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Original Research Article

Assessment of predictors of unskilled delivery among women seeking immunization services in Kitui County, Kenya

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ABSTRACT

Background: Globally, maternal mortality was the second leading cause of mortality among women of reproductive age in 2016 after HIV/AIDS. In 2017, global and Africa maternal mortality rate (MMR) was 211 and 547 maternal deaths per 100,000 live births respectfully. Unskilled delivery is one of the underlying causes of maternal mortality.
Methods: The study assessed the predictors of unskilled delivery among women in Kitui County, Kenya. The facility-based study was cross-sectional with mixed method of data collection. Facilities were selected through simple random sampling and systematic sampling for participants. A structured questionnaire was administered among 380 women seeking immunization services and analysed using Stata. Twelve key informant interviews were conducted and analysed thematically.
Results: The level of unskilled delivery was 29.21%. On inferential analysis income [p=0.023], education [p=0.002], ANC visits [p=0.014], birth preparedness (BP) [p=0.042] and maternal complications [p=0.027], time taken to health facility [p=0.030] and quality of care [p=0.001] were statistically associated with unskilled delivery, p<0.05, C.I.=95%. On logistic regression low income (AOR=4.8356), low education (AOR=4.3169), few ANC visits [aOR=2.6444], lack of BP [aOR=5.0499], history of maternal and child complications [aOR=6.0237], longer time to health facility [aOR=0.1652] and poor quality of care [aOR=0.5615] were positively associated with unskilled delivery.
Conclusions: The level of unskilled delivery in Kitui county was 29.21%. Predictors of UBA were low income, low education, fewer ANC visits, lack of BP, history of maternal and child complications, longer time to health facility and poor quality of care.

Keywords: Unskilled delivery, Unskilled birth attendance, Maternal mortality, Predictors, Birth preparedness

INTRODUCTION

Hindrances to optimal and timely access to maternal health in developing countries remain high. Globally, maternal mortality was reported to be the second leading cause of mortality among women of reproductive age in 2016 after HIV/AIDS.[1] In 2017, sub-Saharan Africa and Asia accounted for approximately 86% of maternal deaths globally. Sub-Saharan Africa alone accounted for over 66% of the global maternal mortality. About 75% of maternal deaths would be prevented if women had access to the interventions for preventing pregnancy and birth related complications.[2] One of the most important strategies towards mitigation of maternal mortality is by ensuring that a skilled birth attendant with the necessary skills is available during pregnancy, delivery and postnatal.[3] Place of delivery and birth attendant have great influence on maternal health outcome among pregnant women.[4] Unskilled delivery is highly associated with obstetric complications leading to high incidences of infant resuscitation, still birth or neonatal death.[5] The level of unskilled deliveries in Kenya is still very high. Most of these unskilled deliveries end up being reported to health facilities when they result in obstetric complications. According to Jhpiego et al, facility delivery is a good indicator of delivery.[6] To enhance the affordability of

maternity services, Kenya abolished the user fee for maternity services under the Free Maternity Service policy, in 2013 for all public health facilities.[7] Unskilled delivery has been identified as one of the underlying causes of maternal morbidity and mortality.[8] According to DHIS 2019, Kitui county ranked the tenth lowest in skilled delivery coverage in Kenya.[9] Despite the efforts by the county government of Kitui, NGOs and FBOs working in Kitui, towards increasing health facility deliveries, the utilization of SBA was suboptimal at 65.2% below the national coverage of 77.4%. Kitui ranked among the top ten counties on low SBA coverage which was a worrying trend worth investigation.[10] There is insufficient data on the predictors of unskilled delivery in Kitui. The objectives of this study were to determine the level of unskilled delivery and the socio-demographic maternal and health system related factors influencing unskilled delivery among women seeking immunization services in Kitui county, Kenya. Findings generated informed the maternal health actors on measures to employ to reduce unskilled delivery.

METHODS

Study design

This was a mixed cross sectional analytical study conducted in selected public health facilities in Kitui county, Kenya from February to April 2023.

Study population

The study population included women with children aged 0-6 months seeking immunization services in the selected public health facilities. Women with children aged 0-6 months were less likely to have recall bias. This study was a facility-based study targeting women visiting the child welfare clinic and healthcare workers. Women who delivered out of facility were also likely to turn up for immunization services in the facilities. A sample size of 380 was estimated using Cochran's formula as applied by Fisher with an estimation of 10% non-response.

