

Factors Influencing Adherence to National Guidelines on Emergency Obstetric Care and Associated Outcomes among Pregnant Mothers and Newborns in Samburu Central Sub-County, Kenya

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ABSTRACT

Maternal mortality in Kenya stands at about 500 deaths per 100,000 live births. This suggests that Kenya's efforts towards reducing maternal mortality ratio has not yielded gains and still remains unacceptably high whereas the government has been providing free maternity services in the last three years. This has failed to deliver substantial reduction in high maternal and perinatal mortality in the country. This means that government efforts to attain MDG's target of reducing MMR by 75% by 2015 were not possible. However it was not quite clear how this had influenced adherence to National Guidelines on Emergency Obstetric Care and Associated Health outcomes among pregnant Mothers and Newborns in Samburu Central Sub-county among parents, politicians and other stake holders in Health sector. The broad objective of the study was to determine factors associated with adherence to national guidelines on emergency obstetric care and the associated health outcomes among pregnant mothers and newborns in Samburu central sub-County. The study adopted a descriptive cross-sectional design. Six public health facilities offering maternity services were involved in this study. A total of 990 files of mothers who had delivered between June and September 2016 were surveyed. This included an average of 165 per month. The questionnaires used in the study were piloted and validated before use. The data collected was analyzed using statistical package for social sciences. The results of the study showed that out of the six health facilities the were five Basic emergency obstetric care (83.3%) namely Kisima Model Health centre, Loosuk health centre, Porror dispensary, Lolmolog dispensary and Suguta Marmar health centre while Maralal county referral hospital(16.7%) provided Comprehensive emergency obstetric cares services within the sub county and the whole county. Maralal county referral hospital had many personnel compared to other health facility. In addition it was the main facility where there many midwives and personnel trained on EMOC. The national and county government in implementation of free maternity by provision of waiver fee, medicines, incubators, delivery coaches, sanitary towels, other non-pharmacologic equipment to the facilities and 24 Hours Free Ambulance Services. The main challenges faced by the health workers in provision of services in their facilities was shortage of staff, long distance for mothers who live far from the facility attributed by poor means of communication and referral fee to the main hospital. There was need for further improvement of the emergency obstetric care services within the sub-County are needed by regular training and updating staff on new protocols in emergency obstetric care, provision of maternity equipment, regular/consistent supply of drugs and upgrading another facility to provide comprehensive emergency obstetric care services. Out of 990 pregnant mothers who delivered in the six health facilities the main health outcomes encountered were obstructed labour, antepartum and postpartum hemorrhage. The National/county government level has a mandate and an obligation to employ more staff and collaborate with other stakeholders and encourage ensuring that the health facilities have enough trained staff to provide services to the respective locations or areas of their operations. The government through the free maternity countrywide should support in supply of maternity equipment to every facility with maternity services. The sub-County ward administrators together with the political fraternity should be in the fore front of encouraging the community to utilize the existing facilities within their locality to encourage pregnant mothers to come to and deliver in the health facility.

Keywords : Emergency Obstetric Care, Health Outcome, Pregnant Mothers, Newborns.

I. INTRODUCTION

Maternal death has been defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, regardless of the time period and location of the pregnancy, as a result of any cause other than accidental and associated to or exacerbated by the pregnancy or its management (Smith and Walsh, 2001). It is estimated that over half a million maternal deaths occur worldwide annually due to pregnancy related complications. Out of these, 99% of the deaths occur in least developed countries (Lawn, et al, 2005). Moreover, a total 130 million babies are born every year, from which 4 million babies die in the first one month. Equally, there has been slow progress in reducing the rate of maternal and new born deaths globally (Bhutta et al., 2014).

This is despite the fact that most maternal deaths are to a large extent preventable if the complications are diagnosed and managed effectively and in time. It is estimated that only 16 countries globally will achieve the Millennium Development Goals target of reducing maternal deaths by 75% by year 2015 (Kassebaum et al. 2014).

Throughout the developing countries and particularly in Sub-Saharan Africa, women with complications of labour and delivery arrive at referral hospitals, only to die due to lack of prompt quality care. This situation is compounded by challenges of delays in arrival of expectant mothers to hospital due to poor or non-existent roads, poverty and other factors (Lori and Starke 2012).

The World Health Organization (WHO), United Nations Population Fund (UNFPA) and United Nations Children's Fund (UNICEF) recommend that all pregnant women should have access to good quality Emergency Obstetric Care (EMOC). This is due to the fact that most of maternal deaths cannot be predicted. For example, regardless of the best obstetric care due to an emergency, a pregnant woman can go into coma due

to bleeding in third trimester of pregnancy (Purohit, Desai, Jodha, & Garg, 2012). In fact, ante partum haemorrhage is one of the leading causes of maternal and foetal mortality globally.

