A SURVEY ON OBSTETRIC CARE, FACTORS AFFECTING PROVISION OF CARE AND PREGNANCY OUTCOME IN DAR ES SALAAM DISTRICT HOSPITALS - 2002

By

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

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the University of Dar es salaam a dissertation entitled; *A survey on obstetric care, factors affecting provision of care and pregnancy outcome in Dar es Salaam district hospitals-2002,* in partial fulfillment of the requirements for the degree of Master of Medicine (Obstetrics and Gynaecology).

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AND

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I praise the LORD my GOD, the sole fountain of life and sustenance, who, by His unmerited favour, has taken me through this work and my studies at large. Glory, praise and honour be unto him now and forever more. Amen

DEDICATION

This dissertation is dedicated to my parents, my wife Shangwe Nyamtema and my daughter, Nzeyimana

ABSTRACT

Background: Majority of the deliveries in Dar es Salaam take place in a few available public facilities mainly district hospitals and Muhimbili national hospital. While the population in Dar es Salaam has remarkably increased from 1.5 to 2.5 million (1988 – 2002) the number and capacities of public referral facilities have remained the same throughout this period.

Objectives: To assess the current state of obstetric care including coverage of essential obstetric functions, pregnancy outcome, and underlying factors in the first-referral hospitals in Dar es Salaam.

Design: Rapid assessment method for health facilities

Setting: All three-district hospitals in Dar es Salaam.

Data Collection: Three nursing officers and the principal investigator collected data from all hospitals. The coverage of essential obstetric services was assessed in all facilities. Data on the available staff, equipment, supplies, drugs and, maternal and fetal outcome were obtained from medical record reviews. Health providers and administrators were interviewed for the health facility-related factors that affected obstetric care and outcome in their respective facilities

Results: All facilities had sub-optimal provision of essential obstetric functions, especially the obstetric emergencies. Caesarean section services were given only for 12 hours of the day at Temeke and Amana hospitals, and very irregularly at Mwananyamala hospital giving rise to the caesarean section rates that ranged from 0.9% to 3.0%.

Obstetric emergency-referral rates were very high up to 59% as found among patients who had obstructed labour at Mwananyamala hospital. Obstetric premises, staffing and equipment were grossly inadequate in these facilities, particularly at Temeke and Mwananyamala hospitals. The postnatal bed occupancy rates ranged from 113% to 255% and nurse-to-patient ratios in the maternity wards were as high as one nurse to seven patients in the labour ward.

Conclusion: The results show a widening gap between provision and the needs for essential obstetric services in these facilities. This gap is a health system problem that must be bridged urgently.

ABBREVIATIONS

1. AIDS = Acquired immunodeficiency syndrome
2. AMO = Assistant medical officer
3. GP = general practitioner
4. HIV = human immunodeficiency virus
5. MNH = Muhimbili National Hospital
6. MTUHA = Mfumo wa Taarifa ya Uendeshaji wa Huduma za Afya, which means Health Information Management System (HIMS)
7. OG= Obstetrics and gynaecology
8. OPD = outpatient department
9. RAM = rapid assessment method
10. SBM = stillbirth macerated
11. SBF = stillbirth fresh
12. TBA = traditional birth attendants
14. TPMM= Tanzania prevention of maternal mortality
15. WHO = World Health Organization
16. EMO = Epstein Macintosh Oxford
17. OMV = Oxford Miniature Vaporizer

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1.0 INTRODUCTION AND LITERATURE REVIEW

Background

Like other Sub Saharan countries the magnitude of maternal mortalities and morbidities in Dar es Salaam and Tanzania in general is unacceptably very high. The reasons for include poor obstetric care. From the safe motherhood technical consultation perspective, good quality obstetric care is the single most important intervention to prevent maternal mortality and morbidity. Improving the quality of the existing maternal health care that leads to provision of appropriate and timely emergency obstetric care has been reported to be the quickest and most cost-effective way to reduce maternal deaths.[1,2,3,4] In order to achieve this quality of care, health facilities, should have adequate number of trained skilled staff, a regular supply of drugs, equipments and supplies, and a well functioning referral system. Attendance at delivery by skilled personnel equipped with appropriate supplies and equipments has been found to be more strongly associated with reduction in maternal mortality than many other interventions[2]. The explanation for these findings is that most life-threatening obstetric complications arise suddenly and without warning and hence, requiring appropriate and timely management on emergency basis.

Health system-related barriers for quality of care

Obstetric care in low-income countries is affected by poorly developed medical infrastructure coupled with chronic shortages of skilled staff, necessary equipment and basic supplies including blood for transfusion and the referral systems that function well enough to ensure that women with complications get essential treatment.[1,5,6] Other

factors reported to affect obstetric care in these countries include the health workers' attitude, lack of morale and passivity in cases of life-threatening obstetric emergences.[5] Although the World Health Organization (WHO) recommends that district hospitals have emergency obstetric care capability, studies in some parts of developing countries have shown that only small number of such hospitals provide emergency obstetric services on a 24 hour basis.[7] There was a feeling that the quality of obstetric care in Dar es Salaam was affected by these same factors leading to high maternal and perinatal morbidities and mortalities. Experience at Muhimbili National Hospital (MNH) had shown that far too often women suffering complications of labour and delivery arrived at this tertiary-referral facility after surmounting a multitude of obstacles, only to die from lack of appropriate and timely obstetric care. These deaths raised questions about how well existing first-referral hospitals were carrying out their WHO-defined function 'to respond appropriately and timely to the needs of patients'.

