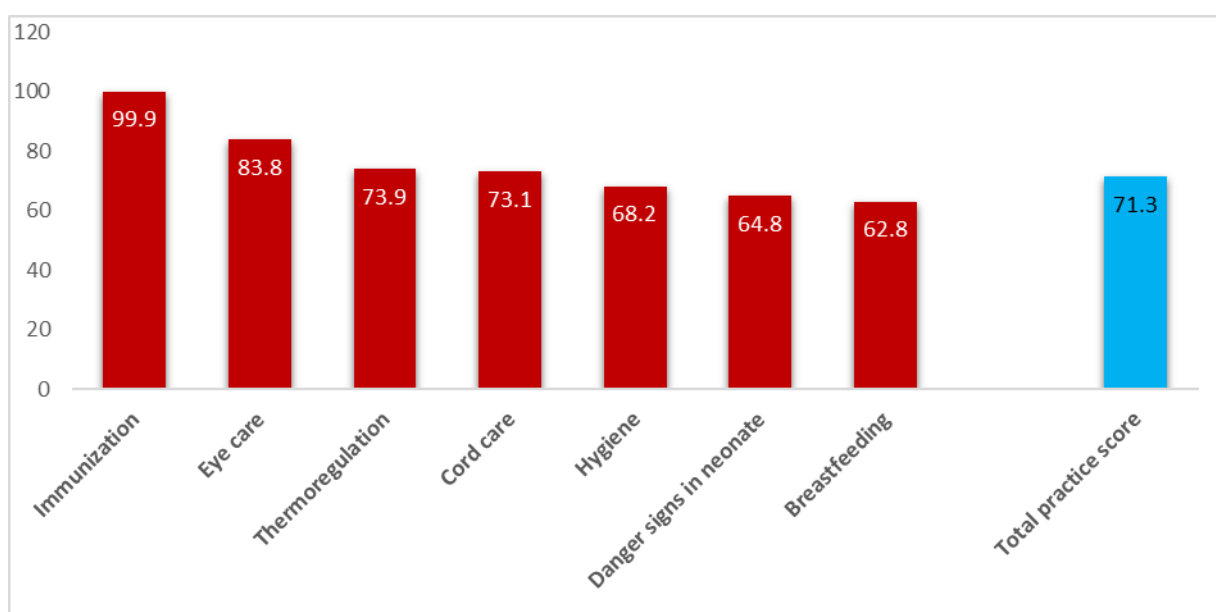


Figure (2) Mean percent score of total practice domains regarding essential neonatal care among studied mothers

Table (6): Multivariate analysis logistic regression for factors associated with essential neonatal care practices among studied mothers.

Variables	P	Exp (B)	95% CI Exp (B)	
			LL	UL
Mother's age (less than 20 years)	0.017*	6.435	1.390	29.787
Mother's education (higher education)	0.001*	0.304	0.154	0.597
Mother's occupation	0.321	3.753	0.276	51.014
Residence (Urban)	0.001*	0.351	0.194	0.636
Family income	0.116	1.696	0.878	3.278
Family type	0.093	0.664	0.412	1.071
Gravida (1-2 times)	0.019*	2.208	1.138	4.287
Para	0.742	0.975	0.838	1.134
No of AN visits	0.301	1.149	0.883	1.496
Time of first AN visits (First trimester)	0.014*	3.227	1.262	8.251
Type of delivery	0.770	1.099	0.583	2.071
Discharge after hospital delivery	0.175	0.453	0.144	1.422
Health education received on essential neonatal care during pregnancy	0.486	1.538	0.457	5.174
Health education received on essential neonatal care after delivery	0.837	1.102	0.437	2.780
Receive home visit	0.807	0.885	0.332	2.360

*: Statistically significant at $p \leq 0.05$

Table (7): Pearson's correlation between the studied mothers' total knowledge and total practice scores (N=352)

	Total knowledge score	
	R	P
Total neonatal practice score	0.794**	.000

R: Pearson Correlation

P: P value of

Pearson Correlation

** : Correlation is significant at the 0.01 level

study was conducted to assess the knowledge and practices of the mothers regarding essential neonatal care.

