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Original Research Article

Utilization of individual birth plan during pregnancy and its determinants in Makeni County, Kenya

John Kyunguti Ndeto¹, Sammy Onyapidi Barasa^{2*}, Mary Wanjiru Murigi³,
Margaret Nyanchoka Keraka¹, Justus O. S. Osero⁴

¹Department of Population and Reproductive Health, ⁴Department of Community Health, Kenyatta University, Nairobi, Kenya

²Department of Nursing, Kenya Medical Training College, Chuka, Kenya

³School of health sciences, Kirinyaga University, Kerugoya, Kenya

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*Correspondence:

Mr. Sammy Onyapidi Barasa,
E-mail: sbarasa@kmtc.ac.ke

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ABSTRACT

Background: All pregnant women are required to have an individual birth plan (IBP) to be discussed during each antenatal care clinic (ANC) visit. Birth preparedness increases the likelihood of seeking skilled care which can lead to positive birth outcomes. However, there is paucity of literature on utilization of IBP in rural Kenya. This study aimed at assessing the level of utilization of IBP and its determinants in Makeni County, Kenya.

Methods: Descriptive cross-sectional design was used to study 326 postnatal mothers in three primary health facilities. Systematic sampling technique was used. We collected data using a researcher-administered structured questionnaire and focused group discussion. Quantitative data analysis was conducted using statistical package for Social Sciences (SPSS) version 20.0 and involved univariate and bivariate analysis. Chi-square were used to test the significance of the association between the dependent and independent variables ($p < 0.05$). Qualitative data was analyzed by thematic content analysis.

Results: IBP utilization was low 48.2% (95% CI (42.7%-58.6%)) despite high ANC attendance. Identifying a blood donor was the least utilized component (25%). Being middle aged, high education level, attending ANC clinic 4 times and being married were significantly associated with utilization of an IBP, (OR=2.108, $p=0.005$), (OR=12.828, $p < 0.001$), (OR 30.942 (95% CI 4.128-231.954) $p < 0.001$) and (OR=2.20, $p=0.001$) respectively. Perceptions of high cost, long distance and disrespect from staff reduced IBP utilization by 65%, 80% and 47% respectively.

Conclusions: Birth preparedness is low despite high antenatal clinic attendance. Stakeholders ought to address factors influencing birth preparedness.

Keywords: Individual birth plan, Focused antenatal care, Maternal mortality, Birth preparedness, Makeni

INTRODUCTION

Despite a global decrease of maternal mortality by 44% in the past two decades, 99% of the global 830 women that die daily from preventable causes related to pregnancy and childbirth still occur in poor and rural communities in developing countries.¹ Fortunately, the

risk of death from a birth complication can be detected early and averted if a woman attends the minimum four quality antenatal clinic (ANC) visits often referred to as focused antenatal care (FANC).²

An individual birth plan (IBP) is an important component of counseling in FANC. As recommended by the World

Health Organization, all pregnant women need to have a written IBP which should be discussed at every ANC visit with a health care provider and at least a month before giving birth.² This is aimed at promoting improvement of women's health seeking behavior for timely and appropriate care. However, many studies in Africa have found nearly more than half of pregnant women do not prepare for birth an indication of unmet antenatal care needs.³⁻⁷

Although there is little proof to demonstrate the direct association between having an IBP and reduction in morbidity or mortality for mothers and babies, some studies have revealed evidence that there is considerable benefit for birth preparedness.^{6,8,9} Women who are well prepared and have knowledge on danger signs in pregnancy, are more likely to: identify a skilled birth attendant, be financially ready to meet emergency costs and transportation and be ready with a potential blood donor thus improving chances of a positive birth outcome.^{4,6,8,9}

A number of socio-demographic factors have been found to be associated with birth-preparedness such as level of education; however, little is known on how socio-ecologic factors such as attitudes and perceptions of clients determine utilization of IBP in a rural area.^{7,9} There is some evidence clients perceive birth preparedness negatively.⁷ Makueni County loses about 6,000 women every year according to the ministry of health records and there are no studies which have established the level of birth preparedness in this county. This study is aimed at first, to establish the level of utilization of IBP during pregnancy and its determinants; secondly, to find out nurses' opinions on IBP utilization. Our findings will hopefully contribute towards informing stakeholders on the existing gaps which should inform future practice as well as policies in primary health.

