

Level of birth preparedness for complication readiness plan and associated factors among women who gave live birth in Bahir Dar, Amhara regional state, Ethiopia, 2018

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Research article

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Abstract

Background Birth preparedness and complication readiness is a safe motherhood strategy that addresses delays that could raise the risk of dying in pregnancy, childbirth and the immediate postpartum period. About 800 ladies pass daily due to pregnancy or childbirth-related complications worldwide. Nearly all maternal passing's 99% occurred in low- and middle-income countries and more than half of these death happen in sub-Saharan Africa. So, the main objective of the study was to assess the level and factors associated with birth preparedness and complication readiness plan among women who gave live birth during the last one year in Bahir Dar City. Methods A Community based cross-sectional study design was conducted from May 10-30/2018 in Bahir Dar City. Study participants were recruited by using a systematic random sampling technique. A pre-tested questionnaire was used to collect the data. The collected data were coded, entered and cleaned with EpiData version 3.1 and analyzed using SPSS version 23. Multivariable logistic regression was conducted to identify factors associated with Birth preparedness and complication readiness. The adjusted odds ratio with a 95% Confidence interval at a 5% level of significance was used to measure the strength of association. Result a total of 328 mothers with a response rate of 93.98% response rate. 46.65% of respondents were found in 18-24 years of age group. From the total respondents, 59.1% had good practice towards birth preparedness and complication readiness plan. Only 36% and 34.3% of respondents have good knowledge about pregnancy danger signs and labor danger signs, respectively. Mothers Age (18–24) years [AOR=0.013; 0.001,0.228], Primary and below education level [AOR=0.01; 0.001, 0.038]; monthly income(<500 birr) [AOR=0.001; 0.001, 0.840], parity(1-2) [AOR=0.052; 0.007, 0.410], and family size (1-3) [AOR=0.048; 0.005, 0.432] were statistically significant associated variables with birth preparedness and complication readiness plan. Conclusion Extent of birth preparedness and complication readiness plan was found to be low as per government require. Maternal Age, Education, Monthly Income, Parity, and Family size were variables that affect birth preparedness and complication readiness plan significantly. Key Birth preparedness, complication readiness, women live birth, Bahir Dar

Background

Birth preparedness and complication readiness (BPCR) may be a technique to advance the timely use of skilled maternal care, particularly during childbirth and it is based on the hypothesis that planning for childbirth reduces delays in obtaining this care. It is additionally the method of arranging for ordinary birth and foreseeing the activities required in case of an emergency. Complication readiness raises mindfulness of danger signs among women, families, and communities and plans them to respond in a legitimate way during emergencies(1).

Around the world 800 ladies pass on each day due to pregnancy or childbirth-related complications. Nearly all maternal passing's (99%) happen in developing nations and more than half of these passing's happen in sub-Saharan Africa(2). A different study in Ethiopia showed that the maternal mortality rate is found at its highest level (3), (4), (5), (6).

A study conducted in Adama town, Ethiopia, revealed that women education status, husband education status, husband occupation, family size, parity, the experience of stillbirth and women who heard the term birth preparedness were significantly associated with birth preparedness and complication Readiness plan(7).

In the last five years, considerable efforts have been made within the wellbeing benefit in arrange to address the request of pregnant and conveying ladies to deflect dreariness and mortality during pregnancy and deliver. Indeed, in spite of the fact that there's a significant lessening in maternal mortality; still Ethiopia is one of the countries with an excess of maternal deaths(3), (4), (5). Therefore, this study determined the level and factors associated with birth preparedness and complication readiness plan among women who gave live birth during in the last one year in Bahir Dar City, Amhara Regional State Ethiopia.

Methods And Materials

Study setting and design

The community-based cross-sectional study design was conducted at Bahir Dar city from May 1st –30th /2018. Bahir Dar City, the capital city of Amhara National Regional State, is located about 565 km North West away from Addis Ababa, the capital city of Ethiopia. According to the Bahir Dar city 2017/18 annual population estimation, a total of 221,991 population of which 52,345 women of reproductive age (15–49 years) were registered. According to Bahir Dar town health office annual health service delivery report, 2017. The city has three hospitals (2 public and one private), 10 health centers, 10 health posts, and 13 medium clinics.

