

**The Magnitude and Determinants of Participation of Male Partners in Birth Preparedness and Complication Readiness in Two Selected Districts of Mwanza Region, Northwest Tanzania**

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**OPEN ACCESS JOURNAL****Abstract****Background**

Limited involvement of male partners in Birth Preparedness and Complication Readiness (BPCR) is one among other factors behind high maternal mortality rate in Low- and Middle-Income Countries (LMIC). This study aimed at establishing the magnitude and determinants of male partners' participation in BPCR in two selected districts in Mwanza region, Northwestern Tanzania.

**Methods**

In August 2019, a community based cross-sectional study was conducted in Magu and Misungwi districts in Mwanza region. Data were collected from 345 male respondents whose partners had given birth in the one year before the study. An interviewer-administered questionnaire was used to collect information on various components of BPCR. Univariate and multivariate analysis of factors associated with male partners' participation in BPCR were conducted.

**Results**

More than three quarters of male partners adequately participated in BPCR (76%) and the findings were comparable between the two study areas ( $\chi^2=0.01$ ;  $p=0.979$ ). The odds of male participation in BPCR were nine times higher among the married men (aOR =9.06; 95% CI: 4.12-19.96;  $p<0.001$ ) as compared to those cohabiting and eight times likely among those who were aware of BPCR as a general term (aOR = 8.15; 95% CI: 3.73-17.77;  $p<0.001$ ). Respondents who discussed with their female partners regarding BPCR had four times higher odds of participating (aOR=4.10; 95% CI: 1.79-9.36;  $p<0.001$ ) than those who never had conversation. Respondents whose female partners delivered in health facility had seven times higher odds of participating (aOR = 7.60; 95% CI: 2.06-28.04;  $p=0.002$ ) than those delivered at home.

**Conclusion**

The level of participation on BPCR among male partners was high and comparable between the two study areas. Married couple, awareness, discussion with female partners and health facility delivery predicted male participation in BPCR. Therefore, intervention targeting at knowledge and awareness improvement as well as couple discussion empowerment could markedly expand male participation in BPCR.

**Keywords:** Birth Preparedness and Complication Readiness, Male partner, Tanzania.

**Introduction**

Maternal mortality has been a challenge for many years and remains unacceptably high despite having preventable causes during pregnancy and childbirth (1). The high burden of maternal deaths is mainly experienced by low and middle income countries (LMICs) (2). The Sub-Saharan Africa region contributes 70% of the global maternal mortality ratio (MMR) with 545 deaths per 100,000 live births in 2020 (3).

Among reasons for high MMR is inadequacy or lack of birth and emergency preparedness, which is a crucial component of globally recognized safe motherhood program (4). Birth Preparedness and Complication Readiness (BPCR) is the process of planning for normal birth and anticipating the actions needed in case complications arise (4-6). It encourages active preparation and decision making for delivery by pregnant women and their respective families (7). According to Tanzania Demographic and Health Survey (TDHS), MMR has been increasing from 454 per 100,000 live births in 2010 to 556 per 100,000 live births in 2016 (8, 9). The possible root causes of MMR are delays in seeking care, reaching at health facility and receiving care (10). These delays could be reduced by male participation in birth preparedness and complication readiness as they are the main family decision makers in African settings (11, 12). Existing evidence attests to existence of male dominance in decision making related to health care but also points out the benefits of male involvement in maternal and child health services (13). When fully engaged in maternal and child health services, especially in antenatal care, men benefit from health education that helps them to make informed and appropriate health care decisions for mothers, children and for themselves. Male involvement can facilitate access to family planning services, antenatal care as well as delivery in health facilities. Others include improved postnatal care, child immunization and proper breastfeeding practices (14). In addition, male involvement can discourage unhealthy maternal and child health practices (15). Yargawa and colleagues demonstrated that male involvement is an important intervention to improve maternal and perinatal health outcomes (16). Studies conducted in Tanzania and elsewhere revealed low male participation in BPCR (17, 18).

