



Received on 20 February, 2016; received in revised form, 09 June, 2016; accepted, 25 June, 2016; published 01 July, 2016

EMERGENCY OBSTETRICS TRAINING IMPROVING SKILLS AMONG HEALTH CARE WORKERS IN MIGORI AND NYERI COUNTIES, KENYA

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Keywords:

Emergency Obstetric care,
Training, Health care Workers, Skills

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ABSTRACT: Introduction: Utilization of skilled health care is effective in reduction of maternal and newborn morbidity and mortality. Sufficiently trained health workers can competently handle and manage obstetric complications. Health workers, despite having undergone a formal training, require regular refreshers to keep up to date with new, evidence-based information. **Methods:** This is an evaluation report following Emergency Obstetrics and Neonatal Care skills - based training by Maternal and Infant Survival and Healthcare Advancement (MAISHA), a project by Dedan Kimathi University of Technology and College of The Rockies, Canada in collaboration with Liverpool School of Tropical Medicine and the Ministry of Health among health care workers in Migori and Nyeri Counties' health facilities. Knowledge and skills pre-test was done before the training and a similar post-test was administered after the training to assess the level of knowledge and skills of each participant. Follow up was done to the trained participants four months after the training to assess the level of retention of the skills. **Findings:** The pre-test findings indicated that the health workers were equipped with theoretical knowledge, however the hands on skills were lacking in common procedures such as maternal and newborn resuscitation, breech delivery and use of a partograph in labour. After the training, knowledge was improved and skills were gained, however, follow up supervisory visits indicated need for a refresher training on the skills. **Conclusion:** A single training appears to be inadequate therefore more frequent skills-based trainings should be organized among health care workers in basic emergency obstetric care facilities.

INTRODUCTION: Maternal and infant health has continued to be the centre of discussion in the international world. Women have a right to life while giving birth, however pregnancy and childbirth in developing countries is marred with challenges.

Globally, 15% of women develop complications which can be life threatening if not managed quickly and efficiently¹. Maternal and newborn health are closely linked. Every year, an estimated 3 million babies die within the first 24 hours after birth². Most of the maternal deaths occur in sub-Saharan Africa resulting mainly due to direct obstetric causes such as haemorrhage, eclampsia, sepsis and obstructed labour. Distance to health facilities is a contributing factor to maternal deaths due to limited access to health facilities³. The lifetime risk of death for a woman due to pregnancy is 1 in 52 in the less developed countries

QUICK RESPONSE CODE 	DOI: 10.13040/IJPSR.0975-8232.7(7).3045-52
	Article can be accessed online on: www.ijpsr.com
DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.7(7).3045-52	

as compared to 1 in 4,700 in the developed world¹. Maternal and infant mortality is unacceptably high in Kenya, with a current maternal mortality rate (MMR) of 362/100000 and Infant Mortality Rate (IMR) of 39/1000⁴.

Improvements in maternal and newborn health are key Sustainable Development Goals (SDGs); strategies to achieve them include ensuring skilled attendance at birth and providing emergency obstetric care (EmOC) for women and infants who need it. Improving the capacity of maternity and newborn health care providers (HCPs) to provide this care is likely to contribute to improved maternal and newborn health. Key indicators to measure progress include the proportion of births attended by skilled health workers and the maternal and infant mortality ratios⁵.

World Health organization (WHO), United Nation's Children's Fund (UNICEF) and United Nations Population Fund (UNFPA) have advocated for improved access to emergency obstetric care as a way of reducing maternal and infant mortalities. Emergency obstetric care (EmOC) must be provided to all women requiring obstetric care. It is recommended that there should be at least four basic EmOC facilities and one comprehensive EmOC facility for every 500,000 people in the population⁶. The services provided in a basic EMONC facility include administration of parenteral antibiotics, parenteral oxytocics, parenteral anticonvulsants, manual removal of a retained placenta, removal of retained products of conception by manual vacuum aspiration, assisted vaginal delivery and neonatal resuscitation. In a comprehensive EmOC facility, the services provided include the seven signal functions offered in a basic facility plus blood transfusion and surgery. In an EmOC facility, 100% of complications should be treated and the case fatality should be less than 1%⁶.

