

Birth Preparedness and Complications Readiness among Primigravid Women Attending Antenatal Clinic at a County Hospital in Kenya

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Introduction: Birth preparedness and complication readiness promotes maternal healthcare service utilization to ensure safe motherhood by reducing the three-delay in seeking care, reaching the health facility and receiving timely care. This study sought to assess determinants of birth preparedness and complication readiness among primigravida women in Nakuru county hospital.

Methods: A descriptive cross-sectional study design using quantitative and qualitative methods. Target population was primigravida women aged 15-49 years who attended antenatal clinic at Nakuru county hospital and nurse managers and deputies attending to them. A sample of 262 primigravida's and six key informants were interviewed using the questionnaires and key informant interviewer guide, Systematic sampling technique was used to select participants, Health belief model was used. Descriptive statistics was used to generate frequencies and proportions. Dependent variable was birth preparedness. The Chi square test was used to test the association of the independent and dependent variables at 95% confidence interval. Logistic regression was used to describe the relationships between variables. Qualitative findings comprised of coding using NVIVO 8 software into subthemes and themes respectively.

Results: Most respondents 90% had funds available for transport, 90% had identified mode of transport and the facility to deliver. Those who did not report on knowledge of danger signs during pregnancy were 21%, 86% during labour and 66% during postpartum. The predictors of adequate BP/CR included being aged above 20 years (OR 0.39, 95% CI 0.219- 6.96) and having high education level (OR 0.486, 95% CI 0.284-8.31).

From the qualitative analysis two themes emerged including the need to improve resources and health education to personnel to handle emergencies and complication at the facility.

Conclusion: The study revealed low level of knowledge on danger signs, low levels on awareness on need of blood among pregnant women attending antenatal clinics. The families of the respondents were prepared for birth and complication. There is need to improve laboratory services and avail a high dependency unit to manage complication. Provide trained staff to handle obstetric emergencies complications.

Key words: Birth preparedness, complication readiness, Kenya

Introduction

Birth Preparedness and Complication Readiness (BP/CR) is an approach that aims at raising awareness at the community level and creating a stronger demand for quality health services. Since pregnancy is perceived as an ordinary event, most families do not

plan for birth nor do they expect an emergency (WHO, 2006). Birth preparedness is one of the elements of focused antenatal care (WHO, 2006). When a pregnancy complication arises, the family is unprepared and while gathering funds, finding transportation and reaching the appropriate



health facility, time is usually wasted and, in many cases, it is too late (Markos & Bogale, 2014). Thus, it is imperative that all women and their families are equipped with adequate information about the danger signs of pregnancy complications and what actions should be taken (Markos & Bogale, 2014).

The World Health Organization (WHO, 2006) recommends that pregnant women should have a written birth plan and for dealing with unexpected adverse events, such as complications or emergencies, that may occur during pregnancy, childbirth or the immediate postnatal period. This plan should be discussed and reviewed with a skilled attendant at each ante-natal assessment and at least one month prior to the expected date of birth (WHO, 2006).

Birth preparedness promotes maternal healthcare service utilization to ensure safe motherhood by reducing the delay in deciding to seek care, reaching the health facility and receiving timely care. Recognizing its crucial role in reducing maternal and neonatal deaths, the WHO recommended and promoted BP/CR intervention as a fundamental component of the antenatal program and the integrated management of pregnancy and childbirth (WHO, 2001).

The danger signs are not the actual obstetric complications, but symptoms that are easily identified by non-clinical personnel. Information is very important in analysing the decision of whether to seek care at the health facility or not. Lack of knowledge of the recognition of danger signs and complications are less perceived severity of pregnancy-related problems and are among the factors that can extend the time to decide in seeking health care (Caulfield et al., 2016).

