ASSESSMENT OF MANAGEMENT OF SEVERE OBSTETRIC HAEMORRHAGE AT MUHIMBILI NATIONAL HOSPITAL

By

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A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Medicine (Obstetrics and Gynecology) of Muhimbili University of Health and Allied Sciences

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CERTIFICATION

The undersigned certifies that has read and hereby recommends for acceptance by the Muhimbili University of Health and Allied Sciences a dissertation entitled ***Assessment of Management of Severe Obstetric Hemorrhage at Muhimbili National Hospital***, in partial fulfillment of the requirements for the degree of Master of Medicine (Obstetrics and Gynecology) of Muhimbili University of Health and Allied Sciences.



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Date: 28/5/2010

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I, Salim Alli Karattah Maumba, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.



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DEDICATION

This work is affectionate dedicated to my late parents, Alhaj Alli S. Maumba and Hajjat Mboni Karattah Nkambia, for their paramount support in my academic achievements.

ABSTRACT

Background: Reduction of maternal morbidity and mortality among women admitted with severe obstetric haemorrhage requires unrestricted access to high quality emergency obstetric care services at all levels of health care delivery.

Methodology: A retrospective case notes review of women admitted at Muhimbili National Hospital (MNH) with severe obstetric haemorrhage was conducted. Management of cases with severe obstetric haemorrhage and factors associated with obstetric haemorrhage from Jan, 2007- Dec. 2008 were collected for review. Management was assessed based on management guidelines for severe obstetric haemorrhage.

Results: A total of 19,469 deliveries were conducted in MNH during the study period. Women who had severe obstetric haemorrhage were 4,052 which were 20.8% of all deliveries. Case notes of those who met the modified criteria were analyzed. Two hundred thirty six (77.6%) patients received management as per guidelines. The major causes of obstetric haemorrhage identified were post partum haemorrhage (PPH) and ante partum haemorrhage (APH). However, it was also noted that a significant proportion of case notes, had inadequate documentation hence leading to failure to identify the cause of obstetric haemorrhage.

Junior doctors attended the patients within half an hour (72%), maintaining standard management of 77%. The main identifiable risk factors for obstetrical haemorrhage in ANC were multiple pregnancy, previous scar, grand-multiparity, previous history of APH or PPH and big baby.

Conclusion: Obstetric haemorrhage is the leading cause of maternal morbidity and mortality. Empowering of the health personnel with update skills in management, will improve the prevention of morbidity and mortality.

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LIST OF ABBREVIATIONS AND ACRONYMYS

ANC	-	**Ante-Natal Clinic**
APH	-	**Ante- Partum Haemorrhage**
C/S	-	**Caesarian Section**
DIC	-	**Disseminated Intravascular Coagulopathy**
EBL	-	**Estimated Blood Loss**
EUA	-	**Examination under Anesthesia**
FFP	-	**Fresh Frozen Plasma**
FIGO	-	**International Federation of Gynecologists and Obstetrician**
GA	-	**Gestation Age**
HELLP	-	**Hemolytic Elevated Liver Enzymes Low Platelet**
ICU	-	**Intensive Care Unit**
LSTCS	-	**Lower Segment Transverse Caesarian Section**
MCH	-	**Maternal and Child Health**
MNH	-	**Muhimbili National Hospital**
MOHSW	-	**Ministry of Health and Social Welfare**
NGO	-	**Non-Governmental Organization**
PHC	-	**Primary Health Care**
PIH	-	**Pregnancy Induced Hypertension**
POC	-	**Product of Conception**
PPH	-	**Post Partum Hemorrhage**
RA	-	**Research Assistant**
RCH	-	**Reproductive and Child Health**
FSB	-	**Fresh Still Birth**
MSB	-	**Macerated Still Birth**
SPSS	-	**Statistical Package for Social Sciences**
STAH	-	**Sub Total Abdominal Hysterectomy**

SVD	-	**Spontaneous Vaginal Delivery**
TAH	-	**Total Abdominal Hysterectomy**
WHO	-	**World Health Organization**

Definition of Terms

Obstetric haemorrhage: Is defined as any vaginal bleeding during pregnancy occurring before or after delivery at gestational age more than 28 weeks.

