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**Original Research Article**

# Determinants to utilization of emergency obstetric care services among perinatal clients seeking care at Kajiado County Referral Hospital, Kajiado County, Kenya

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## ABSTRACT

**Background:** Worldwide, one or more potentially fatal perinatal obstetric complications affect nearly 15% of all pregnant women. There has been little research on the provision of emergency obstetric care (EmOC) services in Kenya. This study aimed to assess the determinants of EmOC services among perinatal clients seeking care at Kajiado County Referral Hospital, Kajiado County, Kenya.
**Methods:** An analytical cross-sectional study design was embraced in this study while both systematic and simple random sampling were used to recruit study respondents for this research. Associations between the utilization of emergency obstetric care services and associated determinants were established using a Chi-square test and binary logistic regression where a p value of 0.05 or lower was considered significant.
**Results:** The utilization of EmOC services from this research was at 74%. Study respondents aged between 18-25 years (OR=9.4, 95% CI=0.04-0.31), being knowledgeable about EmOC services (OR=3, 95% CI=0.13-9.75), and being knowledgeable about obstetric danger signs (OR=6, 95% CI=0.06-0.45), increased the odds of utilizing EmOC services while earning less than 10000 Kshs (OR=4.3, 95% CI=0.45-4.77), reduced the odds of utilizing EmOC services.
**Conclusions:** The utilization of EmOC services from this research was at 74%. Study respondents aged between 18-25 years, being knowledgeable about EMOC services and being knowledgeable about obstetric danger signs increased the odds of utilizing emergency obstetric care services while earning less than 10000 Kshs reduced the odds of utilizing emergency obstetric care services.

**Keywords:** Emergency obstetric care, Perinatal, Utilization

## INTRODUCTION

Unsafe abortions, infections, bleeding, hypertension, obstructed labor, and other preventable complications during pregnancy and childbirth can all lead to maternal death. Preventing maternal fatalities can be achieved through the provision of evidence-based, high-quality emergency obstetric care (EmOC). The two complementary types of emergency obstetric care are basic (BEmOC) and comprehensive (CEmOC).[1] "Signal functions" are six critical obstetric services that a BEmOC facility should provide. Parenteral antibiotics, parenteral anticoagulants, parenteral uterotonics, removal of retained products, manual placental removal, and Assisted vaginal delivery (AVD) are some of the services offered. A CEmOC facility provides cesarean sections and blood transfusions in addition to BEmOC signal functions.[1] The global need for EMOC was found to be 45%, with notable differences between low-income (12-31%), middle-income (15-56%), and high-income (99%) countries.[2] The two complementary types of EmOC facilities are basic emergency obstetric care (BEmOC) and comprehensive emergency obstetric care (CEmOC).[3]

The number of facilities providing seven or nine signal EmOC functions increased from 6 (10.2%) to 21 (35.6%)

between 2012 and 2015, according to a study done in Nigeria, a country in sub-Saharan Africa. Comprehensive EmOC facilities rose from 1 (2.6%) to 7 (18.4%), while basic EmOC facilities increased from 3 (14.3%) to 13 (61.9%).[4] By integrating EmONC training into its national medical sector strategic and expenditure development plans, Kenya is committed to realizing its Vision 2030 goals for universal health coverage (UHC). Reducing maternal mortality and morbidity requires increasing the accessibility and use of crucial evidence-based maternal health interventions, such as EmOC, with special attention to both basic and comprehensive EmOC.[5]

An extensive analysis of EmOC availability in Kenya has not been conducted. A study done in Malindi, Kenya, found that different signal functions are performed in different ways, with manual placenta removal and uterotonic drug delivery being the most common.[6] Anticonvulsant medication use and parenteral antibiotic administration were found to be the least common practices. Due to the lack of a quantifiable measure of EmOC service availability in Kajiando County, data regarding signal function performance in relation to population is lacking.[7] Kenya continues to have a low rate of women giving birth in hospitals (43%). Furthermore, the unmet need for reproductive health services, such as contraception, leads to an unacceptably high MMR. The objective of many governments is to ensure that all women receive expert care during childbirth.[8] The Kenyan government has improved the accessibility of maternity care by doing away with user fees in public facilities and improving the nation's transportation and communication infrastructure.[9] While maternity care is now free in all public facilities in Kenya, there has been little study on the administration of EmOC services at health facilities.[7] EmOC services are not widely known to be available in Kajiado County. Data regarding the quality of obstetric care, including the hospital's preparedness to offer EmOC, staff responsiveness to obstetric emergencies, and the provision of services that respect the rights and needs of the client, are scarce. Determinants of the use of emergency obstetric care services among perinatal patients receiving care at Kajiado County Referral Hospital, Kajiado County, Kenya, were therefore the focus of this study.