Inclusion and exclusion criteria

The study included women with children aged 0 – 6 months seeking immunization services in the selected public health facilities in Kitui county who consented to voluntary participation. Women who were medically and mentally ill and those who did not deliver within Kitui county were excluded.

Sampling

Kitui county and Kitui South sub county were purposively sampled owing to the poor maternal health outcomes in the area. Facilities were sampled from every ward using simple random sampling method. The sample size for each facility was determined proportionately to the child welfare clinic clientele volume. Sampling for respondents was done through systematic random sampling once the mother had completed the clinic appointment. Once the first respondent had been identified by simple random method through the tossing of a coin, the subsequent respondents were identified systematically at a sampling interval of four. Key informant interviewees were purposively sampled, and sample size determined by data saturation.

Research instruments

Pretested structured questionnaire was used to collect quantitative data and key informant guides for health care workers, Community health volunteers and TBAs were used for qualitative data. External validity was met by ensuring probability sampling methods were used to select the sample without bias. This ensured that the sample was a true representation of women in Kitui county. To ensure content validity, the research instruments were prepared in consultation with research supervisors and tested in Kibwezi west sub-county. The key informant interview guide was presented to midwives for their review and expert opinion. Validated questionnaires were also adapted. The questionnaire assessed the level of unskilled delivery and the socio-demographic, maternal related and health system factors influencing unskilled delivery among women seeking immunization services in Kitui county.

Data collection and analysis

Data was collected by 5 research assistants. Mothers seeking immunization were interviewed as they exited the child welfare clinic, health care providers, CHVs and TBAs were interviewed within the health facility. The quantitative data was analysed using Stata version 14. Inferential statistics were used to test hypothesis and logistic regression was used to assess the strength of association. Thematic analysis was applied for qualitative data.

Ethical consideration

Ethical clearance was obtained from Mount Kenya University Ethics Review Committee (MKUERC).

RESULTS

Socio-demographic characteristics of the respondents

Most of the respondents (41.6%, n=158) were aged between 15–24 years and majority had attained primary education as the highest level of education attained, (56.1%, n=213). Majority of the women were married, (63.4%, n=241) and on religion, Christians of protestant denomination were found to be 77.0%. Regarding monthly household income of the respondents, close to three quarters of the respondents (70.3%, n=267) earned a monthly household income of below Kshs 10,000. On cultural perceptions about 10.53% strongly agreed that delivery outside health facility is better than facility

delivery and 14.21% strongly agreed that giving birth is mostly a woman's matter and husbands/partners have little to contribute.

Table 1: Socio-demographic characteristics of the respondents (n=380).

Parameters	Freq-uency	Perc-ent	Cumul-ative percent
Age (years)			
15-24	158	41.6	41.6
25-34	154	40.5	82.1
35-44	64	16.8	98.9
45+	4	1.1	100.0
Current education level			
Never attended school	13	3.4	3.4
Primary	213	56.1	59.5
Secondary	127	33.4	92.9
College/University	27	7.1	100.0
Religion/denomination			
Catholic	84	22.0	22
Protestants	293	77.0	99
Muslim	1	0.0	99
Other	2	1.0	100.0
Marital status			
Single	120	31.6	31.6
Widowed	9	2.4	34.0
Separated	8	2.1	36.1
Divorced	2	0.5	36.6
Married	241	63.4	100.0
Gender of household head			
Female	116	30.5	30.5
Male	264	69.5	100.0
Household income			
<10,000	267	70.3	70.3
10,000-20,000	75	19.7	90.0
>20,000-30,000	6	1.6	91.6
>30,000-39,000	22	5.8	97.4
>39,000	10	2.6	100.0

Kshs=Kenya shillings.

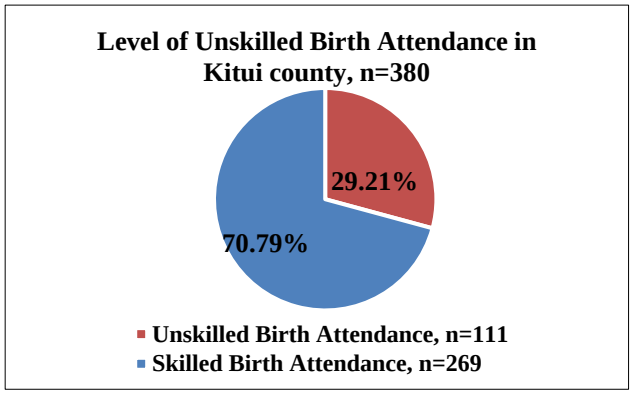

Figure 1: Level of unskilled delivery.