For the purpose of improving Maternal and Newborn and Child Health (MNCH) status in Tanzania, Government and partners' efforts have been implemented in many areas (19). For instance, in Misungwi and Magu districts apart from the Countrywide Government effort, interventions addressing skills of healthcare workers, supplies and community engagement have been implemented by development partners. Misungwi and Magu districts represent areas with interventions on maternal and child health. The interventions in these two districts

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were implemented by Agriteam Health Tanzania, that covered all districts of Mwanza, “Mama na Mtoto” (Swahili term for Mother and child) project and IMPACT Aga Khan project in collaboration with Regional and Council Health Management Teams. The Mama na Mtoto project covered 45 health facilities (reproductive health clinics in hospitals, health centers and dispensaries) in Misungwi district whereas a sister project was implemented by the IMPACT Aga Khan project in Magu district covering 41 health facilities. All these interventions were implemented for the past five years and aimed at contributing to the reduction of maternal, child and newborn deaths in the Lake Zone region of Tanzania. These interventions also aimed to improve community sensitization on reproductive health through engagement of community health workers for effective delivery of maternal and child health preventive services at the household level (18).

Despite the existing efforts towards promoting male involvement in sexual and reproductive health services particularly in maternal and child health care, the involvement of men in the BPCR remains largely understudied particular in areas where health system strengthening interventions implemented. Therefore, this study aims at assessing the magnitude of male participation in BPCR and the associated factors in selected communities of Misungwi and Magu districts of the Mwanza region in Northwestern Tanzania.

**Methodology****Study design and setting**

This was a community based cross-sectional study conducted among male partners in Misungwi and Magu districts of Mwanza region, Northwestern Tanzania. According to the census of 2012, these districts had a total population of 363,452 and 299,759 respectively. Of these, 173,997 and 146,461 were males residing in Misungwi and Magu respectively. Residents of these two study areas are predominantly of Sukuma ethnicity. Generally, most people in these areas engage in farming, fishing and animal keeping. Additionally, some residents participate in artisanal and small-scale gold mining.

**Study population**

The study enrolled males whose female partners had given birth in the one year before the study period in August 2019.

**Sampling procedures of study participants and sample size**

The sample size for this study was determined using a formula for estimation of population proportion of two groups (20). With the assumption of 95% power, margin of error of 5% and

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the assumed prevalence (male participation in BPCR) of 60% for Misungwi district and 45% for Magu district were used (21). Therefore the following formula was used to calculate the sample size;  $n = \{p_1(1-p_1) + p_2(1-p_2)\} \times C_p, \text{ power} / (p_1 - p_2)^2$

Where  $p_1$  and  $p_2$  are proportions for the two populations:  $p$  value of 0.01 with  $C_p$  power of 13.0 at 95% confidence interval. Therefore the sample size value;  $n = 0.6(1-0.6) + 0.45(1-0.45) \times 13.0 / (0.6-0.45)^2 = 281$

Therefore, the minimum sample size was estimated to be 281; however, 345 respondents were involved in the study. Basing on the population size of these two districts, the study therefore recruited 185 and 160 participants in Misungwi and Magu, respectively.

To have representative sample a multistage cluster sampling technique was used. During the first stage, two districts were selected before sampling of one division per district. Out of each sampled division, one ward was randomly selected. From each ward per district, two villages were randomly selected. Misasi and Mbalika villages were selected in Misungwi district whereas Kabila and Nhaya villages were similarly sampled in Magu district. Recruitment of all households with couples that had a child aged less than one year was conducted from the village household registry. With support from the local community health workers, the randomly selected households were visited.

**Inclusion and exclusion criteria**

Males who had a child with less than one year of age during the time of study were included in the study. Participants whose female partners had attended antenatal care clinics and / or delivered in facilities other than those found in the study area were excluded.

**Data Collection**

The study used a structured questionnaire from JHPIEGO (Maternal Neonatal health program) and was modified to suit the Tanzanian context (22). The questionnaire was installed on the online data collection Kit (ODK®). The questionnaire collected data on social demographics, knowledge and attitude on BPCR, male partner participation on BPCR as well as the associated factors.

**Measurement of variables**

Male participation in BPCR as the outcome variable was measured by 10 comprehensive BPCR components. The questions included; (i) Did you identify a place of child birth?, (ii) Did you identify transport to the place of delivery in case of labor or emergencies?, (iii) Did you identify a skilled health provider who could help in case of emergency?, (iv) Did you saved

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money for delivery?, (v) Did you save money for emergency?, (vi) Did you prepare a birth kit?, (vii) Did you plan or arrange for someone to donate blood in case of emergency?, (viii) Did you plan for someone to keep your family in the absence of your wife or partner during labor or obstetric emergency?, (ix) Did you make any plan regarding the postpartum period?, (x) Did you accompany your wife to antenatal clinics?

