Research Article
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Factors associated with maternal decision against hospital delivery despite ANC attendance in Kakamega central sub county

Abstract

Despite a large proportion of woman attending ANC during pregnancy, a significant percentage still avoid delivering at the health facility. This increases the risk of adverse pregnancies outcomes and deaths. Knowledge of factors associated with the decision against health facility delivery is limited. The main objective was to describe health facility factors associated with maternal decision against despite ANC attendance in Kakamega Central Sub-County. A community based cross sectional study was undertaken focused on a structured interview method in collecting quantitative data. Sample of 332 mothers who attended ANC but did not deliver in a health facility were drawn from a study population. A multistage random sampling method was applied in the selection of a primary data. Factors that made mothers to decide against health facility delivery despite ANC attendance included costs of transport and lunch, lack of supplies and commodities and lack of sufficient preparatory service for delivery emerges as more crucial determinant for decision against health facility. Chi-square tests were used describe single variables and to assess associations between variables. The statistical significance level was set at $p<0.05$. Income source of the women were also associated with the perception on all staff always being available at the facility. We found significant associations between costs, and other costs. Availability of different levels of health facility will not alone solve the problem of low health facility delivery rates. These facilities need to be equally empowered with supplies, staffs who can give quality comprehensive service. Furthermore the women need to be economically empowered to be able to meet other costs like transport and lunch. Focus on increasing financing for maternity service by the government and intersectoral approach for maternal health is crucial in Kakamega Central Sub County. The county government should provide ambulance services for pregnant women, decentralization of delivery services in all health facilities and provide with staffs, supplies and commodities for equity of usage of delivery services, improved road network. Need for constructive and collaborative approach to promote maternal health and need to multi-sectoral approach to overcoming the barriers to health facility deliveries.

Keywords: Health facility delivery, Skilled delivery, Antenatal care

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Background information

Globally, one third of births took place at home without the assistance of a skilled attendant. In Africa, less than 50% of births were attended by a skilled health worker despite an increase from 43% to 57% between 1990 and 2005 in all developing regions. Consequently, two million women had died in Africa during childbirth since 2000. Presence of a functioning health care system, most maternal mortalities are avoidable if complications were detected early. In Kenya, Western Rural area, usage of the ANC was high, but the opportunity to deliver in a health services is not fully utilized. Use of skilled delivery services is low, and almost 1 out of 5 women delivered unassisted Kenya Demographic Health Survey (KDHS, 2009).

Each year, approximately 536,000 women died from pregnancy and childbirth complications with 99% of these deaths occurring in Africa and Asia. Slightly more than half of these deaths (270 000) occurred in sub-Saharan Africa. KDHS, (2009) reported MMR of 488/100,000 which was an increase from the 2003 survey which reported an MMR of 414/100,000. Most maternal deaths occurred during labor, delivery and the immediate postpartum period. Obstetric hemorrhage was the main direct cause accounting for 25% of maternal deaths, infections (15%), unsafe abortion (13%), eclampsia (12%), and obstructed labor (8%). Majority of maternal deaths in Kenya were due to obstetric complications that could have been prevented with adequate medical care during and after delivery.

The safe motherhood initiative was launched in Nairobi with the aim of raising awareness about the numbers of women dying each year from complications of pregnancy and childbirth, and to challenge amelioration of the situation. There were clear strategies and specified interventions for the reduction of maternal morbidity and mortality, often referred to as the Pillars of Safe Motherhood. These included: safe delivery, antenatal care, postnatal care and family planning. Safe delivery ensures that all deliveries were attended by persons with the right knowledge, skills and equipment and also provide post-partum care to mother and baby. These requirements could only be found in a health facility. In an effort to reduce maternal mortality, the indicators of progress are Maternal Mortality Ratio (MMR) and proportion of births attended by skilled attendants. According to Kenya Demographic Health Survey (2009), the percentage of health facility deliveries had fallen consistently from 50% in 1993 to 44% of births in 2008. Hospital deliveries seem to be largely in numbers in urban areas where the numbers of health Facilities were also more than in the rural areas. Kenya's government run health facilities were under-financed and characterized by shortages of most basic essentials including shortage of personnel. Where only 15% of all Kenyan health workers providing maternal health services had received any type of

in-service training in treating delivery-related complications and yet (83%) of expectant mothers access the facilities during delivery. In 2013 government had directed that pregnant women should not pay delivery fees at any government run health facilities. Kenyan TBAs with formal training had been accused of frequently sliding back into their old ways of managing birth, often with disastrous consequences for the women who used their services. According to KDHS (2009), on women autonomy status, decision making on their health status 27.9 self, 45.4 was jointly as man and wife 26.4 was husband and other was 0.3 (44%) of births in Kenya were skilled deliveries, TBAs 28% relatives and friends 21% an assisted 7% Mothers who had more education or wealth were more likely to be assisted by skilled personnel than those mothers who resided in rural areas or who had less education or wealth. The family and community had a say in making and carrying decisions and freedom to move about and interact with outside world. In this regard therefore any factor that impeded a woman from seeking care from health facilities could be seen to be hindering her autonomy and right to enjoy better health care. Some culture refrain women from being attended by males who were not their spouses (World Bank, 1993).

Operational terms

Health facility delivery in this context was considered a delivery conducted within a health facility with the help of a trained health worker.

Skilled birth attendants' definition was restricted to doctors, nurses and midwives.

Reproductive age in women was between the age of 15- 49 years.

Maternal health referred to the wellbeing of a mother during up to 6 weeks after pregnancy.