Sample size determination and sampling technique

The sample size was determined by using a single population proportion formula with the following assumptions 95% confidence level, 5% margin of error, 29.1% prevalence of Birth Preparedness and Complication Readiness plan(7). Considering the above assumptions and 10% non-response rate the final required sample size became 349 study participants.

The first number of all women who have live birth in the past year in 9 sub-cities were identified. Then the calculated sample size was distributed proportionally to these nine sub-cities. Then the study participants were selected by a systematic sampling technique following the interval determined by dividing the total study participants into each sub-cities to the sample sizes. The first household from each sub-city was selected by the lottery method. This was done by identifying the center of the sub-city and spinning the pen and following the tip direction of the pen. Then in each household, one mother who gave live birth within a year preceding the survey was interviewed and two visits were made for absences in the first visits. If there were two mothers who gave live births within a year preceding the study, one mother was selected randomly. All mothers who gave live birth within one year and reside at least 6 months in the city preceding the data collection were considered as study population whereas mothers who were sick, mentally ill and who were not able to communicate were excluded from the study.

NB. Each sub cities have different K^{th} value to select study participants systematically from each sub-cities.

Data Collection

A pretested interviewer-administered structured questionnaire developed by reviewing different literature was used to collect the data. The questionnaire has socio-demographic, obstetric and practices about complication preparedness and readiness plan characteristics. It was first prepared in the English language and then translated into the local language (Amharic) and finally back to English to maintain its consistency. Finally, the data were collected using the Amharic version questionnaire. To assure the quality of the data and to make sure that all assessment team members were able to administer the questionnaires properly, a total of three days of rigorous training of enumerators and supervisors was given. Before the actual data collection work, data collectors and supervisors carried out role play practices and then had field pre-test activities. The data collectors and supervisors were BSc holders in nursing. At the end of every data collection day, each questionnaire was examined for completeness and consistency by the supervisors and the principal investigator, and pertinent feedback was given to the data collectors and supervisors.

Operational Definition

Skilled health providers: Are those professionals with midwifery skills (Physicians, Nurses, Midwives, and Health Officers) who can manage normal deliveries and diagnose, manage or refer to obstetric complications.

Knowledge of signs and symptoms of pregnancy: A woman was considered as having “good Knowledge” on pregnancy signs and symptoms if she scored above the mean and adjudged as having “poor knowledge” if she scored less or equal to the mean value after the variable was computed.

Knowledge of key danger signs of pregnancy: A woman was considered as having “good Knowledge” on key danger signs of pregnancy if she scored above the mean and adjudged as having “poor knowledge” if she scored less or equal to the mean value after the variable was computed.

Knowledge of key danger signs of labor: A woman was considered as having “Good Knowledge” about labor danger signs if she had scored above the mean and adjudged as having “Poor Knowledge” if she scored less or equal to the mean value after the variable was computed.

The practice of Birth Preparedness and Complication Readiness plan: A woman was considered as having “good Practice” on birth preparedness and Complication Readiness plan if she had scored above the mean, and adjudged as having “poor Practice” if she scored less or equal to the mean value after the variable was computed.

Data Processing and Analysis

Data were checked for its completeness, coded, entered and cleaned using Epi Data version 3.1 and exported to SPSS version 23.0 for logistic regression analysis. Descriptive summaries such as frequencies, proportions, percentages, mean and standard deviations were determined. For determinant variable identification, first bivariable logistic regression analyses were carried out to identify candidate variables for the multivariate model at P-value < 0.20. Then, to identify significantly associated factors of the dependent variable that were significantly associated with the dependent variable in the bivariate models were entered in the multivariate logistic regression model. At this step, model fitness and the presence of multicollinearity were assessed.

Adjusted odds ratio (AOR) with 95% Confidence interval (CI) at 5% level of significance was used to measure the strength and significance of the association. Hosmer and Lemeshow goodness of fit test was used for checking the logistic regression model fitting assumption.

Result

Socio-demographic characteristics of respondents

The study finding revealed that out of 349 total participants, 328 mothers have participated in the study with a response rate of 93.98% who gave live birth within the past one year preceding the data collection. The majority of them (46.65%) were found within the age range of 18 – 24 years. About two-thirds of the study participants (65.5%), were currently married. Concerning to respondent's religion, the majority of the 56.4% were Orthodox Christians. More than one-third of the respondents 40.2% were attended secondary school.