For each item, those who responded 'Yes' scored 1 and those who responded 'No' scored 0. The total score per respondent was computed and good participation in BPCR required at least five points out of the ten (21). Poor participation in BPCR included respondents who scored at most four points (Table 4). This indicated that husbands/partners who practiced four or fewer elements of BPCR were categorized as having poor participation. Knowledge on BPCR was measured by asking the participants on components of BPCR. Participants who mentioned 4 components of BPCR were considered as "having appropriate knowledge" (17, 23). Moreover, an attitude was measured by nine statements with a maximum score of 5 per each statement (making a minimum and maximum total score of 9 and 45 points respectively). The score of 22 or less were considered as having negative attitude whereas the scores of 23 and above were considered as having positive attitude.

**Data analysis**

The collected data were entered, coded, cleaned and analyzed using SPSS® version 23. Simple frequency distributions were computed. Comparisons of the proportion of men who had some birth preparedness by each category of the independent variables were done and statistical significance was assessed using the Chi-square test and Fisher's exact. To identify factors associated with male participation in BPCR, bivariate logistic regression was used. The results were expressed as the odds ratio (OR) with 95% confidence interval (CI). Factors that were found to have a p-value of less than or equal to 0.2 in the bivariate analysis were then entered into multivariable logistic regression.

**Results****Social demographics characteristics of the study participants**

The study involved 345 participants with age ranging from 19 to 70. Their spouses' age ranged from 14 to 54 years. The mean age of study participants was higher  $35.62 \pm 9.43$  than that of their spouse  $28.01 \pm 6.631$  ( $p < 0.0001$ ). Moreover, approximately two-third (66% (230/345)) of the study participants and three quarters (76% (264/345)) of their spouses were peasants (Table 1).

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**Table 1: Social demographics of study participants in Magu and Misungwi, August 2019**

Variable	Magu		Misungwi		Total
	Frequency N=160	Percentage %	Frequency N=185	Percentage %	
<b>Age</b>	36.41±8.87		34.95±9.88		35.62±9.44
<b>Education Status</b>					
No formal education	13	46.40	15	53.60	28
Primary incomplete	22	57.90	16	42.10	38
Primary complete	96	45.50	115	54.50	121
Secondary incomplete	9	32.10	19	67.90	28
Secondary complete	17	54.80	14	45.20	31
College/university	3	33.30	6	66.70	9
<b>Spouse education</b>					
No formal education	18	40.00	27	60.00	45
Primary incomplete	16	53.30	14	46.70	30
Primary complete	107	47.60	118	52.40	225
Secondary incomplete	7	35.00	13	65.00	20
Secondary complete	11	47.80	12	52.20	23
College/university	1	50.00	1	50.00	2
<b>Occupation status</b>					
Peasant	120	52.20	110	47.80	230
Farmer	0	0.00	1	100.00	1
Business	26	34.70	49	65.30	75
Fisher	0	0.00	8	100.00	8
Employed	4	44.4	5	55.60	9
Other	10	45.5	12	54.50	22
<b>Spouse occupation</b>					
Peasant	133	50.40	131	49.60	264
Farmer	0	0.00	1	100.00	1
Business	19	35.80	34	64.20	53
Fisher	0	0.00	1	100.00	1
Employed	3	75.00	1	25.00	4
Other	5	22.70	17	77.30	22
<b>Marital status</b>					
Married	102	48.3	109	51.70	211
Cohabiting	57	43.5	74	56.50	131
Other	1	33.30	2	66.70	3

**OPEN ACCESS JOURNAL****Male participation on BPCR**

About 81% and 82% of respondents from Magu and Misungwi respectively reported to prepare birth kit as most common BPCR element. More than two-third (83% in Magu and 85% in Misungwi) of respondents reported to have escorted their wives to ANC clinic, however only 15% and 16% of the respondents identified potential blood donors who would donate blood in case of an obstetrics emergency in Magu and Misungwi respectively (Table 2). About 76 % (265/345) of the respondents scored at least five of the 10 comprehensive components of BPCR and were considered as prepared for birth and its complications whereas the rest were considered as not prepared. The BPCR participation level was comparable between the two study areas (Table 2).