Severe obstetric haemorrhage: Is excessive vaginal blood loss of more than 500mls in pregnancy of more than 28 weeks or after delivery which may cause hypotension (SBP <60), acute renal failure and necessitates blood transfusion of more than 2 units.

Antepartum haemorrhage; (APH) this is vaginal bleeding during pregnancy at 28 week or more.

Post partum haemorrhage (PPH) is the blood loss of more than 500mls following vaginal delivery or more than 1000mls following Caesarea delivery. A loss of these amounts within 24 hrs of delivery is termed early or primary PPH, whereas such losses are termed as late or secondary PPH if it occurs 24 hours after delivery.

Placenta praevia: Implantation of the placenta at the lower uterine segment within the zone of effacement and dilatation of the cervix.

Abruptio placenta: Premature separation of the placenta from the site of uterine implantation before delivery of the fetus. It is further classified as concealed if the bleeding occurs within the uterus and revealed if it occurs vaginally.

Uterine rupture: Is defined as tear of the uterus causing intraperitoneal hemorrhage leading to emergency laparatomy.

Severe Obstetric Morbidity: Is defined as severely complicated pregnant condition which may lead to recovery or life threatening condition of which if one survives is termed as near miss.

Identifiable risk factors: These are morbid conditions detected during ANC which may cause serious complications to a pregnant woman.

Standard management: This is management score according to the guideline where the score is above fifty percent.

Substandard management: This is management score according to the guideline where the score is below fifty percent.

1.0 INTRODUCTION

1.1 Background

Postpartum haemorrhage (PPH) is applied to deliveries at gestational age of 28 weeks or more. A widely used definition currently is that proposed by the World health Organization (WHO) in 1990 as any blood loss from the genital tract during vaginal delivery above 500mls and during caesarean delivery 1000mls or more. Obstetric haemorrhage in that case is any vaginal bleeding during pregnancy or after delivery of about 500mls or more at gestational age more than 28 weeks.

Severe obstetric haemorrhage refers to excessive blood loss regardless the amount of blood loss that may cause hypotension, acute renal failure and necessitates blood transfusion of 2 units or more, intravenous fluid resuscitation of more than 3lts and may need surgical intervention like total abdominal hysterectomy (TAH), sub-total abdominal hysterectomy (STAH), caesarean section (C/S), Perineal or vaginal repair and medical intervension like intravenous oxytocin 10 units or more and or misoprostal.

Maternal mortality is still a big problem in the developing countries contrary to the developed countries. This has made the developed countries to change the modalities of assessing their quality of health care, despite having high mortality rate in the developing country the use of the same health indicators of severe obstetric morbidity may be used to assess and upgrade the quality of health care given to their citizen. Worldwide every minute of every day, some where in the world, a woman dies as a

result of complications arising from pregnancy. Women are not dying because of the disease we can not treat, they are dying because societies have yet to make the decision that their lives are worth saving.[1]

Obstetric haemorrhage is the single most important cause of maternal mortality as well as maternal morbidity both in the developed and developing countries.

Common causes of obstetric haemorrhage reported worldwide is postpartum haemorrhage (PPH), following uterine atony, uterine rupture, perineal or cervical tears, retained placenta or product of conception (POC) and abruption placenta as well as placenta praevia. Uterine atony is one of the leading causes of obstetric haemorrhage responsible for about 75-90% of all primary PPH[2, 1]

Worldwide over 535,000 women die annually during pregnancy and childbirth, and the global maternal mortality ratio is estimated to be 400 per 100,000 live births. For decades sub Saharan Africa has been the region with highest maternal mortality ratio in the world at over 900/100,000 live birth.[1]

In the developed countries like UK, maternal mortality is infrequent (13/100,000 deliveries), because of this low rate of maternal mortality interest has shifted to assessment of severe maternal morbidity as a complementary measure of the quality of maternity care. Counting cases of mortality or morbidity serves to quantify the problem but does not address the underlying issues of why problem occur. In order to learn from maternal morbidity, management assessment of individual cases of

obstetric haemorrhage is needed (which is the most common cause of maternal morbidity).[3]

There is no universally accepted definition of major obstetric haemorrhage. Definitions using various levels of estimated blood loss (EBL), quantities of blood transfused, or a specified fall in peripartum haemoglobin have all been used by previous investigators.[1]

Even when a good methodology is in place, there is still difficult in defining obstetric haemorrhage simply as blood loss greater than 500mls because it fails to take into account predisposing health factors that are reflected in such a definition. Since the quantity of blood loss is less often important than the actual effect that it has on the laboring woman, it has been suggested that the definition takes into account any blood loss that causes a major physiological changes, such as low blood pressure which threatens the women's life.