## METHODS

### *Study design*

An analytical cross-sectional study design was applied in this study where it was important to quantify the association between the independent variable and the dependent variable. A quantitative method of data collection was employed in this research.

### *Study area*

The study was carried out at Kajiado Referral Hospital which is in Kajiado County. Situated in Ildamat (Hospital Road), Kajiado Central, Kajiado County, Kajiado County Referral Hospital is a primary care facility run by the Ministry of Health. With 138 beds and 4 cots available, the facility was fully operational as of 2021. The Ministry of Health oversees it and has registration number 14652. The facility offers a wide range of medical services, including emergency, outpatient, inpatient, maternal and child health, surgical, and specialized services.

### *Study population*

The population of this study was perinatal mothers seeking perinatal care at the Kajiado County Referral Hospital.

### *Sample size determination*

Fischer's formula was used to determine the sample size, and 150 study participants were enlisted for the research.

### *Sampling technique*

For this investigation, a combination of simple, purposive, and systematic random sampling techniques was employed to find study participants. Because Kajiado County Referral Hospital serves a wide spectrum of patients, including those with low and middle incomes, it was specifically chosen. The systematic simple random sampling method was used to select the study's respondents.

### *Data collection tools and procedures*

The quantitative data was gathered using a semi-structured questionnaire. Information about the use of emergency obstetric care services was gathered for the tool's section A. Information was gathered in section B on social demographic factors, section C on knowledge factors influencing pregnant clients' use of emergency obstetric care services.

### *Statistical analysis*

An excel spreadsheet was utilized to enter quantitative data for the purpose of cleaning, which involved eliminating duplicate entries, imperfect cases, outliers/extreme values, illegible data, and discrepancies from the data. The cleaned data was then imported into statistical package for the social sciences (SPSS) version 26 from excel for analysis. In the descriptive analysis, percentages and frequencies were used. Cross-tabulations and Chi-square tests were used to examine relationships, at a 95% confidence interval, between the use of emergency obstetric care services and sociodemographic, knowledge, and health facility factors.

Significant variables were those having a p value of less than 0.05. After that, to ascertain additional associations among the variables that the bivariate analysis had shown to be significant, binary logistic regression was used.

### *Ethical consideration*

The Mount Kenya University Ethics and Review Committee provided ethical approval for conducting the study. The National Commission for Science, Technology, and Innovation (NACOSTI) was requested to provide a permit so that the investigation can be carried out. The participant's information was handled with extreme discretion. Participants in the study were asked to complete an informed written consensus form, and their participation in it was completely voluntary. The participants' privacy was upheld to the highest standard because they were given ID numbers rather than individual names.

## RESULTS

### *Utilization of EmOC services*

As indicated in Figure 2, Concerning the utilization of EmOC services by perinatal clients close to three-quarters (74%)of the study respondents confirmed to have utilized EmOC services while only a few (26%) of the study participants reported having utilized EmOC services.

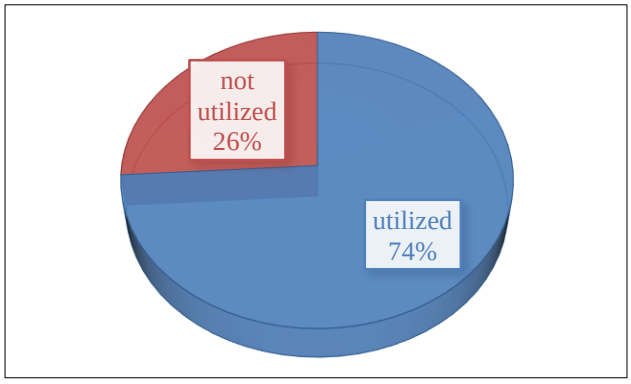


**Figure 1: Utilization of EmOC services.**

**Table 1: Multiple responses on the types of EmOC services utilized.**

| EmOC services | N | Percent |
|---|---|---|
| **Removal of retained products** | 49 | 13.5 |
| **Assisted vaginal delivery** | 54 | 14.8 |
| **Manual removal of placenta** | 61 | 16.8 |
| **Administration of antibiotics** | 65 | 17.9 |
| **Administration of uterotonic drugs** | 71 | 19.5 |
| **Blood transfusion** | 18 | 4.9 |
| **Caesarean sections** | 46 | 12.6 |
| **Total** | 364 | 100 |

### *Multiple responses on the types of EmOC services utilized*

Table 1 below provides types of EmOC services utilized by perinatal clients. Administration of uterotonic drugs was the most (19.5%) utilized EmOC service, this was closely (17.9%) followed by the administration of antibiotics. Blood transfusion was the least (4.9%) utilized EmOC services.