Research problem

Health services are essentially provided by the ministry of health assisted by mission hospitals and private health institutions. Consequently, the government of Kenya had made maternity service free. The distribution of the health facilities in Kakamega Central Sub County is skewed towards urbanization. This has created unequal distribution and hence difference of distance to be covered by women from different area of residence. Different levels of hospitals provide different quality of service due to difference in infrastructure and human resource. Similarly, because of the levels, the women perceived level of quality to be different according to level of the hospital. On same, the women in the county differed in age, education status, parity, employment status; therefore motivation to decide on place of delivery differs. Similarly these women come from different background regarding cultural and social aspect. Some women come from educated group of the community where there literate and income level are high and hence expected to have access to Health facility delivery services compared to their counterparts from low economic and status. Women have different source of income varying from employment in urban areas to agriculture in peri urban and rural settings. Infrastructure and supplies adequacy depended on the level of the health facility. The higher the level of the health facility, the better it is positioned in terms of infrastructure and supplies. This indicates that, the sub county therefore presents a mixed scenario regarding women's perception on comfort and service given during delivery. Furthermore staffing adequacy or lack of it is determined by the location and level of the health facility whereby urban health facilities tended to have better staffing compared to their counterpart in the lower levels. So far there had not been studies in this region that provided information regarding health facility based factors on negative attitude on women delivering in the hospital.

Purpose of the study

This study aimed at analyzing factors associated with women's decision against hospital delivery despite ANC attendance in Kakamega Central Sub County in Kenya.

Main objective of the study

To describe factors associated with maternal decision against hospital delivery despite ANC attendance in Kakamega Central Sub County.

Hypothesis

This study tested the hypothesis that there was no relationship between the covariate factors and women's decision against health facility delivery in Kakamega Central Sub-county.

Justification

Most maternal deaths can be averted if deliveries were overseen by skilled attendants with the right knowledge and skills within health facilities. Improving maternal health is one of the Current estimates of maternal mortality ratios in Kenya are at least as high as 560 deaths per 100,000 live births (KDHS 2009). In Kenya, Western Rural area, usage of the ANC is high (98%) for at least one ANC attendance while health facility delivery in Kakamega Central sub County is at 23% (KDHS 2009) This brings a wide gap between ANC attendance and health facility delivery and therefore a need to investigate the barriers of women's decision against health facility delivery.

Literature review

Many factors of the mother have to be considered when looking at mother's choice on place of delivery. These included age, level of education, religious affiliation, number of pregnancy, occupation status. According to study Olsen et al., the older women appeared to have more risk independent of number of pregnancies. In a study from Kenya by Wanjira, et al.,[1] it showed that in households headed the educational level of the household head was not significantly associated with place of delivery. It was important to consider the role and power of the decision-makers in community where the risk of maternal deaths is high. In study from Dar es Salaam, Mrisho et al.,[2] observed that when complications arose, the mother of the woman decided where to seek help in 31% of the cases, while the husband decided in 29% of the cases. Only in 5% of the cases did the deceased women make their own decision. We know that some women in the present study dared not go to the hospital or other health facility without their husband's agreement. When husbands were not at home at the time of delivery, this could have serious adverse effects. Mrisho et al.[2] found out that the demographic characteristics of women affects their decision on place of delivery, There was significant association between parity and the type of delivery attendance ($P < 0.001$). Satisfaction with maternity services was associated with more facility based deliveries. Four factors were found to predict delivery practice among the mothers. Mothers who had unskilled delivery were more likely to have <3 years of education (AOR 19.2, 95% CI 1.7 - 212.8) and with more than three deliveries in a life time (AOR 3.8, 95% CI 2.3 - 6.4. Mothers with perceived similarity in delivery attendance among skilled and unskilled birth attendants were associated with unsafe delivery practice (AOR 1.9, 95% CI 1.1 - 3.4). Lack of knowledge on safe delivery was associated with unskilled birth attendance (AOR 36.5, 95% CI). According to study of Mpembeni et

