

POSTPARTUM MOTHERS' KNOWLEDGE REGARDING NEWBORN CARE PRACTICES IN KIRKUK GOVERNORATE: A COMPARATIVE STUDY

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Abstract

Background and objectives

Newborn care is the care that is provided to the baby from birth to one-month-old by a caregiver or by the mother. The optimal development of a newborn is dependent on the health and development of the growing process particularly during the first month of a baby's life, which is considered the most critical period. This study aimed to assess and compare the urban and rural postpartum mothers' knowledge regarding newborn care practices in Kirkuk governorate.

Methods

This was a cross-sectional study conducted from October 22, 2023, to March 20, 2024, at the primary health care centers in Kirkuk governorate. A purposive sample of 400 postpartum mothers (divided into 200 mothers for each urban and rural). The mothers were selected from 18 primary health care centers in Kirkuk governorate according to the multistage cluster sampling technique. Data were collected using an interview-structured questionnaire, which consisted of two parts; the first part included socio-demographic and obstetric variables such as maternal age, educational level, economic status, occupation, type of family, age of child, as well as parity, place of birth, antenatal visits and number of visits. The second part related to postpartum mothers' knowledge of practices regarding newborn care consisted of six items (Danger signs, immunization, breastfeeding, eye care, thermoregulation, and cord care). Data entry and analysis were performed using SPSS (version 26). Data was reported as frequency and percentage, the Chi-square test and Fisher exact test were used for categorical variables. significance level was considered at ($P < 0.05$).

Results

Of 400 postpartum mothers, 116(77.9%) of urban mothers had high knowledge regarding newborn care practices compared to 99(77.3%) of rural mothers having poor knowledge. A highly significant association was found between urban and rural postpartum mothers' knowledge of practices, with urban mothers having higher knowledge compared to rural mothers at ($P < 0.001$). In addition, a highly significant association was found between urban and rural postpartum mothers' knowledge of practices and some socio-demographic and obstetric variables such as (maternal age, educational level, economic status, mother's occupation, and antenatal visit).

Conclusions

knowledge of practices regarding newborn care was high among urban postpartum mothers compared to poor knowledge of practices among rural postpartum mothers in Kirkuk governorate regarding the items (danger signs, immunization, eye care, thermoregulation, and cord care). However, both urban and rural postpartum mothers had poor knowledge regarding breastfeeding practices. This requires implementing regular educational programs and follow-up of postpartum mothers by health providers in the care centers to promote the mothers' knowledge regarding newborn care practices, in specific the mothers in rural areas.

INTRODUCTION

According to the World Health Organization (WHO) suggestion in 1998, the postnatal care (PNC) should be integrated into the national health care systems due to the crucial importance of the neonatal and postnatal period. PNC is a set of twelve recommendations for counseling and training mothers. These recommendations focus on issues that are urgent for newborns, as well as normal and abnormal signs in newborns, newborn evaluation and care, breastfeeding, infection prevention, special attention for preterm babies, and making sure that mothers can get emergency care quickly. [1] The optimal development of a newborn is dependent on the health and development of the growing process, particularly during the first month of a baby's life, which is considered the

most critical period. More than 80% of newborns require minimal attention, which can be supplied by the mother under the supervision of a basic health supervisor. [2]

Globally, the neonatal mortality rate continued to increase by about 17 deaths per 1000 live births in 2019[3], about 75% of newborn mortalities occur in the first week postpartum, and primarily take place at home when only the mothers are present[4]. The reason for that is lack of mothers' knowledge about appropriate care to the newborns.

Every group and nation has its cultural practices and beliefs regarding postnatal care. Some of the practices and beliefs are advantageous to the child, however, some of them pose a greater threat to the health aspects which is crucial for healthcare professionals to determine the harmful beliefs[5].

Although the postpartum period is a sensitive period for mother and newborn life most of the mortalities occurred in this period [6]. There are not enough studies regarding postpartum mothers' knowledge and practices regarding newborn care in this region, in specific in rural areas. To our knowledge, this study is the first study conducted in the governorate of Kirkuk and compare the knowledge of practices between two groups in the urban and rural. Therefore, the current study aimed to assess and compare urban and rural postpartum mothers' knowledge of practices regarding newborn care after delivery.

