Research Article

"What you are asking is not what we are told to prepare": A community-based study of Birth preparedness and complication readiness among postpartum women in a rural district, northern Tanzania

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Abstract

Background: This study aimed to assess knowledge and practice of birth preparedness and complication readiness among women in a rural district, northern Tanzania.

Methods: A community-based, cross-sectional study was conducted in July 2019, among women who delivered in the 24 months prior to the study. A validated maternal neonatal program JHPIEGO tool was translated, modified and used for data collection through face-to-face interviews.

Results: A total of 372 women participated; the mean age was 28.5 (S.D 7.1) years. Among these, 93.3% reported they were counseled on BPCR plan. A majority (96%) were counseled to prepare birth materials, 26.9% to prepare money, 13.2% counseled to prepare transport and 1.1% informed on choosing birth attendant. (95.7%) prepared birth materials (clothes, gloves), 30.1% prepared money, 8.1% prepared transport and 2.7% prepared blood donors. Only 13.7% of the women prepared ≥3 components of BPCR plan.

Counseling for danger signs during pregnancy was associated with having a BPCR plan (p= 0.003). Preparing ≥3 components was significantly associated with postnatal care use (p=0.005), but not with 4+ ANC visits (p = 0.875) or SBA use (p=0.057).

Conclusion: Women are counseled on birth preparedness but not on components that can save lives in case of complications. The need to change counseling on birth preparedness plan is required.

Keywords: Prevalence, birth preparedness and complication readiness, BPCR, counseling, childbirth, danger signs, Tanzania

Introduction

Globally 814 women die every day from preventable causes of death following pregnancy and childbirth. Sub Saharan Africa contributes 86% of the global maternal deaths. Obstetric complications account for 75% of the maternal deaths. Majority of these deaths occur in low- and middle-income countries of which 94% are preventable (Say et al., 2014; World Health Organization, 2022). In Tanzania maternal mortality remains high at 524 per 100,000 live births as of 2021 (Ministry of Health et al., 2016; Limenih, Belay and Tassew, 2019; World Bank, 2022). The use of skilled birth attendants during delivery and delivering at health facilities is among the indicators towards reducing maternal deaths by 2030 according to SDG 3.1, SBA coverage in Tanzania is increasing but remains lower than the global target at

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65% as of 2016 (United Nations, 2015; L et al., 2016; World Health Organization, 2016; Orwa et al., 2020).

Birth Preparedness and Complications Readiness (BPCR) is among the interventions recommended by WHO to promote the increase of use of skilled birth attendants and health facilities during delivery(World Health Organization, 2015; Solnes Miltenburg et al., 2017; Obionu, Ajuba and Aguwa, 2022). BPCR plan involves several items that mothers have to prepare including the desired place of birth, the preferred birth attendant, the location of the closest facility for birth , funds for any expenses related to birth; supplies and materials necessary to bring to the facility, an identified labor and birth companion, an identified support to look after at home and other children (if present) while the woman is away, transport to a facility for birth and identification of compatible blood donors in case of complications (Solnes Miltenburg et al., 2017; Smeele et al., 2018; Shimpuku et al., 2021).

There is limited information on BPCR knowledge and practice among women in Tanzania. The demographic health survey shows that despite 84.8% of women are being informed about BPCR during ANC visits during pregnancy, only 58.2% were prepared for birth and its complications. This low practice is similar to studies done in countries such as Kenya , Rwanda , Nigeria and Ethiopia (Smeele et al., 2018; Limenih, Belay and Tassew, 2019; Orwa et al., 2020; Obionu, Ajuba and Aguwa, 2022). Furthermore, pregnant women in urban areas perform the recommended ANC visits compared to rural settings hence even maternal mortality is higher in rural than in urban areas. (Ministry of Health et al., 2016; Obionu, Ajuba and Aguwa, 2022). Based on these findings we hypothesize that women in rural Manyara are not fully informed about BPCR during pregnancy and do not have a BPCR plan during pregnancy. We aim to assess the training and practice of BPCR among women in a rural, Manyara, Northern Tanzania and furthermore to analyze the association of BPCR planning and the use of services among women.

