SITUATIONAL ANALYSIS ON MANAGEMENT OF EMERGENCY OBSTETRIC COMPLICATIONS AT MUHIMBILI NATIONAL HOSPITAL.

By

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A dissertation submitted in partial fulfilment of requirements for the degree of Master of Medicine (Obstetrics and Gynaecology) of the University of Dar es Salaam.

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2002

CERTIFICATION

This undersigned certify that he has read and hereby recommend for acceptance by the University of Dar es Salaam a dissertation entitled: *Situational Analysis of Management on Emergency Obstetric complications at Muhimbili National Hospital*, in partial fulfilment of requirements for the degree of Master of Medicine (Obstetrics and Gynaecology)

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Date 08th Nov. 2002

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AND

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LIST OF ABBREVIATIONS.

1. AIDS .... Acquired Immune Deficiency Syndrome
2. EOC ....Emergency Obstetric Care
3. HIV ... .Human Immunodeficiency Virus
4. LSCS ....Lower Segment Caesarean Section
5. MCH ....Maternal Child Health
6. PIH ....Pregnancy Induced Hypertension
7. PMM ... ...Prevention on Maternal Mortality
8. UNDP ....United National Development Programme
9. UNFPA ..... United National Population Fund
10. UNICEF ..... . United National Children Fund
11. WHO .... World Health Organisation

ABSTRACT

Background

Arriving at the facility providing a comprehensive emergency obstetric care may not lead to immediate commencement and receipt of correct treatment. Congestion of patients, shortage of qualified staff, shortage of essential drugs and supplies coupled by administrative delays and clinical mismanagement are documentable contributing delays in starting correct treatment.

Objectives

The aim of this study was to analyse the management of emergency obstetric complications in Muhimbili National Hospital.

Methodology

It is an observational cross section study. A total of 250 pregnant women who were admitted in the labour ward at Muhimbili National Hospital with obstetric complications or who developed complications after admission during the period of study were included. The data was obtained through observation, from partograms, clinical notes and antenatal cards.

Results

This study showed that, there was delay in initiating treatment after the patient had been admitted. The mean time interval from admission to the time the patient was seen by a doctor was 2 hours 45 minutes with a periods as long as 17 hours. However being seen by a doctor did not guarantee the patient being given treatment, for example the mean time interval from decision making and

starting of an operative procedure was 3 hours and 30 minutes. Blood for transfusion was not available to 34% of the patients who needed blood transfusion. Majority of those who got blood had to wait for more than 2 hours before getting blood.

Conclusion

The study found that there were delays in making decisions and starting treatment. These delays are likely to contribute to the maternal morbidity and mortality that occur at Muhimbili National Hospital.

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1.1 INTRODUCTION AND REVIEW OF LITERATURE

Each year more than 150 million women become pregnant in developing countries. Every pregnancy, anywhere in the world faces risk, it is estimated that 15% of all pregnant women develop life-threatening complications.[19] World-wide, nearly 600,000 women between the ages of 15 and 49 years die every year as a result of complications of pregnancy and childbirth. These women die not from disease but during the normal life-enhancing process of procreation.[17,18] The majority of these deaths, almost 90%, occur in Asia and Sub-Saharan Africa, approximately 10% in other developing regions, and less than 1% in the developed world. Between 25% and 33% of all deaths of women of reproductive age in developing countries are the result of complications from pregnancy and childbirth. Of all the health statistics, maternal mortality is the one with the largest discrepancy between developed and developing countries. For example while infant mortality is seven times higher in the developing countries, maternal mortality is 18 times higher.[22]

Women in developing countries have a 40 times greater risk of dying from pregnancy-related complications and childbirth than those in developed countries. A woman's lifetime risk of dying from pregnancy related complications or during childbirth is 1 in 48 in developing countries, that figure is 1 in 1800 in developed countries. The Human Development Report by UNDP in 1997 gives an estimation of 700 maternal deaths per 100,000 live births in Tanzania.[18]

A survey of maternal deaths in Dar es Salaam in 1984/85 found it to be 680 per 100,000 live births.[4]

A study conducted in 1991 in Ilala district found the maternal mortality rate to be 572/100,000 live births in the district.[15] Data from maternity data base in Muhimbili national hospital, showed hospital maternal deaths of 651 per 100,000 live births for the year 2000.

For every woman who dies, many more suffer from serious morbidity that will affect them for the rest of their lives. Over 50 million women suffer from maternal morbidity from acute complications of pregnancy. For at least 18 million women, this morbidity is long term and often debilitating. [21]

Around 80% of all maternal deaths are the results of complications arising during pregnancy, delivery or the puerperium, these include haemorrhage 25%, sepsis often a consequence of poor hygiene during delivery or untreated sexually transmitted diseases which accounts for 15%. Hypertensive disorders of pregnancy particularly eclampsia 12%, prolonged obstructed labour 8% and complications of unsafe abortion responsible for 13%.[19]

Approximately 20% of maternal deaths are the results of pre-existing conditions that are exacerbated by pregnancy or its management. One of the most significant of these indirect causes of deaths is anaemia which as well as causing death through cardiovascular arrest also underlie a substantial proportion for direct deaths [particularly those due to haemorrhage and sepsis].

