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Birth Plan Utilization and Associated Factors among Post Natal Women Attending Maternal Child Health Services in Moyale Sub County, Kenya

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Abstract

Purpose: Maternal and neonatal mortalities continue to pose big public health concern in Kenya despite several interventions. These deaths are partly attributed to three delays; delay by the mother in deciding to seek timely care, delay in arriving at the point of health service delivery and delay in receiving adequate health care once at the health facility. Birth planning is important in addressing these delays. A birth plan serves to promote positive pregnancy outcome. There is however, a paucity of data showing level of birth plan utilization and factors associated to the utilization in many areas of Kenya. This hampers efforts in promoting its utilization in reducing maternal mortality ratio. This study sought to find out extent of utilization of individual birth plan and factors that are associated with it among post-natal women attending Maternal Child Health Services in Moyale Sub County, Kenya.

Methodology: The study was a health care facility based cross sectional study that employed multi stage sampling methods. A total of 548 post-natal women attending Maternal Child health services within Moyale Sub County were interviewed. Data was collected through a structured quantitative questionnaire and FGD guide between May 2021 and July 2021 and analyzed using binomial logistic regression in SPSS version 22. To address confounding, significant variables were put through multinomial regression analysis.

Findings: Overall, 42.3% of interviewed women had used a birth plan. Socio-demographic factors associated with utilization of a birth plan was secondary level of education (OR=1.214(1.1-2.4), p=0.000), Diploma and above level of education (OR=5.7(0.5-62.1), p=0.042). Maternal factors influencing utilization of birth plan included previous complications (OR=2.6(1.3-3.0), p=0.039), four or more ANC visits (OR=2.4(1.28-3.69, p=0.000), trimester of first ANC (OR=1.4(1.3-3.7), p=0.000), PNC visits (OR=2.3(1.4-3.8), p=0.001). Health system related factors influencing utilization included time of more than one hour in reaching health care (OR=0.999(0.9-1.0), p=0.048), availability of staff at health facility (OR=3.6(1.9-3.9), p=0.024). Treating women with respect at health facility (OR=1.049(1.16-6.5), p=0.034) and availability of drugs/supplies at health facility (OR=3.3(2.2-4.5), p=0.000).

Unique Contribution to Theory, Policy and Practice: The study showed that there is need to improve quality of ANC services given in health care facilities. Health care workers in health facilities offering ANC need to initiate timely IBP counselling for pregnant mothers. There is also a need for Community health volunteers under the community health strategy to offer counselling on IBP during routine household visitations. Health care providers and patient interactions also need to improve, health workers need to be trained/sensitized on good customer relations to build patient trust. Further research is also recommended to assess quality of ANC services offered in health facilities in the region. Quality of health education and counselling offered by CHV's during home visits to pregnant mothers also needs to be examined.

Keywords: *Individual Birth Plan, Birth Preparedness, Focused ANC, Moyale*

Introduction

Background

Bringing new life into the world is one of the most profound and transformative experience a mother can undergo. The journey of child birth is unique to each individual and encompasses a spectrum of emotions, physical sensations and challenges. Utilization of a birth plan represents a significant shift in the approach to child birth and is important in addressing a mother's foreseen challenges as well as address both physical and emotional needs of the mother. Birth planning as an approach provides a patient centered care where the expectant parents are active participants in decision making. The Individual birth plan serves as a useful instrument for expectant women, they can use it to prepare for the birth process and convey their expectations during childbirth (Ahmadpour et al., 2020). Barnes et al. (2023) advised that a birth plan should not be limited to a checklist, but it should outline women's preferences and emotions. It should also outline the psychology of birth and the importance of women's safety and support.

Birth plans are widely used in developed countries, compared to developing countries (Ahmadpour et al., 2020). It is a tool that is recommended as one of the strategies for safe motherhood. (World Health Organization, 2022). Wudineh et al. (2020)(Hidalgo-Lopezosa et al., 2021) noted that utilization of birth planning mitigates child mortality and morbidity which is particularly high in developing countries.

