Birth Preparedness and Complication Readiness Practice and Associated factors among Women Attending Antenatal care Follow up in Yirgalem General Hospital, Sidama Zone, Southern Ethiopia, 2019

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Research

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Abstract

Background: Birth preparedness and complication readiness is an approach that inspires pregnant women, their families and individuals to successfully design strategy for childbirths and deal with emergencies. In developing countries, world health organization estimates that more than 300 million women suffer from short-term and long-term complications related to pregnancy and child birth. In Ethiopia only 32% women have birth preparedness. The aim of this study is to assess practice and Associated factors of birth preparedness and complication readiness among Women Yirgalem General Hospital, Sidama Zone, Southern Ethiopia, 2019

Methods: Facility based cross-sectional study was conducted from September 1st to 30th, 2019. A total of 422 pregnant women were randomly selected and interviewed by using pretested structured questionnaire. Data was entered by Epi-data version 3.1 and the analysis was done by SPSS version 21. Bivariate and multivariable logistic regression was performed to identify factors associated with birth preparedness and complication readiness.

Result: From 422 study participants, 356(48.6%) (95% CI: 46.9%, 49.8%) have birth preparedness and complication readiness practice. Age of respondent ≥ 37 years (AOR =4.2, 95% C.I =1.23, 14.24) and between 25 to 30 (AOR=2.35, 95% C.I =1.1, 5.1); level of education College and above(AOR=5.59, 95% C.I 2.8, 11.2)and secondary school (AOR=9.5, 95% C.I 3.99-22); previous history of ANC follow up (AOR=4.33, 95% C.I = 2.46, 7.61) and history of birth at health facility (AOR=3.09, 95% C.I= 1.72, 5.56) where factors associated with birth preparedness and complication readiness practice.

Conclusion: Relatively higher birth preparedness and complication readiness practice was observed in this study when compared with previous studies. Health extension workers and health care provider should encouraged women to actively utilize the health services and the governments with other stakeholders should works on antenatal care and institutional delivery by focusing on women those has no formal education.

Background

Globally, more than 40 % of pregnant women may develop acute obstetrics complications. In developing countries, world health organization estimates that more than 300 million women suffer from short-term and long-term complications related to pregnancy and child birth(1). Even if global annual maternal death decrease 303,000 in 2015; from this 99% from developing country(2). Birth preparedness and complication readiness is an approach that inspires pregnant women, their families and individuals to successfully strategy for childbirths and deal with emergencies, if they occur. It is a key element of worldwide accepted safe motherhood programs(3).

Child birth is unpredictable risk generating conditions, providing timely and sufficient health care for pregnant mothers who face obstetric complication is a possibility for justifying the risk. Identifying and reducing delays in seeking, reaching and obtaining care are the key strategies for timely use of skilled

maternal and neonatal care, especially during the time of pregnancy, labor and child birth. This can be achieved by one of the essential components of a globally accepted safe motherhood program; birth preparedness and complications readiness is maternal health care services during pregnancy and for potential complications(4, 5).

Birth preparedness and complication readiness is amongst the main involvement with the objective to reduce neonatal and maternal mortality through promoting health care seeking behavior and utilization of appropriate skilled personal for delivery and health care facilities(6). The maternal and neonatal health program of Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHIEGO) developed the birth preparedness and complication readiness matrix to address these three delays; (A) is the delay in deciding to seek care for an obstetric complication; (B) Delay to go to health facility after the decision has been made to seek care; and (C) Is the delay in obtaining care once present at the facility(7). From study done in Ethiopia; age, Antenatal Care (ANC) follow up, place of residence, educational status, birth at health facility, history of still birth and knowledge of birth preparedness and complication readiness plan are factors associated with birth preparedness and complication readiness practice(8, 9).

Birth preparedness and complication readiness encourages active planning and decision making birth between women and their families and encourages to choose a skill birth attendant; arranging and identifying the appropriate health care facility; preparing transportation to health care facilities for birth and obstetrics emergencies; save money for emergency and birth expenses; identifying an individual to take care for the rest of family when the expectant mother absence; preparing any needed supplies for mother during birth and postnatal period, being aware of the expected date of birth and obstetrics danger signs(10).