Level of unskilled delivery

The overall level of unskilled birth attendance in Kitui county was found to be 29.21 percent, compared to skilled birth attendance at 79.79 percent (n=380).

The highest number of births occurred in government hospitals (40.53%, n=154) followed by those that occurred at homes (28.68%, n=109). Only 3.16% of the deliveries were done in private hospitals.

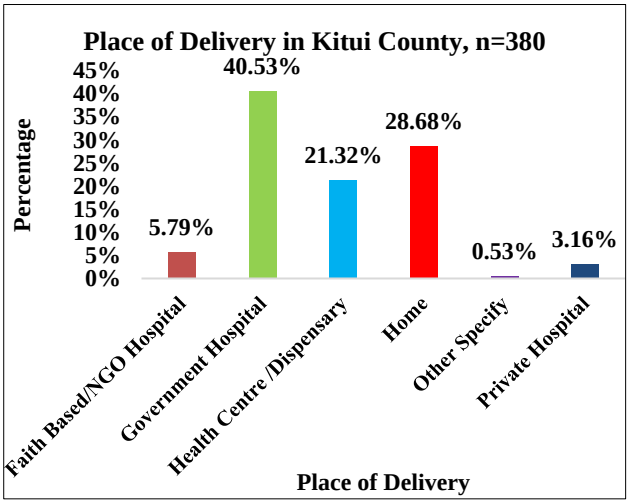

Figure 2: Level of unskilled birth attendance in Kitui County.

Maternal related factors

The level of birth preparedness was found to be high at 91.84%, only four women did not visit a facility for ANC during their previous pregnancy. Most of the respondents, 85.26%, had attended at least four ANC visits. Although majority of the women had late ANC initiation, those who began during their first trimester was high at 48.16%. The proportion of women who had complications after delivery was 9.74%. Mothers who reported that their babies suffered health complication after birth were 21 which translated to 5.53% of the total 380 respondents. Majority of the women, 48.16%, initiated their ANC visits within their first trimester. Three women were not certain on which trimester of their pregnancy they initiated ANC visits.

"When we visit households, we always educate women on individual birth preparedness, such as saving money for transport, selecting the facility to deliver, and having a birth companion. However, some women are ignorant and do not follow our advice perhaps due to different individual challenges." CHV – KII.

"Most women are privy to birth preparedness and complications readiness, however implementing those plans becomes a challenge due to lack of finances, lack of livelihood and residing in hard-to-reach areas." – Nurse – KII.

Table 2: Maternal related factors of the respondents.

Variables	Frequency	Percentage
Number of live births		
Once	111	29.21
Twice	107	28.16
Three or more	162	42.63
Mother complications after delivery		
Yes	37	9.74
No	343	90.26
Baby complications after delivery		
Yes	21	5.53
No	359	94.47
Birth preparedness		
Yes	349	91.84
No	31	8.16
Number of ANC visits		
No visit	4	1.05
Once	4	1.05
Twice	13	3.42
Thrice	35	9.21
Four or more	324	85.26
Trimester of first ANC		
Not visited	4	1.05
First trimester	183	48.16
Second trimester	181	47.63
Third trimester	9	2.37
Don't know	3	0.79

Health systems related factors

Women who preferred to be attended by a male birth attendant were 45.53%, compared to 44.74% who preferred a female birth attendant. However, 9.74% of the women had no preference to any gender.

The overall quality of care was rated as good or very good by a large majority, 91.84%. Only 2.37% of the respondents rated the quality of care as poor or very poor.

More than half of the women, 59.03%, took between one to less than two hours to access a facility for delivery whereas 3.25% of the women took more than two hours. The leading mode of transport to places of delivery was *BodaBodas* at 76.21%, those who confirmed to walk to the facility for delivery were 9.67% and only 1.12% used their own or private means.

"We are in a very far area with very few facilities with maternity services. We can't just sit and see our women suffer, they come to us, and we assist them with or without a token of appreciation." – TBA – KII3.

".....The women may not tell you the truth, they love our services because we are women. In the hospital, they say that they are attended by young men and some of the doctors are harsh."-TBA – KII4.

Table 3: Health systems related factors.