Other important indirect causes of deaths include malaria, heart diseases and increasingly now HIV/AIDS.[19]

Most maternal deaths and serious morbidity could be prevented if women had access to basic medical care during pregnancy, childbirth and post partum period. Many women lack access to adequate care during pregnancy. It is estimated that 15% of deliveries will need emergency obstetric care services by qualified midwives, as well as easy access to a referral centres. And that 5% to 7% of all deliveries will require a caesarean section, so these services must be in place. In health facilities which provide services to high risk patients the figure is expected to be high.[19] Most maternal deaths occur either during or shortly after delivery, yet this is the time when women are at least likely to receive the health care they need because of the distance from health facility and unavailability of transportation. All pregnant women are at risk of obstetric complications and most life-threatening complications occur during labour and delivery. Although some of the obstetric complications can be predicted, most of them can not be predicted. Antenatal screening does not identify all of the women who will develop complications. Women not identified as "high risk" can and do develop obstetric complications. Most obstetric complications occur among women with no risk factors.[5,14,16]

Although most obstetric complications cannot be predicted or prevented, they can be treated. Therefore quality health care during and immediately after the critical period of labour and delivery is the single most important intervention

for preventing maternal mortality and morbidity. Every pregnant woman needs access to facility with capabilities to provide emergency obstetric care [EOC]. Neither effective prenatal care nor identifying the risk will help a woman if emergency obstetric care is not available, not accessible or not utilised.

In a study done in Kasongo Congo, pregnant women were screened for the risk of developing obstructed labour. The results showed that only 29% of women who actually did develop obstructed labour were the 'high risk' group. More than two thirds of women who developed this complication were not predicted by the screening program.[5]

Similarly, Weatherby in United States illustrated evidence that obstetric complications are common despite intensive prenatal care and screening. In that study, one for every thirteen women who were categorised as 'low risk' and received intensive prenatal care developed serious complications.[15]

The prevention on maternal mortality [PMM] network identified the points at which the provision of efficient and effective emergency obstetric care delays. They developed a "3 delay model"

1. Delay in deciding to seek care. Even where facilities with capabilities for emergency obstetric care are easily accessible; women may not use them for various reasons.

These reasons include women's status in the family, perception of severity of the complications, social expectations for women to achieve status and culture

and tradition, the use of health facilities may be restricted by necessity for privacy. Others are dissatisfaction with staff attitudes and performance.

A study done in Zimbabwe showed that delay in decision to seek care contributed to 32% of deaths in rural area and 28% in urban area.[2]

2. Delay in reaching a first referral level facility with emergency obstetric care capabilities once a decision has been made.

Once a decision has been made, availability of transport and easy accessibility to facility with emergency obstetric care capabilities become the problem. In most areas no ambulances are available and in remote villages, no car passes for days. In addition the condition of the roads and travel cost are other factors.

3. Delay in actually receiving care after arriving at the facility providing comprehensive emergency obstetric care.

Many women die in hospitals after having overcome barriers in phases 1 and 2. The provision of emergency obstetric care is dependent on a number of factors, including number and training of staff, availability of drugs and supplies, and general condition of the facility. In addition there is the crucial element of management and staff attitudes.

Delay in treatment once women arrive at facilities is a major contributing factor to maternal mortality. In a study done in Ghana, the PMM Net work found that admission to treatment intervals range from mean time of 2.6 hours to 15.5 hours. Delays were attributed to shortage or lack of essential supplies and equipment, at the health facilities including drugs, gloves, sutures and

anaesthetic agents.[10] In a study done in Zaria Nigeria there was delay in receiving treatment where the mean interval from admission to treatment was 3.5 to 6.9 hours. The study found that the delays were caused by lack of resuscitative supplies [including iv fluids, blood, antibiotics and other drugs], surgical supplies [gloves, sutures and anaesthetic agents] and lack of adequate theatre space.[3]

In study done in Senegal's Kaolak hospital, blood transfusion was not available for 80% of women referred in labour needing transfusion. There was also no anaesthesia available for 64% of those who needed it.[1] At the Enugu University teaching hospital in Nigeria, it was found that 57% of patients with ruptured uterus were unable to have blood transfusion.[10]

Prevention for maternal mortality network in 1995 found that lack of adequate operating theatre at the facility contributed to treatment delays since obstetric emergency cases had to compete with other surgical cases for the single general operating theatre.[11] A study done in Zimbabwe revealed lack of appropriately trained staff and lack of supervision as a major cause of maternal mortality. The responsibility for managing emergency complications often was shouldered by relatively junior staff who failed to diagnose or recognise the severity of the complications.[2]

In Tanzania it was found that delayed in diagnosis or in appropriate management or both was implicated in 36% of maternal deaths.[9] In another study in Tanzania, complacency attitude among staff was identified as one of

the major barriers. The study found that most of the staff were convinced that maternal deaths were due to circumstances beyond their control, such as delayed arrivals, cultural factors and lack of drugs and equipment.[8] Yet another study done in rural Tanzania concluded that the difficulty in obtaining blood was responsible for 35% of maternal deaths. [Price 1984][13]

A study done in Muhimbili Medical centre in 1998 found that there was delay in starting caesarean section once the decision was made. The delay was attributed to rapid turn over of deliveries, inadequacy of facilities and personnel. It was found that there were too many operations to be handled by one resident or registrar on call. The study further found out that only 2.9% of caesarean section were done within half an hour from the time decision was made, 50.5% of procedures were done between half an hour and two hours, the remaining 46.6% of caesarean sections were done after two hours from the decision making.[6] In another study at Muhimbili medical centre in retrospective study done in 1983 found that there were delays in taking decision for caesarean section.[7]

