Birth preparedness among recent delivered primipara's women at muhimbili national hospital, Tanzania; a crossectional study

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ABSTRACT

Background: While the adverse impact of maternal and neonatal mortality and morbidity have remained significantly higher over the years, there has been inadequate information regarding the practice of birth preparedness and complication readiness (BPCR) and associated determinants especially among women delivering for the first time. The aim of this study was to assess and establish the level of BPCR practice and associated factors among first time parturient at Muhimbili National Hospital (MNH) in Tanzania.

Methods: A cross-sectional study was conducted at Muhimbili national hospital in Dar es Salam, Tanzania. A total of 375 primiparas were interviewed from October to December 2018.Information on the level of BPCR practice and its associated determinants was obtained using a validated and pretested questionnaires. The final data was analyzed using SPSS and multivariate analysis performed to determine the factors associated with the BPCR practice. The measure of association was the Odds ratio at $P < 0.05$.

Findings: About 73.6% were practicing birth preparedness, hence demonstrated the readiness for obstetric complications. The most common practiced elements include transport services (87.5%) and identify place of birth (84.0%). The less common practice was identification of blood donor (22.7%). The significant determinants of good BPCR practice include age > 35years AOR=5.5 95%CI(1.7–11),having a partner AOR=2.1 95%CI(1.2–4.6), having means of transport AOR=1.5 95%CI(1.2–6.1), having employment AOR= 3.3 95%CI(1.5–10.1), attending ANC in regional and referral hospital AOR=1.5 95%CI(1.2–6.6), registered ANC early (≤12weeks) AOR=1.695%CI(1.1–7.4) and having four and above ANC visits AOR=2.1 95%CI(1.7–7.5).

Conclusion: The level of BPCR in this study was high. The most practiced element was transport services. It was also observed that preparation of blood donors in this setting was low and therefore much effort has to be done to sensitize health providers to deliver enough information on the importance of having a blood donor.vi

Key words; Birth preparedness and complication readiness, Muhimbili National Hospital

Introduction

Birth preparedness is an advanced planning and preparation for a safe delivery. It aims to promote use of skilled maternal and neonatal care during childbirth so as to reduce high burden of maternal and perinatal mortality particularly in developing countries (1).Globally, the rates of maternal and perinatal morbidity and mortality have remained consistently high despite the increase in the number of antenatal attendance and improved emergency obstetric care. Attesting to that, the World health organization (WHO) has estimated that, worldwide, approximately 830 pregnant women die every day from preventable causes of pregnancy and child birth and more than half of the death occurs in sub Saharan Africa due to variety of causes including poor BPCR(2).

In sub Saharan Africa, the practice is very low in rural areas (3-6). In some part, women still prefer home delivery and do not even attend antenatal clinics which make them unlikely to practice Birth preparedness. In a study done in Ghana which assessed birth location preferences, it was found that approximately half of women and men preferred home delivery, which resulted from lack of birth plans, practice and delayed care seeking and was associated with several cases of stillbirths and postpartum morbidities (7).

In some systematic review of birth preparedness and complication readiness, BPCR practice was associated with statistically significant reduction of maternal death and thus with adequate coverage, BPCR interventions are effective in reducing maternal mortality in low resources setting (8). Moreover, studies have found a significant close relationship between parity and BPCR among different communities. Those with parity of 2 to 4 were more likely to prepare for birth and its complications than grand multi parous and primiparas (9).

Proper antenatal care and counseling on birth preparedness and complication readiness especially among first time parturient and those attending clinic for the first time has an important role in reducing maternal mortality in all levels of the health facility. All women need access to health care and skilled health professional as timely management can make the difference between death and life. Recognizing the possible negative outcomes (death inclusive) that a sense of lack of birth prepared has imposed to pregnant women, this study

aimed at assessing the practice and determinants of birth preparedness and complication readiness among primiparas delivered at Muhimbili National Hospital in Dar es Salaam.