Twenty-four percent of the participants were working in private organizations while a minority of them (3.4%) were employed in governmental organizations. Almost forty-one percent of women had a monthly income of 301–500 while 8.2% of women had a monthly income of greater than 1000 Ethiopian Birr. Regarding women's role in the family, 41.2% were leaders in their family, while 48.5 % had a member role in their family. Concerning to respondent's family size, the majority of them, 35.7%, had a family size of between one and three [Table 1].

Obstetric characteristics of respondents

Out of the total 328 respondents who gave completed responses, half of them were had a pregnancy of 1–2 times. Concerning parity, 46.0% of women had given birth of 1–2 times and only 3.7% of women had a history of stillbirth [Table 2].

Knowledge of Respondents about Pregnancy Danger Signs

Among all, 36% (124) of respondents had good knowledge about pregnancy danger signs. Pregnancy danger signs that were taken into consideration were vaginal bleeding, a sudden gush of blood and fluid, abdominal pain, persistent vomiting, epigastric pain, edema of leg and face, persistent headache, blurred vision and chills and fever [Figure 1].

Knowledge of respondents about labor danger signs

Among the total respondents, 34.3% (118) had good knowledge of labor danger signs. Bleeding, prolonged labor, fever and retained placenta were variables taken into consideration [Figure 2].

Practice on Birth preparedness and Complication readiness (BPCR) plan

One hundred ninety-four (59.1%) of respondents had good practice towards the BPCR plan [Figure 3].

The variables used to assess the practice of BPCR were, women identified a place of birth, identified skilled birth attendant, save money, identified ways of transport, identified blood donor, voluntary HIV/AIDS counseling and testing, prepare flour for porridge [Figure 4].

Factors Associated with Birth Preparedness and Complication Readiness plan

In the bivariable logistic regression analysis; Maternal Age, Marital status, Education, Occupation, Monthly Income, Gravidity, Parity, and Family Size were found to be significantly associated with the BPCR plan. However, in the multivariable logistic regression, Maternal Age, Education, Monthly Income, Parity, and Family Size show statistically significant association with the BPCR plan.

Age was one of the predictor factors for birth preparedness and complication readiness plan mothers whose Age > 25 years were 98.7% less likely to have a good practice of BPCR plan compared to having greater than 18–24 years (AOR (95% C.I): 0.013 (0.001, 0.228)).

Those mothers with Primary school and below educational level were 99% less likely to have good practice towards BPCR than Secondary and above (AOR (95% CI): 0.01(0.001, 0.038)).

Mothers whose monthly Income less than five hundred birrs were 99.9% less likely to have a good practice of BPCR compared to having greater than or equal to five thousand (AOR (95% CI): 0.001(0.001, 0.84)).

Parity was another factor that had an association with birth preparedness and complication readiness plan, Mothers who gave one up to two births were 94.8% less likely to have good practice towards BPCR compared to its counterparts (AOR (95% CI):0.052(0.007, 0.410)).

Lastly but not list, women with one to three family size were 95.2% less likely to have a good practice of BPCR compared to the family of four and above (AOR (95% CI): 0.048 (0.005, 0.432)) [Table 3].

Discussion

Scientific studies on the level of birth preparedness and complication readiness plan and associated factors among women who gave live birth are necessary to design appropriate intervention strategies. The level of birth preparedness and complication readiness plan and associated factors among women who gave live birth in Bahir Dar, Amhara regional state, Ethiopia.

This study revealed that one hundred ninety-four (59.1%) mothers who gave live birth in the past one year had a good practice on birth preparedness and complication readiness plan. This finding was in line with the study conducted in Bankura District, West Bengal (59.0%)(8). However, more mothers in the study area had good practice towards birth preparedness and complication readiness than study conducted in Oromia Region, Ethiopia (16.5%)(9), Ghana (23%)(10), Adama Town (29.1%)(7), Goba woreda, Oromia region, Ethiopia (29.9%)(11), Dire Dawa, East Ethiopia (54.7%)(12), and Chamwino district central Tanzania (58.2%)(13); respectively.