Variables	Frequency	Percentage
Preferred gender of birth attendant		
Female	170	44.74
Male	173	45.53
No preference	37	9.74
Overall quality of care		
Good	349	91.84
Neutral	22	5.79
Poor	9	2.37
Time taken to reach facility for delivery (hours)		
<1	132	37.82
1-2	206	59.03
>2	11	3.15
Transport to place of delivery		
Ambulance	3	1.12
Bodaboda	205	76.21
By foot	26	9.67
Own /private car	3	1.12
Taxi /Matatu	32	11.90

Bivariate associations between independent factors and unskilled delivery

The highest level of education attained, and monthly household income were the socio-demographic factors that had significant statistical association with unskilled delivery.

Association of maternal related factors and unskilled birth attendance

History of maternal complications, birth preparedness and number of ANC visits had significant statistical association with UBA, p=0.027, p=0.042, p=0.014 respectively, [p<0.05, C.I=0.95].

Association of health system related factors and unskilled birth attendance

The quality of care provided during ANC visits, previous deliveries, or other healthcare services in the facility (p=0.001) and time taken to the nearest facility for delivery p=0.030 were found to be significantly associated with practice of unskilled delivery, [α=0.05, C.I.=0.95].

Predictors of unskilled delivery

The variables that had significant statistical association at 95% level of confidence, were further tested on logistic regression to show the strength and direction of association. On logistical regression, increase in education was associated with decrease in practice of unskilled birth attendance. Women who had no formal education were 4.8356 times more likely to pursue unskilled birth attendance compared to women who had attained university or college education. Using a monthly

household income of Kshs 40,000 and above as the reference category, mothers from household earning monthly income of less than Kshs 10,000 were 4.3169 times more likely to use unskilled birth attendance.

Women who had no prior birth preparation were 5.0499 times more likely to deliver under unskilled birth attendance in reference to those who had practiced birth preparedness. Women who had no history of maternal or child complications after delivery, were 6.0237 times more likely to deliver through unskilled birth attendance compared to women who had previously had maternal or child complications after delivery. Women who had had less than 4 ANC visits had 2.6444 odds had 2.6444 odds of practicing unskilled birth attendance compared to their counterparts who had more than four visits. Women who took less than one hour to the nearest facility of delivery, were less likely to practice unskilled birth attendance with 0.1375 odds compared to those who took more than two hours to the facility of delivery. Women who had a positive (good or very good) review on the quality of healthcare provided before were used as the reference category in this variable. Those with neutral or negative reviews (poor or very poor) had 0.5615 odds of practicing unskilled birth attendance.

Table 4: Association of demographic factors and unskilled delivery.

Variables	UBA	SBA	Test	df	P value
Age (years)					
15-24	46 (29.11)	112 (70.89)	Fisher's exact test		0.754
25-34	43 (27.92)	111 (72.08)			
35-44	20 (31.25)	44 (68.75)			
45+	2 (50)	2 (50)			
Highest education level attained					
College/University	5 (18.52)	22 (81.48)	Pearson X^2=15.2532	3	0.002
No school	5 (38.46)	8 (61.54)			
Primary	78 (36.62)	135 (63.38)			
Secondary	23 (18.11)	104 (81.89)			
Marital status					
Divorced	1 (50)	1 (50)	Fisher's exact test		0.101
Married	60 (24.90)	181 (75.10)			
Separated	3 (37.50)	5 (62.50)			
Single	43 (35.83)	77 (64.17)			
Widowed	4 (44.44)	5 (55.56)			
Religion/denomination					
Catholic	25 (29.76)	59 (70.24)	Fisher's exact test		0.822
Muslim	0 (0)	1 (100)			
Protestant	85 (29.01)	208 (70.99)			
Others	1 (50)	1 (50)			
Gender of household head					
Female	39 (33.62)	77 (66.38)	Pearson Chi^2=1.5705	1	0.210
Male	72 (27.27)	192 (72.73)			
Income					
<10,000	89 (33.33)	178 (66.67)	Fisher's exact test		0.023
10,000-20,000	17 (22.67)	58 (77.33)			
>20,000-30,000	2 (33.33)	4 (66.67)			
>30,000-39,000	3 (13.64)	19 (86.36)			
>39,000	0 (0.00)	10 (100.00)			

Kshs=Kenya shillings, *p<0.05 is significant, X^2=Chi square, df=degrees of freedom, UBA=unskilled birth attendance, SBA=skilled birth attendance.