The risk of women dying from obstetric hemorrhage depends not only on the amount and rate of blood loss but also the previous health status of the women. Poverty, malnutrition, and lack of women's empowerment (decision- making, power to control their own reproduction health) are some of the broad issues that have unfortunately come to be accepted as associated factors. However, it should be remembered that these factors can be modified through advocacy, education and women empowerment.

Malaria in pregnancy predisposes women to a number of complications, including anaemia which places them at a higher risk of mortality from haemorrhage. Lack of facilities and qualified personnel also makes the problem worse. It has been found that about 46% of the deliveries in the Africa region are assisted by qualified health personnel. But it is important to remember that there are multiple factors contributing to this problem ranging from poor infrastructure, poor accessibility to health services, negative attitude from health workers and sometimes cultural factors.[1]

1.2 Literature Review

A protocol for early diagnosis, assessment and management of patients at high risk for major obstetric haemorrhage has been found to be useful in disaster preparedness and hence reduction of case fatality rate. In order this to be useful, the developed protocol has to be communicated to all staff involved in the management of the patient from the highly trained to the lowest trained medical personnel.[4]

In the developing countries by looking only at maternal deaths, other major problems in obstetric care may be overlooked; morbidity is an important outcome because it affects many women as well as their children. It provides more cases for clinical review/monitoring of care and the knowledge gained will improve treatment as well as prevent progression to more severe morbidity.

Studies done in 1993 in Iran and Tehran respectively found that among 18,134 conducted deliveries, there were 141 patients with PPH and 90% of these delivered vaginally while 10% delivered by C/S. The commonest etiological causes of PPH

were identified to be; uterine atony 38% and retained product of conception 38%. Predisposing factors were induction 13% and multiparity 9%.[1]

Inspite of development achieved in Japan, the number of maternal deaths from PPH increased in recent years from 4 to 17 between 1995 and 2003. More importantly, as a percentage of causes of maternal mortality, PPH increased from 4.7% to 24.6% between 1995- 2003.[5]

In another study done in Japan between 1991 and 1992 to identify the causes of maternal mortality, 230 cases of maternal death were identified.[7] Haemorrhage was identified as the most common cause of these deaths occurring in 86 (39%) of the 219 for whom their records were available. The maternal mortality ratio was 9.5 per 100,000 total births. The study found that 37% of the maternal deaths occurred in the health care facilities were deemed preventable and another 16% possibly preventable. Among the preventable death, most were attributed to lack of human resources for health where one physician worked both as an obstetrician and anesthetist. This scenario is common in most developing countries where mothers are dying because of lack of skilled birth attendant and majority deliver at home.[8]

Similar studies conducted by Nasrat and Ijaiya in Saudi Arabia and Nigeria respectively revealed that Severe obstetric haemorrhage was one of the leading causes of the obstetric morbidity where atonic uterus contributed to 43.5% followed by ruptured uterus 30.4% and abnormal placenta adherence 26.1%.[9,10]

The trend in increase of maternal morbidity due to obstetric haemorrhage has also been seen in developed countries like Australia where Christine et al 2009 found that 1 in 80 women giving birth suffered a severe obstetric haemorrhage and the magnitude of PPH was 1 in 8 women with no maternal death due to early diagnosis and good intervention.[6]

In another study done in Nigeria on Medical audit of maternal death in Lagos University teaching hospital in 1998, data being collected from hospitals in the north and south of the country showed a mean maternal mortality rate of 497/10,000 (range of 180-1300/100000). The burden of maternal morbidity and mortality of which the leading cause was severe obstetric haemorrhage was reaching 48%.[11]