Pregnant mothers worldwide require adequate knowledge regarding appropriate interventions required during pregnancy, delivery and immediate postpartum period following normal vaginal delivery or cesarean section (UNICEF, 2017). As one of the safe motherhood strategies, IBP enables a pregnant woman to recognize danger signs in time which may necessitate early referral to higher levels of obstetric services. Despite evidence indicating widespread adoption of birth preparedness policies across multiple African settings, there is a paucity of studies about birth plan utilization and its determinants among women undergoing facility-based deliveries within Kenya's remote pastoral communities.(Evans Kasmai, 2018)

The limited studies on Individual birth planning conducted in rural pastoralist communities in Kenya, show that birth preparedness among post-natal women has been relatively low, for example, one study found that only 28% of women had awareness on what birth plan constitutes.(Evans Kasmai, 2018).

The use of birth preparedness plan is an important aspect of ensuring safe motherhood in resource-constrained settings like Moyale Sub-County in Upper Kenya. However, due to data paucity, the uptake of birth preparedness plan among women in the reproductive age in Moyale Sub-County remains unknown.

This study was conducted in Northern Kenya, Marsabit County, and specifically Moyale Sub County. Moyale sub county is one of the four sub counties in Marsabit County. The sub county was purposively considered because it is the most populous Sub County in Marsabit County and

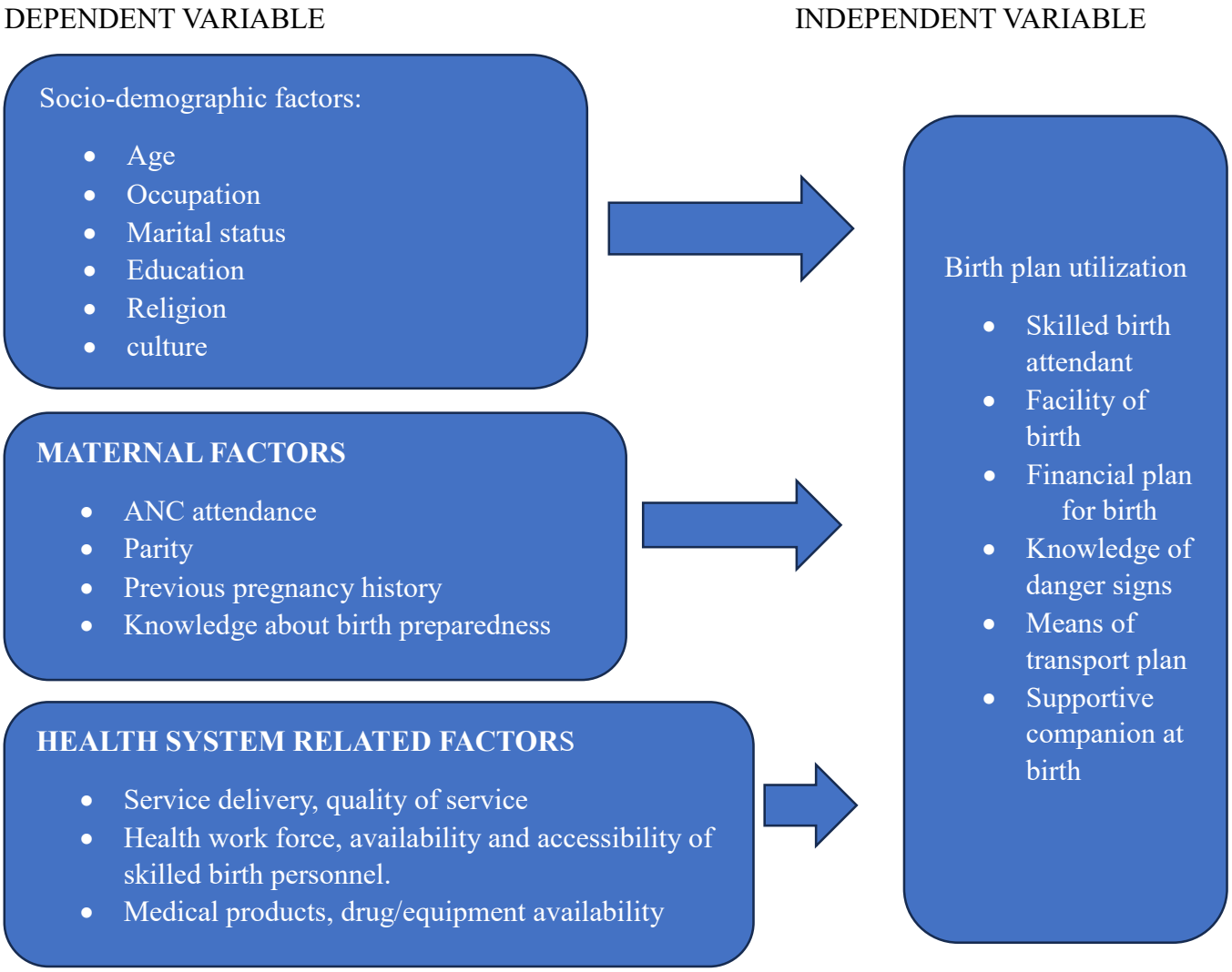
contributes a large chunk to maternal child health indicators for the county, which in most instances perform below average compared to national targets.