Method And Material

Study setting and design

Health facility based cross sectional study was conducted in Yirgalem general hospital from September 1st to 30th, 2019. Yirgalem general hospital is located in Sidama zone, Southern Nation Nationality People Republic (SNNPR), Ethiopia. Figures from the central statistics agency of Ethiopia published in 2005 indicated that, Yirgalem has an estimated total population of 43,815 of whom 21,975 women and 21,840 are men. Yirgalem town is located at the distance of 260Km from Addis Abeba the capital city of Ethiopia and 40Km from Hawassa the capital city of SNNPR. The study was carried out among pregnant women attending Ante Natal Care(ANC) in Yirgalem general hospital from September 1st to 30th, 2019(11).

Source and study population

All pregnant women who came to Yirgalem general hospital for ANC visit was source population and all pregnant women who fulfill the inclusion criteria and selected pregnant women was study population.

Eligibility criteria

Pregnant women who can hear and communicate and who are volunteer to participate are included and a Pregnant women with mental problem or seriously ill/ unable to hear and speak was excluded.

Sample size determination and sampling procedure

The sample size was estimated by using sample size determination for a single population proportion formula. Therefore, the total sample size was calculated with the marginal error of 0.05, with 95% confidence interval and p-value 48.5% from study conducted in Sodo town, Wolaita Zone, SNNPR, Ethiopia(12). A possibility of 10 % of the total sample size was considered for non-respondents. And the final sample size was 422.

Data collection procedure and instrument

Data was collected by face to face interview method with structured questionnaire and subjects were selected by systematic random sampling technique. The questionnaire was first developed in English and translated into Amharic; which include; socioeconomic and demographic characteristics, obstetric, health services related factors, means of information, and availability of transport. The questionnaire was taken from maternal and child health program of Johns Hopkins Program for International Education in Gynecology and Obstetrics. The outcome of this study this study is practice of birth preparedness and complication readiness(7).

Operational definition

Birth preparedness and complication readiness: A women was considered as prepared for birth and its complication if she save money for birth-related and emergency expense; identified place of delivery; skill birth attendants; arrange transport to health institution for delivery and obstetric urgent situation, and prearranged blood donor in cases of obstetrics emergency. The 5 variable were transformed on SPSS in to one variable that is "Birth preparedness and complication readiness practice" women who found at least 3 of the 5 Birth preparedness and complication readiness component were considered as" prepared for birth and its complication" coded as 1. The remain women who found less than three were considered as "not prepared for birth and its complication" and coded as 0. This scoring has been previously used in studies that assessed women's Birth preparedness and complication readiness practice(12-14).

Data processing and Analysis

Data was checked for completeness and entered in to Epi data version 3.1 and SPSS window version 21 was used for analysis. Descriptive analysis was done and results were presented in the form of narrative and table. Bivariate and multivariable logistic regression was done to identify factors associated with

birth preparedness and complication readiness. All variables with p-value less than 0.25 in bivariate logistic regression model were entered to multivariable logistic regression model for controlling possible confounding and variable with p-value less than or equals to 0.05 in multiple logistic regression model were considered as statistically significant.

Result

Socio demographics characteristics

Data were collected from 422 pregnant women who come for ANC follow up in Yirgalem general hospital during study paired with response rate of 99%. The mean age with $\pm$ standard deviation (SD) of respondent age was 26.3 ± 6.2 years. Among the respondents 65(15.4%) of respondents were aged 18-24 years old and 254(59.7%) and 138(32.7%) were no formal education. Majority of the respondents 398(94.3%) were married (table 1).