A 10 years retrospective review of all cases of ruptured uterus seen at the Obafeni Awolowo University, teaching hospital, revealed 61 cases of ruptured uterus from 16,683 deliveries, giving a ratio of 1: 273. Aetiological factors for ruptured uterus were prolonged labor (91.8%) grand multiparity (50.8%), injudicious use of oxytocin (41.0%), uterine scar (26.2%), obstetric manipulation (4.9%) and abnormal lie (14.8%). Fifty six patients had surgery, of which 14 (25%) had subtotal hysterectomy, 15 (26.8%) had repair of ruptured uterus and bilateral tubal ligation and 13 (19.6%) had repairs only. A total of 13 maternal death occurred with case fatality rate of 21.3%. Ruptured uterus remains a problem in poor countries with primary health care centers and mission houses being identified as major contributors to this condition. They primarily failed in the recognition of abnormalities in the ante partum

and or intrapartum periods with delays in referral.[12] Study done at Mulago Hospital in Kampala Uganda about maternal mortality and associated "Near Misses" among emergency intrapartum obstetric referrals, they found that for every maternal death, there were 10-15 women who suffered from disability. The main cause of these morbidities and mortalities were postpartum hemorrhages and ruptured uterus followed by eclampsia as the second cause. These contributed to the suffering of these women leading to their death and morbidity.[13]

Although most obstetric complications cannot be predicted but can be prevented and treated. Therefore quality health care during and immediately after the critical period of labor and delivery is the single most important intervention for maternal mortality.

In Tanzania the study done at Muhimbili National Hospital on Situational Analysis on Management of Emergency Obstetric Complication found that delayed in diagnosis or inappropriate management or both were implicated in 36% of maternal death. It was also revealed that most of the staff were convinced that maternal death were due to circumstances beyond their control such as delayed arrivals, cultural factors, lack of drugs and equipment and difficulty in obtaining blood was responsible for 35% of maternal death.[14]

1.3 Statement of the Problem

At Muhimbili National Hospital in 2006, there were 10,229 admissions in the labor ward. About 1623 patients (15.9%) had severe obstetric hemorrhage complications which lead to their morbidity and mortality. The mortality rate from severe obstetric

haemorrhage (PPH) was 107/100,000 live birth which was 23.3 %.[18] There is a need to do assessment of managed cases to see whether they met the standard guideline of management and reduce the morbidity and mortality related to severe obstetric haemorrhage.

1.4 Rationale of the Study

Severe obstetric haemorrhage is very high at Muhimbili National Hospital causing significant Maternal Morbidity and Mortality.

No specific study has been done on assessing management of severe obstetric haemorrhage at Muhimbili National Hospital. Therefore there is a need of assessing management of severe obstetric haemorrhage which will be useful in improving the quality of care henceforth decreasing obstetric morbidity and mortality.

1.5 Research Question

Does the management of women with severe obstetric haemorrhages at MNH meet the required management guidelines in reducing maternal morbidity and mortality?

1.6 Objectives

Broad Objective

To assess the management of severe obstetric haemorrhage among patients with severe obstetric haemorrhage admitted at Muhimbili National Hospital.

Specific Objectives

1. To determine causes of severe obstetric haemorrhage among patients who were managed at MNH.
2. To determine proportion of pregnant women with severe obstetric haemorrhage who received standard management according to the created guidelines.
3. To determine the proportion of pregnant women with identifiable risk factors who developed severe obstetric haemorrhage.

2.0 METHODOLOGY

2.1 Study Design

Retrospective clinical study.

2.2 Study Area

The study was conducted at Muhimbili National Hospital (MNH) which is the largest consultant and University teaching hospital in Tanzania. MNH receives an average of 2000 pregnant women in a month being referred from different facilities in Dar es salaam, namely Temeke, Amana and Mwananyamala. It also receives patients who had complicated deliveries from private facilities and nearby regions like Coast region. Although the hospital is a tertiary referral centre caring for high risk deliveries and gynecological complications, a significant proportion of self referral patients are being admitted for care.

The maternity ward has bed capacity of about 160. In the year 2007 to 2008, top most causes of admission in the maternity ward was obstetric hemorrhage due to PPH (i.e. Uterine atony, retained placenta or 2^{nd} twin, ruptured uterus, perineal/cervical tears) and APH (i.e. abruptio placenta and placenta praevia).