The delay in actually receiving care after arriving at facility is the most critical.[10]

1.2 RATIONALE.

Many maternal deaths occur when the patients have already arrived to health facility, which provides emergency obstetric care. At Muhimbili National Hospital in year 2000 out of 18,114 admission to the labour ward, 3,608 had obstetric complications, which are about 20% of all admission. In the same year the number of maternal deaths were 118, an average of 10 deaths a month, and out of these 83 deaths [70.4%] were patients referred from other hospitals as emergency cases. Major causes of deaths in that year were found to be eclampsia 26.3%, anaemia 19.5% and postpartum haemorrhage 14.4%. Personal observations have shown that even after arrival at Muhimbili National Hospital, delays in taking appropriate actions in these obstetrics emergencies have resulted into deaths or serious morbidity.

No specific study has been done recently to analyse the management of obstetric complications after arriving at Muhimbili National Hospital.
The aim of this study is to analyse the situation in the management of obstetric emergencies after patients arrived at Muhimbili National Hospital, with the aim of future improvement of our emergency obstetric care. Also the study may be used as a preliminary study for future intervention studies.

2. OBJECTIVES:

2.1 BROAD OBJECTIVE:

To observe and document the management of emergency obstetric complications in Muhimbili National Hospital.

2.2 SPEFIFIC OBJECTIVES:

1. To document the types of major obstetric complications in women admitted at Muhimbili National Hospital from 1st October to 31st December 2001.

2. To establish the mean time interval from the reception of a patient with emergency obstetric complication until the time she is seen by a doctor and factors associated with delay, if any.

3. To determine the availability of drugs in management of patients with major obstetric complications.

4. To establish the time interval from prescription of drugs to the time the patien received the drugs and factors contributing to delays if any.

5. To determine the availability of blood needed in obstetric emergencies and the factors contributing to delay in getting it in time if any.

6. To establish the average time interval from decision making for caesarean section or other operative procedure and the time it is performed and the factors contributing to delays if any.

3. METHODOLOGY:

3.1 Study design:

It is an observational cross sectional study.

3.2 Study setting:

3.2.1 Catchment area

It was conducted at Muhimbili National Hospital from 1st October to 31st December 2001.

Muhimbili National Hospital is one of the four referral hospitals in Tanzania. It offers specialised obstetrics services for Dar es Salaam city and its suburbs, through its department of obstetrics and gynaecology. The city of Dar es Salaam is estimated to have population of 3 million people. [census 1988].

There are 3 districts in Dar es Salaam region Ilala, Temeke and Kinondoni, each district has a district hospital, which provides some emergency obstetric care. However most of obstetric emergency cases in Dar es Salaam are referred to Muhimbili National hospital. In addition patients are also referred from the nearby Coast region particularly from the districts of Kisarawe, Mkuranga, Kibaha and Bagamoyo. Apart from the referred patients

a substantial number of patients with or without obstetric complications come directly from home.

3.2.2 Labour ward setting

Muhimbili National Hospital labour ward is divided into two main parts.

The first part is the main labour ward, this is divided into 4 sections:-

1. Reception, where all patients are registered and officially admitted and the reason for admission, the history of the onset of labour and any obstetric complications are noted. The patient is then thoroughly examined for general condition, pallor, blood pressure, temperature and height if unknown. Then, the fundal height, the size of the foetus, lie, presenting part and foetal heart rate are recorded.

2. Room one, where patients with obstetric complications and those undergoing induction of labour and oxytocic augmentation of labour are usually admitted.

3. Room two, used as post delivery recovery room, also it is used for minor procedures like episiotomy repairs, vacuum extractions as well as breech delivery.

4. The last section is room three, where uncomplicated deliveries are conducted. The main labour ward has 19 beds used for deliveries, 10 beds in room one and 9 beds in room three. Also there are 2 high beds in room two used for minor obstetric procedures and breech delivery.

Adjacent to the main labour ward there is a single room of 3 delivery beds used for deliveries of fast track patients.

The second part of the labour ward is the obstetric intensive care unit where the seriously ill obstetric patients are admitted and managed.

Labour ward has a cupboard where essential drugs and supplies needed for management of emergency obstetric complications are stored. This is to make sure that drugs like antibiotics, oxytocic drugs, anticonvulsants, analgesics, antihypertensives and intravenous fluids as well as supplies like gloves and suturing materials are available within the labour ward.

These drugs are replenished from the hospital pharmacy by using prescriptions given to the patients, in that manner there is revolving system of drug purchasing. Also there is a mini hospital pharmacy within the maternal building where drugs unavailable in the labour ward can be purchased.

3.2.3 Progress of labour monitoring

Partograghs are used in monitoring the progress of labour. After admission to the labour ward, an initial vaginal examination is done; then depending on the stage of labour, the patient is kept on observation and the progress of labour is monitored. The partographic recording is started when the patient is in active phase of labour i.e. having regular uterine contractions and the cervix is 3 cm or more dilated.

3.2.4 Labour ward staff

There were 10 nursing officers working in the main labour ward, 2 of them were exclusively dealing with administrative matters and 2 were in the maternity data processing computer room. Also there were 25 nurse midwives and 19 health assistants working in the labour ward. The average number of trained nurses per shift was as follow: -

Morning shift 7 nurses including 2 nurses for administration, afternoon shift 5 nurses 1 for administration and night shift 6 nurses 1 for administration.