**Table 2: Male participation in BPCR in Magu and Misungwi districts, August 2019**

Variable	Magu	Misungwi	$\chi^2$	p-value
	n=160	n=185		
Identified birth location	103 (64.4%)	134 (72.4%)	2.59	0.11
Identified transportation	109 (68.1%)	124 (67.1%)	0.04	0.83
Identified skilled birth attendant	17 (10.6%)	22 (11.9%)	0.14	0.71
Identified blood donor	24 (15%)	30 (16.2%)	0.10	0.75
Accompanied wife during emergency	109 (68.1%)	127 (68.6)	0.01	0.92
Identified birth kit	130 (81.3%)	153 (82.7%)	1.44	0.23
Saved money	131 (81.8%)	150 (81.1)	0.12	0.72
Planned for post-natal care	113 (70.6%)	133 (71.9%)	0.06	0.79
Identified danger signs	53 (33.1%)	64 (34.5%)	0.08	0.77
Escorted wife to clinic	133 (83.1%)	157 (84.9%)	0.19	0.66
Participated in $\geq 5$ BPCR components	123 (76.9%)	142 (76.8%)	0.01	0.98

**Factors associated with male participation in BPCR**

Bivariate analysis of factors associated with BPCR participation among male partners was done. Being married (OR = 7.74 95% CI 4.37-13.73), having formal education (OR=3.82, 95% CI 2.15-6.77), and being aware of BPCR as a general term (OR=14.53, 95% CI 7.93-26.61) were significantly associated with male engagement in BPCR. Additionally having a positive attitude towards BPCR (OR=3.43, 95% CI 1.92-6.11), having escorted a partner for ANC clinic visit (OR = 2.71 95% CI 1.47-5.01) and discussion with a partner on BPCR (OR=4.65, 95% CI 2.70-8.01) were associated with high participation on BPCR. Other factors include delivery at

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the health facility (OR=5.52 95% CI 2.26-13.46), having tested for HIV as a couple (OR=5.58 95% CI 2.65-11.76) and being married to only one partner (OR= 2.71 95% CI 1.52-4.82).

From logistic regression analysis, the odds of BPCR participation among male partners were higher among married couples (aOR= 9.06 95% CI 4.12-19.96), those married to or living with an educated female partner (aOR=2.81, 95% CI 1.15-6.82) and among those who were aware of BPCR (aOR = 8.15, 95% CI 3.73-17.77). Additionally, having appropriate knowledge on BPCR (aOR = 4.07, 95% CI 1.35-12.30), discussion with a partner on BPCR (aOR =4.10 95% CI 1.79-9.36) and delivery at the health facility (aOR = 7.60, 95% CI 2.06-28.04) were associated with higher odds of participating in BPCR (Table 3)

**Table 3: Bivariate and multivariate analysis on factors associated with BPCR in Magu and Misungwi, August 2019**

Category	Variable	BPCR participation		Crude OR	Adjusted OR
		Good n (%)	Poor n (%)		
Marital status	Cohabiting	74 (55.2)	60 (44.8)	Reference	
	Married	191 (90.5)	20 (9.5)	7.74 (4.37-13.73)	9.06 (4.12-19.96)
Study area	Magu	123 (76.9)	37 (23.2)	Reference	
	Misungwi	142 (76.8)	43 (23.2)	1.01 (0.61-1.66)	
Education	No Formal Education	36 (54.5)	30 (45.5)	Reference	
	Formal education	229 (82.1)	50 (17.9)	3.82 (2.15-6.77)	0.94 (0.38-2.30)
Education of the partner	No formal Education	47 (62.7)	28 (37.3)	Reference	
	Formal education	218 (80.7)	52 (19.3)	2.50 (1.43-4.36)	2.81 (1.15-6.82)
Awareness	No awareness	26 (34.7)	49 (65.2)	Reference	
	Aware	239 (88.5)	31 (11.5)	14.53 (7.93-26.61)	8.15 (3.73-17.77)
Knowledge	Inappropriate knowledge	190 (72.0)	74 (28.0)	Reference	
	Appropriate knowledge	75 (92.6)	6 (7.4)	4.87 (2.03-11.67)	4.07 (1.35-12.30)
Attitude	Negative	36 (56.2)	28 (43.8)	Reference	
	Positive	229 (81.5)	52 (18.5)	3.43 (1.92-6.11)	0.82 (0.32-2.11)
ANC visit with husband	< two times	163 (71.5)	65 (28.5)	Reference	
	> two times	102 (87.2)	15 (12.8)	2.71 (1.47-5.01)	1.55 (0.67-3.55)
Discussion	Had not discussed	45 (53.6)	39 (46.4)	Reference	

on BPCR with partner	Discussed with a partner	220 (84.3)	41 (15.7)	4.65 (2.70-8.01)	4.10 (1.79-9.36)
Place of delivery	Home	9 (40.9)	13 (59.1)	Reference	
	Health facility	256 (79.3)	67 (20.7)	5.52 (2.26-13.46)	7.60 (2.06-28.04)
Couple HIV testing	No	14 (42.4)	19 (57.6)	Reference	
	Yes	251 (80.4)	61 (19.6)	5.58 (2.65-11.76)	2.06 (0.65-6.59)
Time from home to health facility	< 30 minutes	205 (76.8)	62 (23.2)	Reference	
	>30 minutes	60 (76.9)	18 (23.1)	0.99 (0.55-1.81)	
Number of partners	multiple partners	40 (60.0)	26 (39.4)	Reference	
	Single partner	225 (80.6)	54 (19.4)	2.71 (1.52-4.82)	2.24 (0.98-5.13)