Table 5: Association of maternal related factors and unskilled birth attendance.

Variables	SBA	UBA	Test	df	P value
Number of live births					
One	34 (30.63)	77 (69.37)	Pearson X^2= 4.1336	3	0.247
Two	24 (22.43)	83 (77.57)			
Three	17 (28.81)	42 (71.19)			
Four or more	36 (34.95)	67 (65.05)			

Continued.

Variables	SBA	UBA	Test	df	P value
Child complications					
Yes	16 (76.19)	5 (23.81)	Pearson X^2=0.3136	1	0.575
No	253 (70.47)	106 (29.53)			
Mother's complications					
Yes	32 (86.49)	5 (13.51)	Pearson X^2=4.8845		0.027
No	237 (69.1)	106 (30.9)			
Birth preparedness					
Yes	97 (27.79)	252 (72.21)	Pearson X^2=4.1531	1	0.042
No	14 (45.16)	17 (54.84)			
Number of ANC visits					
None	0 (0)	4 (100)	Fisher's exact test		0.014
One	3 (75)	1 (25)			
Two	9 (69.23)	4 (30.77)			
Three	23 (65.71)	12 (34.29)			
Four or more	185 (76.13)	58 (23.87)			
Trimester of first ANC					
Don't know	1 (33.33)	2 (66.67)	Fisher's exact test		0.175
First	137 (74.86)	46 (25.14)			
Second	111 (70.25)	47 (29.75)			
Third	20 (62.5)	12 (37.5)			

*P<0.05 is significant, X^2=Chi square, df=degrees of freedom, UBA=unskilled birth attendance, SBA=skilled birth attendance.

Table 6: Association of health system related factors and unskilled birth attendance.

Variables	SBA	UBA	Value	df	P value
Time taken to the nearest delivery facility (hours)					
<1	34 (25.76)	98 (74.24)	Pearson X^2=6.9886	2	0.030
1-2	43 (20.87)	163 (79.13)			
>2	6 (54.55)	5 (45.45)			
Quality of care					
Good	94 (26.93)	255 (73.07)	Fisher's exact test		0.001
Neutral	10 (45.45)	12 (54.55)			
Poor	7 (77.78)	2 (22.22)			
Preferred gender of birth attendant					
Female	49 (28.82)	121 (71.18)	Pearson X^2 = 3.8688	2	0.145
Male	56 (32.37)	117 (67.63)			
No Preference	6 (16.22)	31 (83.78)			

*P<0.05 is significant, X^2=Chi square, df=degrees of freedom, UBA=unskilled birth attendance, SBA=skilled birth attendance.

Table 7: Predictors of unskilled birth attendance.

UBA variables	aOR	S.E	r	z	P value	[95% C.I]	
						Lower	Upper
Monthly household income							
<10,000	4.3169	2.9994	0.6352	2.1	0.035	1.1060	16.8493
10,000-20,000	3.9179	3.9515	0.5931	1.25	0.801	0.2634	6.1316
>20,000-30,000	3.6153	4.7674	0.5581	0.97	0.33	0.2727	47.9292
>30,000-39,000	1.0000						
>39,000 (Ref)							
Highest level of education							
Never attended school	4.8356	4.8797	0.6845	1.56	0.118	0.6691	34.9471
Primary	1.8587	1.0930	0.2692	1.05	0.292	0.5871	5.8848
Secondary	0.5288	0.3418	-0.2767	-0.99	0.324	0.1490	1.8769
College/University (Ref)							

Continued.

UBA variables	aOR	S.E	r	z	P value	[95% C.I]	
						Lower	Upper
Birth preparedness							
Yes (Ref)							
No	5.0499	2.6083	0.7033	3.14	0.002	1.8350	13.8974
Number of ANC visits							
Less than 4 visits	2.6444	0.8549	0.4223	3.01	0.003	1.4034	4.9831
4 or more than 4 ANC visits (Ref)							
Maternal and child complications history after birth							
Yes (Ref)							
No	6.0237	55.1212	0.7799	3.19	0.001	4.3664	482.85
Time taken to the facility of delivery							
<1 hour	0.1375	0.0804	-0.8617	-2.65	0.008	0.0144	0.5301
1-2 hours	0.1652	0.1525	-0.7820	-1.95	0.051	0.0270	1.0086
>2 hours (Ref)							
Quality of care at health facility							
Good/very good (Ref)							
Poor/very poor	0.5615	0.4316	-0.2507	-0.75	0.453	0.1245	2.5328
_cons	0.0092	0.0138		-3.14	0.002	0.0005	0.1721

Kshs=Kenya shillings, *p<0.05 is significant, CI =confidence interval, AOR=adjusted odds ratio.