Methodology

Study Design and setting

This was cross-sectional hospital based study conducted at Muhimbili National Hospital in Dar es salaam, Tanzania. The hospital is the largest referral and teaching hospital with more than 1,500 bed facilities. It has maternity unit which has antenatal, and postnatal wards, labor ward, intensive care unit and neonatal unit. Using a Cochrans formula with prevalence of 63% maximum error of 5%, 95%ci and 5%non response rate the proportion of BPCR was determined.

Data Collection

Data collection was done for a period of three months from October to December 2018 by the principle investigator. The study participants were identified for eligibility into the study through the interview. A written informed consent was sought from those who met the eligibility criteria after being given detailed information about the aim of the study. Participants were recruited in the labour ward immediately after delivering and were interviewed in their respective postnatal wards by the principal investigator. Eligible respondents who came for elective caesarean section and those of emergency caesarian section were recruited and enrolled in their respective wards after delivery and recovery.

The Interview was done through a pre designed, pre tested, structured and provider administered questionnaires. Using a convenient sampling technique a total of 375 participants met the inclusion criteria and interviewed. Eighteen were excluded as they were admitted in the intensive care unit , five refused, and three participant were dropped from the study due to their unwillingness to proceed with the study.

Variables

The main outcome variable was BPCR practice among primiparas. This was measured as a binary outcome i.e. practices BPCR vs not practice BPCR. A woman was considered as being prepared for birth and its complications if she reported at least five of these characteristics: Registered antenatal clinic in the first trimester, made at least four visits, was aware of the danger signs(at least two in each category) during antenatal, postnatal and delivery, sought the health personnel on recognition of the danger signs, identified skilled health attendant, made transport arrangement to the facility, identified the place of delivery, had set aside/ saved money for delivery, was aware of the new born danger signs and had had at least two blood donors(Adopted and modified from JPIEGHO).

Overall knowledge of obstetric danger signs was dichotomized into two main categories; adequate knowledge (those who were able to spontaneously mention a total of six danger signs during pregnancy, delivery, postpartum period and newborn) and those with inadequate knowledge.

Data management

The final data was checked for completeness by the principle investigator on the daily basis until the final sample size was obtained. The coded questionnaires were entered into pre-developed data entry screens using EPIDATA version 3.02 and cleaned. The data cleaning and checking for any inconsistencies was carried out by the Principal Investigator. The final data set were exported to the SPSS computer software package for analysis.

Statistical analysis

Descriptive data analyses were conducted to obtain the summaries for categorical variables such as level of education, occupation and marital status using proportions, percentages and frequencies. Continuous variable such as age was summarized using the mean (standard deviation) and median (range).The level of BPCR practice was estimated as a proportion of primiparas who met the cut-off point of BPCR practice defined in this

study. Therefore, among the total respondents interviewed in this study, the magnitude (level) of BPCR practice was determined at MNH.

In the bivariate analysis section, the association between independent variables and the outcome variable for each of the objectives was performed. The odds ratios were used as the proposed effect measure and calculated using the binary logistic regression model and 95% confidence intervals (at $p<0.05$) to determine statistical significance.

The multivariable logistic (or log linear) regression model allowed the effect of one predictor variable on the outcome to be studied while adjusting for other variables. One variable was added at a time. The most significant variable at bivariate analysis was entered first. The p-value of <0.05 for each variable was used as a criterion for inclusion in the model. If the P-value for any variable was less than 0.05, the variable was retained in the model. On the other end, the specific variable with $P>0.05$ value, such as travel time to health facility was removed from the model. The determinants of BPCR practice was based on the adjusted odds ratios which were presented with 95% confidence intervals and p-values. A p-value of less than 0.05 was taken to represent a statistically significant association.

Ethical Considerations

The ethical clearance letter was obtained from the Senate Research and Publication Committee from the Muhimbili University of Health and Allied Sciences (MUHAS). The permission to collect data was obtained from the MNH Teaching, Research and Consultancy Unit under the Executive Director of MNH. Informed written consent from participants was sought prior to conducting the interviews. Participants were informed that they had rights to withdraw from the study any time without compromising their care. Confidentiality and anonymity was also guaranteed and systematically observed throughout the period of conducting the study.