A birth preparedness plan includes identification of the following elements by the pregnant woman; the desired place of birth, the preferred birth attendant, the

location of the closest appropriate care facility, funds for birth-related and emergency expenses. It also includes decision-maker during birth process, a birth companion, support in looking after the home and children while the woman is away, transport to a health facility for the birth, transport in the case of an obstetric emergency and identification of compatible blood donors in case of emergency (WHO, 2006)

BP/CR interventions have therefore been embraced with varied implementation by many African countries (JHPIEGO, 2001). The BP/CR matrix delineates the roles of mothers, their partners, other family members, healthcare providers and community members involved in pregnancy, childbirth and the postpartum period. The birth-preparedness package promotes active preparation and decision-making for delivery by pregnant women (JHPIEGO, 2001).

A birth plan is expected to assist women in making choices that would contribute to good pregnancy outcome (JHPIEGO, 2001). If BP/CR is successfully implemented, it is anticipated that there will be an improvement to the maternal and neonatal health outcomes (JHPIEGO, 2001). Maternal mortality remains a public health issue all over the world and is of great significance to the health burden in many developing countries. Birth preparedness promotes maternal healthcare service utilization to ensure safe motherhood by reducing the delay in deciding to seek care, reaching the health facility and receiving timely care. Recognizing its crucial role in reducing maternal and neonatal deaths, the WHO recommended and promoted BP/CR intervention as a fundamental component of the antenatal program and the integrated management of pregnancy and childbirth (2001).

The WHO estimates that in developing countries around 300 million women suffer



from pregnancy and childbirth-related short term or long-term morbidities (Acharya, Kaur, Prasuna, & Rasheed, 2015). Maternal mortality occurs from risks that are related to pregnancy and childbirth as well as from poor availability and quality of health services (Agbodohu, 2013).

In Kenya the maternal mortality ratio is 362 maternal deaths per 100,000 live births (KDHS), 2014). In Nakuru the MMR is 374/100000 live births (UNFPA 2014). Factors that increase high mortality include limited health services, poor access and low utilization of SBA during pregnancy, childbirth and post-natal period. (Gacheri, 2018)

The study sought to assess the status, level and determinants of BP/CR among primigravida women in Nakuru county hospital to guide strategies that can be put in place to solve the challenges related to maternal mortality in the county. It is hoped that the results of the study provide valuable information for the design of possible programs, and policy interventions to improve maternal and neonatal health and serve as baseline information for further studies.

Methods

The study was an institutional-based descriptive cross-sectional study design using quantitative and qualitative methods. The qualitative study design comprised of the individual in-depth interview of key informants, the quantitative methods used a structured questionnaire.

The study took place in Nakuru county hospital. Nakuru County Hospital has a wide catchment area and attends to women within the county and those who are referred. The study included Primigravidae women between 15-49 years of age attending ante-natal clinic who formed the target population from which the sample was obtained. Nurses managers and their deputies from MCH,

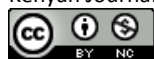
maternity theatre and post-natal were also interviewed.

All primigravida at 36 weeks gestation. Nurse managers and their deputies attending to pregnant women in MCH, maternity ward, maternity theatre were included while Primigravida who are mentally ill were excluded.

The sample size was determined using Fischer's formula where a sample of 264 was selected from Primigravidae women between 15-49 years of age attending ante-natal clinic. Systematic sampling was then used to choose the study participants. The sampling interval $(N) = \text{No of mothers} / \text{Sample size}$ that is $1000/264 = 3.7$ which is approximately 4. The number of mothers who attended the antenatal clinic at Nakuru County Hospital during the two months period of study was 2248, whereby 1200 among them were primigravida. On the first day of the study, all the clients had their attendance numbers serialized. By use of the table randomised numbers the first respondent was identified. The first and every 4th woman were interviewed if she was eligible. Replacement was done by selecting the next eligible respondent based on the interval to maintain the randomness of the sampling process until the desired sample size was achieved.

The key informants were propped by the key interviewer after having an appointment. The Key informant interviews were conducted among in-charges and their deputies from the MCH unit, maternity ward, and maternity theatre.