This difference might be due to the fact that this study was conducted in populations who have better access and awareness of health information including BPCR. In addition, this might be due to the fact that nowadays the government has given great attention to reducing maternal and child mortality via strengthening maternal health care services and health information communication. But greatly lower than the study conducted in rural India (62.4%)(14) Addis Ababa (68%)(15) and Kenya (70.5%)(16) respectively. This difference might be due to the fact that on these two areas the study was conducted among mothers who were Attending Antenatal Care Clinic in Health Facilities, which might increase their awareness and readiness towards BPCR.

In addition to determining the Proportion of birth preparedness and complication readiness plan, this study also assesses various factors that have a statistically significant association with birth preparedness and complication readiness plan among women who gave live birth.

Birth preparedness and complication readiness plan was significantly associated and lower among mothers whose monthly Income was less than five hundred Ethiopian birrs. This finding was supported by a study done in Robe Woreda, Ethiopia; as the monthly income of women was significantly associated with birth preparedness and complication readiness(10).

This might be due to as the monthly income of the mother advances; they might have better access to health information and is able to make them wise decision and payment on their own which in turn might increase their health care seeking behavior towards BPCR.

Mothers with a family size of three or less had statistically significantly associated and they had a lower practice of BPCR. This finding was supported by a study done in Adama Town(7). This might be due to as family size decrease; mothers' tendency to be exposed to the health information on BPCR reduced. In other words, the number of birth preparedness decrease while family size decrease.

Mothers who gave birth two or less were significantly associated and lower to have good practice towards BPCR. This finding was in line with a study conducted in Adama town(4). In contrast with this, a study conducted in Uganda showed that mothers who gave birth four times or more were significantly associated and lower to have good practice to BPCR(17). The possible justification for this finding might be due to the fact that mothers with a higher parity might face previous pregnancy and birth complications. In addition, they might have previous Antenatal visits and/or Institutional delivery which might pave the way to get health information regarding birth preparedness and complication readiness.

Mothers whose Age >25 years were 98.7% less likely to have a good practice of BPCR plan compared to having greater than 18–24 years. This study was congruent with a study conducted in Kofale District, South East Ethiopia(18). This also justified as older women may believe and had less attention to the use of modern health care due to earlier experiences.

Mothers whose education level, Primary and below were 99% less likely to have good practice towards BPCR than Secondary and above. Education and birth preparedness had a positive relationship. This finding was similar to the study undertaken in Nigeria and Thailand (19, 20). Because of more educated women were better to plan for transportation and other activities for delivery.

Mothers whose monthly Income less than five hundred birrs were 99.9% less likely to have a good practice of BPCR compared to having greater than or equal to five thousand. This evidence is consistent with a study conducted in Dale District, Southern Ethiopia(21). On the other hand, this finding contradicts the study conducted in Robe Woreda, central Ethiopia(9).

Limitations of the study

Since this is a cross-sectional study, it is difficult to establish a causal relationship between the birth preparedness and complication redness and other independent variables.

Conclusion

The practice level of mothers who gave live birth in the past year towards birth preparedness and complication readiness plan, in Bahir Dar town was found to be low as per government need. In this study Maternal Age, Education, Monthly Income, Parity, and Family Size showed significant association with BPCR.

List Of Abbreviations

AIDS: Acquired Immune Deficiency Syndrome; AOR: Adjusted Odd Ratio;

BPCR: Birth Preparedness and Complication Redness; CI: Confidence Interval;

HIV: Human Immunodeficiency Virus

Declarations

Ethics approval and consent to participate

Ethical clearance for this research was obtained from the research Ethical Review Board of Bahir Dar University College of Medicine and Health Sciences, School of Public Health. Before the beginning of data collection, permission letter was obtained from Amhara National Regional Institute of Public Health and from each concerned body prior to the data collection period. The purpose of the study was explained to the mothers and Verbal informed consent was obtained from them. Confidentiality of information was maintained by omitting any personal identifier from the questionnaires. The study participant information sheet was attached on the front page of the questionnaire and before the actual data collection process the participants were well informed and the data collection was on a voluntary basis.

Consent for publication

Written consent was obtained that the interview will be included in publications

Availability of data and material

The data can be accessed from the corresponding author with an appropriate request for research purposes only.