Table 1: socio-demographic characteristics of women attending ANC follow up in Yirgalem general Hospital, Sidama Zone, Ethiopia; 2019 (n=422)

Variable	Birth preparedness and complication readiness	
	No	Yes
	Frequency (%)	Frequency (%)
Age of respondents		
18-24	38(58.5)	27(41.5)
25-30	128(50.8)	124(49.2)
31-36	43(57.3)	32(42.7)
37-44	8(26.7)	22(73.3)
Level of education		
No formal education	100(72.5)	38(27.5)
Primary education	65(54.2)	55(45.8)
Secondary education	12(24)	38(76)
College and university	40(35.1)	74(64.9)
Occupation		
House wife	128(60.4)	84(39.6)
Farmer	23(29.9)	54(70.1)
Merchant	43(55.1)	35(44.9)
Government employee	3(25)	9(75)
Private employee	20(46.5)	23(53.5)
Estimated monthly income (ETB)		
>500	151(55.3)	122(44.3)
500-3500	45(43.3)	59(56.7)
3600-7000	21(46.7)	24(53.3)
Current marital status		
Married	202(50.8)	196(49.2)
Not married	10(52.6)	9(47.2)
separated	5(100)	0(0)
Age at first marriage		
None	8(50)	8(50)
14-18	131(52)	121(48)

19-25	67(55.8)	53(44.2)
26-32	6(25)	18(75)
33-40	5(50)	5(50)
Educational level of husband		
No formal education	116(68.2)	54(31.8)
Primary education	25(33.8)	49(66.2)
Secondary education	34(40)	51(60)
College and university	42(45.2)	51(54.8)
Occupation of husband		
No work	16(76.2)	5(23.8)
Farmer	65(45.1)	79(54.9)
Merchant	60(55.6)	48(44.4)
Government employee	11(31.4)	24(68.6)
Daily laborer	45(64.3)	25(35.7)
Other	20(45.5)	24(54.5)
Estimated monthly		
income of husband (ETB)	34(45.3)	41(54.7)
>500	59(45.4)	71(54.6)
500-3500	87(65.4)	46(34.6)
3600-7000	37(44)	47(56)
8000 and above		
Numbers of person live in the house hold		
None		
1-4	88(56)	69(44)
5-8	118(48)	128(52)
	11(57.9)	8(42.1)
Decision maker in the house hold		
Herself	18(54.5)	15(45.5)
Husband	48(55.8)	
Self and husband	142(48.3)	39(44.2)

Other	9(100)	152(51.7)
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Obstetrics characteristics of participants

Regarding obstetrics characteristics of participants two hundred five (48.6%) have attend ANC during last pregnancy. in related outcome face during pregnancy, 74 have face abortion, one hundred seventy eight live birth, only five still birth. 177(42%) start antenatal care during 16 week of gestation (table 2).

Table 2: Obstetrics characteristics of women attending ANC follow up in Yirgalem general Hospital, Sidama Zone, Ethiopia; 2019 (n=422)

Variable	Birth preparedness and complication readiness	
	No	Yes
	Frequency (%)	Frequency (%)
Parity		
Nulliparous(0)	68(46.3)	79(53.7)
Primiparous & multiparous(1-4)	96(50)	96(50)
Grand multiparous (≥ 5)	53(63.9)	30(36.1)
Age at first pregnancy		
<18	45(55.6)	36(44.4)
18-25	62(48.1)	67(51.9)
26-36	93(55)	76(45)
36-45	17(39.53)	26(60.47)
Outcome face during pregnancy		
None		
Abortion	53(61.6)	33(38.4)
Live birth	35(47.3)	39(52.7)
Still birth	82(46.1)	94(53.9)
Other	0(0)	5(100)
	47(59.5)	32(40.5)
Presence of pregnancy now		
Yes	212(51.5)	200(48.5)
No	5(50)	5(50)
Previous ANC follow up		
Yes	150(48.1)	162(51.9)
No	67(60.9)	43(39.9)
ANC is useful		
Yes	163(46.7)	186(53.3)
No	54(74)	19(26)
Birth at health facility		
Yes	110(41.8)	153(58.2)

