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RESEARCH ARTICLE

Birth Preparedness and Complication Readiness Among Pregnant Women Attending Primary Health Care Centers in Erbil City

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ABSTRACT

Background and Objectives: Birth preparedness and complication readiness (BP/CR) is a plan that helps women to consider all obtainable maternal health care services. The aim of this study was to assess the level of knowledge on key danger signs and components of BP/CR among pregnant women within 3rd trimester who attending primary health care centers in Erbil city.

Methods: A descriptive study was conducted on 300 pregnant women, during the period mid-March 2019 to the end of July 2019 in five primary health care centers in Erbil city. Data gathered through interview with study sample and using structured questionnaires and purposive sampling technique used to selected samples. Data were analyzed by using the social package of statistical science (SPSS version 23).

Results: Pregnant women were between the ages of 15 and 46 years, about 8% of the women aged less than 20 years, and 12.3% aged ≥ 35 years. About (93.7%) of the women thinks that planning for the place of delivery is important while only 1.3% thinks that it is important to identify skilled attendant. Also high knowledge about birth preparedness was associated significantly ($p = 0.041$) with age and the distance to the health care facility ($p = 0.003$) but there are not significant association with other socio-demographic factors.

Conclusion: Large proportion of pregnant women had good knowledge about some of key danger signs. Generally, majority of the respondents had increased awareness on most of components of BP/CR.

Key Words: Birth Preparedness and Complication readiness(BP/CR), Pregnant Women, Primary Health Care Center, Erbil City.

INTRODUCTION

Birth-preparedness and complication-readiness (BP/CR) is a broad strategy to improve and promote the timely use of skilled maternal and neonatal care, especially during childbirth, based on the theory that preparing for childbirth and being ready for any complications reduces delays in obtaining this care and the key intervention to reduce maternal mortality. This strategy is equally useful in programs that focus on emergency obstetric care and skilled care during childbirth, although the specific

BP/CR messages and the relative importance placed on birth preparedness versus complication readiness would differ between the two approaches (Del Barco, 2004). McPherson et al., (2006) had defined (BP/CR) is a complete package aimed at helping timely access to skilled maternal and neonatal services. The birth-preparedness package promotes active preparation and management for delivery by pregnant mother and their families. This stems from the fact that all mothers during pregnancy faces risk of rapid and unforeseeable life threatening complications

that could end in injury or death to herself or to her baby (Kakaire et al., 2011).

The idea of BP/CR emerged almost two decades ago and was later included, as an essential part of the antenatal care package. BP/CR plans contain the following elements: the place of birth, skilled birth attendant, location for birth, saving money, identifying someone to take care of my family in my absence, prepare essential items for birth, identify a decision maker in the family who will escort me to the health facility, and identification of blood donors if needed (Carroli et al., 2001),(Bergsjø, 2003).

Improved preparedness for birth and complications would allow mother and their families to expect potential delays and make sure timely use of skilled care for delivery and arrival at the suitable facility for complications. Implementation of BP/CR interventions that focus on individuals, families and communities are intended to decrease at least the first two delays. It is equally important that health facilities and transfer systems are prepared to deliver necessary childbearing care and are able to manage complications, which would contribute to reduction of the third delay (Solnes Miltenburg et al., 2017).

Among the most important key roles of antenatal care is the provision of health education on obstetric danger signs and preparation for birth and complications, it is expected from ANC that pregnant mothers are assisted to have their own birth plan which contribute to good pregnancy outcome (Oladapo et al., 2008).

Information, education and counseling during antenatal care visits play a vital role in prevention of maternal death. These create an awareness of the sequence of events from late recognition of danger signs, through delays in seeking and receiving care. An appropriate program such as BP/CR can improve maternal health and

pregnancy outcome, Birth preparedness is not easy to achieve especially in developing countries where majority are relatively poor (Damian, 2013).