al.,[3] indicated that proportion of women who were attended during delivery by a skilled attendant was seen to decrease significantly with increasing age of mothers from 57.5% among women below 20 years of age to only 48.8% among women aged 35 or more years ($p < 0.01$). Education level of the woman had significant association with skilled care during delivery with women who have more schooling years having a higher proportion of deliveries (50.4%) attended by skilled personnel compared to those with fewer schooling years or those who did not go to formal schooling ($p < 0.01$). A significantly higher proportion (57.1%) of women who are single delivered with a skilled attendant compared to their married counterparts (41.8%) ($p < 0.01$). The findings of Titaley et al.,[4] demonstrated that poverty was a major factor influencing people's decision-making about place of delivery. In a study by Kesterton et al.,[5] there was a strong associations between place of delivery and health facility access and household wealth. Among the least privileged households, those with poorest access, wealth and education, only 10-15% of births were delivered in a medical facility. This proportion rose to 32% among households living within 5 km of a hospital, to 44% among the richest households and to 67% among the small minority of households where the mother has tertiary education. The probability of an institutional delivery rose from 9% in high order births to 39% in first births. Huge regional differences were seen. All these associations remain statistically significant after adjustment. The adjusted results suggest that the influence of household wealth was stronger than that of geographical access. In the poorest 25% of households (the lowest quartile) and in households living 31 kms or more from the nearest hospital, the predicted probability of an institutional delivery is about 10%. In households with good access (<6 kms), the probability rose to 21% but in the richest quartile of the rural population the figure is 28%. A shift in wealth from the poorest to wealthiest group therefore had a greater impact than an equivalent change in accessibility of services. This was a valid comparison because there was a common base of approximately 10% institutional delivery in the least fortunate groups for both household wealth and geographic access, and the most fortunate groups were equivalently favorable, with reasonable numbers in each group. A study in Nepal by Gabrysch and Oona[6,7] found out that the lower level of mother's education, mother's occupation other than office work, lower yearly income, lower amenity score status and the long distance to maternity hospital with facilities for caesarean section, are all statistically significantly associated with a higher prevalence proportion of home delivery. The lower the economic status of the mother, the more likely she would not go into hospital for delivery. The secondary and lower level of the husband's education and occupation other than office work were also found to be statistically significantly associated with home delivery. According to S. Scott et al.,[8] in a study in Indonesia and Bangladesh, women who lived far from health centres in both countries were less likely to have their births attended by skilled attendants than those who lived closer. Gabrysch et al.[6] found out in their study that the distance to the maternity hospital effects the decision on place of delivery for place of delivery. Long distance from the maternity hospital was found to be significantly associated with home delivery and a linear trend could be seen. According to Moisi et al.[9] it was found out that in rural setting with a low density of health facility, physical access to source of care was a known to determine health care utilization. Gabrysch and Oona[6,7] found out in their study that the risk for home delivery among the lowly educated was lower than for other identified risk factors except parity. This suggested education of mother was not the sole predictor of the place of delivery. Poor education was not associated with a high risk of home delivery within low amenity score stratum. Education was 8 times more influential only within the high amenity score stratum. According to the study in Tanzania by Mrisho et al.[2] among the reasons given by the respondents for the choice of delivery place were; perceived comfort in the particular place (23.2%), distance to the health facility (18.3%), and type of ANC given in a health facility (16.6%). Based on all variables, 22.1% (79) of the respondent mothers were satisfied with health facility delivery services while 77.9% (279) were not. A study in Nyandarua south District, Kenya by Wanjira et al.,[1] found out that health facility used for the previous delivery and ANC used were also mostly highly determinants of health facility use for the next delivery however, this would have been due to confounding by service availability and other unforeseen factors which influenced earlier service received. Similarly, the expertise in skilled attendance usually observed between rural and urban areas and between different regions are probably due to differences in infrastructure, health care quality, social, economic and cultural factors that are not accounted for. Wanjira et al.[1] found out that quality of health care services were identified as a crucial determinant of health care-seeking behavior by numerous studies. KDHS, (2009) found out that very few women said they did not deliver in a facility because there were no female providers at the facility, it was not about culture that their husband or family did not allow it, quality of service was poor, or the facility was not open. Differences by age at birth, birth order, and number of antenatal care visits are not major, although respondent with more antenatal visits are more likely than those with no antenatal care to say they did not deliver in a facility because of sudden delivery. As expected, women in rural areas are more likely than those in urban areas to say they did not deliver in a health facility because it was long distance or they lacked transport. Women in Nairobi who did not deliver in a facility were more likely to cite high cost as a factor than are women in other provinces. Women in North Eastern province are far less likely to cite cost as a factor, but they were far more likely than women in other provinces to say they did not deliver in a facility because of poor quality of health service and long distance from a facility. A study done in in Kilifi district, Kenya Moïsi et al.[9] used geographic information system methods to estimate on foot and car travel time to the main referral hospital in Kilifi district and examined the relationship between travel time, hospital attendance and morbidity in children less than 5 years of age which suggested that children in Kilifi travel farther to access inpatient care (Table 1).

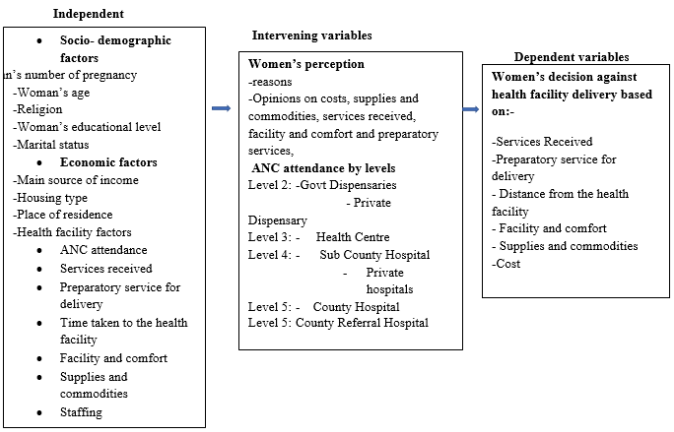

Table 1 Conceptual Framework

Research methodology

Study design

This was a community based cross-sectional study.

Study area

The area of study was Kakamega Central Sub County. All the two divisions namely Municipality division and Lurambi division were included in the study.

Study population

Female reproductive age (15-49years)

Target population

The target population comprised of mothers aged 15 to 49 years in Kakamega Central Sub County and who attended to ANC but had a home delivery in the 6 months preceding the survey.

Sample size & sampling technique

Fishers' formula was used to get 302 respondents as sample size. Multistage random technique was used to select those to be involved in the study as below Table 2.

Table 2 Multistage random sampling technique

Kakamega central sub county		
	Lurambi division	**Municipality division**
All the divisions were included but use proportionate sampling to sample the sub locations and yes/no to choose the village.		
1 ST stage sub locations	5	2
2 Stage villages	7	2
Random sampling technique was used to get the sample population (household)		
	258	74

Data collection procedure

Household survey using structured questionnaires were used for the interview. Both closed ended and open ended questions were utilized for data collection.

Inclusion criteria

All women of reproductive ages between 15-49 years who attended ANC but chose to deliver at home in the past 6 months and lived in Kakamega Central Sub County.

Exclusion criteria

All women of reproductive ages between 15-49 years who attended ANC but chose to deliver at home in the past 6 months and lived in Kakamega Central sub county but are medical personnel or have participated in reproductive health training.

Study assumptions

This being a cross sectional analytical study, during data collection the study assumed that the information being given was true and not biased

Limitation of the study

Likely hood of recall bias. Absence of ANC booklet was a limitation in terms of verification.