Competing interests

I have no competing interests

Funding

No fund was obtained

Authors' contributions

GM was involved in the design, statistical analysis, and interpretation and manuscript drafting. AF and AY were participated in this thesis research by giving suggestions, comments, supports, encouragement, and contribution from the beginning of the research proposal throughout the thesis work. All authors read and have given approval for this manuscript to be published.”

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Tables

Table 1: Socio-demographic characteristics of mothers who gave live birth within the past one year in Bahir Dar City, Amhara regional state, Ethiopia, 2018 (n=328).

Variables	Category	Frequency	Percent
Age (years)	18 - 24	153	46.65
	25 - 34	149	45.43
	≥35	26	7.93
Current Marital status	Single	73	22.3
	Married	215	65.5
	Widowed	2	0.6
	Divorced	38	11.6
Religion	Orthodox Christian	185	56.4
	Islam	130	39.6
	Others*	13	4.0
Educational status	unable to read & write	4	1.2
	Able to read and write	24	7.3
	Primary education	116	35.4
	Secondary education	132	40.2
	College and above	52	15.9
Occupational Status	House Wife	65	19.8
	Government Employee	11	3.4
	Student	42	12.8
	Daily Laborer	74	22.6
	Private Employee	79	24
	Merchant	57	17.4
Monthly Income (Birr)	< 300	83	25.3
	301-500	135	41.2
	501-1000	83	25.3
	>1001	27	8.2
Women role in the Family	Leader	135	41.2
	Member	159	48.5
	Both	34	10.4
Family size of women	One to Three	117	35.7
	Four to Six	112	34.1
	Seven and above	99	30.2

***(Jewish, the 7th day Adventist, Atheist and No religious)**

Table 2: Obstetric characteristics of mothers who gave live birth within the past one year in, B... Dar City, Amhara Regional State, Ethiopia 2018 (n=328).

Variables	Category	Frequency	Percent
Gravidity status	1 - 2	165	50.3
	3 - 4	123	37.5
	5 & above	40	12.2
Parity status	1 - 2	151	46.0
	3 - 4	135	41.2
	5 & above	42	12.8
History of stillbirth	Yes	12	3.7
	No	316	96.3

Table 3: Factors Associated with the practice of BPCR among Mothers who gave live birth in the 1 year, Bahir Dar city, Amhara regional state, Ethiopia, 2018 (n=328).

Variables	Category	The practice of BPCR plan		COR (95%CI)	AOR (95%CI)
		Poor	Good		
Maternal Age	18 - 24	7	146	1.00	1.00
	≥25	127	48	0.018 (0.008, 0.041) ***	0.013(0.001,0.228) *
Educational status	Primary and below	119	25	0.019 (0.009, 0.037) ***	0.01(0.001,0.038) ***
	Secondary and above	15	169	1.00	1.00
Occupational status	Student	32	10	0.189 (0.088, 0.406) ***	0.002(0.001, 3.52)
	Daily laborer	22	52	1.433 (0.810, 2.535)	0.925(0.023,37.71)
	Others♠	80	132	1.00	1.00
Marital status	Currently married	61	154	4.607(2.833,7.494) ***	2.23(0.017,1.141)
	Currently unmarried	73	40	1.00	1.00
Monthly Income (birr)	<500	133	85	0.006(0.001,0.043) ***	0.001(0.001, 0.84) *
	≥500	1	109	1.00	1.00
Parity	1-2	124	41	0.022(0.010,.045) ***	0.052(0.007, 0.410) **
	≥ 3	10	153	1.00	1.00
Gravidity	1-2	119	32	0.025(.013,.048) ***	0.142(0.017,1.183)
	≥ 3	15	162	1.00	1.00
Family size	1 - 3	61	56	0.734 (0.429, 1.257)	0.048(0.005, 0.432) **
	4 - 6	29	83	2.290 (1.283, 4.088) **	0.659 (0.142, 3.065)
	≥7	44	55	1.00	1.00

Significant at *P-value <0.05, **P-value <0.01 and p*** value<0.001;
Others♠ (Housewife, Government Employee, Private Employee, Merchant)