Therefore, Emergency Obstetric Care and services are necessary to save the lives of women who experience obstetric complications. They include; removal of retained products of conception, assisted vaginal delivery, administration of parenteral antibiotics, parenteral oxytocic drugs, parenteral anticonvulsants, manual removal of placenta,, surgery and blood transfusion.

Within the emergency services, there are facilities that are useful in the provision of medical interventions (signal functions). The basic EMOC facilities used to treat obstetric complications comprise eight packages recommended by the World Health Organisation (WHO), the United Nations Children's Fund (UNICEF) and United Nations Population Fund (UNFPA). This are summarised in (Dogba and Fournier 2009) and include; administration of parenteral antibiotics, oxytocic drugs, anticonvulsants as well as manual removal of placenta, removal of retained products of conception and assisted vaginal delivery.

Comprehensive EMOC facilities perform all the basic signal functions as well as perform surgery (caesarean sections) and provide blood transfusion. Currently almost all health centres in the country are not basic EMOC facilities and all patients who require comprehensive services are referred to the secondary facilities. A detailed description of the Emergency obstetric care is given in Table 1. EMOC is often discussed in terms of "basic" and "comprehensive" care available within a facility that provides care for women with obstetric complications.

Table 1 : Basic and Comprehensive Emergency Obstetric Care Description

Basic Emergency Obstetric Care	Comprehensive Emergency Obstetric Care
(1) Administration of parenteral antibiotics (2) Administration of parenteral oxytocic drugs (3) Administration of parenteral anticonvulsants for preeclampsia and eclampsia (4) Performance of manual removal of placenta (5) Performance of manual removal of retained products (e.g., manual vacuum aspiration) (6) Performance of assisted vaginal delivery	All (1-6) functions included in basic EMOC plus. (7) Performance of surgery (e.g., caesarean section) (8) Performance of blood transfusion

Source: UNICEF, 1997

II. METHODS AND MATERIAL

Study Site

The study was conducted among six sampled health facilities in Samburu central sub county rift valley region of Kenya. Health facilities are sparsely distributed in the sub county and serving an approximate population of about 140,000 (Census, 2009).

Study Design

This was a descriptive cross-sectional retrospective study involving a review of maternity records for the last six months in each of the facilities within the study area. In addition, key-informant interviews were conducted among facility in-charges to determine facility level factors associated with adherence to national guidelines. A checklist was also be used to inspect the infrastructure in the health facility which facilitates in provision of emergency obstetric care to mothers and new born in the facility.

Ethical Approval

Ethical clearance from the ethical committee at the University of Nairobi and the Scientific Health Committee was sought. Specifically, permission to conduct the research was sort from the county director of medical services in Samburu County and respective in-charges of health facilities in the sub-county .The data collected was coded and keyed in a database that was pass-word protected to ensure Confidentiality. In addition no harm on the study subjects will be anticipated since this is largely, a retrospective study. Finally potential benefits were dissemination of the information to health facilities and the ministry of health and this may help improve outcomes in the future.

Data Management and Analysis

Data was analyzed using the computer program, statistical package for social sciences (SPSS) Version 23.0 for windows. Descriptive statistics was used where means, percentages and frequencies were determined. Chi-square was used to establish relationships between the independent.

III. RESULT AND DISCUSSION

1. Facility level factors Associated with Adherence to National Guidelines on Emergency Obstetric care

Results indicated that out of 6 health facilities five health facilities were Basic emergency obstetric cares (83.3%) while one facility provided comprehensive emergency obstetric care services (16.7%) (Table 2)

Table 2: Type of health facility

Health Facility Type	Frequency (f)	Percentage (%)
BEm0C	5	83.3
CEm0C	1	16.7
TOTAL	6	100

2. Human/Personnel Resources Factors

Maralal county referral hospital had many personnel compared to other health facility. In addition it was the main facility where there are may midwives and personnel trained on EMOC (Table 3)

Table 3. Staffing of maternity unit

Facility	No. of staff	Staff per shift	Midwives	No. of staffs trained on EMOC
Maralal county referral hospital	15	3	15	15
Loosuk Health Centre	4	1	2	1
Kisima Model health Centre	6	2	3	3
Suguta Marmar Health Centre	5	2	2	3
Foror Dispensary	1	1	1	1
Lolmolog Dispensary	1	1	1	1
TOTAL	32	9	24	24

3. Implementation of free maternity services by National/County Government

Results from the key informants (the facility in charges) interviewed showed a positive support from both the

national and county government in implementation of free maternity by provision of waiver fee, medicines, incubators, delivery coaches, sanitary towels, other non-pharmacologic equipment to the facilities and 24 Hours Free Ambulance Services.