Data processing and analysis

Data captured in questionnaires was entered into Access database and cleaned. Data analysis was performed using Statistical Package for Social Sciences (SPSS). Differences in proportions were compared using the Pearson's chi-square test for the categorical variables. A two-sided P-value < 0.05 was considered statistically significant. Bivariate analysis was conducted to assess association between the independent variables and the dependent variables.

Quality control

A pretest study was done to ascertain the validity and reliability of the research instruments. The procedures were as in the research design and methodology. These ensured that the wordings used were understood within the context of the study, Research tools were acceptable by the population and ensured validity and reliability of the research tool.

Ethical considerations

Great Lakes University of Kisumu protocol proposal defense, Ethical review committee for approval. Approval to carry out the study was obtained from Kakamega central sub county Health Management Team. Only those mothers, who met the study requirements, verbally consented and voluntarily signed the consent forms were enrolled into the study. Participants who could not write indicated their consent by a fingerprint. All mothers were assured for confidentiality.

Results

Socio-demographic characteristics of the mother

Majority of the mothers interviewed were married (62%) 186, divorced mothers being lowest at (1%). There were also mothers who were single (21%) 63, widows were at (12%) 36.Religion of Kakamega Central Sub county was majorly indigenous churches (31%) 92. Even so, there is vast choice of religions in the counties, which were Catholic (29%) 89, Protestants (22%) 69, Muslims (15%) 46, Others (2%) 5and none (1%) 1. Most of the mothers in this study were at the range of the age bracket of 26-30 years which was (26%), 78. and most of the mothers did not have any pregnancy complications (58%) 175.

Main source of income in the households in Kakamega Sub County was farming (53%) 160. This was followed by business (26%) 79, salaried (16%),48 and others (5%)15. Majority of the population reside in temporal housing (50%) 251, this could be explained by high level of poverty in Kakamega Central Sub County. semi-permanent houses (36%) 109 while permanent housing(14%) 42.

ANC Services

Most of the women started their first ANC attendant when they are 2nd trimester (80%) 243 and only (18%) 53 started their ANC at the 1st trimester. Most women had 3 ANC attendances at (44%) 133. Only (9%) of the women had 4 ANC visits. Most women preferred to have their 1st ANC and last ANC attendance at level 5 which was (55%) 166 and (66%) 198 respectively. The private hospitals and lower level public hospital were least preferred (5%) 16.The overall reason for change of facility was lack of supplies and commodities. The major complications experienced were pregnancy related (47%) 143. followed closely by malaria (42%) 127, still 5%, 14 and others (6%), 18.

Association between socio demographic factors and women's decision not to deliver in a health facility

In Table 3 below education level of the women was found to have significantly associated with two out of seven health facility factors, staff availability(p=0.049) and facility and comfort (p=

0.025) The respondents with tertially education were mostly affected at 80% with staff availability and unfriendliness. There was also a strong association between education level and facility and comfort (p=0.025) with the mothers who did not have any form of education highly affected (100%), with inadequate space and poor comfort. The other health facility factors services received, preparatory service of delivery, supplies and comfort, time taken to the health facility and cost) were insignificant. Decision not to delivery based on adequacy of space was associated with education level of the woman (p=0.025). Marital status of the woman was associated with her decision not to deliver at the health facility based on health facility factor of not always getting enough staff at the facility during ANC visits (P=0.011). Single women (51.7%) and widows (45.5%) reported that their decision not do delivery at the health facility was based on not always finding all the staff they needed during the ANC. The result further indicated that number of previous pregnancies was associated with decision based on not receiving any advice on whether to delivery (p<0.0001) The result indicated that majority 66.7% of those who had had 5-6 pregnancies reported not receiving any advice, compared 23.6% who had 1-2 previous pregnancies or 27.9% who had 2-3 pregnancies and who also reported not receiving any advice on where to deliver. The results also indicated that a woman's decision against health facility decision based on how long it took to reach facility was associated with number of previous pregnancies. Majority of who visited level 3; health centre, 62.5% of them had also that they spend more than one hour o health facility. Similarly those who had 3-4 previous, 59.6% of them spend more than an hour to hospital compared to only 31.1% of those who spent more than one hour but had 1-2 previous pregnancies. Though the ages of the mothers was not classified, there was significant association between mothers decision against hospital delivery and services received (p=0.004) and staff unavailability and friendliness (p=0.000).

Table 3 P- Values for associations of socio-demographic characteristics and health facility factors

Socio-demographic	Unsatisfactory service during ANC	Poor preparatory service for delivery	Long distance to the health facility for ANC service and delivery	Poor facility and comfort	No/ inadequate supplies/ commodities	High cost of delivery	Poor staff availability and unfriendliness
Education level	**P=0.587**	**P=0.682**	**P=0.792**	**P=0.025**	**P=0.274**	**P=0.792**	**P=0.049**
1=None	7(77.8)	7(77.8)	9(90.0)	9(100)	10(100)	9(90.0)	5(50.0)
2=Primary	74(81.3)	69(75.0)	81(88.0)	82(89.1)	76(82.6)	81(88.0)	48(51.6)
3=Secondary	112(86.2)	88(67.2)	109(82.6)	115(87.1)	103(78.0)	109(82.6)	86(66.7)
4=Tertiary	10(71.4)	11(73.3)	13(86.7)	13(86.7)	10(66.7)	13(86.7)	12(80.0)
5=N/A	1(100.0)	1(100)	1(100.0)	1(100)	1(100.0)	1(100.0)	0(0.0)
Marital status	P=0.096	P=0.062	P=0.313	P=0.589	P=0.505	P=0.050	P=0.011
1=Single	70(79.5)	64(72.7)	5(5.7)	81(91.0)	74(83.1)	83(93.3)	43(48.3)
2=Married	112(86.2)	95(70.9)	5(3.7)	114(85.1)	103(76.9)	105(78.4)	89(67.4)
3=Widowed	10(90.9)	4(36.4)	0(0.0)	10(90.9)	10(90.9)	10(90.9)	6(54.5)
4=Separated	9(90.0)	8(80.0)	0(0.0)	10(100.0)	9(90.0)	9(90.0)	8(80.0)
5=Divorced	3(60.0)	5(100.0)	1(20.0)	5(100.0)	3(60.0)	5(100.0)	5(100.0)