The sub county has a population of 108, 949(KNBS, 2019) with a total surface area of 9,390 Km^2. The population density of Moyale is 11/Km^2 . In terms of health facilities coverage, the sub county has one sub county referral hospital, Moyale sub county referral hospital, 7 health centers, 4 nursing homes, 2 private clinics one mission hospital in Sololo and 22 dispensaries, making a total of 37 healthcare facilities (Marsabit County Integrated Development Plan, 2018-22).

Several studies suggest that improving awareness of birth preparedness and encouraging adoption of individual birth plan early in pregnancy, may help reduce complications associated with pregnancy, childbirth and post-partum period. Most adverse pregnancy outcome including neonatal deaths are witnessed during childbirth and postpartum periods (Wudineh et al., 2020). Birth plan utilization has been shown to mitigate incidences of postnatal mortalities as mothers deliver at health facilities of choice and referral in case of emergencies is catered for. (Beraki et al., 2020). To achieve the goal of increasing safe motherhood and positive pregnancy outcome in Moyale Sub County, there needs to be a concerted and focused strategies in increasing education and awareness campaigns on IBP utilization targeted at both community members as well as health service providers operating in Moyale Sub-County. These strategies may include enhancing effectiveness of Community Health volunteers counselling sessions with mothers on IBP. In health facilities where Focused Antenatal Care is given, as is required, IBP counselling needs to be given priority by all health care providers. Other opportune health education avenues include use of mother-trusted channels like traditional birth attendants, radio programming and social media platforms frequently accessed by young people. This will make sure vital information is relayed in a way which most effectively suits unique local realities.

CONCEPTUAL FRAME WORK

The study adopted conceptual frame work depicted in the figure below. The framework is a constellation of factors obtained from literature reviews of similar studies that the researchers deemed to be of critical importance in influencing the utilization of individual birth plan among post-natal women group.



Birth Plan Utilization and Associated Factors Among Post-Natal Women Attending Maternal Child Health Services

In a study done to look at factors contributing to still births in Marsabit County, one of the findings was that only 27.6% of participants who comprised of postpartum females possessed a birth plan, signifying a comparatively low incidence of IBP utilization when contrasted against preceding investigations executed internationally in industrialized nations (Wako, 2021). Consequently, it underlines the existence of a requirement for augmented consciousness and instruction regarding the significance of birthing schemes among women of child bearing age inhabiting the region. Study findings also exposed that mothers with elevated scholastic attainments and those engaged in employment evinced a propensity to possess delivery blueprints. Thus, emphasizing the requirement to focus educational initiatives and awareness drives at these factions.