**Discussion**

The study assessed BPCR participation among male partners and the associated factors in an area with intensified maternal and child health promotion. Participation on BPCR was embraced by more than three-quarters of study participants, this proportion was found to be higher than that of studies conducted in Tanzania and Ethiopia whereby 12% and 45% of male partners participated respectively (17, 21). Such a high proportion could be due to time, sensitization campaigns and existence of different maternal and child health intervention in both study areas (17, 21, 24). Moreover, our study used comprehensive (5/10) components of BPCR to consider a man as prepared for birth and its complication while a study in Rufiji district in Tanzania used 3 out of 5 components and Ethiopian study used 5 of 9 components of BPCR (17, 21, 25).

Furthermore, respondents who saved money as one of the preparation for childbirth were found to be higher (81%) than the previously published studies (26, 27). This finding is in concordance with a study conducted in Ethiopia (75%) but then differ from that conducted in Rufiji Tanzania where only 47.7% of respondents saved money as part of BPCR (17, 21).

Despite the high proportion of BPCR participation among males in this study, identification of blood donor as one of the BPCR components was found to be the lowest among all the components, as only 15% of the respondents identified blood donors during ANC visits. The study findings compare well with the findings of a systemic review conducted in Ethiopia and other low middle income countries where less than twenty percent of participants prepared potential blood donors (28, 29). This shows that there is still a long way to go towards prevention of deaths from obstetrics hemorrhages as the top cause of maternal deaths

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because the patients only depend on hospital reserves in case of emergencies (28, 29). Therefore, sensitization on the importance of blood donors during ANC visits is pivotal in making sure that these preventable worse outcomes are contained on time.

Moreover, the study has found significantly associated factors with increased male participation in BPCR such as awareness, place of delivery, marital status, knowledge, discussion with a partner. Men who had discussion with their partners as well as men who identified a place of delivery were more likely to participate in BPCR. This finding is similar to the study conducted in Ethiopia whereby husbands who had discussions with their spouse and those who identified place of delivery were more likely to participate in BPCR (21). Another study conducted on male partner involvement for obstetric emergencies in rural Rwanda which is also part of BPCR, showed men with appropriate knowledge to be in the frontline for BPCR program (30). This shows that males should be well informed about the importance of BPCR and the components in order to enhance their participation. Amid of this there will be improvement in health seeking behavior among expecting couples and therefore reduction of unnecessary complications.

This study represents an effort to understand the magnitude of male participation and the determinants. We collected data from two districts with maternal and child health services from an adequate sample using validated data collection tools. In addition, the use of Online Data collection Kit® (ODK) software helped to get accurate and timely data. This study had some limitations that need to be acknowledged. Its cross-sectional nature only helps to provide a snapshot of the reality that is relevant to the study context and similar settings. Response and recall biases are potential problems which could not be completely ruled out despite our efforts to minimize by use of validated tools and by asking the questions to enhance recall.

**Conclusion**

The level of participation on BPCR among male partner was high and comparable between the two districts. Married couple, awareness, discussion with partner and health facility delivery predicted male participation in BPCR. However, positive attitude towards BPCR was high therefore, intervention targeting at improving knowledge and awareness could result into better male participation in BPCR and reduction of pregnancy related complications that are readily preventable.

**OPEN ACCESS JOURNAL****Declarations****Ethical Approval and Consent to Participate.**

Ethical approval was obtained from the Catholic University of Health and Allied Sciences Research and Ethics Committee (CREC/383/2019) and permission was sought from the local government leadership of Misungwi and Magu districts. Participants were recruited after signing an informed consent.

**Availability of data and materials**

The datasets used and analyzed during the current study is available from the corresponding author.

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**Competing interest**

The authors affirm that they have no completing interest.

**Authors' Contribution**

NMM, DM, and AK designed the study. NMM, PN, NB, ALK, SEN and AK collected data, AK and DW analyzed the data as well as interpretation of the findings. ALK, DW, NMM and AK drafted the manuscript. All authors reviewed and approved submission the manuscript.

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