Materials and Methods

Design of the study

The current study is a cross sectional design

Setting and duration of the study

The Primary Health Care Centers in the governorate of Kirkuk, Iraq (which is 148 miles (238 km) North of Baghdad [7], was the setting for conducting the study. Kirkuk Directorate of Health has two sectors in the urban, 1st and 2nd sectors, while the rural area has four sectors; Daquk sector, Dibis sector, Hawija 1 and Hawija 2 sectors, which the primary health care centers of the governorate are belonging to. Eighteen Primary Health Care Centers (PHCCs) were included according to the multistage cluster sampling technique [8], ten care centers from urban and eight care centers from rural of the governorate were included in the study. A purposive sample of 400 postpartum mothers was equally distributed among (200) mothers in urban and (200) mothers in rural areas. In urban (20) mothers and in rural (25) mothers were selected from each primary health care center. The current study was carried out between October 22, 2023, and March 20, 2024.

Tool of the study

A structured questionnaire was developed by the researcher as a data collection tool. The data was collected by using an interview approach. The questionnaire consists of two parts (appendices). The first part consisted of sociodemographic and obstetric variables such as maternal age, educational level, economic status, occupation, type of family, age of child, as well as parity, place of birth, antenatal visits, and number of visits. The second part related to postpartum mothers' knowledge of practices regarding newborn care consisted of six items (Danger signs, immunization, breastfeeding, eye care, thermoregulation, and cord care). To measure the postpartum mothers' knowledge regarding newborn care practices, they were asked to answer "correct" or "Incorrect" in front of each question of the newborn care items. A score of (1). was assigned for correct answers, and a score of (0) was assigned for incorrect answers. The continuous variables transformed into categorical variables by using Bloom's off point to categorize the level of knowledge into three levels described as high knowledge if it is from (80%-100%), Moderate knowledge from (60%-79%) and poor knowledge if (<60%). (10)

A pilot study was carried out to assess the questionnaire's reliability before implementing the study on 20 postpartum mothers, equally distributed between urban and rural. The included sample for the pilot study was excluded from the current study. The Alpha Cronbach was used to determine reliability and the result was 0.82. The questionnaire's content

validity was evaluated by a panel of 11 experts from the college of Nursing and college of Medicine.

Sampling and sample

The total population that included in this study consisted of 400 postpartum mothers, of whom 200 were from each urban and rural area of the governorate. postpartum mothers who have live babies aged between 1-6 weeks were included. Mothers delivered by cesarean section and babies with congenital abnormalities were excluded from the study. All the mothers included in the study and who agreed to participate were eligible for the study criteria.

Ethical consideration

The Ethics Committee of the College of Nursing, University of Kirkuk, approved the study. The administration of the Primary Health Care Centers Department received official approval (No. 694/2023) from the Kirkuk Directorate of Health to conduct the study. Verbal consent was obtained from each mother before data collection.

Statistical analysis

A statistical package for social sciences (SPSS, V26) was used to analyze the data. Both a descriptive approach (Frequency and percentage) and an Inferential approach (Chi-Square-Fisher's exact test) were used. Chi-square/Fisher's exact test is used to find the relationship between variables. The P value was considered significant at $p < 0.05$.

Results

Of 400 postpartum mothers, distributed equally (200) for each urban and rural, more than half of the urban (51.5%) and rural (53%) postpartum mothers were aged between 18-29 years old. One-fifth of urban mothers graduated from primary school compared to one-third of rural mothers being illiterate, with half of urban mothers coming from barely sufficient economic status compared to (47.5%) of rural mothers coming from insufficient income. Regarding mothers' occupations, both urban (78%) and rural (88.5%) postpartum mothers were housewives. About the type of family, (55%) of urban mothers were living in a nuclear family compared to (54%) of rural mothers living in extended families. Regarding parity around two-thirds of urban mothers were primi (58%) compared to (52%) of rural mothers being multiparous mothers. The majority of both urban and rural mothers have given birth at governmental hospitals (77.5%, 81%) respectively. Both urban and rural mothers were visiting both primary health care centers and private physicians (64%, 40.5%) respectively, with being (55.5%) of urban mothers compared to (67%) of rural mothers visiting primary health care centers less than 7 visits. (Table 1).