The data was collected between December 2018 and January 2019 by the use of structured questionnaires. However, the key informants were interviewed using the key informant interviewers guide. Two research assistants who were nurses with a Master of Science (MSc maternal and neonatal health) at Nakuru County Hospital were recruited



and trained for a week on how to recruit and administer the study tool.

Data collected was analysed by the researcher using the Statistical Package for Social Sciences (SPSS) version 20.0. Descriptive statistics was used to generate frequencies and proportions. The dependent variable was organised as a binary variable with two categories; prepared verses not prepared. Chi square at 95% confidence interval was used to test the association of the independent and dependent variable. The variables that had statistically significant association at $P < 0.05$ were subjected to logistic regression to generate the odds ratios. Qualitative findings were categorized in themes and subthemes.

Approval to carry out the research was obtained from the Institutional Research and Ethics Committee (IREC). Permission from the Medical Superintendents in-charge of the Nakuru county referral hospital. Written informed consent from the participants who agreed to participate in the study was obtained. Assent was sought for those under the age of 18 years.

Findings

Demographic Characteristics

Table 1: Demographic Characteristics of Women Attending Nakuru County Hospital MCH

Variables	Categories	Frequency n=262	Percentage %
Age	15-18 years	19	7.3%
	19-21 years	94	36%
	22-25 years	121	46%
	26-30 years	28	11%
Marital status	Cohabiting	16	6.1%
	Married	181	69%
	Single	65	25%
Education	Primary	29	11%
	Secondary	90	34%
	College	110	42%
	University	33	13%
Number of ANC visits	1	80	31%
	2	37	14%
	3	50	19%
	4	50	19%
	5	27	10%
	6	14	5%
	7	4	2%



The participants mean age was 22.3 range 15-34, standard deviation 3.099 and variance 9.6. The majority were between the ages of 22- 25 years (46%) considered to represent the age of full maturity. Married women were 69%. There were 42% of women who reported that they had attended formal

education up to college level 34% secondary and, 13% university. The percentage of women who had attended only one antenatal visit was 31%. The key informants 2 (20%) were bachelor holders while 4 (80%) were diploma holders.

Table 2: Association Between Demographic Factors and BP/CR.

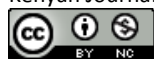
VARIABLE			Yes	No	Total	Chi square	DF	P-VALUE
Level of education	primary		9 (31.03%)	20(68.97)	29(100%)	10.483	3	.015
	secondary		20(22.22)	70(77.78)	90(100%)			
	College		40(36.36)	70(63.64)	110(100)			
	university		17(51.52)	16(48.48)	33(100%)			
age in years	15-18 years		7(36.84%)	12(63.16)	19(100%)	7.875	3	.049
	19-21 years		24(25.53)	70(74.47)	94(100%)			
	22-25 years		40(33.06)	81(66.94)	121(100)			
	26-30 years		15(53.57%)	13(46.43%)	28(100%)			

From analysis, there is association between the BP/CR and the age of the mother. This is because the chi square value 7.875 with a p-value of 0.049 which is less than 0.05 significant level.

From the analysis of the results, there is association between BP/CR and the level of education. Had a chi square value of 10.483, with a p-value of 0.015 which is significantly less than 0.05 significant level.

Table 3: The Status of BP/CR Among Primigravida Women Attending MCH in Nakuru County Hospital