Discussion:

The first few minutes and hours immediately after birth are the most critical period in the life of a neonate **Getachew et al., (2022)**. Providing neonatal care has traditionally been the forte of mothers irrespective of education, income and social. A lack of knowledge among mothers during this time could cause confusion and lower-than-expected standards of care for neonates **Acharya et al., (2015)**. Mothers' lack of knowledge about essential neonatal care procedures is primarily caused by cultural influences and a lack of traditional understandings regarding it. With additional information, the mother can create a more effective plan to protect the health of her newborn. Simply worded, mothers must be educated about essential neonatal care procedures if neonatal morbidity and mortality are to be decreased **Ahmed et al., (2019)**. Hence, the current

In order to improve mothers' knowledge and practices about neonatal care it is important to understand the socio-demographic characteristics and obstetrical history of these mothers. The current study findings indicated that, more than two thirds of the studied mothers aged from 20 to less than 30 years and more than half of them had secondary education. These results were in coinciding with those reported by a study conducted by **Yacout and Ouda, (2019)**. In the current study, the majority of the studied mothers were house wives and this is expected since the greatest proportions of Egyptian females are not working. This result was consistent with study done by **Kanbur et al., (2020)** in Turkey which found that only one fifth of the studied mothers were working. As regard to monthly family income, the present result portrayed that more than half of the studied mothers stated that they had enough monthly income. This was in line with study performed by **Yavuz et al., (2020)** in Turkey who reported that less than two

thirds of the participants stated that their income was equal to their expenditure.

In relation to obstetrical history of the studied mothers, the present study showed that more than half of them were pregnant and delivered one to two times. Correspondingly, the study conducted by **Beraki et al., (2020)** in Eritrea stated the same results. As regard to antenatal care which received by the studied mothers, the current study clarified that, the majority of them receiving visits regarding antenatal care during pregnancy and less than two thirds of them attended four or more antenatal visits at the health centers. This could be explained by the fact that the mothers know that there is a vaccination taken during pregnancy in the second trimester, so that they attended antenatal visits to receive it. These results were corresponding with those reported by study conducted by **Dida (2020)** in Kenya.

Pertain to mode and place of delivery, the current study revealed that more than three quarters of the studied mothers delivered by caesarian section and the majority of them delivered in hospital. This could be due to fear of associated pain and long hours of normal delivery. In addition, it may be because of caesarian section is more convenient to obstetrician than normal delivery. This was in harmony with study performed by **Ávila-Ortiz et al., (2020)** in Mexico who stated that more than one quarter of the mothers were delivered by normal delivery. Likewise, the result of study conducted by **Yacout and Ouda, (2019)** in Egypt which found that less one tenth of mothers delivered in home.

The present study findings highlighted that more than two thirds of the studied mothers had fair knowledge and more than one quarter of them had good knowledge. This result was in agreement with studies conducted in India by **Thakur et al., (2021)** and **Nazir et al., (2020)** who stated the same result. Alternatively, it was contrary with a study conducted by **Grace et al., (2021)** in Nigeria which revealed that less than half of the mothers had poor knowledge and less than tenth had good knowledge regarding neonatal care.

Regarding mean percentage of the studied mothers' knowledge domain, the current study illustrated that danger signs was the highest knowledge percentage that is 91.3% while

thermoregulation was the lowest knowledge percentage that is 46.8%. This result was contraindicated with a study conducted by **Acharya et al., (2015)** in Nepal who stated that the mean percentage of danger signs was 74.50% whereas the mean percentage of thermoregulation was 65.22%.

There is a link between knowledge and practice. It is essential to have adequate knowledge to do adequate practice. The current study showed that less than half of them had good practice and more than half of them had fair practice. This could be due to more than two thirds of the studied mothers had previous experience with previous child. In addition, practice may develop by seeing other people or family member to do that. This result goes in line with studies done in India by **Choudhary et al., (2021)** and **Mandal and Ghosh (2016)**. In conflicting to this result, the study done by **Mall et al., (2021)** in India which reported that the majority of the mothers had poor practice regarding neonatal care. This discrepancy might be attributed to difference in characteristics of the study participants which performed in primipara mothers.

Concerning mean percentage of the studied mothers' practice domains, the current study illustrated that immunization was the highest practice percentage that is 99.9% while breastfeeding was the lowest practice percentage that is 62.8%. Similarly, the result done by **Berhe et al., (2017)** in Ethiopia who stated that the prevalence of optimal breastfeeding practice among mothers was 63.1%.

The current study found a highly significant positive link between knowledge and practice among mothers, as determined by the relationship between the total knowledge score of the examined mothers and their total practice score. This may be the result of the requirement for adequate knowledge in order to perform adequate practice. This finding was coincided with studies conducted by **Choudhary et al., (2021)** in India and **Jouda (2020)** in Palestine which stated that mothers who had adequate knowledge about essential neonatal care had significantly more adequate practice. By contrary, the study done by **Bhattarai et al., (2021)** in Nepal who stated that there was no

statistically significant relationship between knowledge and practice.

Numerous factors can either positively or negatively influence mothers' knowledge of and behaviors related to essential neonatal care. In line with that, this study revealed a statistically significant relationship between the mother's age and essential neonatal care practices. Young age is more risk for poor practice sixfold than old age. This agreed with the result of study conducted by **Kebede, (2019)** in Ethiopia. Additionally, this study showed a statistically significant relationship between educational level and essential neonatal care practices. Higher educated mothers are (30%) protective factors associated with good practice than lower educated mothers. This could be due to educated mothers had the opportunity to acquire more knowledge and information about neonatal care that help them to perform good neonatal care at home than others as well as. A consistent result was documented in study done by **Alemu and Eshete, (2020)** in Ethiopia.