In Malawi, rates of perinatal, neonatal and maternal mortality are high and major public-health problem. About one third of neonatal deaths occur on the first day of life and the majority of maternal deaths occur during labor, delivery, and within 24 hours postpartum (Botha et al., 2013)

In Iraq, the national maternal mortality ratio in 2010 was 63.00/100 000 live births; compared with 200 in Yemen, 70 in Syria, 66 in Egypt, 63 in Jordan, 32 in Oman, 24 in Saudi Arabia, 20 in Turkey, 21 in Iran and 7 in Qatar. About 62.7% of all maternal deaths in Thi-Qar compared to 80% of maternal deaths worldwide (Al – Kayat, 2016). Studies done on BP/CR among pregnant mothers have shown that promoting BP/CR through ANC visits improves preventive behaviors, improves knowledge of mothers on danger signs, and leads to improvement in care seeking during obstetric emergencies. It is also recommended that antenatal care should place emphasis on birth preparedness and complication readiness which have been shown to be critical in reducing maternal and/or perinatal mortality and morbidity (Thaddeus and Maine, 1994).

Therefore, this study will have aimed at assessing the BP/CR among pregnant women attending ANC in Erbil city which have been contributing to a relatively high maternal mortality ratio in the Region. These results will provide valuable information about BP/CR which actually reflects the effectiveness of the ANC services in Erbil city. To our best knowledge, research on BP/CR among women has never been done earlier in Erbil. In fact, the idea of Birth Preparedness and Complication Readiness which is important to reduce the perinatal, neonatal and maternal mortality or morbidity is not well known among the

general population in our country.

SUBJECTS AND METHODS

A cross-sectional study carried out at primary health care centers (PHCCs) in Erbil city. The study was conducted during the period February to October 2019. The period included data collection, analysis and interpretation. Data were gathered during the period from mid-March 2019 to end of July 2019. Epi info version 7 program (issued by CDC and WHO) was used for sample size estimation. The following estimation was entered into the software. The expected frequency of pregnant women in last trimester of pregnancy attending in PHCCs that had average BP/CR among pregnant women (40%) according to a study done in Ethiopia in 2016 and confidential interval 95%. The population size was about 1509 number of pregnant women within 3rd trimester visited this 5 PHCCs during one year (registration unit in PHCCs, 2019). Accordingly estimated sample size by Epi-info was 296 pregnant women but researcher decided to selected 300 pregnant women as a sample size to be more accurate reprehensive sample. At each primary health care center between 31 and 98 women were interviewed and purposive sampling (probability sampling) technique used to selected. Data were analyzed by using the Social Package of Statistical Science (Version 23). Chi square test of association was used to compare proportions. Fisher's exact test was used when the expected count of

more than 20% of the cells of the table was less than 5. All participants were informed about the purpose of the study. Verbal consent was taken from participants. Pregnant women in the 1st or 2nd trimesters of pregnancy and mothers who refused to participate were excluded from the study. Data were collected using a structured questionnaire by the researcher, although data were collected through direct interviews and preventing any influence on response from the respondent during the interview period. The questionnaire was consisted of 3 main parts: Part I was related to sociodemographic characteristics (including age of mother, level education of mother, level education of husband, occupation of mother, occupation of husband, residential area, type of family and distance to health facility on foot). Part II was related to pregnant mother's knowledge on key danger signs. Questions in this part included three stage, key danger signs during pregnancy (Vaginal bleeding, swelling of the face/ hand or both, blurred vision), key danger signs during child birth (Vaginal bleeding, Retained placenta, Prolonged labor and Convulsion) and key danger signs during postpartum (Vaginal bleeding, High fever and Foul smelling vaginal discharge). Part III was related to knowledge about components of BP/CR, identifying (place of birth, transport, skilled attendant, saving money, blood donor, someone to take care of my family in my absence, essential items for clean birth, shaving, a decision maker in the family who will escort me to the health facility).

RESULTS

Basic characteristics of the study sample.