Results

Study flow chart

A total of 375 primiparas met the inclusion criteria and were enrolled in the study, eighteen were excluded as they were admitted in the intensive care unit (severely sick) with eclampsia and other complications such as hemorrhage and cardiomyopathy. Five refused to consent despite counseling and efforts made by the principal researcher. Three participants were dropped from the study after recruitment due to their unwillingness to proceed with the study.
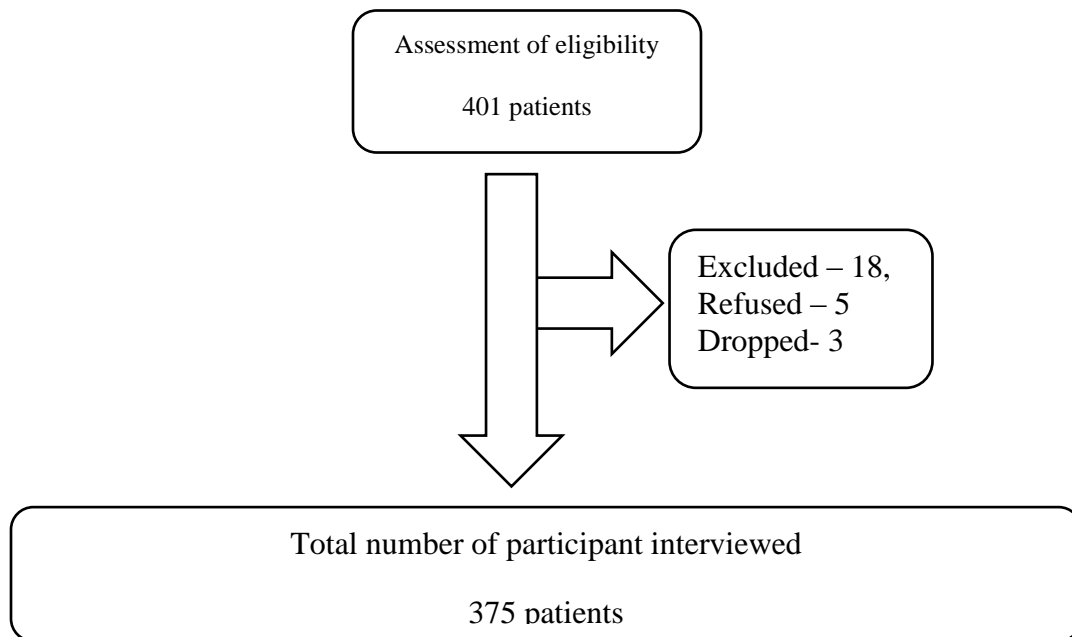

Figure 1: Study flow chart as of recruitment of study participants.

3.2 Socio-demographic characteristics;
The table below shows socio-demographic characteristics of the study participants

Table 1: Socio-demographic characteristics of the study population (n=375)

Character	Count (n)	Percentage (%)
Age (Years)		
15-24	53	14.1
25-34	308	82.1
≥35	14	3.7
Education level		
No formal education	5	1.3
Primary education	94	25.1
Secondary education	139	37.1
College	137	36.5
Marital status		
Single (Never married)	88	23.5
Married/cohabiting	273	72.8
Divorced/widowed	14	3.7
Occupation		
Not employed	112	29.9
Self-employed	142	37.8
Employed(gvt/prv)	121	32.3

The mean age of the study participant was 25years (25.38 ± 4.89) (mean ± SD). Nearly three quarter had secondary and college education. Majorities were living with partners and more than two third were employed.

Birth preparedness and complication readiness Practice

The proportion of participants who practiced BPCR was 276(73.6%).