The labor ward staff comprises of nursing officers and four doctors of different cadres who are on call for 24 hours (Intern Doctor, registrar/resident, specialist and a consultant). In addition to the above mentioned medical personnel, a number of medical and nursing students are involved in patients care.

2.3 Study Population

All pregnant mothers admitted due to obstetric haemorrhage at gestational age more than 28 weeks and managed at MNH from January 2007 to December 2008.

2.4 Inclusion Criteria

All case notes whose patients met the created modified criteria. This is the first time it is introduced. (Appendix I)

2.5 Sample Size.

All women admitted due to severe obstetric hemorrhage at MNH from January 2007 to December 2008 whose case file met the modified criteria.

2.6 Data collection.

Patients' files were selected as follows:

In the first stage, register books for all admitted patients from Jan. 2007 – Dec. 2008 were collected from labor ward, antenatal ward, ICU and post natal ward. The files with identified diagnoses of APH (e.g. Placenta praevia, abruptio placenta) and PPH (e.g. Uterine atony, retained placenta or 2nd twin, ruptured uterus, perineal/cervical tears), their register numbers were selected and files traced from the medical record. The collected files were then selected according to the amount of blood loss. All available files whose blood loss were more than 500mls, during vaginal delivery and those above 1000mls, during caesarean section were included in the study. Any blood loss following delivery that adversely affected the mother i.e. causing hypotension, oliguria, blood transfusion, intravenous infusion, ICU admission and surgical

intervention were included. Those patients who had APH with marked blood loss more than 500mls, which necessitated emergency delivery, were also included. Patients' files whose blood loss were minimal i.e. less than 500mls, like in some placenta praevia, abruptio placenta were excluded.

The above information was collected using structured questionnaires which have both closed-ended and open-ended. The questionnaire contained information on socio-demographic characteristics, ANC attendance and identified risk factors which were noted on the ANC card or partogram. It also contained information on standard of management according to the guidelines and maternal and fetal outcome.

2.7 Training of Research Assistants

The principal investigator (PI) trained seven nurse midwives from ANC ward, labor ward and post natal ward. Two other research assistants came from medical records that assisted in tracing the case files. The training was done for one day and emphasis was put on understanding the aim of the research and the meaning of each question in the questionnaires for proper data collection.

2.8 Pretesting of Data Collection Instruments

A four days pilot study was conducted to test the questionnaires and assess the flow of variables, the feasibility of obtaining relevant information and make necessary correction on the encountered obstacles.

2.9 Data Collection Procedure

Every evening on working days all filled questionnaires were reviewed by the PI and research assistants for consistency, quality assurance and clarification of ambiguities. Using provisional and final diagnosis documented in the admission register, case files of women whose diagnoses met the pre-defined criteria were identified and traced for extracting the relevant information.

After identification of the patients' file/case notes, management was assessed according to the components of clinical management guidelines under the following headings; Communication, resuscitations, monitoring, investigation and arresting the bleeding. (Appendix III)

Communication and System Analysis

Consultation to Senior Doctors and inter departmental communication was assessed (Theatre, ICU, Blood bank/haematology/laboratory and Anesthesia). This was done through checking on consultation notes in the patient files and feedback documented in the files.

In the systems analysis, the following items were assessed; avoidable delays in diagnosis and treatment, failure to follow management guideline, poor communication and inadequate supervision.

Resuscitation.

Basic resuscitation was assessed as per management guideline which included intravenous access, intravenous fluids replacement with R/L or N/S, oxygen administration, blood group and cross matching, blood pressure, pulse rate recording and urine out put. Patogram filling during monitoring progress of labor till delivery was also assessed. Finally, fetal and maternal outcome was assessed and recorded.

Monitoring and investigation.

This was done by continuous check of pulse rate, blood pressure, respiratory rate, and temperature, in-put and out put. Use of central venous pressure (CVP) / arterial monitoring.

Investigations checked whether were ordered and results traced.

Arresting the bleeding

This was done to identify if bleeding was controlled conservatively using, uterotonics like Oxytocin, ergometrine, misoprostal or surgically by performing TAH, STAH, C/S, EUA, perineal/cervical repair and manual removal of the placenta, uterine artery ligation and packing uterus with gauze.