METHODS

This descriptive cross-sectional study was conducted in Kisau division, Makueni County, in south-eastern Kenya. According to county records, Kisau division has three locations: Waia (8,497 people), Kisau (18,760) and Kiteta (23, 253). The study was conducted in three primary health facilities that offer maternal and child health (MCH) services: Wambiti dispensary in Waia location, Taw sub-district hospital in Kiteta location and Kisau sub-district hospital in Kisau location. These facilities serve a population of approximately 53,349 people.

Between May and August 2016, we recruited 326 postnatal mothers from the MCH clinics proportionate for each facility, using systematic sampling technique. For inclusion criteria, we interviewed women who had delivered nine months preceding the study regarding IBP use. Verbal consent was obtained. Women who were unable to give information, those who were more than 9 months postnatal and the non-consenting were excluded.

Semi-structured researcher-administered questionnaires were used to collect quantitative data while focus group discussion (FGD) was used to collect qualitative data from healthcare providers. We collected data on socio-demographics, ANC services, attitudes and perceptions on utilization of IBP and mothers self-reported IBP use i.e. i) Identification of place of delivery; ii) identification of preferred birth attendant; iii) setting aside funds to cater for transport; iv) identification of a birth partner or companion; v) Identifying a designated decision maker in case of incapacitation; vi) identification of a compatible blood donor and vii) preparing a mother-baby package before childbirth. One 45 minutes-long-FGD was conducted with six nurses to assess their opinion on utilization of IBP and what they thought as to what influenced utilization of IBP. Unlike key informant interviews, FGD allows in-depth discussion that can bring out feelings. The principal investigator was the moderator while one research assistant took notes. The discussion was done in both English and Akamba language, the mothers declined to be recorded digitally.

Data analysis

Manual thematic content analysis was done for qualitative data and findings aligned to relevant themes. We have incorporated relevant verbatim quotes from the FGD. SPSS program version 20.0 was used in quantitative statistical analysis and involved univariate and bivariate analysis. We utilized Chi-square test and ODDs ratio to establish the association between the dependent (utilization of IBP) and independent variables (categorical socio-demographic factors, ANC clinic attendance, attitude and perceptions on IBP). P value <0.05 was considered statistically significant. Odds ratio were used to quantify the relationship between the dependent and independent variables. Data has been presented in narratives and frequency tables.

RESULTS

Demographic characteristics of study participants

Table 1 below shows demographic characteristics of the 326 eligible respondents. 71.1% were aged between 18-37 years and 60% married. 92% respondents had more than primary school level of education of which, 38.3% had attained secondary level and 22.1% college qualification. 62.6% were working of whom 50% were business ladies. 4 in every 10 respondents had a monthly income above 20,000 Kenyan Shillings (200 USD).

Antenatal care visits and education on IBP components by the health worker

Table 2 shows ANC visits information. Overall, (302, 92.6%) study participants had received ANC services during their last pregnancy. Of these, majority (277, 91.7%) reported visiting antenatal clinic (ANC) at least four times while the rest either once or twice. The reasons

cited for not attending ANC were high cost (47.7), lack of a companion (33.3%) and distance (25%).

Table 1: Socio-demographic characteristics of study participants.

Characteristic	Frequency (n=326)	Percentage (%)
Age (years)		
18–27	122	37.4
28–37	110	33.7
38–49	94	28.8
Marital status		
Single	64	19.6
Married/in union	204	62.6
Widowed	25	7.7
Divorced	18	5.5
Separated	15	4.6
Currently living with a partner		
Yes	239	73.3
No	87	26.7
Religion		
Christian	312	95.7
Muslim	11	3.4
Others	3	0.9
Level of education		
No formal	26	8.0
Primary	103	31.6
Secondary	125	38.3
Tertiary	72	22.1
No of children (n=326)		
1-3	106	32.5
4-6	140	42.9
> 6	80	24.5
Work other than housework (n=326)		
Yes	204	62.6
No	122	37.4
Type of work (n=204)		
Business	102	50.0
Farming	85	41.7
Other*	17	8.3
Monthly income (n=204)		
<Sh.10,000	50	24.5
Sh. 10,000- 20,000	73	35.8
>Sh. 20,000	77	37.7
No response	4	2.0