### *Social demographic characteristics*

Table 2 below provides the social demographic characteristics of the study respondents. From this study, more than half (52%) of the study partakers were aged between 18-25 years. Close to half (42.7%) of the study respondents had a secondary level of education, while only a few (18%) of the study partakers had no formal education. Concerning the level of income, more than half (68%) of the study partakers were earning less than Ksh 10000 per month. The majority (91.3%) of the study partakers in this study were Christians. Close to half (46%) of the study partakers were self-employed. Lastly, concerning the marital status of the study respondents, the majority (74%) of the study partakers were married.

**Table 2: Social demographic characteristics.**

| Independent variables | Frequency | Percentage |
|---|---|---|
| **Age (years)** | | |
| 18-25 | 78 | 52 |
| 26-33 | 37 | 24.7 |
| 34-41 | 35 | 23.3 |
| **Education level** | | |
| Primary | 52 | 34.7 |
| Secondary | 64 | 42.7 |
| Tertiary | 7 | 4.7 |
| No formal education | 27 | 18 |
| **Income** | | |
| 1-10000 | 102 | 68 |
| 10001-20000 | 36 | 24 |
| >20000 | 12 | 8 |
| **Religion** | | |
| Muslim | 13 | 8.7 |
| Christians | 137 | 91.3 |
| **Occupation** | | |
| Employed | 31 | 20.7 |
| Self-employed | 69 | 46 |
| Farmer | 44 | 29.3 |
| Peanut | 6 | 4 |
| **Marital status** | | |
| Single | 30 | 20 |
| Married | 111 | 74 |
| Windowed | 6 | 4 |
| Divorced | 3 | 2 |

### *Association between social demographic factors and EmOC services utilization*

In the social demographic factor, the following variables were found to be statistically significantly associated with the utilization of EmOC services when the chi-square test for independence was done; age of the study respondents ($\chi^2$=28.09, df=2, p≤0.000), income ($\chi^2$=6.831, df=2,

p=0.03) and educational level ($\chi^2$=23.46, df=3, p≤0.000) hence they were imported for binary logistic regression analysis. The utilization of EmOC was not statistically correlated with the study participant's occupation ($\chi^2$=0.523, df=3, p=0.9), religion ($\chi^2$=0.063, df=1, p=0.801), and marital status ($\chi^2$=2.26, df=3, p=0.52).

As indicated in Table 3, study respondents aged between 18-25 years were 9.4 more times likely to utilize emergency obstetric care services as compared to those aged 34-40 years. In addition, study respondents who earned less than 10000 Kshs were 4.2 times less likely to utilize emergency obstetric care services as compared to those earning more than 20000 Ksh.

***Association between knowledge factors and EmOC services utilization***

In the knowledge factor, the following variables were found to be statistically significantly associated with the utilization of EMOC services when the chi-square test for independence was done; Knowledge of obstetric danger signs ($\chi^2$=18.773, df=2, p≤0.000) and knowledge of EmOC services ($\chi^2$=14.610, df=2, p=0.001) hence they were imported for binary logistic regression analysis. The utilization of EmOC was not statistically correlated with knowledge of pregnancy complications ($\chi^2$=1.168, df=2, p=0.558) and knowledge of pregnancy complications risk factors ($\chi^2$=0.875, df=2, p=0.646).

**Table 3: Binary logistic regression analysis on social demographic factors.**

| Variables | B | S. E. | Wald | df | Sig. | Exp (B) | 95% C.I. for EXP (B) | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Lower | Upper |
| **Age (years)** | | | 22.496 | 2 | 0.000 | | | |
| 18-25 | -2.239 | 0.544 | 16.927 | 1 | 0.004 | 9.35 | 0.037 | 0.310 |
| 26-33 | 2.896 | 0.722 | 16.079 | 1 | 0.232 | 0.055 | 0.013 | 0.228 |
| | | | | | | ref | | |
| **Income level** | | | 6.616 | 2 | 0.037 | | | |
| <10000 Ksh | 1.451 | 1.152 | 1.587 | 1 | 0.008 | 4.266 | 0.446 | 4.769 |
| 10001 Ksh-20000 Ksh | -0.090 | 1.266 | 0.005 | 1 | 0.943 | 0.914 | 0.076 | 1.929 |
| | | | | | | ref | | |
| **Education level** | | | 17.080 | 3 | 0.11 | | | |
| No education | 2.289 | 0.658 | 12.112 | 1 | 0.001 | 0.101 | 0.028 | 0.368 |
| Primary | -2.353 | 0.615 | 14.651 | 1 | 0.100 | 0.095 | 0.029 | 0.317 |
| Secondary | -2.124 | 1.212 | 3.070 | 1 | 0.080 | 0.120 | 0.011 | 1.287 |
| | | | | | | ref | | |
| Constant | 1.350 | 1.266 | 1.137 | 1 | 0.286 | 3.856 | | |