Further analysis from the same study revealed a correlation between antenatal care attendance and birth plan utilization. Attending more antenatal care appointments led participants to be more

inclined to create a birth plan. These observations suggest the necessity for strengthening efforts directed toward enhancing accessibility to prenatal medical attention facilities and services within this geographic location (Evans Kasmai, 2018). Ensuring broader exposure to quality prenatal attention enhances possibilities to acquire practical details on and set up individualized maternal deliveries. It must be noted that good prenatal care represents a vital piece of both maternal and neonatal medical conditions administration and may aid detect and control gestational risks or difficulties; therefore, concentrating on this factor might bring rise to lasting growths in overall population health while minimizing unwanted outcomes via suitable management and preventative steps established at an early stage.

The investigation underscores the indispensable nature of expanded understanding and appreciation concerning birth arrangements for postnatal women in less prosperous regions (Wako et al., 2021). Collective attempts aimed at bettering prenatal care admittance coupled with inclusive birth scheme guidance could facilitate optimal maternal and baby health final results.

3. METHODS

Study area and period

The study was conducted in Upper Eastern Kenya, Marsabit County, and specifically Moyale Sub County. Moyale sub county is one of the four sub counties in Marsabit County. The sub county is largely rural and the main source of livelihood is pastoralism. Data collection for the study was between May and June 2021.

Study design and population

A descriptive cross-sectional design was deployed. The study's population was post-natal women making their first visit to the Maternal and Child health services in the health care facilities within Moyale Sub County.

Sample size calculation and sampling procedure

Kish Leslie formula (1996) was used to derive the sample size where by

$n = z^2p\ (1-p) * DEFF/ e^2$

Where;

n = sample size

z is the confidence interval at 95% α =1.96

p is the estimated prevalence of birth preparedness (65.2%). Drawn from the recent skilled birth deliveries in Moyale sub county (KHIS, 2019)

q=1-p

e is the margin error at 5%

DEFF is the design effect which is 1.5 (for cluster sampling.)

$= (1.96)^2\ 0.652(1- 0.652) * 1.5 / (0.05)^2$

n=**522**. Anticipated non response rate of 5% added (26), which gave a sample size of **548.**

The study used multi stage sampling method. All health care facilities in the seven wards in Moyale Sub County were stratified using their levels i.e., level 2 and level 3. From each ward, two health care facilities were then randomly sampled. Hence, 14 health care facilities drawn across all levels of health care were sampled. Using targeted proportion of women expected for post-natal care in the current year for each level (KHIS, 2019), the number of women to be sampled from each level was calculated. Target proportion of PNC client workload in the current year for each sampled health care facility was used to sample the number of women to be interviewed for each health care facility. Participants who met study inclusion criteria at sampled health care facilities were enrolled using systematic random sampling into the study. The systematic sampling interval was arrived at by dividing mean monthly PNC attendance by the apportioned size selected health facility with the number of women to be sampled from the health care facility. From 14 health care facilities sampled for the study, random selection was done to give 3 FGD sites. Hence, FGD sites were at the level of dispensary, health center and Sub County referral hospital. KII was also be done to facility in charges of the three sites where FGD was done.

Data Collection

Quantitative data was collected through a structured questionnaire adopted from reviewing previous literature of similar studies. Qualitative data was collected through focus group discussions and key informant interviews. Audio recorders and note books were used to capture data. The composition of the FGD was 8-12 women members who were attending MCH services.

Data Analysis

Quantitative data was analyzed using SPSS version 22. Categorical variables were tabulated using frequencies and percentages and charts. Qualitative data was transcribed from notes taken and audio recorders. Data from the participants was analyzed and coded, and the codes were sorted manually to create a pattern, and ultimately form groupings. Grouping analysis was done, and different themes emerged.

Ethical Considerations

Ethical approval was obtained from Mount Kenya University Ethical Review Committee MKU/ERC/1754 and from NACOSTI (Ref. 417695) for the research before data collection.

RESULTS

57.7% of women indicated they did not utilize birth plan, while 42.3% indicated they utilized a birth plan. Table 1 below shows the results of utilization of birth plan.