Figures

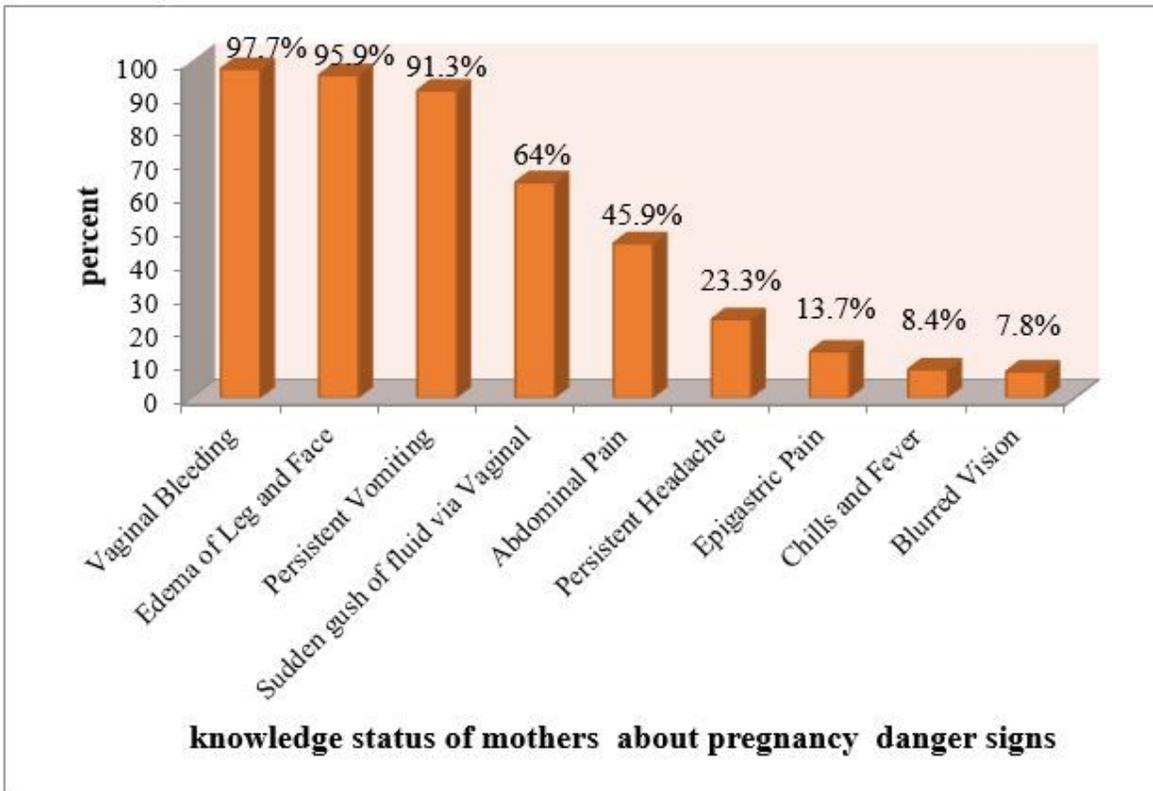


Figure 1

knowledge of mothers who gave live birth within the past one year on pregnancy Danger Signs in, Bahir Dar City, Amhara regional state, 2018(n=328)