No	106(67.1)	52(32.9)
Week to start ANC		
Before 16 week	40(37.4)	67(62.6)
16-28 week	97(54.8)	80(45.2)
28-34 week	67(60.4)	44(39.6)
34-40 week	13(48.1)	14(51.9)
Time of attending ANC in last pregnancy		
None		
One	49(47.1)	55(52.9)
Twice	20(69)	9(31)
Three time	26(61.9)	16(38.1)
Four and above	26(38.2)	42(61.8)
	96(53.6)	83(46.4)

Women's birth preparedness plan and complication readiness

The Birth Preparedness and Complication Readiness (BPCR) score was computed from key 5 elements of BPCR. By considering three or more steps of this 5 components, 356(48.6%) (95% CI: 46.9%, 49.8%) were found to fulfill the criteria and measured as ready for birth and its complication (table 3).

Table 3: Women's birth preparedness plan and complication readiness among women attending ANC follow up in Yirgalem general Hospital, Sidama Zone, Ethiopia; 2019 (n=422)

Variable	Frequency	Present (%)
Plan for place of delivery		
Yes	356	84.4
No	66	15.6
Plane for which place of delivery		
Home	61	14.45
Health center	135	32
Hospital	154	36.5
Couse to prefer to deliver at health facility		
None	125	29.6
Health facility is near to me	22	5.2
Give better service	222	52.6
I had better out come before	15	3.6
Health workers activity	22	5.2
I have problem with previous home delivery	16	3.8
Preparation done		
Grain for porridge	96	22.7
Cloth for new born	61	14.5
Identified helper	44	10.4
No preparation	221	52.36
Save money for previous delivery		
Yes	233	55.2
No	189	44.8
Plane for transport for emergency		
Yes	248	58.8
No	174	41.2
Prepare blood donor		
Yes	105	24.9
No	317	75.1

Persons going with you		
Husband	76	18
Relatives	57	13.5
Community emergency committee	10	2.4
Health care provider	4	0.9
None	275	65.2

Factors influencing practice of birth preparedness and complication readiness

In Multivariable regression analysis age of respondents, level of education, outcome face during pregnancy and child birth , antenatal care follow up is useful, attend antenatal care during last pregnancy and birth at health facility where significantly associated with practice of birth preparedness and complication readiness.

Birth preparedness and complication readiness practice is higher among older age group than younger age group; age group 37-44 where four time more practicing birth preparedness and complication readiness (AOR =4.2, 95% C.I =1.23, 14.24) and age group from 25 to 30 where more than two fold birth preparedness and complication readiness practice (AOR=2.35, 95% C.I =1.1, 5.1)than those with age group 18-24 years. Educational level was another significantly associated with birth preparedness and complication readiness practice. From the respondents those whose educational level is college, University and above are more than 5 time have birth preparedness and complication readiness practice (AOR=5.59, 95% C.I 2.8, 11.2) than educational level with no formal education, with secondary school more than 9 time (AOR=9.5, 95% C.I 3.99-22) more likely to have birth preparedness practice than no formal education and primary school education more than 2.8 time (AOR=2.8, 95% C.I 1.46-5.38) more likely to have birth preparedness practice than no formal education.

Another significantly associated factor with birth preparedness and complication readiness was history of antenatal care follow up; those who have previous history of antenatal care follow up have 4.33 time more likely to have birth preparedness and complication readiness practice (AOR=4.33, 95% C.I = 2.46, 7.61) than those who have no history of antenatal care follow up and from respondents who say “antenatal care follow up is useful” have 3.99 time birth preparedness and complication readiness practice (AOR=3.99, 95% C.I = 2.06, 7.72) than those who have say antenatal care is not useful. Birth at health facility was another factor have significantly associated with birth preparedness and complication readiness practice. Those who have a history of birth at health facility have more likely to have birth preparedness and complication readiness practice (AOR=3.09, 95% C.I= 1.72, 5.56) than those who have no history of birth at health facility (table 4).