This therefore calls for staff competency while administering care. Various efforts have been put in place by the Kenya government to address the issue of concern. One of the ways of addressing the issue is through equipping the health care workers with skills in emergency obstetric care to ensure effective handling and management of

emergencies. Currently in Kenya, the Ministry of Health (MOH) in collaboration with Liverpool school of Tropical Medicine (LSTM) is rolling out a programme of training health care workers on emergency obstetric care. This is a skills oriented training where health workers are equipped with skills. The Maternal and Infant Survival and Healthcare Advancement (MAISHA) project is a partner with the LSTM and MOH in training health care workers at basic facilities i.e the dispensaries and health centres. The training encompasses all cadres of clinical staff working in the health facilities, the nurses, clinical officers and doctors. Evidence suggests that team training has better outcomes⁷. Currently, the use of traditional training methods such as event analysis are not as effective as compared to targeted-skill training with the aid of case scenarios and mannequins which allow for evaluation of competence⁸.

A recent systematic review of maternal health interventions in resource-limited countries showed that programs integrating multiple interventions—including EmOC training; placement of providers; refurbishment of existing infrastructure; and improved supply of drugs, supplies, and equipment—are likely to have a significant positive impact on maternal and newborn health⁹.

MATERIALS AND METHODS

This is an evaluation report following Emergency obstetrics training by an on-going MAISHA project among health care workers in Migori and Nyeri County health facilities. The health facilities supported by the project are Karaba, Kamoko, Gichiche and Njokini health centres and dispensaries in Nyeri County and Nyamaraga, Ogwedhi, Godkwer and Ondong' health centres and dispensaries in Migori County. Staff from all the eight health facilities in the two counties, where the project is currently working attended a one week skills competency training course on emergency obstetrics and infant health.

On induction to the training, a pre-test was done which involved both written and practical tests to assess the level of knowledge and skills among the participants. The written test was used to assess the level of knowledge in the common obstetric areas. Management of common obstetric emergencies

was evaluated with the use of obstetric mannequins. A similar test was done at the end of the training to assess how much the participants had learned. Observation was made on how the staff carried out the skill systematically and marks were awarded based on their performance. A follow-up was done four months later after the training to assess the level of skill retention. An evaluation visit was made to all the facilities and mannequins were used to assess the specific skill retention among the trained staff. Each staff was given a chance to demonstrate the various skills they had been trained on. Observations were made while the staff carried out the demonstration. In addition, key informant interviews were also conducted to identify success and challenges faced in applying the basic lifesaving skills learned. Ethical approval was sought from Kenyatta University Ethics and Review committee.

RESULTS AND DISCUSSION:

The training was offered to a total of 58 (80%) clinical staff working in the MAISHA project-supported health facilities in the two Counties. All the facilities where a total of 58 staff who had been trained on EMOc were visited were and assessed

on skill retention. Most of the staff reported much improvement on how they carried out the skills after the training as compared to before the training.

Knowledge assessment:

At the start of the training, an evaluation test was done to assess the level of knowledge of the participants before the training. The areas evaluated during the written pre-test were communication and triage, obstetric haemorrhage, management of shock and unconscious patient, management of obstructed labour through use of partograph, management of pre-eclampsia and unsafe abortion. Despite the participants being knowledgeable, there was improvement after the training in most of the trained areas. There was no change in the level of knowledge in communication, triage and referral. There was marked improvement of knowledge in management of shock and unconscious patient from 74 to 90%. The average level of knowledge on obstetric emergencies was low before and after the training at 57 and 61% respectively. The figure below indicates the findings of both the pre and post - tests.