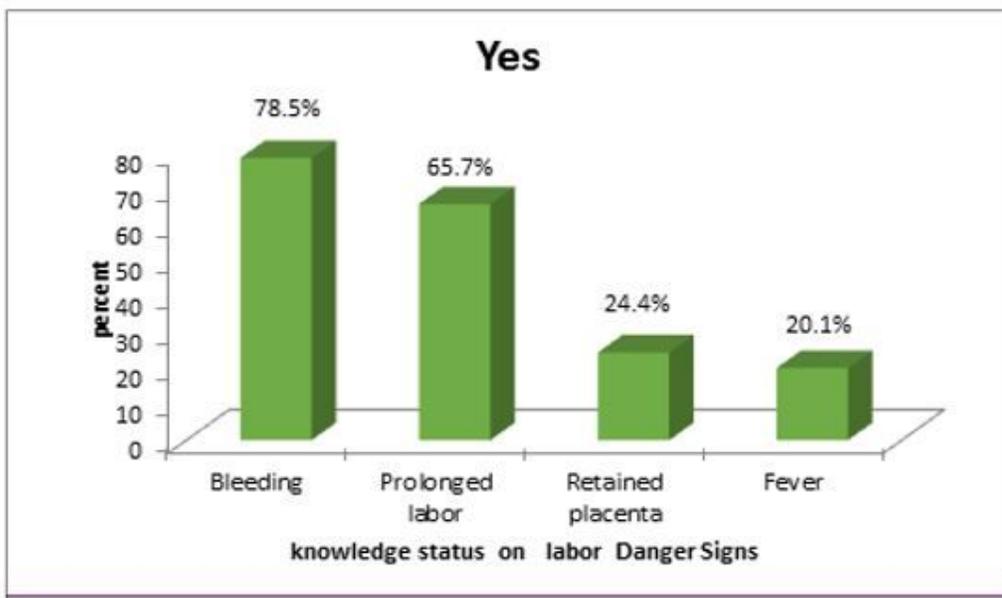


Figure 2

knowledge of mothers who gave live birth within the past one year on labor Danger Signs, Bahir Dar town, Northwest Ethiopia 2016(n=328)

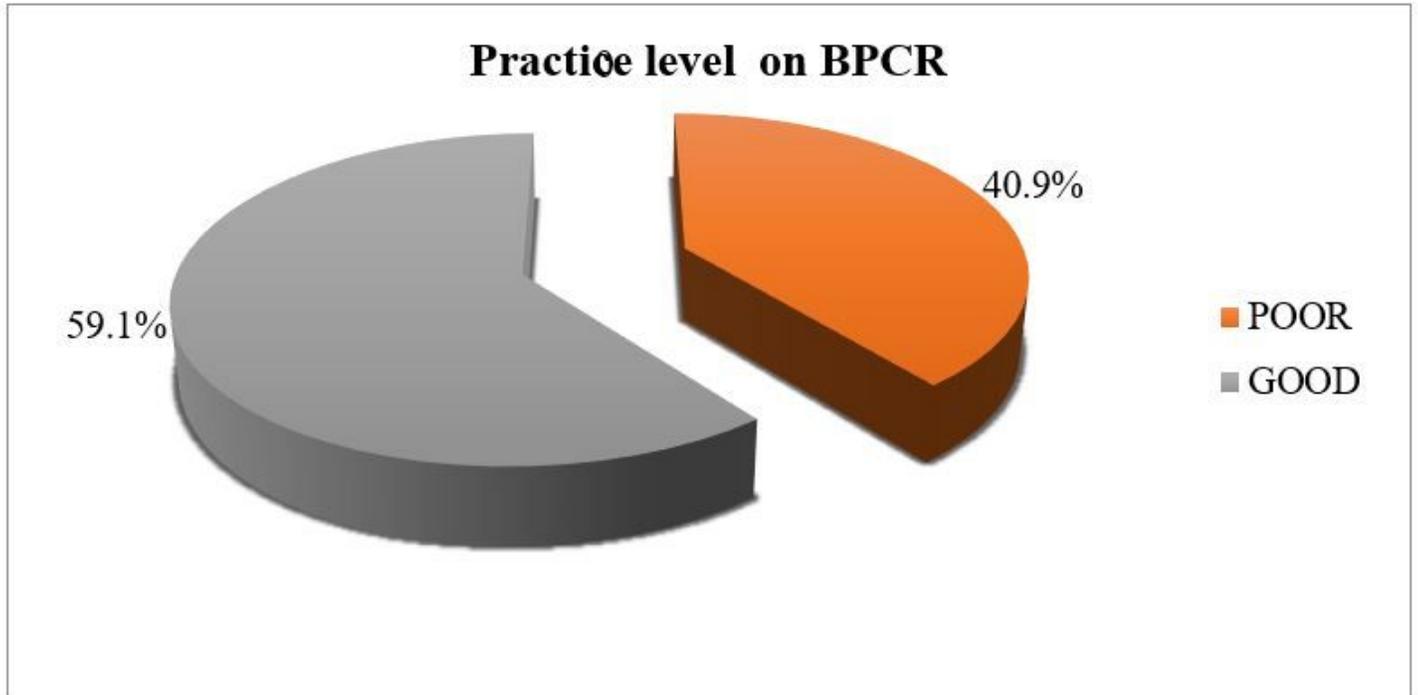


Figure 3

Grouped practice status of mothers who gave live birth within the past one year on BPCR plan in, Bahir Dar city, Amhara regional state 2018 (n=328)