At the end of case enrollment the management was assessed according to standard of care with reference to management guidelines. (Appendix III). Each guideline had number of points and at the end total score was obtained. The total score was further classified as standard or sub-standard where a score of > 10 (50%) was classified as standard management and ≤ 10 (50%) was classified as sub-standard management.

2.10 Variables

Dependent variables.

Standard of management was assessed based on the total score obtained; > 10 (50%) points was regarded as standard management and ≤ 10 (50%) points was regarded as sub-standard management using the criteria for management guidelines which had twenty points.

Independent/explanatory variables

The main explanatory variable was severe obstetric haemorrhage.

Other variables were the time spent by the patient from admission to treatment, management provided, identifiable risk factors during ANC visits and documentation of action plan.

2.11 Data Processing and Analysis

A template for data entry was developed; all filled questionnaires were given identification number. The responses were coded and entered into a computer using SPSS version 15. Descriptive analysis of frequency was run for each demographic and outcome variables. Frequency tables were used to summarize the analyzed data. Cross tabulations were done for dependent and independent variables and p-values were calculated to determine the strength of association.

2.12 Ethical Issues and Permission to Conduct Research

Ethical clearance was obtained from Muhimbili University of Health and Allied Sciences by the Research and Publication ethical Committee. Permission from

Muhimbili National Hospital administration was also obtained. No name was mentioned during the study period; instead code numbers were used to identify the files so as to maintain anonymity. Questionnaires were kept anonymous.

3.0 RESULTS

During the study period, a total of 19,469 deliveries were conducted in MNH. Information gathered from registers revealed that women suspected to have obstetric haemorrhage were 4,052 which was 20.8% of all deliveries. Three hundred and four women met the modified criteria for severe obstetric hemorrhage and their data were analyzed.

Table 1: Socio-demographic characteristics (n = 304)

Socio-demographic characteristics		Number	Percentage
Age (years):	<20	32	10.5
	20-24	54	17.8
	25-29	118	38.8
	30-34	60	19.7
	>35	40	13.2
Marital status:	Married	254	83.6
	Single	40	13.2
	Cohabiting	2	0.7
	Missing	8	2.5
Education level:	Informal education	10	3.3
	Primary education	186	61.1
	Secondary	72	23.7
	College/University	10	3.3
	Missing	26	8.6
Occupation:	House wife	208	68.4
	Business	36	11.8
	House keeper/maid	8	2.7
	Employed	30	9.9
	Missing	22	7.2

About 10.5% were adolescents and single most affected age group was 25-29 years.

Table 2: Distribution of Parity and gestational age (n =304)

Parity	Number	Percentage (%)
1	78	25.7
2-5	202	66.45
Above 6	24	7.9
Gestational Age (Weeks)		
28-32	30	9.9
33-36	130	42.8
>37	134	44.0
Missing	10	3.3
Total	**304**	**100**

Table 2 shows that a high proportion, 66.45% were mid parity 2-5. Premature babies (52.7%) were mostly from mothers who had abruptio placenta, placenta praevia (APH).

Table 3: Frequency Distribution of causes of Obstetric Haemorrhage (n =304)

Cause of Haemorrhage	Frequency	Percentage
Abruptio placenta	110	36.2
Placenta praevia	26	8.6
PPH	168	55.2
Total	**304**	**100**

PPH due to various causes accounted for 55.2% of obstetric haemorrhage.

Causes of PPH included uterine atony, ruptured uterus, retained placenta or 2nd twin, abruption placenta, placenta praevia and cervical or perineal tears.

Table 4: Management provided to women with Severe Haemorrhage to control bleeding

Type of management	Frequency	Percent
TAH	12	3.95
STAH	28	9.2
C/S	59	19.4
EUA	12	3.95
Perineal/cervical repair	10	3.29
Manual removal	12	3.95
Medical treatment	174	57.2
Total	**304**	**100**

Majority of women were treated medically using uterotonic drugs, like oxytocin, misoprostal and ergometrin for controlling PPH.