Variables (Question)	Category	Frequency n=262	%	chi-square	Df	P-value																												
<i>Have you made funds available for transportation to the hospital when labor begins?</i>	Yes	235	89.7	165.13	1	0.000																												
	No	27	10.3				<i>Have you identified the mode of transportation to the hospital when labor begins</i>	Yes	227	86.6	140.702	1	0.000	No	35	13.4	<i>If yes what mode of transportation have you arranged for?</i>	Motorbike	8	3.1	127.901	5	0.000	Matatu	40	15.3	tuk-tuk	33	12.6	Taxi	73	27.9	Personal	77
<i>Have you identified the mode of transportation to the hospital when labor begins</i>	Yes	227	86.6	140.702	1	0.000																												
	No	35	13.4				<i>If yes what mode of transportation have you arranged for?</i>	Motorbike	8	3.1	127.901	5	0.000	Matatu	40	15.3		tuk-tuk	33	12.6				Taxi	73	27.9	Personal	77	29.4	Other	2	0.8		
<i>If yes what mode of transportation have you arranged for?</i>	Motorbike	8	3.1	127.901	5	0.000																												
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	tuk-tuk	33	12.6																															
	Taxi	73	27.9																															
	Personal	77	29.4																															
	Other	2	0.8																															



The study used the chi-square test of proportion to assess birth preparedness among primigravida in Nakuru County. From table above, the following factors were found to be significant when assessing the status of BP/CR; 90% had made funds available for

transportation when labor began ($p < 0.000$); 87% had identified the mode of transportation to hospital when labor began ($p < 0.000$); 30% of the women had made personal transportations; during labor ($p < 0.0000$).

The level of BP/CR in the family as reported by the respondents (women)

Table 4: The Level of BP/CR Among Family Members of Women Attending MCH in Nakuru County Hospital

Variables (Question)	Category	Frequency n=262	Percentage %	chi-square	Df	P-value
<i>Have you identified an individual who will help you care for the baby after he/ she is born</i>	No	20	8%	188.107	1	0.0000
	Yes	242	92%			
<i>Do you have someone to give you good advice when you notice a danger sign?</i>	No	18	7%	194.947	1	0.0000
	Yes	244	93%			
<i>Do you have someone to help you if you were confined to bed?</i>	Yes	252	96%	223.527	1	0.0000
	No	10	4%			
<i>Do you have someone to take you to the doctor</i>	Yes	257	98%	238.555	1	0.0000
	No	5	2%			

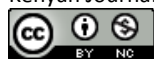
The study used the chi-square test of proportion to assess birth preparedness among primigravida in Nakuru County. From the table above 92% of women had identified an individual to care for the baby ($p < 0.0000$). Those who had someone to give advice when

a danger sign was noticed were 93%, ($p < 0.000$). Those who had identified someone to help when confined to bed were 96%, ($p < 0.000$) and 96% had someone to take them to the doctor ($p < 0.0000$).

Birth preparedness and complication readiness Qualitative analysis

Table 5 : Themes and subthemes

THEMES	SUB-THEMES
Resources	Shortage of Equipment Shortage of Staffs Poor Infrastructure
Health Education	Trained staff Teamwork Sensitization



The in-depth interviews involved 6 key informants, managers and their deputies from Nakuru county hospital. Two themes emerged from those interviewed namely resources and health education. For the theme on resources the following subthemes emerged: equipment, staffing and infrastructure. For the theme of health education, the following subthemes emerged: trained staff, teamwork and sensitization.

Resources

From the analysis of the study there was a need for heaters in the room. There was a need for clothes for the mother to be available for the mother to change when they soil themselves. There is a need for the delivery pack to be available when a sick pregnant mother goes to labor.

“The rooms require heaters, extra clothes for mothers to change when they get soiled. Sick mothers don't carry baby clothes so when labor begins it becomes a challenge. Availability of the delivery packs in case a sick mother goes into labor to ensure prompt care.” (KI #2)

The analysis of key informants in the hospitals indicated that about 80 clients are attended by 2 staff every day. The analysis also indicated that the main challenge is the availability of doctors, nurses, anesthetist, anesthetist -assistants cleaners and potters which are important in the childbirth operations

“The staffing is low compared to the clients seen each day. approximately 80 clients per day against 2 staffs” (KI #1)

The analysis of the key informants indicates that there was a need for 24-hour laboratory services in the health facility.