Association between economic factors and reasons behind a woman's decision not to deliver in a health facility

In Table 4 below, out of seven health facility factors, four factors including staff availability and friendliness, cost and preparatory service for delivery show significant associations with income sources. Income source of the women was significantly associated of services received during ANC service, (p=0.000), preparatory service for delivery (p=0.035), staff availability and friendliness (p=0.001) and cost (0.006). Other health factors were insignificant. Majority of those who were salaried (91.5%, n=51) made their decision based on charges were the facility compared to 70% who were farmers of those who were famers who also based their decision on charges. Income source of the women were also associated with the perception on all staff always being available at the facility. Of those who farmers, 23.1% (n=9) reported that did not always get enough staff compared to 36% of business women and 38.2% (n=21) who also mentioned that staff were not always available Income source was also associated with the receipt of advice on where to delivery (p=0.035). Amongst those were 37.5% made their decision based on not receiving compared 32.5% who were business women and 16.7% who had other income sources but also complained of not receiving any advice on where to deliver. There was no significant association between house type where the women live and all the seven health facility factors.

Table 4 P- Values for associations of economic characteristics and health facility factors

Economic factors	Unsatisfactory service during ANC	Poor preparatory service for delivery	Long distance to the health facility for ANC service and delivery	Poor facility and comfort	No/ inadequate supplies/ commodities	High cost of delivery	Poor staff availability and unfriendliness
Income	**P=0.000**	**P=0.035**	**P=0.897**	**P=0.471**	**P=0.991**	**P=0.006**	**P=0.001**
1=Farming	34(89.5)	32(80.0)	32(80.0)	39(97.5)	32(80.0)	28(70.0)	30(76.9)
2=Business	109(87.2)	85(67.5)	102(81.0)	110(87.3)	102(81.0)	108(85.7)	80(63.5)
3=Salaried	48(88.9)	35(62.5)	44(78.6)	47(83.9)	44(78.6)	51(91.1)	34(61.8)
4=Others, Specify	5(83.3)	5(83.3)	5(83.3)	5(83.3)	5(83.3)	4(66.7)	2(33.3)
5=N/A	8(36.4)	19(95.0)	17(77.3)	19(90.5)	17(77.3)	22(100.0)	5(22.7)
House type	P=0.387	P=0.263	P=0.117	P=0.724	P=0.548	P=0.280	P=0.156
1=Permanent	55(83.3)	42(63.6)	45(68.2)	56(84.8)	56(84.8)	60(90.9)	45(68.2)
2=Semi Permanent	118(81.4)	110(74.3)	89(60.5)	133(89.3)	118(79.2)	123(82.6)	89(60.5)
3=Temporal	31(91.2)	23(67.6)	17(48.6)	31(91.2)	27(77.1)	30(85.7)	17(48.6)

Health facility factors and women' decision against health facilities delivery

Preparatory service for delivery

Most of the interviewed mothers affirmed to have received preparatory service on where to delivery in all the health facilities. Private hospital were leading with 80%, level 5 and level 4 hospital and Private dispensary each followed by (76%).The same trend was seen on other preparatory service for delivery that is advise on place of delivery. A Chi Square test of independence conducted on the data showed that there was no significant association between availability of advice on where to deliver and birth plan and level of the health facility.

Facilities and comfort

mothers interviewed, generally indicated that the different level of health facilities which they attended their ANC services were comfortable in terms of adequate space, privacy, cleanliness, well maintained grounds and flowers, correctly directed for services during ANC visits and waiting time. Comparably, private hospital and private dispensaries had the highest percentage followed by the county and sub county hospitals and lastly the government health centres and government dispensaries. However a Chi Square test of independence conducted on the data showed that there was no significant (P=0.380.) association between availability of comfort and level of health facilities.

Supplies and commodities

In Kakamega Central Sub County, most of the interviewed mothers (66%) affirmed to have always receive supplies and commodities they required or that had been prescribed during the ANC visits in all the health facilities. Private hospital were leading with 90%, then level 5 hospital. A Chi Square test of independence conducted on the data showed that there was no significant association between level of health facilities and supplies and commodities (P=0.999). The supplies that were missing mostly were ferrous and folic acid and dewormers.

Responses on missing supplies and commodities

In Kakamega Central Sub County, most of the interviewed mothers(66%) affirmed to have always receive supplies and commodities they required or that had been prescribed during the ANC visits in all the health facilities though there were some supplies and commodities missed especially in government health facilities. A Chi Square test of independence conducted on the data showed that there was significant (P=0.038) association between level of health facilities and missing of supplies commodities.

Cost for any services

Most mothers interviewed cited that costs incurred during ANC visit affected their decision against health facility delivery. A Chi Square test of independence conducted on the data showed that there was no significant (P>0.05), association between level of health facilities and cost of services $\mathcal{X}\ (\chi^2_{2,0.05} = 3.003)$.

Other costs

Other costs like transport, lunch and others affected greatly mothers' decision against hospital delivery. A Chi Square test of independence conducted on the data showed that there was a significant (P=0.0063) association between level of health facilities and availability of other costs.