Table 5: Management Outcome of both fetus and mother n= (304)

Management	**Maternal Outcome**			**Total**
	Alive	**Dead**		
Sub-standard	56	12		68(22.4%)
Standard	186	50		236(77.6%)
Total	242(79.6%)	62(20.4%)		304(100%)
Management	Fetal Outcome			Total
	Alive	FSB	MSB	
Sub-standard	60	12	2	74
Standard	158	62	38	258
Total	**218(65.66)**	**74**	**40**	**332**

About seventy seven point six percent (77.63%) received standard management according to the set management guidelines ($\chi 2 = 0.42$, p-value >0.05) but there was high still birth (37.5%) secondary to obstetric haemorrhage

($\chi^2 = 12.57$, p value < 0.05)

Note:

Most of FSB and MSB are from mothers who had abruptio placenta and ruptured uterus.

Table 6: Time seen on admission by Standard of Management (n=290)

Time seen on Admission	Management				Total	
	Standard		Sub-standard			
	N	%	N	%	N	%
< 30 min	166	(72.8)	48	(77.4)	214	(73.8)
30-60 min	30	(13.2)	6	(9.7)	36	(12.4)
> 60 min	32	(14)	8	(12.9)	40	(13.8)
Total	**228**	**(100)**	**62**	**(100)**	**290**	**(100)**

14 case notes were excluded from the analysis because time when the patients were seen was not documented.

Majority of women were seen within 60 minutes ($\chi 2 = 0.66$, p-value = 0.72) and this will determine the maternal and neonatal outcome.

Table 7: Time seen by senior doctor by Standard of Management (n=220)

Time seen by senior doctor	Management		Total
	Standard	Sub-standard	
< 30 min	68(41.0)	22(40.8)	90(40.9)
30-60 min	26(15.7)	16(29.6)	42(19.1)
> 60 min	72(43.3)	16(29.6)	88(40.0)
Total	**166 (100)**	**54 (100)**	**220 (100)**

The proportion of women who received standard management was higher among those attended by senior doctor after one hour from the time of admission and it was statistically significant ($\chi 2$ =6.09, p-value = 0.048)

NB: 84 case note were excluded from the analysis due to lack of documentation whether the patient was seen by a senior doctor or not.

Table 8: ANC risk by Standard of Management (n=170)

Risk during ANC visit	**Management**		**Total**
	Standard	**Sub-standard**	
Previous PPH	11	4	15
Previous APH	17	4	21
Previous C/S	23	8	31
Multiple pregnancy	22	6	28
Grand multiparity	20	0	20
Big baby	10	6	16
PIH	8	2	10
Anaemia	11	1	12
Malaria	11	0	11
Sickle cell disease	1	0	1
LAP	2	1	3
Total	**136**	**34**	**170**

About 80% of women who were identified to have risk factors during ANC visits were managed according to the protocol.

NB: one hundred and thirty four patients who had no risk factors documented during ANC visits their files were excluded from the analysis.

4.0 DISCUSSION

Severe obstetric haemorrhage is very prevalent both in developed and developing countries. Mortality from obstetric haemorrhage is rare in developed countries compared to poor resource countries due to lack of equipments, poor communication and inadequate human resources.

Obstetric haemorrhage (PPH) due to various causes in our study were 168 (55.26%). Uterine atony was the leading cause in about 15.8%. This is very high compared to the study done in New York State where overall severe obstetric haemorrhage accounted for 15.2% of all reported maternal mortalities in 2003-2005. Ninety seven percent (97%) of all deaths occurred while women were hospitalized. [25]

In another study done in India has shown obstetric haemorrhage contributed 24-64.8% which is similar to our study findings. [26]

Obstetric haemorrhage due to abruptio placenta alone was 110 (36.2%). Most of these cases were referrals from various health facilities surrounding Dar es Salaam including district hospitals, private hospitals and other peripheral facilities. Abruptio placenta cases were the main contributors of high rate of premature babies and neonatal deaths as well (36.2%).