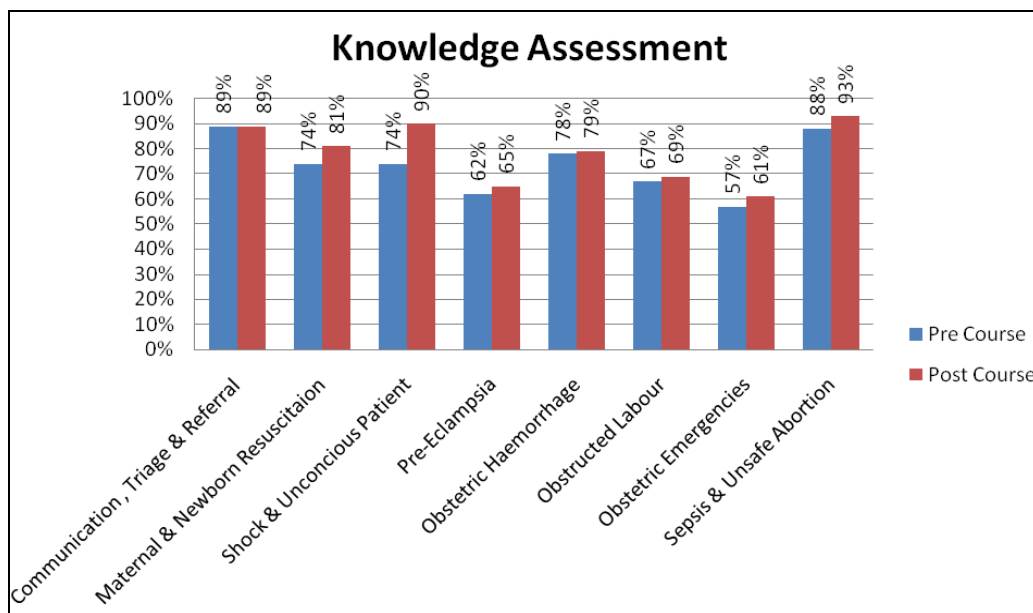


FIG. 1: PRE AND POST – TEST FINDINGS ON KNOWLEDGE ASSESSMENT

Skills tests:

On the practical tests, skill assessment was done on newborn and maternal resuscitation, assisted vaginal delivery and obstetric complications. The findings indicated that most of the skills were

lacking before the training, however, there was much improvement after the skills training. Despite this improvement, three months after the training, it was found out that competency of some skills still required refresher training to enhance retention.

Maternal resuscitation:

Each participant was assessed on each of the steps of maternal resuscitation (call for help, assess ABCs, manage as appropriate with ventilations and chest compressions). In the pre-test, 61% of the participants were not able to shout for help while (49%) could not assess for the patient’s response. Also, the resuscitation steps; airway management,

ventilation or chest compressions were very poorly done. In the post test, it was evident that learning had taken place since all the participants remembered the initial step of shouting for help, however, there is need to further improve the critical skills of resuscitation such as airway management and chest compression.