Staff availability

A Chi Square test of independence conducted on the data showed that there was no significant (P=0.867), association between level of health facilities and getting of all staffs needed). Majority of the respondent in Kakamega Central Sub County got all staffs that they needed to see during all there ANC visits. However in all health facilities, the respondent missed being attended to by the doctors of their liking which was (43%). A Chi Square test of independence conducted on the data showed that there was no significant (P=0.0605) association between level of health facilities and staffs often missed.

Responses on availability of all staffs needed to be seen during all ANC visits

Most of the interviewed mothers cited that the non-availability of staff and unfriendliness affected their decision against health facility delivery. Most affected the private hospital at 80% and private dispensaries at 78%. A Chi Square test of independence conducted on the data showed that there was no significant (P=0.281) association between medical facilities and staff who served you most of the time

Time taken to the health facilities for ANC services

Most of the mothers interviewed in Kakamega Central Sub County stated that they use (31mins – 1 hour) to reach the facility of their ANC service. The facilities that seem to be far Away were the government health centre whereby (54%) of those mothers interviewed took more than one hour to reach the health centre. The private hospitals seems to be the most easily accessed whereby (40%) of the mothers interviewed spent less than 10mins to reach the health facility. Most mothers interviewed in Kakamega Central Sub County cited to use bicycles and motorbikes as means of transport to their health facility. A Chi Square test of independence conducted on the data showed that there was no significant (P= 0.517) association between level of health facilities and Time taken to the health facility of your ANC services.

Discussion

Socio-demographic characteristics and decision against health facility deliveries

Findings in our study population points to a socio-demographic profile similar to other areas with a high fertility rate, high infant mortality and low socio-economic status. Marital status of the woman was associated with her decision not to deliver at the health facility based on health facility factor of not always getting enough staff at the facility during ANC visits. Single women and widows reported that their decision not do delivery at the health facility was based on not always finding all the staff they needed during the ANC. The result further indicated that number of previous pregnancies was associated with decision based on not receiving any advice on whether to delivery. The result indicated that majority of those who had had 5-6 pregnancies reported not receiving any advice, compared those who had 1-2 previous pregnancies or those who had 2-3 pregnancies and who also reported not receiving any advice on where to deliver. This was unlike the study of who found out that there was no a significant association between advice received during ANC visits and no of pregnancies decision. The results further indicated that a woman's decision against health facility decision based on how long it took to reach facility was associated with number of previous pregnancies. Majority of who visited level 3; health centre, of them had also that they spend more than one hour o health facility. Similarly those who had 3-4 previous, spend more than an hour to hospital compared to only of those who spent more than one hour but had 1-2 previous

pregnancies. Though the ages of the mothers was not classified, there was significant association between mothers decision against hospital delivery and services received and staff unavailability and friendliness. This was similar by study in Nepal which found out that women living more than one hour away from a health facility are 8 times less likely to use health facility during delivery.[10]

Economic characteristics of women and home deliveries

Majority of the population reside in temporal housing (50%) 251, this could be explained by high level of poverty in Kakamega Central Sub County. semi-permanent houses (36%) 109 while permanent housing(14%) 42. According to KDHS (2009), the findings were similar more than half of Kenyan households (55 percent) live in dwellings with floors made of earth, sand, or dung. The next most common type of flooring material is cement, accounting for 41 percent of households. Although we did not formally test associations between various economic characteristics and decision against health facility delivery, our descriptive analysis points to a strong presence of contextual determinants on the decision for home deliveries. Specifically, low level of education, young age at marriage and dependence on farming suggests a state of powerlessness with regard to decision making within the household. That socio-demographic, and specifically education and income strongly influence delivery practices is a well known phenomenon. Our study findings closely resemble other studies carried out in regions that score very low on the Kenyan poverty index. For instance, Nyanza and Coast province still record high rates of home deliveries, followed by western province. Our findings also corroborate the findings of other studies across Africa which show a clear relationship between maternal decision making power and delivery outcomes.

ANC visits and services

The highest total Pregnancy in a life time in the study was in the range of (1-2) which was (45%) 137. This could be explained by the fact that most of the mothers in this study were at the range of the age bracket of 26-30 years which was (26%), 78. These were young mothers. Most of the mothers did not have any pregnancy complications (58%) 175. This can be explained by high attendance to ANC (98%) and presence of many health facilities in the area. This was similar to a study done in rural Tanzania in which more than ninety percent of women attend ANC but less than half of them deliver in a health facility. Magoma et al.[7] Furthermore, most of the mothers attained basic education to understand care during pregnancy though majority only attended to ANC as a requirement. These findings were similar to WHO report (2005), Antenatal care is not just a way to identify women at risk of troublesome deliveries. Women expect that antenatal care will help them deal with the health problems that can occur during pregnancy itself. WHO(2005). Survey KDHS (2009), among women who received antenatal care for their most recent birth in the five years before the survey, 43 percent reported that they had been informed of the signs of pregnancy complications. The major complication experienced were pregnancy related (47%) 143. followed closely by malaria (42%) 127, still 5%, 14 and others 6%, 18. Our analyses showed that majority of mothers were advised to deliver at the county general hospital or in private facilities. The explanation for this phenomenon could be that government dispensaries are run by very few staff who offer all the services. This may lead to lack of time to offer comprehensive preparatory service for delivery. Despite this remarkable finding, there was only weak or no difference in actual quality of intrapartum services provided by different facility levels. For example, descriptive analysis showed that women reported more comfortable stays in private hospitals compare to public hospitals, however bivariate analysis using chi-square statistics revealed no associations between comfort and level of facility. Similar findings (no difference by facility) were observed with regard to missing supplies. Univariately, women reported that they were provided with supplies and commodities as required, with private hospitals scoring highest in terms of commodities and supplies. This could be explained by the fact that private hospitals are in business oriented hence they give quality care by providing supplies and commodities required in order to attract clients Furthermore, the county and sub county hospitals are normally better staffed than the government health centers and government dispensaries . However, bivariate analysis did not reveal significant associations between availability of commodities and supplies and choice of facility for delivery. The above findings may point to a disparity between perceptions or expectations about the quality of care in health facilities and actual quality of care in these facilities. For instance, pre-natal women may harbor unrealistic expectations about the nature of care in private facilities, but in reality, as evidenced from the analysis, there is little or no difference in quality of care between the different levels.