4. Community Perception of having Maternity Unit in the Health Facility

The health facilities in charges interviewed in common were pointing out the easy availability of Maternity Services, neonatal mortality had reduced, availability of maternal shelters in health facilities.

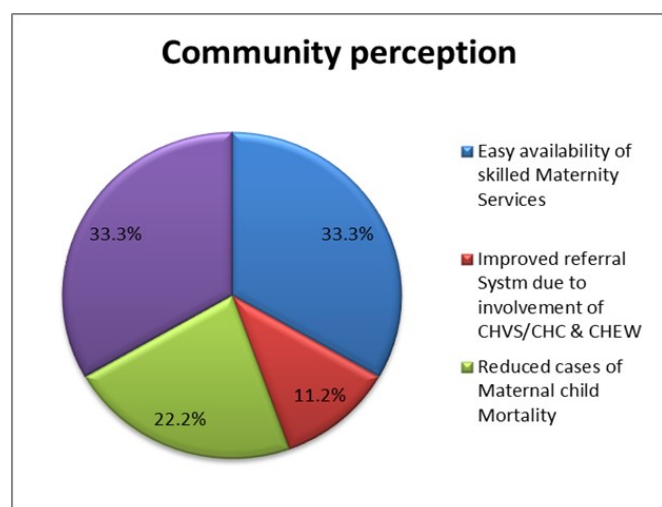


Figure 1. Pie chart of the Reasons for community Perception of having maternity unit in Health Facility

5. Challenges faced in providing emergency care Services in Health Facility

The main challenges faced by the health workers in provision of services in their facilities was shortage of staff, long distance for mothers who live far from the facility attributed by poor means of communication and referral fee to the main hospital.

6. Opinion on further improvement in improving adherence to the national guidelines on Obstetric emergency services

Opinions from the key informant pointed out that further improvement of the emergency obstetric care services within the sub-County are needed by regular training and updating staff on new protocols in emergency obstetric care, provision of maternity equipment, regular/consistent supply of drugs and

upgrading another facility to provide comprehensive emergency obstetric care services.

7. Organizational Structure of the Maternity unit

The checklist/observation revealed that Maralal county referral hospital had more and spacious room, delivery coaches and adequate number of beds in the post natal wards (Table 4)

Table 4. Organization of the maternity units in the health facilities

Facility	No. of rooms	No of delivery coaches	No of post natal wards
Maralal county referral hospital	5	3	2
Loosuk Health Centre	2	1	1
Kisima Model health Centre	2	1	1
Suguta Marmar Health Centre	2	1	1
Poror Dispensary	1	1	1
Lolmolog Dispensary	1	1	1
TOTAL	13	8	7

8. Availability of Emergency Obstetric care in the Health Facility : Basic Emergency Obstetric care Kit

All the six health facilities had enough medications for the six signals of basic emergency obstetric care (intravenous fluids, Oxytocin, Injectable Sedatives/Anticonvulsants and Injectable Antibiotics.

9. Availability of Emergency Obstetric care in the Health Facility: Comprehensive emergency obstetric care.

Results from Maralal county referral hospital which was the only CEMO facility had all the six signal functions, performed caesarean sections and blood transfusion which was evidenced by a well-stocked blood bank.

10. Maternity Supplies/Equipment's availability in the Maternity Labour room supplies/Equipment

The checklist used to check the labour rooms indicated that rooms were equipped with equipment; incubators, oxygen cylinders, resuscitation tray, ambubags and medicines.(Figure

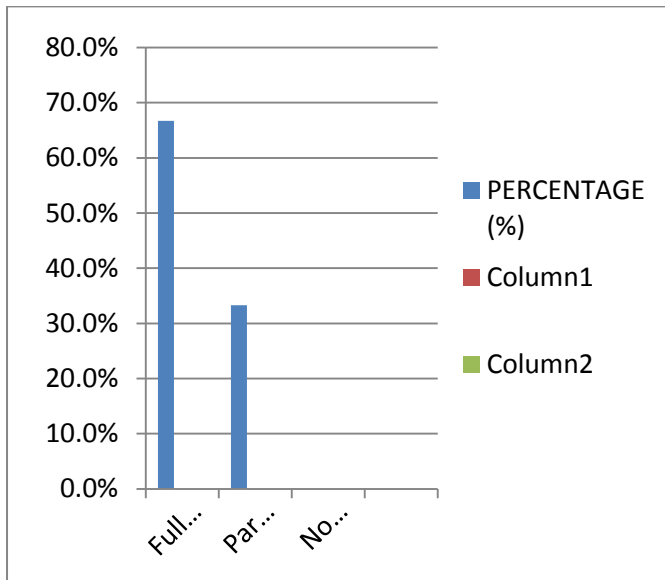


Figure 2. Bar Graph of Maternity Supplies/ Equipment availability in the Maternity Labour Rooms.