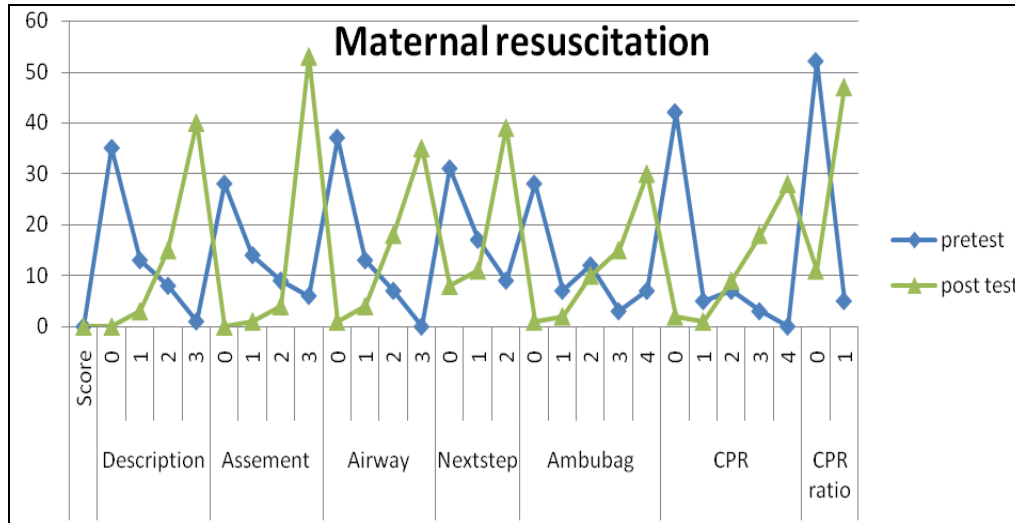


FIG.2: PRE AND POST - TEST FINDINGS ON MATERNAL RESUSCITATION

Newborn resuscitation:

Newborn resuscitation is a procedure done when a baby fails to establish respirations after birth and it involves various steps. The pretest findings indicated that the participants were well-versed with newborn resuscitation (stimulate and dry, position, assess, ventilate, and provide chest compressions). However many of them were not able to place the baby in a good neutral position, reassess the apex beat or give inflation breaths. During the post test, most of the participants were able to stimulate the baby, place in neutral position and give chest compression. However, it was found out that even after the training, most of the participants could remember how to stimulate the baby, place in neutral position. However, some of them were not able to chronologically carry out the resuscitation procedure. This indicated the need for a follow up training to enhance this skill. The evaluation visit findings indicated that the participants still required more training to competently carry out the procedure. It was observed that some of the participants as they practiced on the mannequins still had a challenge in ventilation and performing chest compression.

‘We managed to successfully resuscitate one baby after the training, although I feel we still need more refresher training on this because it is very important’. (Nurse, dispensary)

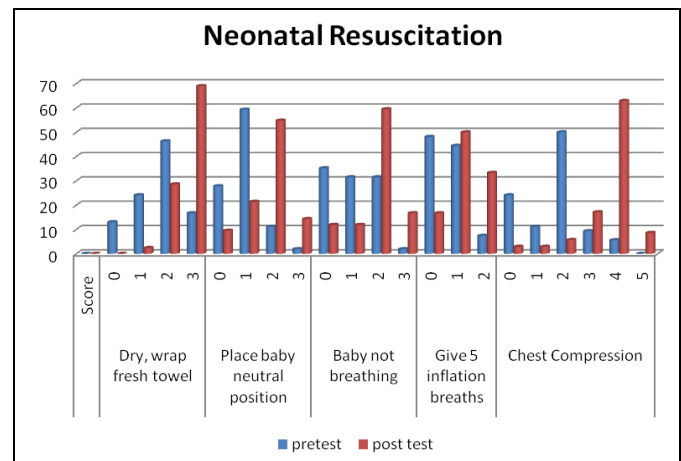


FIG. 3: NEONATAL RESUSCITATION PRACTICAL

Vaginal breech delivery:

Breech delivery is one of the common abnormal presentations which may present as complete, frank or footling breech. A vaginal delivery in this case is attempted if it is a complete or frank breech if the baby is of average size and once a pelvic adequacy

assessment has been done. This is a delivery that is conducted ‘hands off’ when the breech is coming and only interventions are made when the delivery is not spontaneous. During the pre-test, most of the participants were not able to give a description of how to conduct the ‘hands off’ aspect of the delivery. In addition, the skill for conducting the delivery of the arms and legs in complicated breech was lacking. There was notable improvement during the post-test since most of the participants were able to describe the delivery and demonstrate

delivery of the arms. However, the delivery of the legs was still a problem since only 20.7% of the participants scored the highest marks. During the evaluation visits, some of the participants had been able to successfully conduct a breech delivery in their facilities although most of them indicated the need for a refresher training.