The most common practices were transport services (87.5%) and identify place of birth (84.0%). The less common practice was identification of blood donor during time of delivery (22.7%) as shown in figure 3.
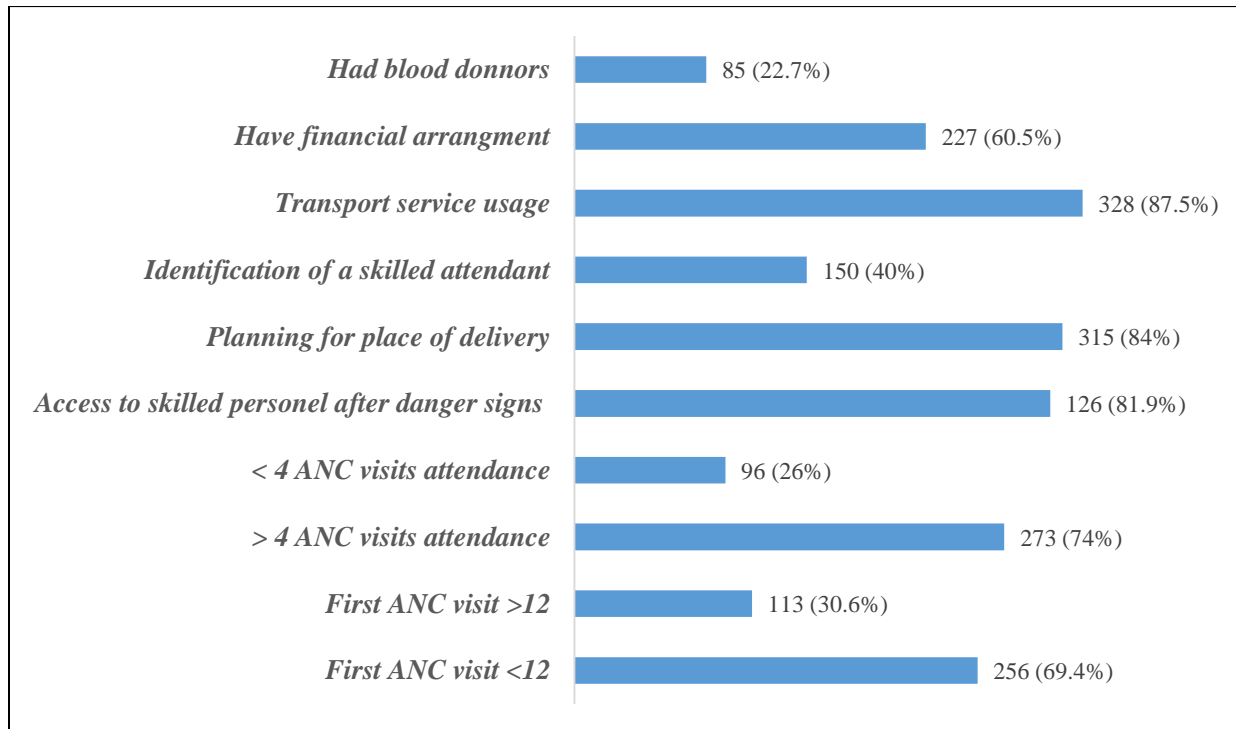

Figure 2: Mothers practice on birth preparedness and complication readiness (Multiple Response)

Table 2; Association between social demographic factors and BPCR practice (Bivariate and Multivariate analysis)