Table 1: Utilization of birth plan

Utilization of birth plan

Characteristic	Frequency	Percentage
Not utilized birth plan	316	57.7
Utilized a birth plan	232	42.3

Socio demographic factors and utilization of Individual Birth Plan

The findings discovered that women who had reached secondary level of education were 1.2 times more likely to utilize a birth plan than those in primary or not educated. (OR= 1.214, 95% CI=1.108, 2.423, p=0.000), while those who had attained diploma and above level of education were 5.7 times more likely to utilize a birth plan than their counterparts who had lower-level education or not educated. (OR= 5.772, 95% CI= 1.5-62.1, p=0.042). Table 2 below shows the results of socio demographic factors and utilization of IBP.

Table 2: Socio demographic factors and utilization of IBP

Relationship between socio-demographic factors and birth plan utilization						
Characteristic (n=	Utilized IBP	P value	OR	95% C.I.		AOR (95% CI)
				Lower	Upper	
Age						
<19	15(16.5)	0.227	0.445	0.119	1.658	_
20-29	132(56.9)	0.997	0.998	0.339	2.938	_
30-39	79(34.1)	0.339	1.652	0.59	4.621	_
40-49	6(2.6)	Reference				
Marital status						
Married	215(92.7)	Reference				
Not married	333(7.3)	0.81	1.221	0.243	6.212	1.123(0.121-4.735)
level of education						
Primary	67(28.9)	0.106	6.676	0.669	66.574	4.741(0.552-48.552)
Secondary	40(17.2)	0	1.214	1.108	2.423	0.992(0.886-2.201)
Diploma and above	28(12.1)	0.042	5.722	0.527	62.113	4.422(0.027-61.613)
Illiterate	91(39.2)	Reference				
Occupation						
House wife	142(61.2)	Reference				
Employed	41(17.7)	0.686	1.117	0.653	1.91	0.511(0.923-0.452)
Self-employed	47(20.3)	0.104	0.214	0.033	1.375	0.117(0.027-0.995)

Maternal/obstetric characteristics of the respondents

All women who participated in the study had had at least one pregnancy before the age of 30 years, while over half of them 52.7% had their first pregnancy before the age 20. The remaining respondents (47.3%), had their first pregnancy when they were in the age group of 20-29 years.

The proportion of the respondents who had given birth (successful pregnancy) once as at the time of the research was 17.7%, while majority had given birth to more than four times 242(44.2%). Of these, 232 (42.3%) had given birth to four or more live births, with 31 mothers (5.66%) reporting to have had one child born dead. Almost half of the respondents had more than four alive children during the time of the study 221(40.3). Among the respondents, 176 mothers had experienced a complication either in birth or delivery accounting for 32.21% of all respondents.

Almost all, 518 (94.5%) of the respondents had attended antenatal care, with those who had made the recommended four or more visits being 396(72.3%). A majority, 404(73.7%) of the respondents, reported that a birth plan had been discussed by the health care provider during the ANC visits. When it came to who made the final decision on place of birth most mothers, 382(69.71%) reported to be the decision makers while 130 mothers (23.7%) said that their husbands made the decision for them.

Majority of the respondent mothers, 397 (72.5%), reported to have had no family planning before their current delivery, those who did have family planning had child spacing mean age of 2.9 (SD ±2.56). Nearly three quarters, 392 (71.5%) of the respondent mothers cited having been visited by Community Health Volunteer while pregnant, of which 333(60.8%), acknowledged having been made aware on birth preparedness. Slightly over half of the respondents 326 (59.5%), reported having attended post-natal care visit, of this nearly three quarters made one visit 408 (74.4%). Table 3 shows the results.