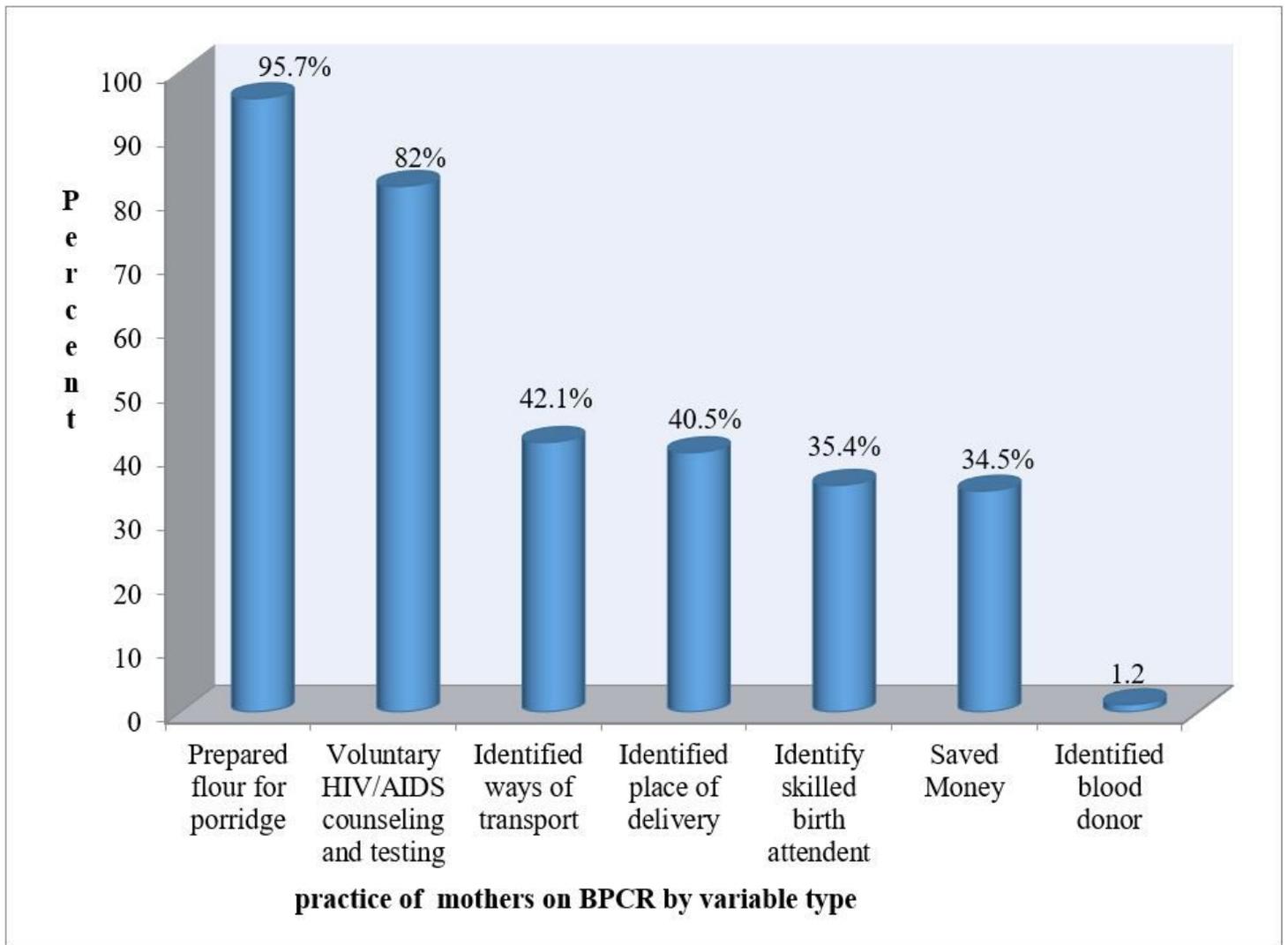


Figure 4

the practice of mothers who gave live birth within the past one year on BPCR plan in, Bahir Dar City, Amhara regional state 2018 (n=328)

Supplementary Files

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