DISCUSSION

Level of unskilled delivery in Kitui County, Kenya

The study aimed to determine the level of unskilled birth attendance in Kitui county. The prevalence was found to be high at 29.21% against the WHO international recommendation for 2025 global target of at least 90% of skilled deliveries.[11] This deficit can be attributed to some socio-demographic factors such as low level of education, low-income status, maternal related factors, and health system related factors among women in rural hard to reach parts of Kitui county, as evidenced by the statistical significance in test for association. In neighbouring Ethiopia, a study in Angolella Tara area found the level of unskilled birth attendance to be at 31.5% which is slightly higher than Kitui.[12] According to the KDHS 2019, Kitui county ranked tenth among the counties with low SBA at 65.2% below the national coverage of 77.3%.[13] In the sub-Saharan Africa, the level of unskilled birth attendance is at 27% which is slightly lower than in Kitui county.[14] However, these findings are relatively low compared to some sub-Saharan countries for instance Chad. In a spatial and multilevel analysis of unskilled birth attendance in Chad by Acquah et al found the level of unskilled birth attendant to be very high at 61.5%.[15] In both studies, income and level of education were found to be statistically significant. Kenya is much ahead of Chad in economic status, and which may explain the huge difference in the level of unskilled birth attendance. In 2020, Mutiiria et al study involving 245 women, found the level of skilled birth attendance in Kitui county to be 50.4%, thus unskilled birth attendance at 49.6%.[16] This shows a 20.39% decrease in the number of unskilled birth attendance over a period of three years in the county. This can be contributed by several reproductive health interventions by the national government, county government and private actors.

Socio-demographic factors of the respondents in Kitui County, Kenya

The socio-demographic factors studied included woman's highest level of education attained, age, religion, monthly household income, gender of household head, marital status, and culture. Education and household income were found to have significant statistical association with unskilled delivery [p value=0.023 respectfully], α=0.05. These findings correlate with findings from a multivariate-geospatial analysis of demographic and health surveys for women in sub-Saharan Africa that found lack of or low education to have a significant association with unskilled birth attendance.[17] On studying influence of socio-demographic factors on utilization of skilled birth attendance in Kitui county, Kaprom found increase in level of education to have positive correlation with skilled birth attendance.[18] Educated women are more informed about the importance of skilled birth attendance, the risks and dangers associated with unskilled birth attendance and therefore more proactive on utilizing skilled birth services.[19] Kasso et al found that a significant number of women had opted to utilize unskilled birth services from TBAs in Port Harcourt, Southern Nigeria, because there were cheap compared to skilled birth attendants based in health facilities. It is their low income that predisposes them to unskilled birth attendance and not by choice.[20]

Maternal health related factors of the respondents in Kitui County, Kenya

The maternal related factors studied included number of live births, maternal complications following delivery, child complications after birth, number of ANC visits, trimester of first ANC visit and birth preparedness. At 5% level of significance, ANC visits [p=0.014], birth preparedness [p=0.042] and maternal complications

[p=0.027] had significant statistical association with unskilled birth attendant. In assessing the relationship between attendance of at least four ANC visits and skilled birth attendance, Nkeeto found that attending at least four ANC visits was a positive predictor of skilled birth attendance.[21] Wanjohi et al in a study on the predictors of birth preparedness in Laikipia county, Kenya, concluded that practice of birth preparedness is an integral endeavour towards total eradication of unskilled delivery.[22]

Health system related factors in Kitui County, Kenya

The health systems related factors studied included the quality of care provided, time taken to access the facility of delivery, means of transport to the facility of delivery and gender preference of birth attendant. Time taken to reach to the health facility was found to have significant statistical association with unskilled birth attendance. Women who took more than one hour had higher odds of practicing unskilled birth attendance than those who took less than one hour to access a health facility with maternity services in Kitui county.