Three hundred pregnant women participated in the study. Table 1 shows that 8% of the women aged less than 20 years, and 12.3% aged ≥ 35 years, ranging from 15 to 46 years. Table 1 shows that around one fifth of the women had been graduated from institutes or colleges compared with 28.6% of the fathers. On the other hand, it is evident that 9.7% of the women, and 4.7% of their husbands were illiterate. The majority of the women 78.3% were housewives, and the majority of their husbands 72.7% were skilled manual workers. The majority of the women 79.0% were living in urban

areas, and 62% of the families were nuclear ones. Regarding the distance to the health facility, more than half 59% of the women need ≥ 30 minutes to reach the health care facility.

Table 1: Basic Characteristics of the Study Sample.

Characteristics	No.	(%)
Age (years)		
< 20	24	(8.0)
20-24	83	(27.7)
25-29	90	(30.0)
30-34	66	(22.0)
≥ 35	37	(12.3)
Mother's educational level		
Illiterate	29	(9.7)
Read & write	22	(7.3)
Primary school	53	(17.7)
Intermediate school	50	(16.7)
Secondary school	58	(19.3)
Institute	34	(11.3)
College and above	54	(18.0)
Husband's educational level		
Illiterate	14	(4.7)
Read & write	31	(10.3)
Primary school	55	(18.3)
Intermediate school	72	(24.0)
Secondary school	42	(14.0)
Institute	31	(10.3)
College and above	55	(18.3)
Occupation of mother		
House wife	235	(78.3)
Skilled manual worker	7	(2.3)
Non-manual worker	40	(13.3)
High rank occupation	6	(2.0)
Student	12	(4.0)
Occupation of husband		
Skilled manual worker	218	(72.7)
Non-manual worker	74	(24.7)

High rank occupation	6	(2.0)
Student	2	(0.7)
Residency		
Urban	237	(79.0)
Rural	63	(21.0)
Type of family		
Nuclear	186	(62.0)
Extended	114	(38.0)
Distance to health facility		
< 30 minutes	123	(41.0)
≥ 30 minutes	177	(59.0)
Total	300	(100.0)

knowledge of mothers about key danger signs during pregnancy, childbirth and postpartum

Table 2 shows that the proportion of women with good knowledge about some danger signs was relatively high between 60-70% of the women such as. vaginal bleeding 71.3%, severe vomiting 69%, and difficulty in breathing 69%. On the other hand, the proportions of knowledge about the danger signs were low for the following signs: convulsion 35.7%, fever 41.7% and blurred vision 45.3%.

Table 2: Proportion of women who reported knowledge of key danger signs during pregnancy, childbirth and postpartum (N = 300)

Danger signs	During pregnancy		Childbirth		Postpartum	
	No.	%	No.	%	No.	%
Vaginal Bleeding	214	(71.3)				
Swelling of the face/ hand or both	175	(58.3)				
Blurred Vision	136	(45.3)				
Severe Vomiting	207	(69.0)				
Difficulty in Breathing	207	(69.0)				
Vaginal Bleeding			195	(65.0)		
Retained Placenta			159	(53.0)		
Prolonged Labor			164	(54.7)		
Convulsion			107	(35.7)		

Vaginal Bleeding	203	(67.7)
High Fever	125	(41.7)
Foul Smelling Vaginal Discharge	179	(59.7)

Mother's knowledge on the components of BP/CR

Table 3 shows that 94.3% of the women think that preparing essential item for delivery is important and 93.7% of the women planning for the place of delivery is important. Three-quarter 75% of the women think that planning for saved money is important, and 73% plan to someone to take care of my family in my absence is needed. Regarding the definition of birth preparedness and complication readiness only 1.3% thinks that it is important to identify skilled attendant. The other definitions are presented in the Table 3. Around one third of the women 30.3% think that ANC should start at the first trimester.

Table 3: Distribution of Women with Knowledge on the Components of BP/CR

Components of BP/CR	No		Yes	
	No.	%	No	%
Identifying place of birth	19	(6.3)	281	(93.7)
Identifying transport?	98	(32.7)	202	(67.3)
Identifying skilled attendant?	296	(98.7)	4	(1.3)
Saving money	74	(24.7)	226	(75.3)
Identifying blood donor	144	(48.0)	156	(52.0)
Identifying someone to take care of my family in my absence	81	(27.0)	219	(73.0)
To identify essential items for clean birth, shaving	17	(5.7)	283	(94.3)
To identify a decision maker in the family who will escort me to the health facility	102	(34.0)	198	(66.0)

Association between knowledge about components of BP/CR and the studied factors.