Table 4: factors affecting birth preparedness and complication readiness practice adjusted for confounding variable in Yirgalem general Hospital, Sidama Zone, Ethiopia; 2019 (n=422)

Variable	birth preparedness and complication readiness practice		Crude OR (95% C.I)	Adjusted OR (95% C.I)
Age of respondents				
18-24	38(58.5)	27(41.5)	1	1
25-30	128(50.8)	124(49.2)	1.36(0.78,2.36)	2.35(1.07,5.15)*
31-36	43(57.3)	32(42.7)	1.04(0.53,2.05)	0.87(0.32,2.33)
37-44	8(26.7)	22(73.3)	3.87(1.50,9.98)	4.17(1.22(14.24)*
Respondents level of education				
No formal education	100(72.5)	38(27.5)	1	1
Primary education	65(54.2)	55(45.8)	2.22(1.32,3.73)	2.80(1.46,5.38)*
Secondary education	12(24)	38(76)	8.33(3.94,17.62)	9.52(3.99,22.68)*
College and university	40(35.1)	74(64.9)	4.862.84,8.32)	5.59(2.79,11.20)
Outcome face during pregnancy				
None	53(61.6)	33(38.4)	1	1
Abortion	35(47.3)	39(52.7)	0.91(0.49,1.9)	1.33(0.55,3.20)
Live birth	82(46.1)	94(53.9)	1.83(0.86,3.1)	3.53(1.51,8.25)
Still birth	0(0)	5(100)	1.72(1.01,2.94)	1.55(0.73,3.28)
Other	47(59.5)	32(40.5)	2.23(1.36,7.32)	
Age at first pregnancy				
<18	45(55.6)	36(44.4)	2.16(1.7,6.67)	1.76(0.44,7.00)
18-25	62(48.1)	67(51.9)	1.63(0.53,4.98)	1.01(0.26,3.80)
26-36	93(55)	76(45)	6.00(1.52,23.6)	5.67(1.14,28)
36-45	17(39.53)	26(60.47)	1	1
Previous ANC follow up				
Yes	150(48.1)	162(51.9)	3.86(1.08,2.62)	4.33(2.46,7.61)*
No	67(60.9)	43(39.9)	1	1
ANC is useful				

Yes	163(46.7)	186(53.3)	1.84(1.84,5.69)	3.99(2.06,7.72)*
No	54(74)	19(26)	1	
Birth at health facility				
Yes	110(41.8)	153(58.2)	2.83(1.87,4.28)	3.09(1.7,5.56)*
No	106(67.1)	52(32.9)	1	

*Significant association at P-value <0.05

Discussion

This study reveals that the practice of birth preparedness and complication readiness was (48.6%) (95% CI: 46.9%, 49.8%). Reported in the present study is in line with the study done in Wolaita Sodo town southern Ethiopia (8) and in rural community in southern Nigeria 48.4%(15). The similarity may be due to similarity in methodology and socio-demographic characteristics.

The finding observed in this study higher with as compared with a study done in Jimma Zone, south west Ethiopia(23.3%)(16), Dale District, southern Ethiopia (22.5%)(17), Adigrat town, North Ethiopia (22%)(18), and the study done in Goba, East Ethiopia (29.9%)(19). The difference might be due to the time, the current study conducted after a lot of work done by multi-sectoral collaboration to enhance mother birth preparedness and complication readiness through one –to- five networks health extension workers.

Birth preparedness and complication readiness practice is higher among older age group than younger age group; age group ≥ 37 where four time (AOR =4.2, 95% C.I =1.23, 14.24) and age group from 25 to 30 where more than two fold (AOR=2.35, 95% C.I =1.1, 5.1) more likely practicing birth preparedness and complication readiness than age group 18-24. The finding is in line with the study conducted in India among women beneficiaries of selected rural primary health center of Dakshina district, Karnataka(20). The possible reason is that younger women may have no previous obstetrics complication that makes them to prepare themselves but the old women they have a history of obstetrics complication they prepare themselves for their current pregnancy (not assessed in study). This study finding differ from study conducted in Wolaita Zone, Sodo town, that indicated younger age groups are more likely to birth preparedness and complication readiness practice(12). The observed difference might be because of older women in Sodo town may be traditional and they might accept as they feel safe as they deliver at home and the older women are less likely to birth preparedness and complication readiness.