The department of obstetrics and gynaecology is divided into 4 firms, each of which is under the leadership of a consultant/specialist. Other doctors include specialists, residents, registrars and interns.

The labour ward works for 24 hours 7 days a week. Every day there is one firm on call for 24 hours starting at 0800hours in the morning. Every morning at around 0900 hours there is major ward round in the labour ward by the firm taking over the duty of the labour ward at that particular day. All patients with obstetric complications are seen during the round and decisions on their management are made. The round also involved the nurses who note down the instructions and decisions made. After major ward round one resident or registrar on daytime duty remains in the labour to continue managing the patients. Another resident or registrar from the firm on duty remains in the obstetric operating theatre performing emergency operative procedures from

the labour ward as well as elective procedures from the antenatal ward up to 1600 hours.

After 1600hours the resident of night duty takes over the labour ward responsibility after a handing over ward round. An intern doctor on call assists him/her. The resident or registrar of night duty is supposed to manage patients in the labour ward and emergencies occurring in the antenatal wards as well as performing emergency operative procedures. Apart from being assisted by the intern the resident or registrar is supported by specialist and consultant on call..

3.2.5 Obstetric operating theatre

Obstetric operating theatre has one working operating room, all emergency obstetric procedures as well as elective ones use the same single operating room. There is another operating room but for various reasons it is not working. The theatre is working for 24 hours of 3 working shifts of nurses Each shift has an average of 4 nurses and one porter, except for morning shift when there is an additional two administrators.

3.3 Study population:

The study population was pregnant women admitted in the Muhimbili National Hospital labour ward with obstetric complications or who developed complications after admission during the time of study. It was not possible to make a follow up of all patients with emergency obstetric complications

admitted during the time of the study because it took time to follow step by step the management of one patient from admission to definitive treatment. Sample size was calculated from the statistical formula for the design of the study, the minimum sample size for the results to be statistically significant was found to be 246 patients. From this number it was estimated that for 92 days of study approximately 3 patients per day should be enrolled into the study. Selection of patients included in the study was systematic and distributed in 24 hours of work according to the three shift work roster of nurses. For every shift the first patient admitted with emergency obstetric complication or who developed an obstetric complication after admission was included in the study thus a total 276 pregnant women were included in the study. These patients were followed up from admission in the labour ward or after developing complications after being admitted until definitive treatment or death. Twenty-six patients were dropped out because they were not fully followed up to the end. Only 250 patients were analysed. The investigator was making daily data collection on the total number of admissions and their diagnoses.

Pregnant women admitted to antenatal or postnatal wards with complications or who developed complications after admission were not included in the study.

3.4 Sample size:

The sample size was calculated using EPI - Info 6 statcalc programme. This software calculates the sample size with the formula:-

$$N = \frac{Z^2 \times PQ}{D^2}$$

Where:-

N = Calculated sample size

Z = Percentage point of normal distribution corresponding to the significant level of 95%, set for Z=1.96

P = Proportion of pregnant women who have obstetric complications [estimated to be 20% of all pregnant women]

Q = 1 - P

D = Maximum likely error ie degree of accuracy taken to be 5%.

Thus $\frac{(1.96)^2 \times 0.20 \times 0.8}{(0.05)^2}$

$N = \frac{3.8416 \times 0.16}{0.0025} = 245.86$

Thus the minimum sample size of pregnant women with obstetric complications which is statistically significance is 246.

3.5 Data collection::

Questionnaires have been used for collecting information after observations were made for a particular stage of management of a patient. Information was also collected from patient's files and MCH card number 4 [antenatal card] as well as admission and delivery registers. In case the patient was sent to the operating theatre information was also obtained from there. Information was gathered about the time of admission if the patient was admitted with the complication or time when the complication was recognised if it occurred after admission. The time when the doctor was informed, the time when he/she saw the patient and the time treatment was instituted was recorded. If a decision had been made for operation the time interval from decision making to the operation was recorded. The factors, which were thought to influence the time intervals, were sought by using questionnaire with specific possible responses. In this study the doctor considered was registrar or resident and above, however in case of emergencies the duties performed by nurses and intern doctors in saving lives like giving intravenous fluids, blood transfusion and anticonvulsants were included as seen by a doctor. The chief investigator and 3 assistants, [Nurse midwives] were involved in collecting the information needed. The assistants were taught on how to observe and follow up the management of the patients with obstetric complications. To avoid bias, the chief investigator did not collect information when he was primarily involved in the management of a patient.

3.6 Data analysis:

For Data entry and analysis, computer software of EPI Info version 6 was used. EPI Info program was used to analyse information obtained. Results were enterpretated and presented.

3.7 Assumptions:

This is a qualitative study measuring our response in dealing with obstetric emergencies, with the assumption that there is delay in providing care after the patient arrives at the hospital. There is no standard time limit beyond which one says delay has occurred, however in this study it was assumed that :

- A doctor should see a patient with an obstetric complication within 30 minutes of admission.
- A Doctor should be informed within 15 minutes of admission or recognition of a complication.
- Prescribed drugs if available should be started within 30 minutes from prescription.
- Blood should be available within 60 minutes after being ordered.
- An emergency operation should be started within 60 minutes after decision has been made.