Table 3 below shows health education received in ANC. Encouragingly, at least 8 in 10 women had received some health education and advice on some components of IBP and general ANC messages. 284 (94.0%), 259 (85.8%) and (270, 82.8%), of the women were advised on danger signs during pregnancy, place of birth childbirth and where to go if they had the danger signs and transport arrangements respectively. Advice on finances (287, 95.0%), finding a compatible blood donor (249, 82.5%)

and identifying a skilled birth attendant (262, 86.8%) and having a birth companion 251 (83.1%) were among the common messages.

Table 2: antenatal care visits information for postnatal mothers ahead of last childbirth, Makueni Kenya.

Variables	Frequency	Percentage (%)
Received antenatal care (n=326)		
Yes	302	92.6
No	24	7.4
Times attended ANC (n=302)		
Once	13	4.3
2-3	12	4.0
≥4	277	91.7
Reasons for not visiting ANC (n=24)		
Health facility was too far	6	25
No one to accompany (me)	8	33.3
Too expensive	10	41.7

Utilization of individual birth plan

Being aware of birth planning may not necessarily translate to utilization. We asked mothers to recall their IBP utilization in the last pregnancy, preceding the study. We did not ask for a written birth plan as recommended by the World Health Organization because we targeted postnatal mothers who were expected to recall their behavior during their last pregnancy rather than currently pregnant women. As shown in Table 4, the most utilized components of IBP by the respondents included: identification of a place of birth (271, 83.1%), identification of a birth companion 277 (85.0%), preparation of a mother-baby package before childbirth 267 (81.9%), making prior arrangements for a mode of transport 287 (88.0%) and saving money for transport and hospital bill (290, 89.0%). Based on these criteria, the level of utilization of IBP was 48.2% (95% CI 42.7% -53.6%). On the other hand, identification of a blood donor, having a designated decision maker in case of incapacitation and identification of a skilled birth attendant were the least utilized components when planning for a birth at 25.2%, 49.1% and 53.1%

Determinants of IBP utilization

As shown in Table 5 below, was associated, at least in part, with utilization of IBP whereby women belonging to age group of 28 - 37 years were two times more likely to utilize an IBP compared to those of age group of 18 - 27 years (Odds ratio (OR) 2.108 (95% CI 1.246-3.565), p=0.005). Additionally, those who had tertiary qualifications were approximately 5.2 times more likely to utilize IBP compared to the group that had no formal schooling or had primary level of education (OR 5.245 (95%CI 2.803-9.814), p<0.001). Similarly, secondary

level graduates had about 91% higher likelihood of utilizing IBP (OR 1.905 (95% CI 1.032-3.515, p=0.038). A married woman had a 2.2-fold increment in the likelihood of utilizing the IBP compared to the unmarried

(OR 2.201, 95% CI 1.388-3.491)). Income level, family size and living with a partner at the time of this study didn't show association.

Table 3: Health education received during antenatal clinic, Makueni, Kenya.

Birth plan item	Responses (n=302)					
	Yes		No		Don't remember	
Component	Number	%	Number	%	Number	%
Danger signs in pregnancy, childbirth or soon after	284	94.0	10	3.3	8	2.6
Where you should give birth from baby	244	80.8	39	12.9	19	6.3
Arrangements for transportation	270	82.8	23	7.1	9	2.8
Arrangements for funds/finances	287	95.0	9	3.0	6	2.0
Arrangements for blood donor	249	82.5	26	8.6	27	8.9
Arrangements for a skilled birth attendant to deliver your child	262	86.8	23	7.6	15	5.0
Identifying a birth companion	251	83.1	25	8.3	26	8.6

Table 4: Components of an individual birth plan utilized in pregnancy by MCH clinic mothers ahead of last childbirth, Makueni-Kenya.