The only significant finding concerning services at different levels of facilities was to do with costs. We found positive associations between level of medical facility and costs, and other costs. Contrary to conventional beliefs about free maternity care, our findings point to a systematic misunderstanding of the concept "free" in maternity services and care. Although few studies have been published since the declaration of free maternity services, anecdotal reports already suggest the existence of misunderstanding and distortions of free maternity care. Nevertheless, it is possible that extra costs incurred by mothers in the form of gloves, intrapartum medications, gauze; and other supplies represent a significant financial burden. Most of the women interviewed started their first ANC attendant when they are 5 months pregnant (42%), 127. This could be explained by the fact that most women confirm that they were pregnant late and could be that the women don't know the importance of early ANC attendance. These findings are similar with the KDHS (2009) which indicated that in Kenya, less than half (47percent) of pregnant women make four or more antenatal visits. Ideally it is recommended by the Kenyan government that women have at least 4 ANC visit yet in only (9%) of the women had 4 ANC visits. According to Carolyn J Tann et al., in total 413 women reported on their most recent pregnancy. Antenatal care attendance was high with 96% attending once which was similar and 69% the recommended four times which was contrary to our findings. The findings correlate with a study done in Rwanda where by odds of delivering at the health facility for women who attended ANC more than four visits were higher than those who attended only once Umurungi Y. Most women interviewed preferred to have their 1st ANC and last ANC attendance at Kakamega County hospital which was (55%) 166 and (66%),198 respectively .This could be explained by the fact that it is a level 4 hospital had better facilities and well-staffed. The private hospitals were least preferred and the main reasons would have been the cost of care. Carolyn j Tann et al. in their study found out that Entebbe General Hospital, the major provider of governmental health services in the area, is located centrally within Entebbe town for both antenatal and delivery care.

Difference in factors associated with women's decision against health facility deliveries by level of the health facility

In this study, we investigated health facility factors associated with the women's choice against hospital delivery which were: services received, preparatory service for delivery, distance from the health

facility, facility and comfort, supplies and commodities, cost and staff availability & friendliness.

Preparatory service for delivery

Most mothers in Kakamega Central Sub County who attended different health facilities cited to have received advice on birth plan on various issues. A Chi Square test of independence conducted on the data showed that there was no significant (P=0.427). Association between availability of advice on where to deliver and medical

Most of the interviewed mothers affirmed to have received preparatory service on where to delivery in all the health facilities. Private hospitals were leading with 80% followed by Kakamega county hospital. The same trend was seen on other preparatory service for delivery. This could be explained by the fact that private hospitals are in business hence they give quality care in order to attract clients, the county and sub county hospitals are normally better staffed than the government health centre and government dispensaries. Most of the government health centres and government dispensaries are run by very few staffs who offer all the services. This may lead to lack of time to offer comprehensive health education preparatory service for delivery. A Chi Square test of independence conducted on the data showed that there was no significant association between availability of advice on birth plan and medical facilities (P=0.827).

Facilities and comfort

A Chi Square test of independence conducted on the data showed that there was no significant association between availability of comfort and level of health facilities (P=0.380). however, mothers interviewed, generally indicated that the health facilities which they attended their ANC services were comfortable in terms of adequate space, privacy, cleanliness, well maintained grounds and flowers, correctly directed for services during ANC visits and waiting time. Comparably, private hospital and private dispensaries had the highest percentage followed by the county and sub county hospitals and lastly the government health centres and government dispensaries. The reasons could be explained by the fact that private hospitals are in business hence they give quality care in order to attract clients, the county and sub county hospitals are normally better staffed than the government health centre and government dispensaries which are run by very few staffs who offer all the services. This may lead to lack of time to offer comprehensive preparatory service for delivery.

Missing supplies and commodities per health facility level

A Chi Square test of independence conducted on the data showed that there was no significant association between medical facilities and reception of supplies and commodities (P=0.999). This was unlike in Southern Tanzania who found out that some women ended up delivering at home due to inadequate of essential supplies in public facility and were forced to purchase for them.[2]

Cost for any services

The cost charged during ANC visit was cited to affect mothers' decision against hospital delivery. A Chi Square test of independence conducted on the data showed that there was no significant association between medical facilities and cost of service. However in associations of other costs, A Chi Square test of independence conducted on the data showed that there was a significant association between level of health facilities and availability of other costs like transport and lunch, these findings were similar to a study in Ethiopia whereby 76.4% of the deliveries were assisted by untrained TBAs or by a relative. Out of 206 mothers who delivered at home, 202 (98.1%) were intended to deliver in a health facility and the main reason to deliver at home was lack of transport to the health facility Nigussie et al.

Staff availability

Most mothers got all staffs that they needed to see during all there ANC visits A Chi Square test of independence conducted on the data showed that there was no significant, association between medical facilities and getting of all staffs needed. However in both cases, the mothers missed being attended to by the doctors of their liking. This can be explained by dire shortage of doctors in the country. Majority of the mothers interviewed indicated that the staff of their liking was missed once. This could be explained by the fact that most on them attended ANC once. This was unlike the study in Zambia who found out that 32% of women said they would not deliver in a health facility because of shortage of staffs Shankwaya S.[12] A Chi Square test of independence conducted on the data showed that there was no significant association between medical facilities and staffs missed often.