In a similar study in Angolella Tara, Ethiopia, women who accessed a health facility in more than one hour, were 3.46 times more likely to practice unskilled birth attendance compared to those who accessed a health facility in less than one hour.[23] These findings are further confirmed in a case control study in Wondo Genet, Sidama Region, Ethiopia, that less than half hour to reach health facility had 2.14 odds of unskilled birth attendance.[24]

This study found quality of healthcare provided at the facility to be a strong predictor of unskilled birth attendance in Kitui county. An exploration of the reasons why women prefer home deliveries as opposed to skilled deliveries in rural northern Ghana found that quality of care provided at the facility to be the main reason followed by lack of finances.[25] Long distance to access skilled birth services in Kitui county is a major impediment as in many other parts of Kenya. A study on awareness and utilization of maternal healthcare services among women in Mt. Elgon Sub-County also identified long distance as a major deterrent despite the services being free.[26] Inaccessibility to health facility, therefore, greatly contributes to unskilled birth attendance which in turn is an underlying cause of maternal mortality. Such challenges are attributable to the sluggish trend in achieving the SDG 3.1.1 target of reducing the global MMR to less than 70 per 100,000 live births by 2030.[27]

Limitations

The study was conducted in a purely rural and interior setting of Kitui south sub-county in Kitui county. Therefore, the study findings were not a perfect representation of the women of Kitui county residing in urban areas within the county and other urban areas of Kenya.

The study did not collect information from the partner perspective to substantiate the findings. The accuracy of the information purely depended on respondent ability to recall past information regarding their previous pregnancy. The study did not capture women not utilizing health facilities.

CONCLUSION

The study found the level of unskilled birth attendance in Kitui county to be at 29.21%. Woman who had no formal education were more likely to pursue UBA compared to women who had attained university or college education. On monthly household income, women with low income were likely to use unskilled birth attendance services. Women who did not practice birth preparedness, had less than four ANC visits and no history of maternal and child complications, had earlier received poor quality healthcare in the facilities or had taken more than one hour to access health facility, were more likely use unskilled delivery services in Kitui county, Kenya.

Recommendations

The ministry of education should focus on strengthening programs to keep girls in schools and enhance women education. The health care workers should encourage pregnant women to have group savings and ANC wallets to enable them to prepare for their births. Efforts should be made by national and county governments to ensure accessibility of maternity services. The county governments should leverage the community health system to create awareness through the community health volunteers on utilization of individual birth plans and promote early ANC. Group savings and ANC wallets among pregnant mothers can ensure access to revolving funds necessary to help women to plan for their births and meet transport costs for skilled birth attendance. On quality of care, HCWs should be trained on respectful maternity care. The researcher recommends for further studies to assess how long distance to facility impact on maternal and new-born health.