‘After the training, I have been able to carry out one breech delivery and the baby scored well’ (Clinical officer, dispensary)

TABLE 1: BREECH DELIVERY

	Score	Pretest		Post Test	
		n	%	n	%
Practical questions					
Delivery Description	0	30	52.6	4	6.9
	1	20	35.1	8	13.8
	2	7	12.3	46	79.3
Total		57	100.0	58	100.0
Leg – Delivery Demonstration	0	9	15.8	0	0.0
	1	35	61.4	24	41.4
	2	13	22.8	34	58.6
Total		57	100.0	58	100.0
Arms - Delivery Demonstration	0	4	7.0	0	0.0
	1	7	12.3	0	0.0
	2	19	33.3	1	1.7
	3	16	28.1	4	6.9
	4	10	17.5	20	34.5
	5	1	1.8	21	36.2
	6	0	0.0	12	20.7
Total		57	100.0	58	100.0

Assisted vaginal delivery:

Assisted vaginal delivery is done through the use of a vacuum set in cases where there is delay in second stage of labour with a full descent of the head. In the assisted vaginal delivery station participants were assessed on their knowledge indications for and complications of vacuum extraction and demonstration of its safe use. The pretest findings indicated that only a few participants were aware of the indicators and complications of the assisted vaginal delivery. However, all (100%) of the participants were not skilled on how to carry out the procedure. After the training, 43.1% of the participants were able to correctly demonstrate the procedure of assisted vaginal delivery. Less than half of the participants (48.3%) could mention correctly the pre-requisites of a vacuum delivery. Most of them could

remember the complications that may arise with the procedure.

The in-depth interview findings during the evaluation visits indicated that the participants were ready to embrace the use of the equipment in their facilities although they indicated the need of more practice before competently practicing the procedure in their facilities.

‘Initially, we feared to use the vacuum delivery kits because of the rumour that it can cause brain damage’ (Nurse, health centre).

‘Once we get the vacuum sets, we will be able to practice the delivery but we still need more practice before using the equipment’ (Clinical officer, health centre)

TABLE 2: ASSISTED VAGINAL DELIVERY

Practical questions	Pretest			Post Test	
	marks	n	Percentage (%)	n	Percentage (%)
AVD Indicators	0	21	36.8	3	5.2
	1	17	29.8	2	3.4
	2	16	28.1	18	31.0
	3	2	3.5	16	27.6
	4	1	1.8	19	32.8
Total		57	100	58	100
AVD pre-requisites	0	20	35.1	1	1.7
	1	19	33.3	2	3.4
	2	14	24.6	11	19.0
	3	4	7.0	16	27.6
	4	0	0.0	28	48.3
Total		57	100	58	100
Vacuum extraction Delivery Demonstration	0	57	100.0	3	5.2
	1	0	0.0	9	15.5
	2	0	0.0	21	36.2
	3	0	0.0	25	43.1
Total		57	100	58	100
Vacuum extraction Complication	0	16	28.1	1	1.7
	1	22	38.6	6	10.3
	2	15	26.3	14	24.1
	3	4	7.0	37	63.8
Total		57	100	58	100

DISCUSSION: Skills training is a very vital component of health care training. Retention of skills is also an aspect that is critical in patient management. With the ever-changing nature of medical care, frequent refresher courses in skills training are key to enhancing retention.

The study findings indicated that the participants were knowledgeable on the areas that were tested which included communication and triage, obstetric haemorrhage and management of shock and unconscious patient. This could be attributed to continuous professional education where the health care workers get updates on new knowledge. However, for the skill performance, gaps were noted on the skills that were tested. This could be attributed to emphasis on knowledge acquisition rather than skills in most training.