Character (s)	Frequency	COR (95% CI)	** AOR(95% CI)
Age (years)			
15-24	53	1 (ref)	1 (ref)
25-34	308	2.1 (1.1 – 3.06)	**2.4** (1.5 – 5.5)
≥35	14	4.8 (1.8 – 10)	**5.5** (1.7 – 11)
Education level			
No formal education	5	1 (ref)	1 (ref)
Primary education	94	1.4 (0.7 – 5.1)	1.7 (0.3 – 5.8)
Secondary education	139	1.5 (0.2 – 9.9)	1.3 (0.4 – 9.2)
College	137	4.8 (0.7 – 30)	4.2 (0.8 – 26)
Marital status			
Single (Never married)	88	1 (ref)	1 (ref)
Married/cohabiting	273	2.3 (1.1 – 5.2)	**2.1** (1.2 – 4.6)
Divorced/widowed	14	2.7 (0.2 – 6.6)	2.6 (0.8 – 6.5)
Occupation			
Not employed	112	1 (ref)	1 (ref)
Self employed	142	2.5 (1.5 – 6.2)	2.1 (1.3 – 4.3)
Employed (Gvt/prv)	121	3.1 (1.2 – 8.4)	**3.3** (1.5 – 10.1)
Means of transportation			
Without means	249	1 (Ref)	1 (Ref)
With means	126	1.4 (1.09 – 5.5)	**1.5** (1.2 – 6.1)

Results shows that; the odd of practicing BPCR increases with the age, participants who had partners were two times more likely to practice BPCR than those who had no partners. Also, participants who had employment and mean of transport were more likely to practice BPCR than those who had no employment and mean of transport.

Table 3: shows how obstetric characteristics affect birth preparedness and complication readiness practices. The table shows both bivariate and multivariate analysis.

Character (s)	Frequency	COR (95% CI)	** AOR(95% CI)
Registration for first ANC visit			
None	6	1 (Ref)	
≤ 12 weeks pregnancy	256	1.8 (1.1 –5.2)	**1.6** (1.1 – 7.4)
>12 weeks pregnancy	113	0.4 (0.08 – 2.6)	0.3 (0.03 – 2.3)
Frequency of ANC visits(n=369)			
<4	96	1 (Ref)	1 (Ref)
≥4	273	2.2 (1.5 – 4.6)	**2.1** (1.7 – 7.5)
Place where ANC attended(n=369)			
Primary health facilities	272	1 (Ref)	1 (Ref)
Regional and referral hospital	97	1.6 (1.1 – 3.5)	**1.5** (1.2 – 6.6)
Overall knowledge on obstetric danger signs			
Adequate	226	1 (Ref)	1 (Ref)
Inadequate	149	1.6 (0.7 – 3.4)	2.1 (0.5 – 6.9)

** For adjusted odds ratio, it has been adjusted for age, marital status, education, occupation, means of transport, gestational age at first ANC, and frequency of ANC visits, place where ANC attended and overall knowledge of obstetric danger signs.

Results from table above shows that, participants who had attended regional and referral hospital were more likely to practice BPCR by an odd of 1.5. Also, participants who had registered early for first ANC visits and those who had gone more frequent for ANC visits were more likely to practice preparedness and complication redness than those who had not.

Discussion

This study has attempted to establish the extent and determinants associated with **BPCR** practice among primiparas who delivered in a tertiary hospital in Tanzania. Approximately three-quarter (73.6%) of the participant were well prepared and hence readiness for obstetric complications. Similar findings were observed in Thailand (78.6%), in Urban India (71.5%) and in Kericho Kenya (70.7%) were BPCR practice were significantly high (7,10,11). Again the findings are not far from the study done in Singida and Dodoma which revealed more than half of the women practiced BPCR respectively (4,12).

The higher proportion of BPCR practice can be explained based on several reasons: First, the study was carried out in the urban setting where women are more likely to access health information through media, magazine and the well-trained health professionals than in other areas. Secondly, the majority of the participants were well educated much to have attained secondary and college education levels, whereas very few had no formal education.

The most practiced element was found to be preparation of transport services (87.5%) and identification of place of delivery (84.0%). Similar findings were observed in other studies in Kenya and Nigeria (10,13) which indicated more than three fourth of the respondents were able to prepare transport and identify the place of delivery. The high proportions can be justified by easy accessibility and availability of health centers and good infrastructures in the urban settings.