Table 4 demonstrated that high knowledge 57.3% about birth preparedness was associated significantly $p =$

0.04 with age, this association was not consistent throughout the different age groups. No significant association was detected with mother's education $p = 0.595$, father's education $p = 0.683$, mother's occupation $p = 0.061$, father's occupation $p = 0.692$, residency $p = 0.543$, type of family $p = 0.654$, and place of previous delivery $p = 0.476$. Regarding the distance to the health care facility, 67.5% of the women who live near the health care facility < 30 minutes had high level of knowledge, compared with 50.3% of the women who live in places far from the health center $p = 0.003$.

Table 4: Association Between Knowledge About Components of BP/CR and the Studied Factors.

	Low & medium		High		Total		
	No.	(%)	No.	(%)	No.	(%)	P
Age (years)							
< 20	8	(33.3)	16	(66.7)	24	(100.0)	
20-24	36	(43.4)	47	(56.6)	83	(100.0)	
25-29	47	(52.2)	43	(47.8)	90	(100.0)	
30-34	19	(28.8)	47	(71.2)	66	(100.0)	
≥ 35	18	(48.6)	19	(51.4)	37	(100.0)	0.041
Mother education							
Illiterate	17	(58.6)	12	(41.4)	29	(100.0)	
Read & write	9	(40.9)	13	(59.1)	22	(100.0)	
Primary school	21	(39.6)	32	(60.4)	53	(100.0)	
Intermediate school	18	(36.0)	32	(64.0)	50	(100.0)	
Secondary school	26	(44.8)	32	(55.2)	58	(100.0)	
Institute	13	(38.2)	21	(61.8)	34	(100.0)	
College and above	24	(44.4)	30	(55.6)	54	(100.0)	0.595
Father education							
Illiterate	6	(42.9)	8	(57.1)	14	(100.0)	
Read & write	13	(41.9)	18	(58.1)	31	(100.0)	
Primary school	22	(40.0)	33	(60.0)	55	(100.0)	
Intermediate school	31	(43.1)	41	(56.9)	72	(100.0)	
Secondary school	20	(47.6)	22	(52.4)	42	(100.0)	
Institute	17	(54.8)	14	(45.2)	31	(100.0)	

College and above	19	(34.5)	36	(65.5)	55	(100.0)	0.683
Occupation of mother							
House wife	100	(42.6)	135	(57.4)	235	(100.0)	
Skilled manual worker	6	(85.7)	1	(14.3)	7	(100.0)	
Non-manual worker	18	(45.0)	22	(55.0)	40	(100.0)	
High rank occupation	2	(33.3)	4	(66.7)	6	(100.0)	
Student	2	(16.7)	10	(83.3)	12	(100.0)	0.061*
Occupation of father							
Skilled manual worker	91	(41.7)	127	(58.3)	218	(100.0)	
Non-manual worker	34	(45.9)	40	(54.1)	74	(100.0)	
High rank occupation	3	(50.0)	3	(50.0)	6	(100.0)	
Student	0	(0.0)	2	(100.0)	2	(100.0)	0.692*
Residency							
Urban	99	(41.8)	138	(58.2)	237	(100.0)	
Rural	29	(46.0)	34	(54.0)	63	(100.0)	0.543
Type of family							
Nuclear	72	(38.7)	114	(61.3)	186	(100.0)	
Extended	56	(49.1)	58	(50.9)	114	(100.0)	0.077
Distance to health facility							
< 30 minutes	40	(32.5)	83	(67.5)	123	(100.0)	
≥ 30 minutes	88	(49.7)	89	(50.3)	177	(100.0)	0.003
Total	128	(42.7)	172	(57.3)	300	(100.0)	

*By Fisher's exact test. †N = 204

DISCUSSION

The result of present study shows that more than two thirds (71.3%) of women recognized vaginal bleeding as a danger sign during pregnancy, while (67.7%) of them knew the vaginal bleeding was a danger signs of post-partum and (65.0%) of participated were aware the vaginal bleeding as a danger signs during delivery. Severe vomiting and difficulty breathing had same result, which had been

reported as danger signs (69.0%) of pregnant women.