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REFERENCES

1. WHO, UNFPA, & WORLDBANK. Trends in maternal mortality 2000 to 2017: estimates. In Sexual

and Reproductive Health. 2019. Available at: https://www.who.int/reproductivehealth/publications/maternal-mortality-2000-2017/en/. Accessed on 09 August 2023.
2. World Health Organization. Fact sheets on sustainable development goals: health targets Maternal health. WHO Library Cataloguing-in-Publication Data. 2017;2:1-8. Available at: https://www.who.int/europe/publications/i/item/WHO-EURO-2017-2363-42118-58039. Accessed on 09 August 2023.
3. Ali Ibrahim H. Predictors of Utilization of Skilled Birth Attendants Among Women of Reproductive Age in Mandera East Sub County, Mandera County, Kenya. Sci J Public Health. 2017;5(3):230.
4. World Health Organization. Maternal mortality Evidence brief. Maternal Mortality. 2019;1:1-4. Available at: https://apps.who.int/iris/bitstream/handle/10665/329886/WHO-RHR-19.20-eng.pdf?ua=1. Accessed on 09 August 2023.
5. NCPD, & UNFPA. The State of Kenya Population 2020: Zero Harmful Practices-Accelerating the Promise of ICPD25 - (National Council for Population Development) & United Nations Population Fund). 2020;1-52. Available at: https://ncpd.go.ke/wp-content/uploads/2020/07/state-of-kenya-pop-report.pdf. Accessed on 09 August 2023.
6. JHPIEGO. Monitoring Tools Birth Preparedness & Complication Readiness (BPCR). 2017. Available at: https://pdf.usaid.gov/pdf_ docs/Pnada619.pdf. Accessed on 09 August 2023.
7. Pyone T, Smith H, Van Den Broek N. Implementation of the free maternity services policy and its implications for health system governance in Kenya. BMJ Global Health. 2017;2(4):1-11.
8. World Health Organization. Monitoring health for the Sustainable Development goals. Sàr LC, Editor. World Health Organization (Issue 1). World Health Organization. 2019.
9. DHIS. DHIS 2 Pivot Tables. 2019. Available at: https://hiskenya.org/dhis-web-pivot/index.html. Accessed on 09 August 2023.
10. Ministry of Health. Kenya Country Summary—Selected Demographic and Health Indicators Data. Knbs, March. 2019. Available at: http://www.mcsprogram.org/wp-content/uploads/ 2017/04/ Kenya-Country-Summary-March-2017-1.pdf. Accessed on 09 August 2023.
11. WHO and UNFPA. Ending preventable maternal mortality (EPMM): A renewed focus for improving maternal and newborn health and welbeing. World Health Organization. 2021. Available at: https://www.who.int/news/item/05-10-2021-new-global-targets-to-prevent-maternal-deaths. Accessed on 09 August 2023.
12. Taye BT, Zerihun MS, Kitaw TM, Demisse TL, Worku SA, Fitie GW, et al. Women's traditional birth attendant utilization at birth and its associated factors in Angolella Tara, Ethiopia. PLoS One. 2022;17(11):e0277504.
13. KNBS. Maternal Health Indicators in High-Priority Counties of Kenya. 2018. Available at: https://www.dhsprogram.com/pubs/pdf/AB2/AB2.pdf. Accessed on 09 August 2023.
14. Addo IY, Acquah E, Nyarko SH, Boateng ENK, Dickson KS. Factors associated with unskilled birth attendance among women in sub-Saharan Africa: A multivariate-geospatial analysis of demographic and health surveys. PLoS One. 2023;18(2):e0280992.
15. Acquah E, Nyarko SH, Boateng ENK, Dickson KS, Addo IY, Adzrago D. Spatial and multilevel analysis of unskilled birth attendance in Chad. BMC Public Health. 2022;22(1):1561.
16. Mutiiria MM, Mbugua GG, Marwanga D. Factors associated with health facility delivery in Kitui County: a cross sectional study. F1000Research. 2020;9:522.
17. Addo IY, Acquah E, Nyarko SH, Boateng ENK, Dickson KS. Factors associated with unskilled birth attendance among women in sub-Saharan Africa: A multivariate-geospatial analysis of demographic and health surveys. PLoS One. 2023;18(2):e0280992.
18. Kaprom BC. Influence of Sociodemographic Factors on Utilization of Skilled Birth Care in West Pokot County, Kenya. Am Res J Human Soc Sci. 2015(11):35-41.
19. Kaprom BC. Influence of Sociodemographic Factors on Utilization of Skilled Birth Care in West Pokot County, Kenya. Am Res J Human Soc Sci. 2015(11):35-41.
20. Kasso T, Asuquo GW. Factors influencing women's choice of health care provider during childbirth in Port Harcourt, Southern Nigeria. Int J Reprod Contracept Obstet Gynecol. 2022;11(3):689.
21. Nkeeto B, Yawe BL, Matovu F. The Relationship Between Attendance of at Least Four Antenatal Care Visits and Facility Delivery. Res Square. 2023;4.
22. Wanjohi JM, Wanyoro AK, Makunyi EG. Predictors of birth preparedness among women in Laikipia County, Kenya. Int J Comm Med Public Health. 2022;9(6):2396.
23. Taye BT, Zerihun MS, Kitaw TM, Demisse TL, Worku SA, Fitie GW, et al. Women's traditional birth attendant utilization at birth and its associated factors in Angolella Tara, Ethiopia. PLoS One. 2022;17(11):e0277504.
24. Gaga AG, Abebo TA, Simachew Y. (2023). Predictors of homebirth amidst COVID-19 pandemic among women attending health facilities in Wondo Genet, Sidama Region, Ethiopia: A case control study. PLoS One. 2023;18(5):1-15.
25. Adatara P, Strumpher J, Ricks E. Exploring the reasons why women prefer to give birth at home in rural northern Ghana: A qualitative study. BMC Pregnancy and Childbirth. 2020;20(1):1-10.
26. Furechi O. Awareness and utilization of free maternal healthcare services among women in Mt. Elgon Sub-County, Kenya. Afr J Reprod Health. 2023;1(1):1-7.

27. UNICEF: WHO: World Bank: UN DESA. Levels & Trends in Child Mortality 2019. UN IGME Report. 2019;52.

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