Table 3: Obstetric characteristics of the respondents

Obstetric characteristics of the respondents			
Variable		**Frequency**	**%**
How many times in total have you become pregnant?	1		
	2	99	18.1%
	3	111	20.3%
	4+	243	44.3%
At what age did you get your first pregnancy?	less than 20	289	52.7%
	20-29	259	47.3%
Number of births	1	97	17.7%
	2	100	18.2%
	3	109	19.9%
	4+	242	44.2%
In how many of your pregnancies were children born alive?	1	98	17.9%
	2	103	18.8%
	3	115	21.0%
	4+	232	42.3%
In how many of your pregnancies were children born dead?	1	31	5.66%
	2	8	1.4%
	3	2	0.36%
	4+	0	0%
How many children do you have now?	1	99	18.1%
	2	108	19.7%
	3	120	21.9%
	>4	221	40.3%
Have you or your baby had any complication in any of your pregnancies/deliveries?	Yes	176	32.1%
	No	372	67.8%
	No	372	
	Yes	176	
In your last pregnancy, did you attend Ante natal care?	Yes	518	94.5%
	No	30	5.5%
At what month of pregnancy did you start ANC?	1-3	187	36.1%
	4-6	318	61.4%
	7-9	13	2.5%
ANC attendance	One Visit	1	0.2%
	Two Visits	27	4.9%
	Three visits	124	22.6%
	4+ visits	396	72.3%
Was an individual birth plan discussed/ written by the health care provider?	Can't tell/remember	20	3.6%
	No	94	17.1%
	Yes	404	73.7%
Who gives final decision where you have to give birth?	Husband	130	23.7%
	My self	382	69.7%
	Other relatives	36	6.6%
Did you use family planning before your current pregnancy?	No	397	72.4%
	Yes	151	27.6%
Were you visited by a CHV in your last pregnancy?	No	156	28.5%
	Yes	392	71.5%
Did the CHV discuss birth preparedness with you?	No	60	10.8%
PNC attendance	Yes	333	60.8%
	Yes	326	59.5%
	No	222	40.5%
PNC attendance	1	408	74.4%
	2	88	16.1%
	3	52	9.5%
	4+	0	0

95

Relationship between Maternal/Obstetric factors and utilization of Birth Preparedness Plan

Significant factors found to influence utilization of a birth plan were previous complications in pregnancy/delivery (p=0.039), mothers who had opinion of saving for birth(p=0.016), Those mothers who a birth plan was discussed during ANC by health care provider(p=0.046), Ante natal care attendance (P=0.000), trimester of first ANC attendance(p=0.000), Post-natal Care attendance (p=0.001) and CHV discussion of birth preparedness(p=0.001). Those who made their first ANC visit in the first trimester of their pregnancy were one and a half times more likely to utilize a birth plan those who made visits in later trimesters. (OR=1.49 95% CI=1.3-3.71, p=0.000) Similarly, those who had attended one to three post-natal care showed that they had 2.3 times likelihood of having utilized a birth plan than those who never made any visit. (OR=2.345 95% CI=1.447-3.801, p=0.001). The results are shown in table 4 below.