Table 1: Socio-demographic and obstetric variables of the study sample (n=400)

Variable	Urban (n=200)		Rural (n=200)	
	N	(%)	N	(%)
Maternal age/ year				
<18	5	(2.5)	7	(3.5)

18-29	106	(53)	103	(51.5)
30-39	75	(37.5)	76	(38)
≥40	14	(7)	14	(7)
Maternal educational level				
Illiterate	62	(31)	23	(11.5)
Read & write	57	(28)	32	(16)
Primary level	49	(24)	44	(22)
Intermediate level	9	(4.5)	29	(14.5)
secondary level	5	(3.5)	17	(8.5)
Institute	9	(4.5)	22	(11)
College	10	(5)	32	(16)
Master degree	1	(0.5)	1	(0.5)
Economic status				
Sufficient	14	(7)	42	(21)
Barely sufficient	91	(45.5)	101	(50.5)
Insufficient	95	(47.5)	57	(28.5)
Maternal occupation				
House wife	177	(88.5)	156	(78)
Teacher	0	(0)	4	(2)
Employee	19	(9.5)	33	(16.5)
Student	2	(1)	7	(3.5)
Free business	2	(1)	0	(0)
Type of family				
Nuclear family	92	(46)	110	(55)
Extended family	108	(54)	90	(45)
Age of child				
<1 week	56	(28)	41	(20.5)
1-3 week	100	(50)	106	(53.5)
4-6 week	44	(22)	53	(26.5)
Parity				
Primipara	37	(42)	51	(58)
Multipara	163	(52.2)	149	(47.8)
Place of birth				
Governmental hospital	162	(81)	155	(77.5)
Private hospital	4	(2%)	34	(17)
Midwife	34	(17)	11	(5.5)
Antenatal visits				
primary health care	20	(10)	16	(8)

private physician	53	(26.5)	40	(20)
Both	81	(40.5)	128	(64)
None	46	(23)	16	(8)
Number of visits				
<7	69	(67)	81	(55.5)
>7	34	(33)	65	(44.5)

Table 2: Postpartum mothers' knowledge regarding newborn care practices according to residence (N=400)

Variables	Urban (n=200)		Rural (n=200)	
	Total (%) Correct	Total (%) Incorrect	Total (%) Correct	Total (%) Incorrect
1. Danger signs (do you visit the physician when these signs occur?)	(91.1%)	(8.9%)	(58.4%)	(41.6%)
2. Immunization	(95.1%)	(4.9%)	(78%)	(22%)
3. Breast-feeding	(59.5%)	(40.4%)	(42.7%)	(57.2%)
4. Eye care	(85.6%)	(14.4%)	(52.8%)	(47.2%)
5. Thermo-regulation	(89.5%)	(10.5%)	(86.75)	(13.25%)
6. Cord care	(70.5%)	(29.5%)	(38.8%)	(61.2%)

knowledge of practices regarding newborn care according to residence showed that urban mothers have good knowledge and answered correctly for the items; danger signs of the newborn (91.1%), immunization (95.1%) eye care (85.6%), thermoregulation (89.5%) and cord care (70.5%) compared to rural mothers knowledge, except for the items regarding breastfeeding both urban and rural mothers had poor knowledge (59.5%, 42.7%) respectively. (Table 2)

Table 3 Association between postpartum mothers' socio-demographic and obstetrical variables and knowledge of newborn care practices (N=400)

Postpartum mothers' knowledge of practices											
Variables	Urban (n=200)						Rural (n=200)				
	N	High n (%)	Moderate n (%)	Low n (%)	P value		N	High n (%)	Moderate n (%)	Low n (%)	P value
Maternal Age											
<18	7	3(42.9%)	4(57.1)	0(0.0)			5	0(0.0)	0(0.0)	5(100)	
18-29	103	67(74.6)	28(21.5)	8(3.9)	0.001*	S	106	8(8.8)	46(49.1)	52(42.1)	<0.001*
30-34	54	30(55.6)	12(22.2)	12(22.2)			41	18(43.9)	11(26.8)	12(29.3)	
35-39	22	8(36.4)	10(45.5)	4(18.2)			34	5(14.7)	11(32.4)	18(52.9)	
≥40	14	8(57.1)	1(7.1%)	5(35.7)			14	2(14.3)	0(0.0)	12(85.7)	
Maternal educational level											
Illiterate	23	9(39.1)	7(30.4)	7(30.4)	<0.001*	H.S	62	14(16.5)	20(23.5)	51(60)	<0.001*
Read write	32	14(43.8)	11(34.4)	7(21.9)			56	19(21.6)	35(39.8)	34(38.6)	
Primary level graduate	44	12(27.3)	22(50)	10(22.7)			48	14(15.2)	46(50)	32(34.8)	
Intermediate level graduate	29	17(58.6)	7(29.1)	5(17.2)			9	19(50)	8(21.1)	11(28.9)	
Secondary level graduate	17	11(64.7)	6(35.3)	0(0.0)			5	13(59.1)	9(40.9)	0(0.0)	
Institute Graduate	22	21(95.5)	1(4.5)	0(0.0)			9	29(93.5)	2(6.5)	0(0.0)	