3.8 Exclusion criteria:

- Those women with complications due to abortions [incomplete abortions and ectopic pregnancies] were not included in the study.
- Since the study primarily focussed on preventing maternal mortality and morbidity those obstetric complications primarily endangering foetal lives [foetal distress, cord prolapse] were not included in the study.

3.9 Definition of terms:

EMERGENCY OBSTETRIC COMPLICATIONS:

These are complications occurring during pregnancy, delivery or peurperium that are life-threatening. These can be attributed directly to the pregnancy for example abruptio placenta, eclampsia, obstructed labour, placenta praevia, post partum haemorrhage, ruptured uterus, retained placenta and sepsis.
Or indirect obstetric causes from previously existing diseases or from diseases arising during pregnancy which were aggravated physiological effect of pregnancy. eg. Cardiovascular diseases, anaemia and malaria.

Emergency obstetric complications included in this study are obstructed labour, antepartum haemorrhages, severe PIH and eclampsia, severe anaemia retained placenta and postpartum haemorrhage. Others are previous LSCS in labour, ruptured uterus and intrapartum sepsis.

In this study

- A patient with previous lower segment caesarean section scar in labour whom an emergency repeated caesarean section was decided upon was considered as an obstetric emergency.
- The anaemic patients included in this study were those with impending or had heart failure.
- Patients with placenta praevia included in this study are only those who needed emergency delivery.
- Cases of sepsis included in the study are only intrapartum sepsis like chorioamnionitis.

EMERGENCY OBSTETRIC CARE:

Are specific interventions to manage emergency obstetric complications. Interventions may include:- intravenous fluids, intravenous antibiotics, oxytocic and anticonvulsant drugs, management of antepartum or postpartum bleeding, assisted delivery for prolonged labour[vacuum or forceps] blood transfusion and caesarean section.

In this study needs of blood for transfusion was only categorised if blood was ordered and a follow up was made to get blood, not only when the blood was ordered routinely and was not necessarily needed for transfusion.

BASIC EMERGENCY OBSTETRIC CARE

These are interventions to manage emergency obstetric complications excluding blood transfusion and surgical intervention such as caesarean section. These include antibiotics, oxytocics drugs, anti-convulsants, management of postpartum bleeding and assisted delivery for prolonged labour.

COMPREHENSIVE EMERGENCY OBSTETRIC CARE.

These are interventions to manage emergency obstetric complications including blood transfusion and surgical interventions plus that basic emergency obstetric care.

3.10 Limitation of the study:

- The study was only an "eyewitness" on how we manage obstetric complications. . Discussion on accuracy and correctness on diagnosis and treatment was not sought out.
- The study design did not include outcome of the complications followed up as a part of the study.
- The study did not apply blindness to the Doctors and nurses managing the patients, there might have biases on management when the study was going on.

3.11 Ethical clearance:

- For each selected individual into the study, confidentiality and maintenance of anonymity were ensured. The participant names on the questionnaires were used for follow up only.
- In case of severely life threatening situation which was not attended to, the observer was forced to intervene in the management and the patient was then excluded from the study.

4. RESULTS:

TABLE I.

PROPORTION OF PREGNANT WOMEN ADMITTED WITH OBSTETRIC COMPLICATIONS TO THE TOTAL ADMISSIONS FROM 1ST OCTOBER TO 31ST DECEMBER 2002.

	NUMBER OF ADMISSION	PERCENTAGE %
Pregnant women admitted with EOC	757	17.8
Pregnant women who developed EOC in ward	98	2.2
Pregnant women admitted without EOC	3523	80.0
Total admission	4378	100.0

Table I shows 4378 patients who were admitted in the labour ward during the time of the study, this is approximately 48 admissions per day. Out of these 855 (20%) were either admitted with emergency obstetric complication or developed emergency obstetric complication after admission, this is about 10 patients admitted with complications per day. Two hundreds and seventy-six (276) patients who were either admitted with emergency obstetric complications

or developed emergency obstetric complications after admission were included in the study. Two hundreds fifty (250) were fully followed up and analysed, 26 women were dropped out from the study; 4 of them because of ethical reasons and 22 due to incomplete follow up.

TABLE II.

PREGNANT WOMEN ADMITTED WITH COMPLICATIONS AND THEIR RESPECTIVE DIAGNOSES.

DIAGNOSIS	NUMBER OF PATIENTS	PERCENTAGE %
Obstructed labour	91	36.4
Abruptio placenta	54	21.6
Eclampsia & severe PIH	29	11.6
Very severe anaemia	24	9.6
Previous LSCS	16	6.4
Postpartum haemorrhage	10	4.0
Placenta praevia	9	3.6
Ruptured uterus	6	2.4
Retained placenta	6	2.4
Intrapartum sepsis	5	2.0
Total	250	100.0

Table II shows the distribution of the 250 women followed up in the study with their respective complications.

Ninety-one women (36.4%) were admitted due to obstructed labour, bleeding complications (antepartum bleeding, postpartum bleeding and ruptured uterus)

were 79 (31.6%). Severe pregnancy induced hypertension and eclampsia attributed to 29 patients (11.6%) and severe anaemia in heart failure were 24 patients (9.6%). These results show that the main emergency obstetric complications encountered in the study were obstructed labour and bleeding complications, which contributed to almost 69% of all complications. Patients with previous lower segment caesarean section contributed to 6.4%. Other complications encountered are retained placenta 6 (2.4%) and intrapartum sepsis 5 (2.0%).