Distance to the health facility of your ANC services

Most of the mothers interviewed in Kakamega Central Sub County stated that they use (31mins – 1 hour) to reach the facility of their ANC service. The facilities that seem to be far Away were the government health centre whereby (54%) of those mothers interviewed took more than one hour to reach the health facility this may have been due to poor road network and poor transportation. Ensor and Cooper noted that the use of health services decline with distance. The private hospitals seems to be the most easily accessed whereby (40%) of the mothers interviewed spent less than 10mins to reach the health facility. Most mothers interviewed in Kakamega Central Sub County cited to use bicycles and motorbikes as means of transport to their health facility. This would be because bicycles and motorbikes is the most common means of transport in kakamega Central Sub County and also could reach most areas that vehicles could not reach. Bicycles and motorbikes also proved fastest means of transport because they can carry one passenger so no time wasted in waiting for other passengers unlike the vehicles. Ensor and Cooper noted that the use of health facility decline with distance. This means, the far the health facility chances are that mothers would rarely use it for delivery services. Study in Nepal found out that women living more than one hour way from health facility are eight times less likely to use health facility for delivery Wagle et al.[11]

Facility factors that made the woman not to deliver in health facility

ANC services missed during ANC visit were responsible for decision against health facility delivery. Majority of the mothers interviewed in Kakamega Sub County (52%) expressed that health services that they missed during ANC was not considered as most important to have caused your decision for not delivering in the hospital. Mothers who indicated that they were influenced by health services that they missed during ANC were (48%) and the service they mostly missed was lab investigations.

Preparatory services that you missed were responsible for your decision against health facility delivery

Whereas most mothers interviewed indicated that preparatory services that they missed were responsible for their decision against health facility delivery (62%), This may be due to the fact that most respondent in mothers indicated that the components in

the preparatory service which were place of birth, delivery money, transport preparation, baby clothing and nutrition, each to some extend affected the in their decision against hospital delivery.

Lack of supplies and commodities and decision against delivering in a health facility

Whereas majority of the mothers interviewed indicated that lack of supplies and commodities discouraged them from delivering them from health facility (55%), this may be due to the fact that most of the government health facilities are poorly stocked and the medical supplies and commodities are very expensive. The supplies that were missed most were malaria drugs, ferrous and folic tablets and lab reagents in all health facilities.

Time taken to the health facility covered during antenatal care visit and decision against delivery in a health facility

Most mothers interviewed indicated that the long distance they covered did not affect their decision against health facility delivery this was unlike the study by **S. Scott et al.[8] found out that** women who lived further from health centres in both countries were less likely to have their births attended by health professionals than those who lived closer. For women who were assisted by a health professional, the odds of dying increased with increasing distance from a health centre [odds ratio per km; Indonesia: 1.07 (95% CI: 1.02–1.11), Bangladesh: 1.47 (95% CI: 1.22–1.78)]. The factor that made most mothers interviewed to decide against health facility delivery was the cost of transport (39%) 117, followed by mode of transport which was (35%) and lastly time taken to the health facility (26%).

Cost Incurred during ANC and decision against health facility delivery

Most of the mothers interviewed (61%) indicated that the cost of ANC services did not affect their decision against health facility delivery. They however they have a perception that generally the delivery is costly while the cost of ANC service is affordable (46%). This could be the reason why they maybe decided to attend to ANC in the health facility and deliver at home. These findings were similar to Thaddeus and Maine found to their surprise that "the literature indicates that compared to other factors, the financial cost of receiving care is often not a major determinant of the decision to seek care.

In Kakamega Central Sub County indicated that, non-staff availability and unfriendliness during antenatal care visit did not affect their decision against delivery in a health facility (61%), 184 of the mothers confirmed that they were not affected by non-staff availability and friendliness. Though the finding were not so surprising, currently medical staffs are undergoing a lot of managerial and customer care trainings. In every health facility in Kakamega County there was customer care desk. Shanwaya[12] in Zambia similarly found out that shortage of staff discourages mothers to use health facility for delivery. In this study, the health facility which is perceived to have the lowest number of staff, government dispensary were least supplied with hospital commodities and equipment hence least comfort.

Health facility factors addressed and deliver from a health facility

Most mothers in the study decided against hospital delivery because of the health services missed during ANC were 48%, preparatory services for delivery missed was 63%a, long distance were 40%, lack of supplies and commodities was 55%, Poor facility and lack of comfort were 41% and high cost were 39%respectively in all the health facilities. Majority of interviewed mothers had a perception that the most discouraging health facility factor against health facility delivery was preparatory service for delivery (63%) 190, followed by lack of supplies and commodities (55%) 166.

Conclusion & recommendations

Maternal health care services provided in health facilities were widely recognized as an important protective factor against maternal morbidity and mortality. In Kakamega Centre sub County there is a high ANC attendance (98%) for at least one visit but health facility delivery is very low (23%). This is very low compared to the national rate of (44%). Factors that are making these women to decide against health facility delivery are enormous. The results from the associations showed significant results in other costs incurred the mothers during ANC visits like transport, missing of supplies and commodities and decision against health facility delivery. Level of education especially women with tertially education and availability of staff made them to decide against health facility delivery. Marital status and missing of most staffs during ANC visit especially for single women and widows made them not to deliver in a health facility.

The community needs to be better informed about the true costs and benefits of hospital deliveries, while medical services must be more sensitive to community needs and preferences. Continued efforts are required to increase the proportion of rural births conducted with the supervision of skilled birth attendants in hospitals, and so address the currently high MMR in Kenya. There is a need for a multi-level, multi-pronged approach to overcoming barriers to hospital delivery was clear.

Acknowledgments

None.

Conflicts of Interest

None.

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