Subjects and Methods

Study Design and study site

This was a community based cross-sectional study conducted in 2019 at a rural district, in Manyara region, Northern Tanzania.

Study population and Sampling

The study population was 422 women who gave birth in the past 24 months prior to the study. Random sampling was used from district level to household level of which 2 wards out of 25 wards in the district and 70 households were selected.

Data collection tool and methods:

A standard validated Maternal and Neonatal health JHPIEGO questionnaire tool was used to collect data from participants (JHPIEGO, 2004). The questionnaire was translated to Swahili and pilot tested before data collection. The questionnaire was semi-structured contained open and closed ended questions and had four sections which included the socio- demographic characteristics of the participants, reproductive and maternal health characteristics of the participants, counselling on birth preparedness and the history of the birth preparedness plan of the participants during the last pregnancy. Face to face interviews were used to collect data from participants with pre-trained interviewee team. The interviews lasted about 15-30 minutes on average.

Study Variables

Dependent variables is Birth preparedness and complication readiness. Independent variables are birth materials, money for delivery, person to stay with children, transport, and place of delivery, blood donor and choosing skilled birth attendant.

Operational Definition of Variables

Women were categorized as well prepared if they prepared three or more components and not well prepared if they prepared less than three components. The term "birth materials" referred to the following items birth clothing (khangas or kitenge a cloth used to wrap the baby), wash basin (beseni), baby clothes, hat, sanitary towels (pads), makintosh (bed cover), gloves, sharps (wembe) and sometimes sutures.

Data analysis

Difference between groups and outcome variables (categorical) was first assessed using Chi-square test. In bivariate analysis, Odds Ratio with their 95% confidence interval were calculated to assess the strength of association between having a BPCR plan with socio-demographic, reproductive and maternal health characteristics.

Ethical considerations

The Research Ethical Committee at the Kilimanjaro Medical University approved the study. Permission to conduct the study at the rural communities of Manyara was granted by the District Medical Officer. The informed consent from the participant included a description of the purpose of the study, benefits, risks, right to refusal, also confidentiality and privacy was insured. We obtained a signed consent and a right thumb print for an illiterate participant.

Results

Response rate

A total of 422 women were approached but only 372 women agreed to be enrolled in the study, hence 88.1% was the participation proportion. The reasons for refusal to provide participation to the study regardless after the explanation of

the benefit of the study to the participants was lack of interest to provide their personal information, busy with household activities and taking care of babies, being in a rush to go to their daily activities.

Socio-demographic characteristics of the participants

The mean age of the 372 participants was 28.5 (S.D 7.1) years. The majority of the 372 participants were in union (86.6%), had no and/or primary education (80.1%), and were unemployed (69.1%), with 82.3% not able to estimate their income per month, Table 1. Nearly half (49%) of the women walked for < 30 minutes to reach the nearest health facility with reproductive and child health (RCH) services, and (67%) use motorcycle and/ or tricycle as common mode of transport during labor.

Reproductive and maternal health characteristics of the participants

The median parity of the 372 women was 3 (IQR 2-4). All the women attended for ANC visit at least once during last pregnancy, but 68.3% had first ANC visit at >12 weeks of gestation and 65.3% attended for four or more visits. The majority of the 372 women (70%) reported to have been counseled on danger signs of obstetric emergency during pregnancy and 85% delivered their last baby at the health facility (Table 2).

Counseling on birth preparedness

Of the 372 women, 93.3% reported to have been counseled on birth preparedness and complication readiness plan. Figure 1, shows proportion of each component that the women reported they were counseled to prepare. Majority of the women (96%) reported that they were informed to prepare several things like; child clothes, khanga or kitenge to wrap the baby when born, hat, basin to wash the baby, gloves, mackintosh to put on the bed during delivery and pads. Nearly a third (26.9%) of the women were informed to prepare money, 13% to prepare for transport and 1.1% were informed to prepare the skilled birth attendant (SBA) of their choice, (Figure 1).