TABLE III.

TIME INTERVAL FROM ADMISSION (OR DEVELOPMENT OF COMPLICATION) TILL ATTENDED BY A DOCTOR.

TIME	NUMBER OF PATIENTS	PERCENTAGE %
Within 15 minutes	35	14.0
15 to 30 minutes	32	12.8
30 to 60 minutes	30	12.0
More than 60 minutes	153	61.2
Total	250	100.0

Table III shows that only 35 patients (14%) were seen immediately after admission, on the other hand 153 patients (61.2%) with complications were seen by a doctor for the first time after 60 minutes had elapsed. A doctor saw the rest 62 patients (24.8%) between 15 to 60 minutes after admission. The results show that most of the patients were seen late by a doctor after being admitted or developing complication. The minimum time interval observed for a doctor to see the patient was 5 minutes and longest time was 17hours. The median was 2.0 hours and average [mean] time for all patients was 2 hours and 45 minutes.

TABLE IV.

LOCATION OF THE DOCTOR ON CALL AT THE TIME OF ADMISSION OF THE PATIENT.

PLACE	NUMBER OF PATIENTS	PRECENTAGE %
In the labour ward attending emergencies	104	41.6
In the operating theatre	142	56.8
Doing nothing	1	0.4
Not known	3	1.2
Total	250	100.0

Table IV shows that 246 patients (98.4%) were admitted or developed complications when the doctor on call was attending to other patients. This indicates that most of the time the doctor was busy in managing other patients with obstetric complications.

TABLE V.

TIME INTERVAL FROM ADMISSION OF A PATIENT WITH OBSTETRIC COMPLICATION TILL COMMUNICATION WAS PASSED TO THE DOCTOR.

TIME COMMUNICATED	NUMBER OF PATIENTS	PERCENTAGE %
Within 15 minutes	94	37.6
15 to 30 minutes	57	22.8
30 to 60 minutes	46	18.4
After 60 minutes	53	21.2
Total	250	100.0

Table V shows 151 patients (60.4%), a doctor on call was communicated within 30 minutes from admission of a patient with complication or after the patient developed complication. And in about 40% the doctor was informed within 15 minutes. The remaining 99 patients (39.6%) were reported late to the doctor on call, and took more than half an hour after admission or occurring of the complication.

TABLE VI.

TIME WHEN TREATMENT WAS INITIATED AFTER PRESCRIPTION

TIME TREATMENT GIVEN	NUMBER OF PATIENTS	PERCENTAGE %
Within 15 minutes	119	47.6
15 to 30 minutes	65	26.0
30 to 60 minutes	23	9.2
After 60 minutes	43	17.2
Total	250	100.0

Table VI illustrates that in 184 patients (73.6%) the treatment was instituted within 30 minutes after being prescribed by a doctor and nearly 50% of the patients, treatment commenced within 15 minutes after being prescribed. The remaining 66 patients (26.4%) treatment instituted after 30 minutes, of these 43 patients (17.2%) treatments were initiated after an hour had elapsed. Treatment described here are antibiotics, anticonvulsants, antihypertensives and intravenous fluids excluding blood.

TABLE VII.

AVAILABILITY OF BLOOD.

AVAILABILITY	NUMBER OF PATIENTS	PERCENTAGE %
Blood available 100%	14	11.3
Only 50% of ordered	51	41.1
Only 25% of ordered	17	13.7
No blood available	42	33.9
Total	124	100.0

Table VII shows the availability of blood in the blood bank for those patients who needed blood transfusion. Out of 250 patients enrolled in the study in 124 patients (49.6%) blood transfusion was needed as the sole or part of the management. For the patients who needed blood transfusion only 14 patients (11.3%) got the ordered amount of blood. Sixty eight patients (54.8%) received less than ordered amount of the blood.

The remaining 42 patients (33.9%) no blood was available at all. Thus about one-third of the patients who needed blood transfusion did not get blood and only 82 (66.1%) out of 124 patients to whom blood was ordered got all or some amount of blood.

TABLE VIII.

TIME TAKEN TO OBTAIN BLOOD AFTER BEING ORDERED.

TIME TAKEN	NUMBER OF PATIENTS	PERCENTAGE %
Within 60 minutes	7	8.5
60 t0 90 minutes	12	14.6
90 minutes to 2 hours	13	15.9
More than 2 hours	50	61.0
Total	82	100.0

Table VIII shows that out of 82 patients who received blood transfusion, only 7 patients (8.5%) blood was available within one hour from the time it was ordered. In other 50 patients (61.0%) blood was available after 2 hours had passed. The remaining 25 patients (30.5%) received blood between one to two hours from the time it was ordered.

Therefore even those patients who got blood transfusion, in most of them (91.5%) it became available late.

TABLE I X.

TIME WHEN AN OPERATIVE PROCEDURE WAS STARTED AFTER DECISION WAS MADE.