Table 4: Association between maternal factors and birth plan utilization

Characteristic	IBP utilized (f, %)	p value	OR	95% C.I. Lower	Upper	AOR (95% CI)
Number of pregnancies						
1	39(16.8)	0.646	0.903	0.585	1.394	0.881(0.411-0.993)
2	49(21.1)	0.621	2.248	1.127	4.485	1.892(0.782-3.754)
3+	144(62.0)	Reference				
Age at first pregnancy						
<19	101(43.5)	0.901	1.005	0.932	1.083	_
20-29	131(56.5)	Reference			1.211	
Number of births						
1	41(17.7)	0.645	0.904	0.59	1.387	0.822(0.447-1.116)
2	47(20.3)	0.724	0.922	0.688	1.632	0.654(0.544-1.532)
3+	154(62.0	Reference				
Children born alive						
1	41(17.7)	0.506	1.216	0.684	2.161	1.111(0.584-1.998)
2	46(19.8)	0.733	0.344	0.554	1.766	0.272(0.338-1.213)
3+	144(62.5)	0.595	1.334	0.743	2.922	1.222(0.673-2.791)
children born dead						
1	19(8.2)	0.723	1.087	0.686	1.721	0.994(0.524-1.583)
2	4(1.7)	0.933	2.111	0.733	1.563	1.772(0.632-1.332)
3+	4(1.7)	Reference				
Children alive now						
1	42(18.1)	0.913	0.966	0.525	1.78	0.881(0.311-1.438)
2	48(20.7)	0.887	0.944	0.665	2.776	0.872(0.552-2.435)
3+	142(61.2)	Reference				
pregnancy/delivery complication						
Yes	73(31.5)	0.039	2.627	1.387	3.016	2.72(1.229-2.874)
No	159(68.5)	Reference				
IBP discussed by health care provider at ANC						
Yes	94(83.6)	0.046	2.779	1.251	2.922	2.324(0.998-1.668)
No	27(11.6)	Reference				
Opinion on birth preparation (f, % in fig 4)						
No opinion		Reference				
Identify health facility for delivery		0.172	10.448	0.36	303.08	9.765(0.244-300.05)
Identify skilled Birth Attendant		0.555	1.285	0.56	2.949	1.004(0.461-1.832)
Identify support Companion		0	2.793	1.642	4.75	1.993(1.378-3.995)
Make savings for birth		0.016	1.198	0.053	1.737	1.003(0.047-1.634)
Make transport arrangements		0.138	0.361	0.094	1.386	0.228(0.611-1.005)
Identify blood donor		1	0.564	0.134	3.767	0.493(0.932-2.467)
Final decision maker on where to give birth						
Myself	185(79.7)	0.235	0.542	0.197	1.489	0.433(0.882-1.321)
Husband	39(16.8)	0.473	1.409	0.552	3.595	1.300(0.448-3.225)
Other relatives	8(3.4)	Reference				
ANC attendance						
1-3	42(16.1)	Reference				
4+	190(81.9)	0	2.447	1.288	3.695	2.17(1,154-2.234)
ANC first visit month						
1-3	103(45.4)	0	1.494	1.343	3.713	1.378(1.278-3.452)
3-6	120(52.9)	0.101	0.036	0.108	0.129	0.222(0.993-0.083)
7-9	4(1.8)	Reference				
Use of Family planning						
Yes	90(38.8)	0.377	0.257	0.554	0.774	0.179(0.499-0.698)
No	142(61.2)	Reference				
CHV discussing Birth preparedness						
Yes	170(73.3)	Reference				
No	16(6.9)	0.001	0.341	0.185	0.627	0.279(0.123-0.331)
PNC attendance						
1-3	127(64.8)	0.001	2.345	1.447	3.801	2.111(1.331-3.436)
Not attended	222(40.5)	Reference				

5. LIMITATIONS OF THE STUDY

The study focused on Moyale Sub-County only; therefore, the study's results cannot be generalized to other Sub-Counties in Kenya.

6. CONCLUSION

The study assessed birth plan utilization and associated factors among post-natal women attending maternal child health services in Moyale Sub County, Kenya. The study's findings discovered that utilization of IBP was low, 42.3% of mothers having used the plan. From the study, several socio-demographic factors, maternal/obstetric and health system related factors were found to contribute to utilization of individual birth planning. Socio-demographic factors observed include the level of education with secondary and post-secondary level of education contributing positively to utilization of a birth plan. Maternal/obstetric factors seen to enhance use of individual birth plan included previous experience of complications, be it in pregnancy, birth or post- partum period. Women who had a history of complication, showed propensity to use individual Birth plan. Early attendance of ANC in the first trimester of pregnancy and attending more than 4 ANC visits were also seen to positively influence IBP use. When it came to health system related factors, the longer the distance to reaching the facilities negatively affected use of IBP, negative attitude of health care workers was also seen to affect negatively the uptake and utilization of Individual Birth plan.

RECOMMENDATIONS…

To promote uptake of individual birth plan utilization in Moyale sub county, the study proposes the following:

1. Improving quality of ANC, especially prioritizing early counselling on IBP and obstetric danger signs to pregnant women.
2. Improving quality of health education given by CHV's during home visits to pregnant mothers and prioritizing IBP and awareness of danger signs in the education.
3. Strengthen literacy levels to secondary and post-secondary levels especially for women within the sub county
4. Increasing access to health facilities and equipping health facilities with drugs, supplies and equipment that shall improve safer deliveries within the sub county.
5. Educating health care staff on work ethics and public relations in order to serve client/patients well.

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