The impact of these obstetric haemorrhages affect the fetal and maternal outcome leading to short and long term consequences. Among the short term complication seen were severe anemia (abruptio placentae, placenta praevia, ruptured uterus) contributing about 50%, other complications included ureteric injury and acute renal

failure. However, other long term complications include sepsis and complication related to surgery like infertility, chronic pelvic pain, psychological trauma and long term maternal complications like fistulas which are beyond this research. The finding is consistence with the study done in New South Wales where 60% of the complications were related to postpartum haemorrhage whereas another study done in Pretoria SA revealed that rate of obstetric haemorrhage due to APH and PPH were 125/10,000 and 238/10,000 deliveries respectively.[6, 17] The common complication which may lead to long term morbidity but in most cases is under looked, is anemia as it was found to be about 2.6% in this study. This lead to poor wound healing, puerperal sepsis and other underlying infection like malaria and urinary tract infection leading to increased in morbidity and mortality during puerperium.[18]

Significant number of women with risk factors in our study were identified during ANC period and had good management during labor and delivery and therefore good maternal and neonatal outcome. Unlike those with no risk factors about 44% of the patients had severe obstetric haemorrhage. It is a common behavior for health workers concentrating on the risk assessment forgetting that a good number of the obstetrical haemorrhage will occur without identified risk factor. This points to the fact that, at all times in all pregnancies we should anticipate severe haemorrhage. The main recognized predictors of maternal morbidity are maternal age over 35 years or age below 15 years, diabetes, hypertension and obstetric factors like previous postpartum hemorrhage, multiple pregnancy and previous caesarean section.

Anemia is an important predictor as it increases the risk of severe morbidity fivefold but in most cases it is overlooked. One could argue that few of these predictors are amenable to change, but they are useful in the identification of women who require extra vigilance as it was seen in this study, leaving the low risk women unattended hence increasing the morbidity and mortality. Previous studies have observed an increased risk of morbidity in women aged more than 35 years when they delivered their first child in the developed countries whereas in the developing countries multiparous is a common risk factor leading to uterine atony as well as ruptured uterus.[20] In this study, grandmultiparous were among the high risk (11.76%) and all were managed according to the standard. Most of the women in this study had a primary education and majority were house wife hence lacking economic power in health seeking behaviors.[21]

Management of severe obstetric haemorrhage is an emergency which needs urgency in management with life saving skill in prevention of further damage which occurs following acute blood loss [22, 23]. Despite that senior doctors attended majority of the patients after one hour and the analysis shows that the overall standard management was about 77.6%, this shows that the proper basic management is very important to all health personnel irrespective of seniority. The specialist should give the guidelines for emergency care and if followed properly, most women may be saved as it was seen in this study. The high maternal death and neonatal death observed is an indication that probably initial management, resuscitation and detection of fetal

comprise were missing right from the referral facilities. Obstetrical haemorrhage is often acute, dramatic, and underestimated in most patients hence poor resuscitation measure are common at the primary facilities. Postpartum haemorrhage being a significant cause of maternal death and abruptio placenta being the most common cause of neonatal death, their management needs urgency and has to be vigilant therefore provision of definitive management after one hour is always late and therefore associatcd with morbidity. It is the APH that weakens and then PPH that kills [26]. Skill for emergency obstetrical care (basic and comprehensive) are fundamental to all health professional and this could be the basic for over 77% of standard management observed in this study. Surgical procedure is the most common antecedent if acute hemorrhage is not responding to medical treatment but this carry a lot of long standing morbidity if done by unskilled personnel due to accidental visceral injuries like fistulas (VVF and RVF), injury to the ureters and great vessels. Identification, isolation, and rapid control of bleeding encountered during the procedure will limit the total blood loss and this need skillful people within 30 minutes. The study done by Nabahani on Situational Analysis on Management of Emergency Obstetric Complications found that delays in diagnosis or inappropriate management or both were implicated in 36% of maternal deaths, this is explaining the typical finding in third delay occurring in the hospital setting hence leading to more complication.

The study limitation includes inaccurate information due to loss of data, improper or lack of documentation as well as observation error in blood loss estimation both during vaginal delivery and operative delivery.

5.0 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Basic knowledge and skill in the management of obstetric haemorrhage is important to all health care providers.

Senior personnel need to be available in person in the course of management of obstetric haemorrhage where surgical intervention is needed. This will improve the standard of care and reduce both maternal and neonatal morbidities.

5.2 Recommendations

1) Obstetric haemorrhage is the known preventable cause of maternal mortality. This can be achieved by developing effective guidelines for the management of severe obstetric haemorrhage to all obstetric units and maintain regular auditing.

2) Education programs with didactic components and simulation drills may be developed to assist the staff with preparing for emergencies.

3) Proper documentation and record keeping of patient information should be emphasized at all levels of health care delivery.

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