College graduate	32	31(96.9)	1(3.1)	0(0.0)			10	39(92.9)	3(7.1)	0(0.0)		
Master degree or higher	1	1(100)	0(0.0)	0(0.0)			1	1(100)	0(0.0)	0(0.0)		
Economic status												
Sufficient	42	36(85.7)	3(7.1)	3(7.1)	0.001*	S.	14	6(42.9)	8(57.1)	0(0.0)	<0.001*	H.S
Barely sufficient	101	58(57.4)	28(27.7)	15(14.9)			91	23(25.3)	43(47.3)	25(27.5)		
Insufficient	57	22(38.6)	24(42.1)	11(19.3)			95	4(4.2)	17(17.9)	74(77.9)		
Maternal occupation												
Employee	33	31(93.9)	2(6.1)	0(0.0)			19	18(94.7)	1(5.3)	0(0.0)		
House wife	156	77(49.4)	50(32.1)	29(18.6)	<0.001*	H.S	177	13(7.3)	67(37.9)	97(54.8)	<0.001*	H.S
Student	7	4(57.1)	3(42.9)	0(0.0)			2	2(100)	0(0.0)	0(0.0)		
Teacher	4	4(100)	0(0.0)	0(0.0)			0	0(0.0)	0(0.0)	0(0.0)		
Farmer	0	0(0.0)	0(0.0)	0(0.0)			2	0(0.0)	0(0.0)	2(100)		
Parity												
Primipara	51	40(78.4)	10(19.6)	1(2.0)	0.342**	N.S	37	6(16.2)	12(32.4)	19(51.4)	0.967*	N.S
Multipara	149	76(51)	45(30.2)	28(18.8)			163	27(16.6)	56(34)	80(49.1)		
Place of birth												
Governmental hospital	155	82(52.9)	46(29.7)	27(17.4)	0.008**		162	22(13.6)	57(35.2)	83(51.2)	0.003*	S.
Privet hospital	34	29(85.3)	5(14.7)	0(0.0)			4	0(0.0)	4(100)	0(0.0)		
Midwife	11	5(45.5)	4(36.4)	2(18.2)			34	11(32.4)	7(20.6)	16(47.1)		
Antenatal visits												
primary health care	16	9(56.2)	5(31.2)	2(12.5)	0.002*	S.	22	0(0.0)	3(15)	17(85)	<0.001*	H.S
privet physician	40	22(55)	12(30)	6(15)			53	5(9.4)	23(43.4)	25(47.2)		
Both	128	84(65.6)	28(21.9)	16(12.5)			81	28(34.6)	40(49.4)	13(16)		
None	16	1(6.2)	10(62.5)	5(31.2)			46	0(0.0)	2(4.3)	44(95.7)		
Number of visits												
<7	81	45(55.6)	26(32.1)	10(12.3)	0.009**	S.	69	6(8.7)	42(60.9)	21(30.4)	0.001*	S.
≥7	65	49(75.4)	7(10.8)	9(13.8)			34	22(64.7)	2(5.9)	10(29.4)		

*chi square test, ** fisher exact test was used to test the relationship between variables and knowledge levels, Highly significant(H.S), Significant(S.),Non-significant(N.S)

Highly significant association was found between urban mothers' knowledge of practices and maternal educational level, maternal occupation at ($p<0.001$) and compared to highly significant association between rural mothers' knowledge of practices and maternal age, economic status, parity, place of birth, antenatal visits, number of visits at ($p<0.001$), with being non-significant with parity for both urban (0.342) and rural (0.967) postpartum mothers' knowledge of practices. (Table 3)

Table 4 Comparison between urban and rural postpartum mothers' level of knowledge regarding newborn care practices (N=400)

Level of knowledge	Urban N =200(%)	Rural n =200(%)	P value	
High knowledge	116(77.9%)	33(22%)	<0.001*	H.S
Moderate knowledge	55(44.7%)	68(55.3%)		
poor knowledge	29(22.7%)	99(77.3%)		

*Chi square test, Highly significant(H.S)

Of 400 postpartum mothers', distributed equally (200) for each urban and rural, highly significant association was found between urban and rural mothers' knowledge of practices at p value (<0.001). Urban mothers had 77.9% high knowledge compared to 77.3% of rural mothers having poor knowledge. (Table 4)