Birth plan item	Done		Not done	
	Number	%	Number	%
1. Identified place of delivery	271	83.1	55	16.9
2. Identified Skilled birth attendant	193	59.2	133	40.8
3. Saved money for transport and delivery costs	290	89.0	36	11.0
4. Identified a birth partner/companion	277	85.0	49	15.0
5. Designated a decision maker in case of incapacitation	162	49.7	164	50.3
6. Identified compatible Blood donor	82	25.2	244	74.8
7. Prepared a mother-baby package before childbirth	267	81.9	59	18.1

Table 5: Socio-demographic determinants of individual birth plan utilization.

Variables	Utilized IBP		Odds ratio (OR) (95% CI)	P value
	Yes (n=157) (%)	No (n=169) (%)		
Age (years)				
38-49	36 (38.3)	58 (61.7)	0.808 (0.467-1.399)	0.446
28-37	68 (61.8)	42 (38.2)	2.108 (1.246-3.565)	0.005
18-27	53 (43.4)	69 (56.6)	Reference	
Religion				
Christianity	151 (48.4)	161 (51.6)	1.251 (0.424-3.688)	0.685
Other	6 (42.9)	8 (57.1)	Reference	
Family size				
1-3	50 (47.2)	56 (52.8)	0.943 (0.593-1.500)	0.804
>3	107 (48.6)	113 (51.4)	Reference	
Currently living with a partner				
Yes	119 (49.8)	120 (50.2)	1.279 (0.780-2.095)	0.329
No	38 (43.7)	49 (56.3)	Reference	
Marital status				
Married	113 (55.4)	91 (44.6)	2.201 (1.388-3.491)	0.001
Other	44 (36.1)	78 (63.9)	Reference	
Education				
Tertiary	50 (69.4)	22 (30.6)	5.245 (2.803-9.814)	<0.001
Secondary	68 (54.4)	57 (45.6)	1.905 (1.032-3.515)	0.038
None/Primary	39 (30.2)	90 (69.8)	Reference	

Variables	Utilized IBP		Odds ratio (OR) (95% CI)	P value
	Yes (n=157) (%)	No (n=169) (%)		
(Paid) work apart from housework				
Yes	101 (49.5)	103 (50.5)	1.156 (0.737-1.812)	0.528
No	56 (45.9)	66 (54.1)	Reference	
Monthly income				
<Sh.10,000	23 (46.0)	27 (54.0)	0.830 (0.438-1.573)	0.568
>=Sh. 10,000	78 (50.6)	76 (49.4)	Reference	
Overall	101 (49.5)	103 (50.5)		

Table 6: Association between attitude and perceptions and utilization of IBP.

Variables	Utilized IBP		OR (95% CI)	P-value
	Yes (n=157) (%)	No (n=169) (%)		
One should plan on the delivery venue				
(Strongly) agree	139 (51.3)	132 (48.7)	2.165 (1.174-3.990)	0.012
(Strongly) disagree	18 (32.7)	37 (67.3)	Reference	
One should plan on mode of transport				
(Strongly) agree	148 (53.2)	130 (46.8)	4.933 (2.302-10.571)	<0.001
(Strongly) disagree	9 (18.8)	39 (81.3)	Reference	
Husband/partner should accompany wife to ANC				
(Strongly) agree	110 (50.5)	108 (49.5)	1.322 (0.831-2.102)	0.238
(Strongly) disagree	47 (43.5)	61 (56.5)	Reference	
Services at the h/facility are expensive				
(Strongly) agree	24 (29.3)	58 (70.7)	0.345 (0.202-0.592)	<0.001
(Strongly) disagree	133 (54.5)	111 (45.5)	Reference	
It is difficult to get to the h/facility				
(Strongly) agree	17 (21.0)	64 (79.0)	0.199 (0.110-0.360)	<0.001
(Strongly) disagree	140 (57.1)	105 (42.9)	Reference	
Staff do not treat women with respect				
(Strongly) agree	32 (36.8)	55 (63.2)	0.531 (0.320-0.879)	0.013
(Strongly) disagree	125 (52.3)	114 (47.7)	Reference	
Birth is a woman's matter				
(Strongly) agree	21 (26.9)	57 (73.1)	0.303 (0.173-0.531)	<0.001
(Strongly) disagree	136 (54.8)	112 (45.2)	Reference	

Table 7: Association between no. of ANC visits and utilization of IBP.