Proportion of women who had BPCR plan

Most of the women prepared birth materials (like khanga, child clothes, hat, wash basin for the child and gloves) before delivery (95.7%); 30.1% prepared money, 15.1% prepared a person to take care of children when the woman is at the facility during delivery and 8.1% prepared for transport (Figure 2). No woman among the participants chose a birth attendant during delivery. Many women commented that "what you asking us on birth preparedness is not what we are told to prepare. During ANC most of the time the health providers insist to prepare baby things like gloves, clothes, what to wrap the baby once he/she is born, hat, wash basin and pads".

Of the 112 who prepared money; the median amount of money prepared was 50,000 Tanzanian shillings (IQR 30,000 – 100,000).

Of the 372 women, only 51 (13.7%) had prepared three or more components of BPCR plan, and were therefore classified as being well prepared for birth and for complications that may arise during pregnancy and/or at delivery. Figure 2;

Factors associated with being well prepared for birth and complications and its effect on maternal health service use

Bi-variate analysis was done to assess factors associated with being well prepared for birth and complications. Women aged 25-34 years had 2 times higher odds of having a well

Table 1: Background characteristics of the 372 women in a rural district, Manyara, Northern Tanzania

| Variables	Frequency	%
Age (years)		
< 20	20	5.4
20 – 29	210	56.5
30 – 39	105	28.2
40 –49	37	9.9
Marital status		
In union (married/cohabiting)	322	86.6
Not union (single/ divorced)	50	13.4
Education level		
None/ primary	298	80.1
Secondary and above	74	19.9
Employment status		
Formal employed	9	2.4
Self employed	106	28.5
Unemployed	257	69.1
Income of women per month (TZS)*		
≤70,000	50	13.4
>70,000	16	4.3
Don't know	306	82.3
Level of nearest health facility with RCH services		
Dispensary	67	18
Health centre	199	53.5
Hospital	106	28.5
Time to nearest health facility with RCH (walking)		
Up to 30 minutes	181	48.7
31 – 60 minutes	107	28.8
61 – 180 minutes	84	22.5
Mode of transport used by women during delivery (reported)		
Walking	54	14.5
Motorcycle/ Tricycle	249	66.9
Car/Tax	103	18.6

* 1 USD = 2,280 TZS during data collection

Table 2: Reproductive and maternal health characteristics of the 372 women in a rural district, Manyara, Northern Tanzania

Variable	Frequency	%
Parity		
1	89	23.9
2-3	155	41.7
4+	128	34.4
Number of living children		
0-3	256	68.8
4+	116	31.2
GA when started ANC at last pregnancy		
≤ 12 weeks	118	31.7
13 – 27 weeks	215	57.8
28+ weeks	39	10.5
Frequency of ANC visit at last pregnancy		
1-3	129	34.7
4	126	33.9
5-9	117	31.5
Place of delivery of last child		
Healthy facility	316	84.9
Home/ on the way (BBA)	56	15.1
Birth Assistant at last delivery		
Health care provider	317	85.2
TBA/relative/ mother-in-law	50	13.4
Self-delivery	5	1.3
Attended ANC with a partner		
No	139	37.4
Yes	233	62.6
Counseled on danger signs during pregnancy		
No	100	26.9
Yes	272	73.1
Counseled on danger signs before discharge (N = 316)		
No	148	46.8
Yes	168	53.2
Well prepared (prepared 3+ components of BPCR plan)		
No	321	86.3
Yes	51	13.7