Additionally, the current study found that there was statistically significant relation between residence and essential neonatal care practices. Mothers who live in urban area are (30%) protective factors associated with good practice than those who live in rural area. This might be due to availability and accessibilities of health services. This was congruent with the result of **Abebe et al., (2021)** in Southwest Ethiopia. In relation to obstetric history, this study promulgated that there was statistically significant relation between gravida and essential neonatal care practices. Mothers who had gravida 1-2 times are more risk for poor essential neonatal care practice two-fold than multigravida. This could be due to multigravida mothers might have better competence than primigravida in caring of their neonates because of their previous experiences. This finding was in harmony with study done by **Teferi et al., (2020)** in Ethiopia.

Moreover, the current study displayed that there was statistically significant relation between time of antenatal visit and essential neonatal care practices. Mothers who delayed antenatal visit during other trimesters are more risk for poor practice threefold than those who started visit in first trimester. This could be due to antenatal

clinics provide an opportunity to educate mothers on neonatal care which results in sustained knowledge in the postnatal period This in accord with the result of **Kebede, (2019)** in Ethiopia

For neonates to survive, grow, and thrive as well as to lower neonatal morbidity and mortality, improving mothers' knowledge and practices about essential neonatal care is necessary **Getachew et al., (2022)**. Therefore, it is crucial to implement educational policies and health education programs that encourage mothers to have the necessary information and home care practices to improve overall health, growth, and development of their neonates as well as to prevent neonatal morbidity and mortality **Syan et al., (2021)**.

Conclusion:

Based upon the results of the current study, it could be concluded that:

More over two thirds of the mothers who participated in the study had a fair knowledge of essential neonatal care. Additionally, less than half of the mothers in the study had good practices and more than half had fair practices regarding essential neonatal care. Additionally, knowledge and practice had a significant positive correlation. Likewise, the most independent risk factors for poor care were maternal age, gravida, and the time of the antenatal visit. On the other hand, the strongest independent protective factors linked to quality healthcare were the mothers' education and place of residence.

Recommendations:

Based on the results of the current research

- 1- Provide continue in service training for physicians, nurses and midwives regarding essential neonatal care that help them up-to-date their knowledge and practices.
- 2- Improve strategies for maternal and neonatal care during the antenatal and postnatal periods such as strengthening postnatal care services, improve the quality and access to perinatal care services and home visit using the rural health care providers.
- 3- Creating an official hotline and educational websites on the internet with information on every aspect of essential neonatal care would

make it easier to contact and communicate with mothers.

- 4- During prenatal visits, healthcare providers should provide thorough lectures to the mothers to raise their awareness of the importance of neonatal care.
- 5- Counseling mothers about importance of complete their follow up visits during postpartum periods in maintaining neonatal health.
- 6- Ensure training of community coaching to be leaders in their local areas to support and training postnatal mothers in dealing with neonatal care.
- 7- Conducting further studies to evaluate the effect of interventional educational program on mothers' knowledge and practices regarding essential neonatal care.

Limitation of the study:

Some mothers refused to speak with researcher because they afraid from high prevalence of Covid 19 virus.

References

Abebe H, Adane D, and Shitu S. (2021). Essential newborn care practice and its associated factors in Southwest Ethiopia. *Archives of Public Health.*; 79(1):1-9.

Acharya N, Dhakal R, Chaudhary D and Baral G. (2015). Knowledge on newborn care among postnatal mothers in Nepal. *IJHSR.*; 5(4):202-205.

Ahmed S, Majumder S, Monia Z and Bhuiyan S. (2019). Assessment of postnatal mothers' knowledge of newborn care practices. *Journal of Community and Preventive Medicine.*; 2(1):1-6.

Alemu A, and Eshete A. (2020). Newborn care practices and associated factors among lactating mothers at home in Southern Ethiopia. *Pediatric Health Med Ther.*; 2020(11):47-54.

Ávila-Ortiz M, Castro-Sánchez A, Martínez-González E, Núñez-Rocha G, and Zambrano-Moreno A. (2020). Factors associated with abandoning exclusive breastfeeding in Mexican mothers at two private hospitals. *International Breastfeeding Journal.*; 15(73):1-9.

Baih RA. (2020). Nursing intervention sessions to improve newly mothers' home care practices for their newborns in slum areas in Cairo. *Egypt Nurs J.*; 17(1):1-12.