Variables	Total	Utilized IBP		OR (95% CI)	P value
		Yes (n=157) (%)	No (n=169) (%)		
At least 4 ANC visits					
Yes	277	156 (56.3)	121 (43.7)	30.942 (4.128-231.954)	<0.001
No	25	1 (4.0)	24 (96.0)	Reference	
Total	302	157 (52.0)	145 (48.0)		

We also assessed the association between mothers' attitudes and utilization of IBP using a likert-scale and findings are in Table 6 above. Mothers who had a favorable attitude towards IBP use were more likely to use IBP as illustrated by those who either agreed or strongly agreed that an expectant woman ought to plan on the venue of delivery (OR 2.165 (95% CI 1.174-3.990), p=0.012) and the mode of transport (OR 4.933 (95% CI 2.302-10.571), p<0.001). Perceptions of high cost, long

distance and disrespect from staff reduced IBP utilization by 65%, 80% and 47% respectively.

Table 7 above shows the association between ANC attendance and use of IBP. Attending ANC at least four times was associated with a significant boost in utilization of IBP (OR 30.942 (95% CI 4.128-231.954), p<0.001).

DISCUSSION

Overall, our study has shown low utilization of IBP despite high ANC attendance. Comparatively though, this level of IBP utilization is slightly higher (48.2%) compared to other studies done elsewhere in Kenya (47.5%), Uganda (35%), Ethiopia (18.3-24.1%), and India (47.8%).^{7,10-14} However, it is hard for us to draw conclusive comparisons between our findings and these studies because of differences in methods and criteria used and possibly environmental variations, despite the underlying core principles of birth preparedness.

Being prepared for a birth or at least having some knowledge on it has been found to be beneficial in terms of birth outcomes and averting the delay to make decisions to seek care and delay to reach the hospital.^{3,4,15} The IBP concept is based on the assumption that lack of it or lack of awareness of it may lead to delay in seeking care, delay in transportation to a health facility and delay in receiving care from a skilled health provider and the possibility of resulting into undesirable birth outcomes both to the mother and baby.⁶

In Kenya giving birth is free in public health facilities. However, the decision to seek care and arranging for transport, is the sole responsibility of the client and her family. Failure to do so may lead to home delivery leading to possible unfavorable birth outcomes. Often those living in rural areas not only face the challenge of distance from healthcare facilities but also poor roads and slow means of transportation which can cause delay in arrival to a health facility; a concern shared by one of the HWs during the FGD:

“Home delivery occurs because some women do not plan for pregnancy, or plan for transport to the health units in advance. Transport costs are also much and the roads are impassible and especially during the rainy seasons. If we can assist them to plan for birth early in advance I believe we can reduce home deliveries.” (FGD, MCH Nurse).

In Kisumu location, unlike other places, women were not assured of not only locating but also accessing transport and thus this called for early preparation.⁴ Just like other studies elsewhere, majority of pregnant women in our study saved money in preparation for birth as well as making prior transport arrangements.^{4,13} This practice has been linked to seeking skilled birth attendance during birth thus curtailing chances of negative birth outcomes.^{4,9,15}

Certain factors have been found to be associated with birth preparedness. Table 5 shows the association between selected socio-demographic factors with utilization of IBP. In this study, a married woman had a 2.2-fold increment in the likelihood of utilizing the IBP as opposed to her counterparts who were not married (OR 2.201(95% CI 1.388-3.491). This is contrary to a study done in Kirinyaga Kenya which found no association.⁷

This could be attributed to the fact that a husband could be of support to the woman during pregnancy and therefore offer support in getting ready for the birth of the baby.