“The lab should be Incorporated in the building to give the client holistic care. Availability of the laboratory services 24

hours. Avail quality control in the unit for easy access to the supplies. Avail mama kit” (KI#1).

Health education

The analysis of the key informants has indicated the health facilities in Nakuru use the standard partograph to monitor mothers in the labour. The analysis of the interview also indicates that there is the presence of trained midwives in the emergency obstetric care center.

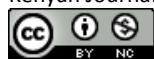
“Use of standard partograph to monitor mothers in labor, trained midwives on emergency obstetric care.” (KI#3)

The working relationship between all health workers is paramount. In order to enhance co-operation and teamwork between staff the hospital holds mortality meetings immediately and monthly to identify the gaps and acts accordingly without pinpointing on individual staff.

“The review of maternal and perinatal deaths and near-miss are done once per month organized by the hospital this has brought about cooperation and teamwork because gaps are identified, and action taken immediately to avoid the same occurrence”. (KI#1).

“There is a 24-hour review team on any maternal deaths and recommendation have done and monthly maternal mortality but however neonatal mortality is done by the paediatric this has brought about team spirit among all cadres” (KI#2)

From the analysis of the key informant's interview, it was observed that the health facilities have initiated the education to sensitize the pregnant mother of the importance of birth preparedness. This has been done through the availability of health education as groups and individuals on diet



and birth preparedness, the emphasis being on antenatal care.

“Emphasis have been done concerning focused antenatal care. Health education as groups and individuals on diet and birth preparedness” (KI#1).

Discussion

The association between baseline characteristics with BP/CR status in this study revealed that identifying the place to birth and the skilled birth attendant is very important in this study it was observed that the pregnant women who had prepared by having identified the facility they will give birth was significant. The study results were supported by the result of another study that found out that, the participants had identified the place of delivery and identified the mode of transport to the place of childbirth (Kiataphiwasu & Kaewkiattikun, 2018). This was also supported by a study done in Bureti sub county of Kericho county where the women had identified place for delivery (Omari, Afrane, & Ouma, 2016).

This study found out that most clients preferred the government facility this could be due to the introduction of free maternity and delivery by the Kenyan Government. This is supported by a quasi-experimental study that revealed an increase in the use of maternal health services after the introduction of free maternity services (Dennis et al., 2018).

This study- found that there was a need for laboratory services within the department to reduce the time lag. The findings from this study revealed that preparing for a potential blood donor for emergency cases that may occur during pregnancy-, childbirth and postpartum were low which is similar to a systematic review and meta-analysis study in Ethiopia where they found out that 8.8% of the women had arranged for blood and

another study that was done in Kenyatta in Kenya revealed that there is need for availability of laboratory (Wanjau, 2012).

This study found out that there was shortage of staff to care for pregnant women this is supported in a study done in Ethiopia whereby disempowering health system where providers are overworked and facilities are understaffed and overcrowded (Bohren et al., 2017) These findings are also similar to a study done in Kenyatta hospital Kenya that found out that organization must enhance employees capacity in order to improve provision of service quality (Wanjau, 2012).

Limitation

The study design was cross-sectional which does not provide strong evidence on the direct cause and effect relationship between BP/CR practice and the explanatory variables. The study was focused on one health facility covering a small proportion of women.

Conclusion and Recommendations

The study revealed a low level of BP/CR among pregnant women attending antenatal clinics.

The lower the age and level of education is a risk factor to BP/CR. The respondents (mothers) reported that the family were prepared for birth and complication. There is a need to improve infrastructure in the hospital. Provide trained staff to handle emergency complications.

As evidenced by the findings, the following are therefore recommended of the hospital management, leaders and scholars;

- Come up with strategies to improve knowledge of BP/CR among pregnant women. Women need to be sensitized on the need to arrange for blood through relatives.



- Provide a 24 -hour working laboratory services and high dependency unit in the hospital
- More studies in other establishments in both urban and rural settings should be done to support and validate the findings of this study

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