TIME TAKEN	NUMBER OF PATIENTS	PERCENTAGE %
Within 30 minutes	23	16.0
30 to 60 minutes	13	9.0
60 minutes to 2 hours	11	7.6
After 2 hours	97	67.4
Total	144	100.0

Table IX shows that out of 250 patients in the study 144 patients (57.6%) needed an operative procedure. The results show that only 23 patients (16.0%) who were planned for operation had the procedure started within 30 minutes after the decision was made. In 97 patients (67.4%) the procedure started more than 2 hours after decision was made. The remaining 24 patients (16.6%) were operated between one and two hours after decision was made. These results reveal that in majority of the patients 121 (84%) the operations were started more than an hour since decision was made. The average time (mean) taken from decision making to the start of the procedure was 3.30 hours, with the minimum of 30 minutes and as long as19 hours. The median from decision making to the start of the operation was 3.0 hours.

TABLE X.

TIME TAKEN FOR THE PATIENT TO BE TAKEN TO THE OPERATING THEATRE.

TIME TAKEN	NUMBER OT PATIENTS	PERCENTAGE %
Within 30 minutes	28	19.5
30 to 45 minutes	13	9.0
45 to 60 minutes	13	9.0
More than 60 minutes	90	62.5
Total	144	100.0

Table X shows the time taken from decision making for operation to the time when a patient was sent to the operating theatre. The results show that 90 patients (62.5%) were sent to the operating theatre more than an hour after the decision for an operation was made. Other 26 patients (18.0%) were sent to the operating theatre between 30 to 60 minutes. Only 28 patients (19.5%) were sent for the operation early within 30 minutes after decision was made.

TABLE XI

PRESENCE OF ANOTHER OPERATIVE PROCEDURE IN THE OPERATING THEATRE.

ANOTHER PROCEDURE	NUMBER OF PATIENTS	PERCENTAGE %
Yes	108	75.0
No	36	25.0
Total	144	100.0

Table XI shows the availability of an operating space in the theatre. The results show in 108 patients (75.0%) the operating room was occupied by another procedure when the patient arrived in the operating theatre. In only 36 patients (25%) was the operating room found empty.

The operating theatre has only one working operating room. This partly explains the delays revealed in starting an operative procedure after decision was made.

TABLE XII

TIME WHEN AN OPERATIVE PROCEDURE WAS STARTED AFTER PATIENT ARRIVED IN THE OPERATING THEATRE.

Time taken	Number of patients	Percentage %
Within 15 minutes	23	16.0
15 to 30 minutes	13	9.0
After 30 minutes to 1 hour	11	7.6
After 1 hour	97	67.4
Total	144	100

Table XII shows that out of 144 patients operated in the study, 97 patients (67.4%) were stayed in the operating theatre for more than one hour waiting be operated after being sent from the labour ward for emergency operation. Only 23 patients (16.0%) operated immediately after being arrived in the operating theatre. The remaining 16.6 started to be operated between 15 to 6 minutes after arrived in the operating theatre.

5. DISCUSSION

Timely provision of emergency obstetric care is very important, however arriving at the facility providing comprehensive emergency obstetric care may not lead to immediate commencement of treatment as it was found in this study.

In this study found that the average number of admission per day was about 50 patients, and 20% of the admission had emergency obstetric complications that needed emergency obstetric care. This 20% of obstetric complications is slightly higher than the standard by WHO which estimated that 15% of deliveries will have complications needing emergency obstetric care.[19] However the study was carried out in high risk hospital where many high risk patients are referred to, and this can explain the higher percentage of patients with obstetric complications.

The study found that the leading obstetric complications encountered were obstructed labour 36.4% and bleeding complications (abruptio placenta, placenta praevia, and postpartum haemorrhage). Obstructed labour, previous lower segment caesarean section, placenta praevia and ruptured uterus all needed surgical intervention. Some cases of abruptio placenta, eclampsia and retained placenta also needed surgical intervention. Most of the haemorrhagic complications abruptio placenta, placenta praevia, postpartum haemorrhage and ruptured uterus, which constituted 31.6% of cases, together with anaemia cases needed blood transfusion.

It was revealed that there was considerable delay for the patient to be seen by a doctor after being admitted or after she developed complication in the ward. (table III) The mean time interval from admission of the patient to the time when a doctor first saw her was 2.75 hours and longest time was 17 hours. To the investigator knowledge there is no standard time recommended, however the mean time of 2.75 hours for the patient with life threatening complication waiting to be seen by a doctor is too long. In a similar type of a study done in Ghana it was found that the average time from admission to commencement of treatment was 2.6 hours with a maximum of 15.5 hours.[11] Another study done in Zaria Nigeria found that the admission to treatment time to be 3.5 to 6.9 hours.[3]

This study found that only 14% of admissions with emergency obstetric complication were seen immediately after admission and 61.2% of admissions were seen more than one hour from admission.

It was found that most of the patients (88.8%) got the prescribed drugs in the labour ward. However observations revealed that in most cases what was available is what was prescribed. The correctness and adequacy of the treatment prescribed was not sought in this study. The study also found that there was a delay in initiating treatment, despite that in 90% of patients the prescribed drugs were available in the labour ward. In 52.4% of the patients the treatment was initiated more than 15 minutes after being prescribed. The delay

may be attributed to inadequacy of personnel or complacency attitude of the staff.