Discussion

Newborns are vulnerable populations that require special care in the first period of their life. This study aimed to assess and compare the knowledge of practices regarding newborn care among urban and rural postpartum mothers attending primary health care centers in Kirkuk governorate. The sample of the

study consisted of 400 postpartum mothers, 200 of them from urban, and 200 from rural areas. In the current study's result, more than half of the mothers in both urban and rural were aged between 18-29. This result is similar to a cross-sectional study conducted in Ghana which 49.9% of the mothers were aged between 20-29 years old [11], in addition, another study conducted in Sindh Pakistan indicated that the majority of the mothers aged between 20-29[12]. This similarity in results may be due to the sample type as they are of reproductive age. The present study shows that One-fifth of the urban mothers graduated from primary schools compared to one-third of the rural mothers who were illiterate. This result disagrees with a study conducted in India which indicated that about half of the sample had graduated from university [13]. About occupation, more than half of mothers were housewives in both urban and rural areas. This result is similar to the study conducted in Ethiopia, which shows more than half were housewives [14]. The present study sample was housewives as their educational level ranged between illiterate and primary school level, therefore the chance of having a job is difficult. More than half of urban mothers were living in nuclear families Compared to rural mothers living in extended families This result is similar to a study conducted in Turkey reported the highest percentage 83.4% of mothers living in the nuclear family[15], while the other cross-sectional study conducted in Saudi Arabia on 372 mothers were living in extended families[16]. This can be explained as differences in lifestyle as recently, houses in urban areas have become smaller and most of the families preferred to live independently, unlikely in rural areas, where they still maintain customs and traditions and most of the families prefer to live in extended families.

According to the knowledge of the postpartum mothers' regarding newborn care practices, urban mothers had high knowledge and answered correctly about practices of danger signs, immunization, eye care, thermoregulation, and cord care

compared to the answers of rural postpartum mothers, except for the answers about breastfeeding, both urban and rural mothers had poor knowledge (59.5%,42.7%) respectively. This result is consistent with the result of a study conducted in the Gaza Strip on 338 primi mothers which revealed that the majority of mothers answered correctly about immunization, recognition of danger signs, eye care, and thermoregulation, but not with breastfeeding practices[17].

As a total assessment of postpartum mothers' knowledge regarding newborn care practices, More than three-quarters of urban mothers had high knowledge, compared to rural postpartum mothers' who had poor knowledge of practices regarding newborn care (77.3%) and this can be considered a huge gap between urban and rural mothers' knowledge of practices. This result agreed with the study conducted in Southwest Ethiopia on 624 mothers aimed to assess their essential newborn care practices study revealed that mothers who live in urban areas are 1.70 times more likely to practice newborn care than mothers in rural areas[18]. This can be explained as urban mothers have access to and availability of infrastructures more than rural mothers such as mass media, antenatal care, and others, which may allow them to appreciate the benefits of newborn care practices.

The current study results indicated a high significant association and significant association between mothers' level of knowledge of practices with selected demographic and obstetric variables such as maternal age, educational level, economic status, and maternal occupation. This result is in line with the study conducted in Gana which aimed to assess knowledge and quality of newborn care practices, the study showed a significant association between maternal knowledge with maternal age and mothers' occupation[11]. Another study conducted in India indicated a highly significant association between mothers' practices of essential newborn care and with type of family[19]. Another study conducted in Ethiopia indicated a significant association between maternal knowledge with family income[20]. The present study revealed that there was a significant association between maternal knowledge with place of birth and antenatal visits. This result is consistent with the result of another multinational analysis study that indicates mothers who received antenatal care regularly and delivered in a health facility are more likely to perform newborn care adequately[21]

Limitations of the study

The limitation of this study was reaching the primary health care centers in a rural area of the governorate to interview the mothers on specific days of immunization, especially since the data collection period was in winter and some roads to these centers were not safe during rainy weather. In addition, the crying of the babies was interrupting the mothers' concentration on the questions, which caused the researcher to spend more time with the mother to answer the questions.

Conclusions

In Kirkuk governorate, urban postpartum mothers have high knowledge of practices regarding newborn care compared to rural postpartum mothers having poor knowledge regarding the items (danger signs, immunization, eye care, thermoregulation, and cord care). However, both urban and rural postpartum

mothers had poor knowledge regarding breastfeeding practices. A highly significant association was found between urban and rural postpartum mothers with some socio-demographic and obstetric variables such as (maternal age, educational level, economic status, mother's occupation, and antenatal visits). Implementing regular educational programs and follow up of postpartum mothers by health providers specifically in rural areas to promote their knowledge of practices regarding newborn care after delivery.

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