Education is an important social determinant of health. Similar to other studies, we found that higher level of education is associated with birth preparedness and complication readiness.^{6,7,10-14} We attribute this to the fact that a woman who is educated is likely to understand more the health messages and apply the knowledge accordingly compared to an illiterate woman.^{7,10,14}

Contrary to studies in Kenya and Uganda, middle age rather than young age was associated with utilization of IBP.^{7,10} Perhaps this is because younger women were single whereas the middle-aged were mostly married; and being married is a factor associated with utilization of IBP.

The antenatal clinic is the most common point of contact between a health care provider and a pregnant woman. In this study, contrary to a study in Uganda, attending ANC clinic at least four times was significantly associated with utilization of IBP (OR 30.942 (95% CI 4.128-231.954), $p < 0.001$), similar to a study done in India and Kenya.^{7,13,14} Ironically though, the high ANC attendance did not translate to high utilization of IBP despite mothers receiving some health education in ANC. Reasons for this could be poor quality of health education and ANC services as well as high workload; sentiments shared by Mbalinda.⁶ Despite the limitation of being a primary health facility based study, a number of concerns have been raised by our study.

Firstly, high ANC attendance didn't seem to translate to utilization of IBP. This, in our view, shows missed opportunities for quality health education and staff shortage could be one of the reasons as reported in FGD and other studies.⁹

“Indeed we put the health of the mother and the child at risk by not sharing this information with them. The issue is we hardly get enough time to discuss the issues of individual birth plan with the women. Sometimes, we are few healthcare providers at work and yet you have several women to attend to. In addition, if you spend so much time with one woman others start leaving claiming they will be left behind by the only vehicle that takes them home-they claim it will be late before they are attended to...”[FGD, MCH Nurse].

Secondly, anemia in pregnancy is associated with postpartum hemorrhage, a common cause of death among women in sub-Saharan Africa.¹⁵ Transfusion of safe blood to these women is a lifesaving intervention.¹⁶ However, Kenya has an acute shortage of blood a potential risk to mothers who may require the service.^{17,18} Although a discouraged practice in HIV prevalent countries, identifying a blood donor is an important

component of birth preparedness.^{10,15} However, we are concerned that only a quarter of the women we interviewed had identified a potential blood donor, implying that in the event that they are to provide a potential donor in an emergency situation, nearly 8 in 10 women would not be prepared; this was even worse in an Ethiopia study.¹⁹ Perhaps this may be due to the fact that the adult population in Kenya hardly volunteer to donate blood, with over 80% of donors being either high school or college students, thus making it difficult for these women to identify a consenting adult blood donor.¹⁷ Another reason that can explain this scenario is the possibility that HWs could be putting a lot more emphasis on more “serious” components like arranging for transport and saving money and continued on-job training can avert this. Most importantly though, we recommend clear policy guidelines to HWs as to whether it is best to have centralized donations by non-remunerated regular voluntary donors as recommended by the WHO, or encourage women to identify potential donors whose blood can be screened for possible transfusion.¹⁸ Perhaps programs targeting this component can contextualize their interventions and test, for instance through longitudinal studies, the most appropriate strategy of ensuring prompt access to safe blood in different contexts in the event that a woman needs it.

Despite these findings, this study had two limitations. First, we asked postnatal women about their birth preparedness behaviors after delivery. The validity and reliability of this approach of asking women who have given birth recently to recall a certain behavior that occurred just before childbirth, is a subject of discussion due to potential of recall bias.⁴ Thus, we interviewed these women on average at 5 months after delivery. Secondly, we did not ask nor expected postnatal women to have carried a written IBP as recommended by WHO; thus limiting generalization.² To minimize this, we asked the mother to recall and state the actual components she undertook rather than focusing on what they were aware of.

CONCLUSION

Utilization of individual birth plan is low in Makueni County. The significant determinants from this study are age, level of education, marital status, number of ANC visits and having a birth companion. We recommend continued medical education, on-job-training of MCH health workers and perhaps easy-to-use job aids to improve quality of ANC and inadvertently IBP use. Further, HWs ought to optimize number of ANC visits while paying attention to the significant determinants such as education level. Further studies should: First, find out why identifying a blood donor is the least utilized component and how best a pregnant woman can identify a potential blood donor in different low-resource-settings contexts. Secondly, test contextual strategies that can upturn utilization of IBP.

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