Beraki G, Tesfamariam E, Gebremichael A, Yohannes B, Haile K. (2020). Knowledge on postnatal care among postpartum mothers during discharge in maternity hospitals in Eretria.; 20(17):1-10.

Berhe M, Medhaniye A, Kahsay G, Birhane E, & Abay M. (2017). Essential neonatal care utilization and associated factors among mothers in North Ethiopia. *PLoS ONE.*; 12(4):1-9.

Bhattarai M, Gurung R, Gurung S, Poudel S, Mahato J, Katel K. (2021) Knowledge and practice on neonatal care among postnatal mothers in Nepal. *Int. J. Soc. Sc. Manage.*; 8(1): 279-284.

Choudhary M, Joshi P, Murry L, Malhotra S, and Sankar J. (2021). Determinants of knowledge and practices of postnatal mothers on essential newborn care in India. *Int J Community Med Public Health.*; 8(4):1674-167.

Daba W, Alemu T, Shimbire M, and Tsegaye B. (2019). Knowledge and practice of essential newborn care among postnatal mothers in Addis Ababa city health centers, Ethiopia. *J. Public Health Epidemiol.*; 11(8):170-175.

Dida G. (2020). Knowledge and attitude of postnatal mothers on essential newborn care practices in Kenya.

Eraky E, and Hassan E. (2018). Effect of newborn-care practices for postnatal mothers on occurrence of selected health problems among their newborn infants in Cairo, Egypt. *American Journal of Nursing Research.*; 6(4): 174-175.

Getachew T, Dheresa M, Eyeberu A, Balis B and Yadeta T. (2022). Magnitude and determinants of postnatal mothers' knowledge of essential newborn care at home in rural Ethiopia. *Front Pediatr.*; 10(1):1-9.

Grace N, Daniel N, Anekoson J, Nanben O, Bilkisu N, and Abdullahi G. (2021). Knowledge, attitude and practices regarding neonatal health among mothers in Nigeria. *Science World Journal.*; 16(4):441-446.

Jouda F. (2020). Knowledge and practices of postnatal primiparous mothers towards newborns' care in Palestine.

Kanbur E, Senturk B, Cinar S and Kanbay Y. (2020). Traditional baby care practices in Artvin, Turkey. *IJTCMR.*; 1(3):112-117.

Kebede A. (2019). Knowledge, practice and associated factors of newborn care among postnatal mothers in Northwestern Ethiopia. *BMC Res Notes.*; 12(483):1-6.

Mall A, Mohanta B, and Pareek S. (2021). The knowledge and practices toward neonatal care among primipara mothers in India. *MRIMS J Health Sci.*; 9(2): 67-71.

Mandal M and Ghosh A. (2016). Evaluation of awareness of neonatal care practices among postnatal mothers in India. *Clin Obstet Gynecol Reprod Med.*; 5(5):1-5.

Nazir S, Monica, and Mohit. (2020). A Descriptive study to assess the knowledge regarding new born care among postnatal mother's with a view to prepare a pamphlet in India. *IJTSRD.*; 4(2):1069-1073.

Phakathi W, Haskins L, Jama N, Mntambo N, and Horwood C. (2018). Exploring the care provided to mothers and children by community health workers in South Africa. *BMC Public Health.* ; 18(1): 1-10.

Syan S, Samuel V, Llaguno M, and Abdalla S. (2021). Effect of instructional guidelines on mothers' knowledge and practice regarding neonatal care in Sohag City, Egypt. *EJHC.*; 12(3):64-70 .

Teferi M, Teferi M, and Ayalew A. (2020). Prevalence of new born care practice and its associated factors among women who gave birth in the last one year in Ethiopia. *Arch Community Med Public Health.*; 6(1):91-101.

Thakur N, Renuka, and Kaur G. (2021). A descriptive study on newborn care among primi mother in India. *J Urol Nephrol Hepatol Sci.* ; 4(1):7-10.

UNICEF. (2021). Monitoring the situation of children and women: Egypt demographics, health & infant mortality - UNICEF Data. Available at: <https://data.unicef.org/country/egy/>

World Health Organization, United Nations Children's Fund and World Bank Group. (2020). Levels & Trends in Child Mortality. Available at: <https://www.unicef.org/media/79371/file/UN-IGME-child-mortality-report-2020>.

World Health Organization. (2014). Recommendations on postnatal care of the mother and newborn. Available at: https://apps.who.int/iris/bitstream/handle/10665/97603/9789241506649_eng.

Yacout D and Ouda M. (2019). Pre-lacteal feeding practices and its predominant factors among mothers of infants in Damanhour, Egypt. *IOSR-JNHS.*; 8(6):26-38.

Yavuz A, Derya Y, and Uğur H. (2020). Traditional practices in infant care a province in eastern region of Turkey. *Middle Black Sea Journal of Health Science.*; 6(2):257-266.