The study found that preparation of blood donors were poorly practiced accounting to 22.7%.Majority were not aware of the importance of having blood donors ready for donation in the cases of obstetric emergency. This was attributed by the fact that blood products and blood services are offered freely as per the government policy directives. There might also be a low sensitization of the health care providers during antenatal visits.

Results shows that BPCR practice was significantly associated with women's age, marital status,occupation and having means of transportation.The more the women's age the more the likelyhood the woman will be prepared. This relationship is consistent with findings reported in Goba Woreda in Ethiopia (14). The explanation for this finding could be due to increased knowledge of pregnancy complications in older women especially in primiparas.

Married women were two times more likely to have practice birth preparedness than unmarried women, divorced and widowed. This relationship is similar with findings reported in Thailand and Ethiopia (9,11). This can be due to improved decision making in those living with partners and increased family support in cases of obstetric emegency. Another reason could be due to increase male involvement in ANC visits which increases awareness of obstetric danger sings.Employed women were more likely to practice BPCR than those unemployed by an odd of 3.3. This can be due to improved life standard and easy accessbility to information and looking for better services in those with employment compared to those without employment.

Majority of the participants seemed much dependant on the public and private transport as a means of reaching the health facility. These two groups were shown to be more prepared than those using other modalities.Similar findings were observed in studies done in Kenya and Ethiopia (10,15,16) which show birth preparedness to be highly influenced by emegency transport arrangement.Some other studies revealed no influence in birth preparation such as that done in Nepal India (17).

Having a transport service available reduces the second delay(delay in reaching) health facility in cases of obstetric emegency and funther reducing martenal motarlity.Unlike other studies time taken to reach the health facility was not among the factors affecting BPCR(18-20). Majority of the participant were living within a walking distance to the health facility. This can be explained by the study area, being in urban where there are alot of hospitals including dispensaries, health centers, district, reginal and refferal hospitals.Some women were also moving to their relatives were they can acess health services easily in cases of emegency obstetric need.

Antenatal care reduces martenal and perinatal motality directly through detection and treatment of pregnancy related complications and indirectly through identification of women at increased risk of complications. In this study it was shown, early registration and the more the visit, the more the likelyhood of birth preparations. The odd of being prepared was two times more likely in those with more than four visits compared to the controlled group.These findings correlate with studies done in Ghana and Nigeria which shows that birth preparedness was significantly affected by the time of registration and frequency of ANC visits (16,21,22).

Having early registration, frequent ANC visits and attending reginal and refferal hospital increases chances of early detection of pregnancy complications and hence emegency readiness.This helps to reduce delays that are associated with decision making in cases of obstetric complications which futher reduces martenal and neonatal morbidity and mortality.This findings support the new WHO recomendations on increasing the antenatal visit to eight contacts as this will funther reduce the higher incidence of martenal motarlity and morbidity prevailing even in urban settings.

Despite the findings; It was noted that participant who had poor birth outcome were the difficult group to interview and so some could not be able to provide enough information due to their situations after delivery however much effort was done by principal investigator to obtain all the necessary information. Another setback was that quite majority of the patients who were encountered were those that needed special consideration as most had been referred from the lower centers. This translated that the likelihood of missing the normal cases was comparatively higher in the study but some participant who were interviewed attended ANC at MNH which can be a representative of such patients.

Conclusion

The level of BPCR in this study was high since more than three quarter of the participants had good preparations. The factors that significantly increased the level of birth preparedness include age, living with a partner; having employment, using private and public vehicles as means of transportation, attending ANC in regional and referral hospital, registered ANC early and those with frequent antenatal visits.

Despite the high levels of BPCR practice and the fact that the majority of women demonstrated the ability to attend four ANC visits as recommended by focused antenatal care, identification of skilled health personnel and preparation of blood donors were poorly practiced. Inferably, therefore, concerted efforts need to be made especially by the health providers to delivery enough information regarding above items in women attending antenatal care in every visit. Pregnant women who are delivering for the first time need to be given enough information as this can improve maternal and fetal wellbeing as well as decreasing maternal and neonatal mortality and morbidity.

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