Resuscitation of the newborn is an important and frequently required skill in many EmOC facilities. The pre-test findings indicated that the skill of newborn resuscitation was lacking among most of the health workers. This could be attributed to lack of skills training updates. In addition, most of the staff worked in basic facilities where deliveries are fewer compared to the higher level health facilities and also early referral of complications. A skilled

health care provider should be able to handle these complications competently, therefore reducing the risks of poor outcomes. A retrospective observational study to assess impact of training on Apgar scores in a tertiary hospital in Bristol found out that there was an association of significant reduction in low 5 –minute Apgar scores with the introduction of obstetric emergencies training courses¹⁰. Onsite skills training obstetric emergencies such as on neonatal resuscitation, led to improvement outcomes after the training¹¹.

Maternal resuscitation pre-test findings indicated that the participants were lacking competency in the skill. Most of the leading causes of maternal mortality are preventable including haemorrhage. Through resuscitation, near misses and maternal deaths can be averted. The pre-test study findings indicated that most of the participants were not competent in carrying out maternal resuscitation. This could be attributed to limited opportunity for practice due to early referral of clients with complications who are referred to higher level facilities. Resuscitation is challenging thus prompt initiation is important to save the life of the mother¹². Adequate staff training is important to enable them manage cardiac arrest in emergency obstetric care¹³.

Vaginal breech delivery may lead to maternal and neonatal complications if not handled skillfully. The study findings indicated that the skill was lacking for complicated breech in the pre-test but much improvement was noted during the post-test. This could be attributed to lack of practice since breech deliveries are often referred to high level facilities. Vaginal breech delivery can be a safe option which can lead to positive maternal and neonatal outcome if the criteria is met before and during labour¹⁴. A study comparing planned vaginal delivery versus elective caesarean section in singleton term breech presentation in Lyon found out that there was increased risk of neonatal deaths and complications in planned vaginal delivery while elective caesarean section increased the possibility of only minor maternal complications¹⁵.

Assisted vaginal delivery is a procedure which is being rolled out to the lower level facilities in Kenya. Most of the participants were not aware of the procedure during the pre-test. This could be attributed to lack of the assisted vaginal delivery equipment in the facilities. From the findings, most of the participants had misconceptions associated with the use of the equipment. There are fewer risks of using vacuum delivery for assisted vaginal delivery compared to forceps delivery¹⁶. Assisted vacuum delivery has been associated with increased risk for neonatal intracranial haemorrhages¹⁷. Studies indicate that the incidence of cephalhematoma decreases with more skilled experience gained with vacuum extraction¹⁸. This indicates the need for competency among the staff carrying out the procedure.

CONCLUSION: Obstetric emergencies are sometimes inevitable therefore staff competency in managing the complications is paramount. A one week skills training was found to significantly improve the level of knowledge and skills among the participants comparing the pre- and post-test scores. Suboptimal performance of some common skills like neonatal resuscitation, postpartum haemorrhage management and conducting breech delivery during the post-tests and the assessment visits indicated the need for ongoing refresher training on the specific skills.

RECOMMENDATION: As it appears, a single training is inadequate to ensure adequate acquisition and retention of many of the complicated skills required in emergency obstetric care. Staff therefore, need to have refresher trainings and supportive monitoring and supervision.

CONFLICT OF INTEREST: The authors declare no conflict of interest

ACKNOWLEDGEMENT: The authors acknowledge the contributions of Morritz Schmidt, Norma Sherret, Catrina Ziesman and the entire College of The Rockies team, Canada. Also the authors acknowledge the funding support of the project from Department for International Development (DFID) – Canada.

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How to cite this article:

Cheptum J.J, Gitonga M.M, Mutua E.M, Mukui S.J, Ndambuki J.M, Koima W.J and Hale I: Emergency Obstetrics Training Improving Skills among Health Care Workers in Migori and Nyeri Counties, Kenya. *Int J Pharm Sci Res* 2016; 7(7): 3045-52. doi: 10.13040/IJPSR.0975-8232.7(7).3045-52.

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