Educational level was another significantly associated with birth preparedness and complication readiness practice. From the respondents those whose educational level college, University and above are more than 5 time (AOR=5.59, 95% C.I 2.8, 11.2), educational level with secondary school more than 9 time (AOR=9.5, 95% C.I 3.99-22) and primary school education more than 2.8 time (AOR=2.8, 95% C.I 1.46-

5.38) more likely to have birth preparedness and complication readiness practice than no formal education. The finding of this study was in line with the study done in Wolaita zone, Sodo town, Southern Ethiopia and Robe Woreda, Arisi zone, Central Ethiopia (12, 21). The reason might be Education give a greater health care seeking behaviors of women and education build self-confidence and decision making ability that enhance their birth preparedness and complication readiness.

History of ANC has a positive association with birth preparedness and complication readiness practice; those who have previous history of antenatal care follow up have 4.33 time more likely to had birth preparedness and complication readiness practice (AOR=4.33, 95% C.I = 2.46, 7.61) than those who have no history of antenatal care follow up. This study is in line with a study done in Adigrat town, Ethiopia and Wolaita Zone, Sodo town, southern Ethiopia(12, 22). The reason might be during ANC the health provider gives health education in birth preparedness and complication readiness and their previous exposure will increase women's knowledge and practice. Women who say "ANC is useful" have 3.99 time more likely to have birth preparedness and complication readiness practice (AOR=3.99, 95% C.I = 2.06, 7.72) than those who have say antenatal care is not useful. This is due to if they agree as ANC is useful, they have birth preparedness and complication readiness.

Birth at health facility was another factor have significantly associated with birth preparedness and complication readiness practice. Those who have a history of birth at health facility have more likely to have birth preparedness and complication readiness practice (AOR=3.09, 95% C.I= 1.72, 5.56) than those who have no history of birth at health facility. The finding of this study is similar with study done in Dale District, Southern Ethiopia(23). The reason might be their contact to health institution help the women to get health education for birth preparedness and complication readiness practice.

This study has a few limitations. First it is institution based study that addresses only women who come to health institution those women who doesn't come to health institution missed to assess their birth preparedness and complication readiness practice. The cross sectional nature of this study may not elucidate temporal relationship between the dependent and independent variable.

Conclusion

Relatively higher birth preparedness and complication readiness practice was observed in this study when compared with previous study. age of respondents, level of education, age at first pregnancy, outcome face during pregnancy and child birth, previous antenatal care follow up and birth at health facility were found to be significantly associated with birth preparedness and complication readiness practice.

The government has to work in collaboration with different stockholder universal coverage of education and health education by strengthen the communication system with community to increase BPCR practice and focus on younger women and increase ANC follow up and institutional delivery coverage from health care provider also expected to do not miss the opportunity to disseminate all information related BPCR practice.

Abbreviations

AOR: Adjusted Odd Ratio; ANC: Ante Natal Care; BPCR: Birth Preparedness Complication Readiness; ETB: Ethiopian birr; JHIEGO: Johns Hopkins Program for Institutional Education in Gynecology and Obstetrics; SNNPR: Southern Nation Nationality People Republic

Declarations

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Availability of data and materials

All data and materials are available in the manuscript

Authors' contributions

MM wrote the proposal, participates in data collection, data analysis and wrote the manuscript WA made some revision on proposal; participate in data analysis and manuscript preparation.

Ethics approval and consent to participate

Ethical approval was obtained from Wolaita Sodo University College of health science and medicine Ethical review board. Permission was obtained from Yirgalen town health office and Yirgalem Hospital. The purpose and objective of the study was well explained to study participants and they were informed about their full right to withdrawal or discontinue participation at any time they want. In addition privacy and confidentiality of participant was kept.

Consent for publication

It is not applicable

Computing interest

The authors declare that they have no competing interests

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