BPCR plan than those aged 15-24 years (OR 2.33 [95% CI: 1.14-4.79]). All the socio-demographic factors (education, marital status, income, partner attendance at ANC) were not associated with having three or more components of the BPCR plan, Table 3. Of the facility, reproductive and maternal health factors, the level of facility where women received ANC care (p < 0.001) and report of being counseled for danger sign during antenatal care (p=0.003) were significantly associated with being well prepared with BPCR plan (Table 3). A higher proportion of women who were counseled for danger signs of obstetric emergency had BPCR plan (16.9%) compared to those who were not counseled (5.0%), [OR 3.87; (95% CI: 1.49 – 10.04)]. The 95% confidence interval for both (level of facility and counseled for DS) were wide. In logistic regression analysis level of facility where the woman received ANC and counseling on danger signs during ANC remained associated with having a BPCR plan being well prepared for birth was not significantly associated with four or more ANC visits [OR 1.07; (95% CI: 0.57 – 2.01)] or with skilled birth attendance use during delivery [OR 3.09; (95% CI: 0.93 – 10.31)]. It was however associated with postnatal care utilization within 42 days after delivery [2.39; (95% CI: 1.31 – 4.36)]. Table 3.
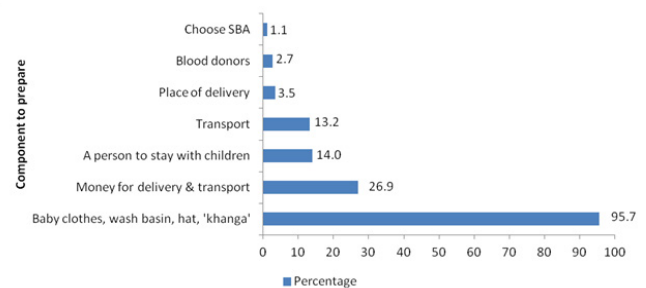
Figure 1: Proportion of women who were counseled on each component of birth preparedness and complication readiness plan at a rural district, Manyara, northern Tanzania (N = 372)
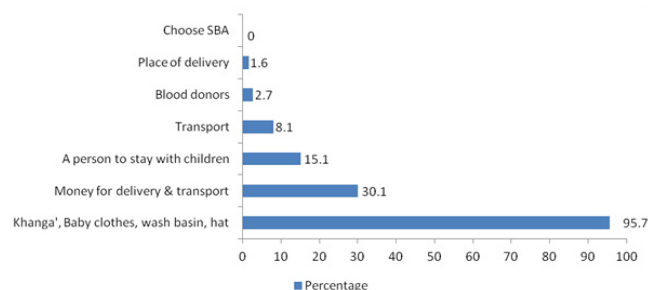
Figure 2: Proportion of women who had Birth Preparedness and Complication Readiness Plan in a rural district, Manyara, Northern Tanzania (N=372)

Discussion

In this study (93.3%) of women were counseled on birth preparedness whereby (96%)were informed on preparing birth materials before delivery and less than 3% of women were informed on choosing facility for delivery, birth attendant and blood donors. This resulted in a majority (95.7%) of women prepared materials for birth before delivery and those who prepared facility for delivery, birth attendant and blood donors were less than (5%). This is similar to study done in Southeast Nigeria where 94.1% of the women prepared birth materials as instructed (Onoh et al., 2020). This implies that women prepare accordingly to what they are informed with emphasis from the counseling by health providers. Thus,

Table 3: Factors associated with having a birth preparedness and complication readiness plan in a rural district, Manyara, Northern Tanzania

Variable		Had a BPCR plan	Association with BPCR plan	
	N	n (%)	COR (95%CI)	AOR (95%CI)
Predictors				
Age of woman (years)				
15-24	139	12 (8.6)	1	1
25-34	155	28 (18.1)	2.33 (1.14 – 4.79) *	1.70 (0.77 – 3.77)
35-49	78	11 (14.1)	1.74 (0.73 – 4.15)	1.15 (0.43 – 3.02)
Education level				
None/primary	298	41 (13.8)	1	
Secondary and above 74		10 (13.5)	0.98 (0.47 – 2.06)	
Marital status				
Not in union	50	4 (8.0)	1	
In union	322	47 (14.6)	1.97 (0.68 – 5.72)	
Income per month (TZS)				
≤ 70,000	50	5 (10.0)	1	
>70,000	16	4 (25.0)	3.00 (0.70 – 12.90)	
Don't know	306	42 (13.7)	1.43 (0.54 – 3.81)	
Time to nearest facility (walking)				
Up to 60 minutes	288	35 (12.2)	1	
61 – 180 minutes	84	16 (19.0)	1.71 (0.89 – 3.26)	
Level of facility received ANC				
Hospital	121	4 (3.3)	1	1
Health Centre	197	38 (19.3)	6.99 (2.43 – 20.10) ***	6.83 (2.20 – 18.56) ***
Dispensary	54	9 (16.7)	5.85 (1.72 – 20.00) **	5.52 (1.59 – 19.16) **
Partner attended ANC				
No	139	17 (12.2)	1	
Yes	233	34 (14.6)	1.23 (0.66 – 2.29)	
Parity				
1	89	7 (7.9)	1	1
2+	283	44 (15.5)	2.16 (0.94 – 4.98)	1.74 (0.67 – 4.49)
GA when started ANC at last pregnancy				
≤ 12 weeks	118	21 (17.8)	1	
13+ weeks	254	30 (11.8)	0.62 (0.34 – 1.13)	
Informed on danger signs during ANC				
No	100	5 (5.0)	1	1
Yes	272	46 (16.9)	3.87 (1.49 – 10.04) *	3.47 (1.32 – 9.17) *