It was found that there are so many emergencies to be handled by one resident or registrar on call. The study has shown that in most cases when the patient was being admitted the doctor on call was either in the operating theatre 41.6% or attending other emergencies in the labour ward 56.8%. (table IV) The rapid turn over of the patients with emergency obstetric complications can be attributed to the inadequacy of the health facilities providing comprehensive emergency obstetrics care in Dar es Salaam. According to WHO recommendation, for every 500,000 people there should be 4 facilities providing basic obstetric care and one facility providing comprehensive emergency obstetrics care.[19] According to the census of 1988 Dar es Salaam city is estimated to have 3 million people, therefore it is supposed to have 6 facilities providing comprehensive emergency obstetrics care and 24 facilities providing basic obstetrics care. Currently Dar es Salaam city has several public health facilities providing basic obstetric care. However there are only few facilities providing some comprehensive emergency obstetric care and only one health facility providing comprehensive emergency obstetric care.

Even after a doctor had seen the patient and made a decision for caesarean section or other operative procedure, the patient had to wait for long time before being operated. The mean time interval from decision making to the start of the procedure was found to be 3.5 hours to a maximum of 19 hours.

Only 16% of the patients were operated within half an hour from the time of decision making. Many patients (67.4%) had their operation started after 2 hours. (Table IX)

In a study done at Muhimbili Medical Centre Tanzania found that only 2.9% of caesarean sections were done within half an hour and 46.6% were done after 2 hours from decision making.[6] The delays in performing the procedure were attributed to the congestion of the patients in the operating theatre. As seen in table XII, in 75% of cases the operating room was occupied by another procedure when the patient was sent for operation. There is only one working operating room in the obstetric theatre competing with elective caesarean sections or other obstetric procedures especially during the day time, although as a rule emergency procedure were given priority but that was not always so. PMM Network (1995) found that lack of adequate operating theatre as contributing factor for delay in treatment.[12]

The delay in starting operative procedures was also attributed to the lack or inadequacies of personnel in the labour ward especially doctors. Usually a single doctor on call is available in the labour ward on admission or occurrence of emergency obstetric complication, and was supposed to provide services in the labour ward, attend emergencies in the obstetric intensive care unit (ICU), ward and antenatal and postnatal wards this is especially true during the night duties.

Most of the patients delayed to be operated because the doctor was attending other emergency. (table IV)

In this study about 50% of the patients needed blood transfusion, however only 11.3% of those who needed blood received the required amount of blood. Blood was not available to 34% of patients who needed blood transfusion. In 55% of patients the blood received was less than amount needed. (Table VII)

A study done in Senegal found that blood transfusion was not available to 80% of women referred in labour needing blood transfusion.[1]

Even those who got blood, most of them (61%) received it late, more than 2 hours after being ordered.(Table VIII) This is long duration especially for a woman who is bleeding. Most of the time the patient had to wait until relatives donated blood because there was none in the blood bank.

Lack of blood is a constant problem that can delay treatment and result in death. In a study in rural Tanzania concluded that the difficulty in obtaining blood was responsible for 35% of maternal deaths[13]. Study at the University of Nigeria teaching hospital in Enugu, found that the survival rate for the patients with ruptured uterus who were unable to have blood transfusion was 57% compared to a survival rate of 76% in the patients who received blood transfusion.[10]

The delays found in this study very likely contribute to the morbidity and mortality that occur in Muhimbili national Hospital labour ward and other parts of

the country. These maternal deaths can be avoided by timely provision of appropriate emergency obstetric care.

The time interval between the onset of the obstetric complication and its outcome is very crucial. As we have seen in the literature review the outcome is most affected by delayed treatment, and this is contributed to:-

1. Delay on decision to seek care
2. Delay on arriving at health facility and
3. Delay on provision of adequate care

To reduce the adverse effects of obstetric complications these barriers should be overcome by: -

- Empowering women to make choice on their reproductive lives with the support from the families and communities. Improving their education, economic, cultural, legal and political position in the society can do this.
- To improve the accessibility to the health facilities, by increasing the number and to have equity distribution of health facilities, transportation and good referral system.
- Improving the quality of care provided at health facilities, by improved number of trained and competent personnel, availability of drugs, supplies and equipment, attitude of staff and administration.

Thus most maternal deaths can be avoided by the timely provision of appropriate emergency obstetric care.

6. CONCLUSION.

Arriving at the facility providing comprehensive emergency obstetric care may not lead to the immediate commencement of treatment.

The study found that there are delays in obtaining services once the patient arrived at the hospital due to:-

- Congestion of patients needing obstetric emergency care results into the delays.
- Delays for the patient to be seen by a doctor once admitted or when she developed a complication after admission. This delay is attributed to the inadequate number of personnel.
- Delays in commencement of treatment attributed to complacency attitudes among staff.
- Delays in starting an operative procedure once a decision has been taken due to inadequacy of operating space.
- Delays of getting blood transfusion because there is shortage of blood.

Therefore, there are delays in taking appropriate actions in dealing with emergency obstetric complications in Muhimbili National Hospital.

7. RECOMMENDATIONS

- There should be at least two working operating rooms in the obstetric theatre.
- The department should establish its own blood bank in the labour ward. All elective procedure relatives should blood to boost the store of the blood.
- The Dar es Salaam District Hospitals should be strengthened by provided with enough personnel competent in dealing with normal and emergency obstetrics complications for 24 hours, so as to decrease work load in consultant Hospital.
- The population growth in Dar es Salaam should go parallel with the social services, especially health facilities, apart from strengthening services in the existing facilities, there need to establish other facilities providing emergency obstetrics care in Dar es Salaam.
- An intervention study is needed on those areas of delays.

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