11. Availability of Neonatal Resuscitation Kit: Suction Machines, Cord clumps, Ambubags, Resuscitation coach and Vitamin K Injection.

The checklist revealed that Maralal county referral hospital, kisima, poror had all the fully equipped neonatal resuscitation kit. Vitamin K injection was missing at Lolmolog Dispensary, Suguta Marmar Health Centre and Loosuk Health Centre (Table 5)

Table 5. Availability of Neonatal Resuscitation Kit

Facility	Suction machines	Cord clumps	Ambubags	Resuscitation coach	Vit K injection
Maralal county referral hospital	yes	yes	yes	yes	yes
Loosuk Health Centre	yes	yes	yes	yes	no
Kisima Model health Centre	yes	yes	yes	yes	yes
Suguta Marmar Health Centre	yes	yes	yes	yes	no
Poror Dispensary	yes	yes	yes	yes	yes

ary					
Lolmolog Dispensary	yes	yes	yes	yes	No

12. Health outcomes Associated with Adherence to National Guidelines on Emergency Obstetric care

The study revealed that out of 990 pregnant mothers who delivered in the six health facilities the main health outcomes encountered were obstructed labour, antepartum and postpartum hemorrhage (Table 6).

Table 6. Health outcomes

Outcome	Frequency	Percentage (%)
1. Ant Partum Hemorrhage	4	0.4
2. Post-Partum Hemorrhage	4	0.4
3. Eclampsia	1	0.1
4. Abortion	0	0
5. Puerperal sepsis	0	0
6. Obstructed Labour	6	0.6

13. Delivery and New born outcomes Associated with Adherence to National Guidelines on Emergency Obstetric Care

More deliveries were observed in the month of September and October and least deliveries were in the month of July and August (Table 7).

Table 7. Distribution of deliveries with regard to month

Month delivery	No. of deliveries	Proportion of delivery
June	155	15.7
July	153	15.5
August	153	15.5
September	203	20.5
October	169	17.0
November	157	15.8
TOTAL	990	100

The Chi-square value for the outcome of deliveries for the last six months

Observed (O)	155	153	153	203	169	157
Expected (E)	165	165	165	165	165	165

NB

165- Is the mean (x) of the Total Observed deliveries for the last six months

$$X^2 = \frac{\sum (O-E)^2}{E} = \frac{1,912}{165} = 11.59$$

$$\text{Degree of freedom (df)} = (r-1)(c-1) = (2-1)(6-1) = 5$$

Re-reference to the table shows that a χ^2 Value of 9.49 is significant at $P < 0.5$ (d.f) 4.1 since the obtained value of 11.59 greatly exceeds this value, it is concluded that delivery and new born outcomes do not adhere to the National guidelines on Emergency obstetric care in Health facilities of Samburu County.

IV. DISCUSSION

Five health facilities had basic emergency obstetric cares services .Only the county referral hospital could provide comprehensive emergency obstetric care services. In addition it was the main facility where there many midwives and personnel trained on EMOC. The national and the county governments had supported the provision of free maternity services although they were not fully utilized.

There is need to have more personnel in the health facilities trained in emergency obstetric care and supply of essential maternity equipment so as to provide emergency obstetric cares services in the sub county. There is need to increase a facility that can also provide the existing comprehensive facility to provide comprehensive maternity services.

The main health outcomes encountered were obstructed labour, antepartum and postpartum hemorrhage but they were few than expected. More deliveries were observed in the month of September and October and least deliveries were in the month of July and August.

V. RECOMMENDATIONS

National/county government level

These organs have a mandate and an obligation to employ more staff and collaborate with other stakeholders and encourage ensuring that the health facilities have enough trained staff to provide services to the respective locations or areas of their operations. The government through the free maternity countrywide should support in supply of maternity equipment to every facility with maternity services.

Community level

The sub county ward administrators together with the political fraternity should be in the fore front of encouraging the community to utilize the existing facilities within their locality to encourage pregnant mothers to come to and deliver in the health facility. It is discouraging to see the antenatal clinic attendance in the facilities is high but the deliveries are low which gives a lot of queries why mothers deliver at home

Area for further research

1. Correlations between antenatal visits and skilled attendant deliveries
2. Introduction of e-mobile to improve skilled attendant deliveries
3. Impact of beyond zero tolerance in reducing maternal mortality.

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