More than half of the respondents (59.7%) had idea of foul smelling vaginal discharge. Approximately half (58.3%) of the respondents reported on swelling face/hand or both as a danger sign, while (54.7%) reported on prolonged labour. Half (53.0%) of the respondents were reported on retained placenta as a danger sign during pregnancy. Nearly half (45.3%) of the respondents were reported blurred vision as danger signs of during pregnancy. Less than

half (41.7%) of the respondents however reported high fever as a danger sign in postpartum. only (35.7%) of the respondents reported convulsion as a danger sign.

This finding agrees with result of cross-sectional study carried out on 454 participants' in Abeshige district, Guraghe zone, SNNPR, Ethiopia, which showed to assess the current BP/CR practice and determine associated factors among rural women of reproductive age. Ninety percent of the participants reported that they were informed about danger signs related to pregnancy complications. Among these, (73.1%), (31.0%), and (21.6%) women mentioned vaginal bleeding, swollen hands/face, and blurred vision as danger signs during pregnancy. The majority of the respondents (91.5%) reported to be informed about danger signs during labor and delivery. Among those who had information, (74.2%), (29.3%), (26.9%), and 65 (15.4%) of the respondents mentioned vaginal bleeding, retained placenta, prolonged labor, and convulsions, respectively, as danger signs associated with labor/delivery. On the other hand, three hundred and ninety-nine (88.8%) of the participants reported that they were informed about danger signs during postpartum. Three hundred and twenty (71.3%), (21.4%), and (8.2%) of the respondents mentioned severe vaginal bleeding, high fever, and foul smelling vaginal discharge, respectively (Zepre and Kaba, 2016).

Ibadin *et al* (2016) conducted a descriptive cross-sectional study to assess the determinants of BP/CR among pregnant women in southern Nigeria, the most frequently recognized symptoms among all respondents (67.5%) were vaginal bleeding, Foul-smelling vaginal discharge (50.2%). Also it is supported by a cross-sectional study was conducted in Tehuledere district, northeast Ethiopia; they found the highest percentage vaginal bleeding during pregnancy, childbirth and postpartum reported obstetric danger sign was considered, (96.8%), (96.6%) and (91%) respectively (Endeshaw et al., 2018).

The result of the present study disagrees with (Bitew et al., 2016) conducted A cross sectional study to assess the status of BP/CR and associated factors among pregnant women in South Wollo Zone, Northwest, Ethiopia, they found that only (37.4%) of pregnant mothers reported vaginal bleeding as danger signs, blurred vision (6%) Convulsion (2.7%) Swelling of hand and feet (10.5 %) Fever (20.9%) Difficulty of breathing (3.7%).

In contrast to the present study, regarding prolonged labour a cross-sectional study was conducted by Al-Hadithi and AWRING M. RAOOF, (2011) to assess women's awareness of danger signs of obstetric complications and their experiences at health care facilities in Erbil city, they found that only 11% of women were aware of prolonged labour as an obstetric danger sign.

Another supported for present study done by Kumadi (2015), only (1.3%) respondents had idea of hemorrhage (bleeding) as a danger sign of pregnancy, only (15.1%) of the respondents reported on swelling of hands, face and entire body (edema)

as a danger sign during pregnancy. Less than (8.2%) of the respondents were able to report blurred vision, (2.3%) convulsion and (4.3%) difficulty in breathing as danger signs of during pregnancy. Close to half (49.2%) of the respondents however reported severe vomiting as a danger sign during pregnancy. Approximately, (12.5%) of the respondents were reported fever as a danger sign.