**Table 4: Binary logistic regression analysis on knowledge factors.**

| Variables | B | S. E. | Wald | df | Sig. | Exp (B) | 95% C.I. for EXP (B) | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Lower | Upper |
| **Obstetric danger sign** | | | 16.072 | 2 | 0.000 | | | |
| **Knowledgable** | -1.785 | 0.505 | 12.492 | 1 | 0.030 | 6 | 0.062 | 0.452 |
| **Neutral** | -1.600 | 0.572 | 7.826 | 1 | 0.125 | 0.202 | 0.066 | 0.619 |
| | | | | | | ref | | |
| **Knowledge of EmOC services** | | | 11.602 | 2 | 0.003 | | | |
| **Knowledgable** | -1.153 | 0.443 | 6.775 | 1 | 0.009 | 3 | 0.133 | 0.752 |
| **Neutral** | -2.414 | 0.834 | 8.391 | 1 | 0.284 | 0.089 | 0.017 | 0.458 |
| | | | | | | ref | | |
| **Constant** | 0.713 | 0.393 | 3.299 | 1 | 0.069 | 2.041 | | |

As indicated in Table 4, study participants who were knowledgeable about obstetric danger signs were 6 times more likely to utilize emergency obstetric care services as compared to those who were not knowledgeable about obstetric danger signs.

Furthermore, study participants who were knowledgeable of EMOC services were 3 times more likely to utilize emergency obstetric care services.

## DISCUSSION

Concerning the utilization of EmOC services, from this study, the majority confirmed to have utilized EmOC services these findings were close to those of a study done in Kenya.[7] This could be linked to easy access and availability of EmOC services. In terms of the types of EmOC services used, blood transfusion was the least common EmOC service, while the administration of

antibiotics and uterotonic drugs was the most common. These results were in line with a study conducted in Tunisia.[10]

From this study, study participants aged between 18-25 years were 9.4 more times likely to utilize emergency obstetric care services as compared to those aged 34-40 years. Young mothers, especially teenagers, are at a higher risk of experiencing pregnancy-related complications such as preeclampsia, preterm labor, and obstructed labor hence this could be the reason why young mothers are likely to seek EmOC services as compared to older mothers. These findings were consistent with another study done in Tanzania, but contrary to those of a study conducted in Ethiopia.[11,12] In addition, study respondents who earned less than 10000 Kshs were 4.2 times less likely to utilize emergency obstetric care services as compared to those earning more than 20000 Ksh. Low-income mothers may live in remote or underserved areas with limited access to healthcare facilities offering EmONC services. In addition, even if emergency services are available, there may still be associated costs such as transportation, medications, and facility fees. Low-income mothers may not be able to afford these costs. Similar findings were recorded in another study conducted in Zambia where income was found to have an association with EmOC services utilization.[13]

Study participants who were knowledgeable about obstetric danger signs were 6 times more likely to utilize emergency obstetric care services as compared to those who were not knowledgeable about obstetric danger signs. Knowledgeable respondents can recognize early signs of complications, such as severe abdominal pain, excessive bleeding, or high fever, prompting them to seek care promptly. Being aware of these danger signs increases the likelihood of seeking EmOC services. Study results agreed with those of a s study carried out in Uganda.[14] Furthermore, study participants who were knowledgeable of EmOC services were 3 times more likely to utilize emergency obstetric care services. Understanding what EmOC services are available (e.g., emergency cesarean sections, blood transfusions, and treatment for eclampsia) makes mothers more likely to seek these services when needed. The findings from the study were contrary to those of a study carried out in Ethiopia.[15]

## CONCLUSION

The utilization of EmOC services from this research was at 74%. Administration of uterotonic drugs was the most (19.5%) utilized EmOC service, this was closely (17.9%) followed by the administration of antibiotics. Study respondents aged between 18-25 years, being knowledgeable about EmOC services and being knowledgeable about obstetric danger signs increased the odds of utilizing emergency obstetric care services while earning less than 10000 Kshs reduced the odds of utilizing emergency obstetric care services.

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