*p-value <0.05; ** p-value<0.01; *** p-value<0.001 COR: Crude Odds Ratio; AOR: Adjusted Odds Ratio

women are not well informed about all components of BPCR and more emphasis is put on certain components of BPCR such as birth materials, resulting in a lower proportion of women who are well prepared for birth and its complications. Hence, interventions are required to improve counseling on BPCR.

Overall 13.7% of women were well prepared for birth and its complications, this proportion is lower than in studies done in rural Rwanda 22.3% , Nigeria 25.7% and Ethiopia 34% (Smeele et al., 2018; Limenih, Belay and Tassew, 2019; Obionu, Ajuba and Aguwa, 2022). This might be due to the differences in study settings and level of literacy among women in the areas. The low proportion of women who were well prepared implies that there is still work to be done to increase Birth preparedness in some of the regions in Tanzania, a study done in central Tanzania showed majority (86.2%) of women were well prepared for birth and its

complications (11) but this is not the case in other parts of Tanzania such as Manyara. More interventions are required to improve BPCR coverage throughout the country.

In our study having middle age of 25-34 among women was found to be an important factor associated with being well prepared for birth than those aged <25 years and >35 years of age. This is similar to study done in Nigeria which also found participants aged 25-29 are associated with being well prepared for birth. Although this is different to study done in in Southern Ethiopia a community based study that showed having a young age of 15-24 was more likely to be prepared for birth than others. This difference may be due to age between 25-34 years tends to have experienced previous pregnancies hence more aware of complications that can arise and be encountered during pregnancy, delivery and even after delivery. Also women aged above 35 years of aged tend to believe can deliver safely without assistance of health professional since they belong to traditional era when most women delivered without skilled birth assistants because of lack of health facilities. This finding stresses the importance of improved training for health providers on how to better communicate BPCR related messages with antenatal care attendants (Azeze, Mokonnon and Kercho, 2019; Onoh et al., 2020).

Moreover, being counseled for danger sign was associated with being well prepared with BPCR plan. Women who were counseled for danger signs of obstetric emergency had 3.87 times higher odds to have a BPCR plan compared to the women who were not counseled, This was similar to other studies done in Rwanda Ethiopia, and Kenya (Smeele et al., 2018; Limenih, Belay and Tassew, 2019; Orwa et al., 2020). This further stresses the importance of proper counseling of women during Antenatal Clinic to help them prepare for birth and its complications. There is a need to improve the quality of counseling in Antenatal Clinic to ensure that women are given the right information and furthermore supporting strategies such as house to house teachings and focus group discussions serving as a reminder to pregnant women to maintain flow of information.

In this study the level of education, marital status and parity was found to have no association with women being well prepared for birth. This is different from other studies done in Kenya ,Tanzania , Rwanda , Nigeria and Ethiopia (Smeele et al., 2018; Limenih, Belay and Tassew, 2019; Onoh et al., 2020; Orwa et al., 2020). The difference may be due to study settings, type of study conducted and number of participants involved in the study.

Consent to publish:

Not applicable, the manuscript does not contain any individual personal data.

Competing interests:

The authors declare that they have no competing interests.

Authors' contributions

MGM, EJS, BJL and SEM contributed to the design of the study. EJS, MGM collected the data. MGM, EJS, EJD and SEM analyzed the data. MGM, EJS, EJD, BJL, PS and SEM interpreted the results. MGM, EJS and EJD prepared the manuscript and all the other authors reviewed the manuscript critical input before submission. All authors read and approved the final manuscript.

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