As regard to knowledge of danger signs during pregnancy, it was found that the most frequently recognized danger signs that may occur during pregnancy were vaginal bleeding mentioned by more than two third (69.1%) of the women, Swelling of the face and hand (9.4%), Vision changes (9.4%), Severe vomiting (5.4%), vaginal bleeding was the most commonly recognized danger sign during labor that mentioned by (30.2%) of the women, Retained placenta (0.7%) in post-partum, the most commonly known danger signs by the women were vaginal bleeding, and fever that were mentioned by (36.9% and 29.5%) of the women, respectively. Foul Smelling Vaginal Discharge (3.4%), Convulsion (0.7%) (El-Nagar et al., 2017).

The present study regarding components of BP/CR demonstrated that all pregnant women were not given enough information about all the components. These showed that about (93.7%) of the mothers were informed about identifying place of birth, (67.3%) were informed about the importance of identifying transport but only (1.3%) of participated were informed about identifying skilled attendant and three-quarters (75.0%) of pregnant women were informed about the need to identify a saved money.

About half (52.0%) of the women that Identifying blood donor, and about near three-quarter (73.0%) of the women knowledgeable Identifying someone to take care of my family in my absence. The majority (94.3%) of the women think that identify essential items for clean birth, shaving is important, and more than half (66.0%) of respondent were knowledgeable about identify a decision maker in the family who will escort me to the health facility. Markos and Bogale (2014) conducted a cross sectional study to assess BP/CR among women of childbearing age group in Goba Woreda, Oromia region, Ethiopia; they mentioned that the highest percentage (87.6%) of sample had knowledge about prepare essential items for clean delivery, identify place of delivery (45.1%), Saved money (69.6%), Identify skilled provider (7.2%), Identify a mode of transportation (5.3%), Arranging blood donors (3.2%), Designating decision maker on her (40.8%).

Omari (2016) conducted a cross sectional study to assessing Birth Preparedness and Complication Readiness among women attending antenatal care clinic (ANC) at health facilities within Bureti Sub County of Kericho County, Kenya; they mentioned that the highest percentage (87.9%) of sample had knowledge about identified place of delivery, (72.5%) of women were Know expected date of delivery, identify prepared for birth (70.5%), Saved money (43.8%).

Moreover, it is in line with a cross sectional study carried out by Begashaw et al., (2017) was conducted in antenatal clinic of (Begashaw et al., 2017) on a

sample of 392 pregnant women, Mothers answered for each components identified place for your recent birth (51%), identified skilled birth attendant (72.2%), saved money (26.5%), identified means of transport to place of delivery (61.5%), identified blood donor (15.6%).

Also other study which done by Edenshaw et al (2018) to assess the practice of birth preparedness and complication readiness and associated factors among pregnant women in Tehuledere district, northeast Ethiopia. All of the respondents reported that they had information about (20.8%) of the women identified potential blood donors, (78.2%) identified a health facility for delivery, (35%) identified a skilled birth attendant, (67.2%) saved money for delivery, (40.4%) determined mode of transport.

The result of present study shows that high knowledge about components of BP/CR was associated significantly with age ($p = 0.041$) while no significant association was detected with mother's education, father's education, mother's occupation, father's occupation, residency and type of family. Finally, regarding the distance to the health care facility, 67.5% of the women who live near the health care facility (< 30 minutes) had high level of knowledge, compared with 50.3% of the women who live in places far from the health center ($p = 0.003$). This result agreed with of the study done by Nkya (2017) who mentioned that there was no statistically significant association of knowledge on components of BP/CR with demographic characteristics such as age, education level and occupation but who found

was associated significantly with time taken to reach the health facility ($p=0.022$).

Maroof et al., (2017) conducted a study to assess level of awareness of BP/CR of expectant mothers visiting rural health center, Mandra, Pakistan. they found that there was a high significant association sociodemographic factor such as participants' education occupation's husbands with BP/CR. however, family system was not significantly associated to BP/CR.

CONCLUSION

In the study, although Majority of the pregnant women within third trimester had good knowledge on most of components of BP/CR and key danger signs during pregnancy, childbirth and delivery but no significant association between the knowledge about the danger signs with most the studied factors.

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