Dimensions and consequences of poor obstetric care

Worldwide about 600,000-woman die yearly of pregnancy related complications. Of all deaths 99% occur in developing countries particularly in sub Saharan countries. In Tanzania maternal mortality ratio has remained unacceptably high over the years, recently estimated to be 930 – 1,100 per 100,000 live births in 2002.[9,10] In Dar es Salaam, both community and hospital-based studies have reported striking high maternal mortality ratios. Between 1992 -1995 maternal mortality ratio in Dar es Salaam was estimated to be 733 per 100,000 live births.[11,12] Following a community-based study on maternal mortality in Ilala district in Dar es Salaam between 1991-1993 a relatively

lower (but still high) maternal mortality ratio was reported i.e. 572/100,000 live births[13]. At Muhimbili National Hospital 127 maternal deaths were registered in the local database within a two year period from 2000 -2001, giving a maternal mortality ratio of 378 per 100,000 live births.

According to World Health Organization for every maternal death that occurs worldwide, an estimated 30 additional women suffer pregnancy-related health problems that can be permanently debilitating.[8] Although the magnitude of maternal morbidity in Tanzania is not known, experience shows that the incidences of maternal morbidities like ruptured uterus, obstetric fistulae etc are not uncommon.

It is important to emphasize here that, the death of a mother has profound consequences in the household economically, socially and children outcome. It has been reported that following a death of a mother the chances of dying for the under fives increases by 50-100%.[8]

Initiatives to improve quality of care

Ever since the safe motherhood initiative was launched in Nairobi, Kenya in 1987, the aims have been to draw attention to the dimensions and consequences of poor obstetric care in developing countries, and to mobilize action to address high rates of death and disability caused by the complications of pregnancy and childbirth. The overriding goal of these global efforts has been to improve the quality of obstetric care and in due course reduce the unacceptably high maternal mortalities and morbidities. In order to achieve this goal several approaches have been proposed as cost effective ways to lower maternal deaths and these include risk approach, expanding antenatal care, training

traditional birth attendants (TBAs) etc. Although antenatal clinics and risk approach are still practiced in developing countries, they have been reported to have poor predictive values for maternal mortality, with very high false-positive results and poor sensitivity.[14,15] This is because most life-threatening obstetric complications arise suddenly and without warning. Most authorities also, have argued on the impact that the TBAs have had in reduction of maternal deaths, some reaching to a point of concluding that the approach has proved failure.[14,15] More recently, the need to improve first-referral level health facilities to care for complications of pregnancy, delivery and postpartum period has been advocated.

The panel of experts (1985) estimated that 88-98% of maternal deaths can be avoided in the circumstances of most developing countries.[16] This statement has been proved true by several global and local maternal mortality intervention experiences.[3,4,5]

Prior to the national level attention on maternal mortalities and morbidities, a few individual initiatives aimed at reducing maternal deaths and morbidities were made in some parts of the country. In Kigoma an intervention to reduce maternal deaths was implemented from 1987 – 1991 and this resulted into a remarkable reduction of maternal mortality ratio from 849 per 100,000 live births in 1984 - 1986 to as low as 275 per 100,000 live births from 1987-1991. Together with other strategies, the eight essential obstetric functions were made available on a 24 hour basis, hospital personnel mobilization and regular internal training on how to handle obstetric emergences were implemented.[5] Studies on maternal mortality in Ilala district in early 1990's reported high maternal mortality ratio and that 62% of all maternal deaths were due to the direct

obstetric causes that were preventable. The striking finding was that, suboptimal treatment was identified in 77% of cases reaching health care. Following this work, in 1998, Tanzania prevention of maternal mortality (TPMM) started to implement the ongoing intervention activities in Ilala district. Unpublished data from the TPMM team members reported that ever since these activities were started Ilala district hospital (Amana) has improved the coverage of obstetric care to 75% of comprehensive level.[17]

Following International conference on population and development in Cairo, Egypt, in 1994, Tanzania started to implement reproductive health strategy that addressed on fundamental issues including maternal care and the major goal was to reduce maternal mortality by 50% by the year 2001. Concomitant to the safe motherhood initiative approaches, this strategy was designed to achieve this goal by strengthening management of obstetric emergencies, antenatal care and revive postnatal care.[18]

Referral system in Dar es Salaam

In Dar es Salaam obstetric care is performed in all four levels of health care i.e. dispensaries, health centres, hospitals and Muhimbili National Hospital as a consultant hospital. Statistics reviewed from MNH database showed that a significant number of mothers attending at Muhimbili labour ward were women without any risk factors and were admitted from home. For instance, in the year 2001, 60% (9,271/15,438) of all mothers delivered at MNH had been admitted to the labour ward without any antenatal risk factor. Some of these, however, were those mothers who were referred from the peripheral health facilities after having succumbed to pregnancy-related complications without any antenatal risk factor. The data also showed that, of all deliveries 90%

(13,776/15,438) were admissions from home, only 7% and 3% (i.e. 1,118 and 538) were referred patients and from Muhimbili antenatal wards respectively. In this review, however, it was not possible to quantify the number of women who were admitted in this labour ward who had attended at Muhimbili antenatal clinic. Altogether, most likely majority of mothers who were admitted from home constituted the majority of those who had no any antenatal risk factors. To couple the impact, some of these referred mothers came directly from the health centres to Muhimbili, a tertiary facility bypassing the district hospitals. A significant proportion of them might have been managed in these district hospitals. That observation could be explained by the community awareness on the importance of delivery in a well-equipped hospital with a presumption that district hospitals in Dar es Salaam were not well equipped with skilled staff and essential equipment. The impact of the index referral system in Dar es Salaam has been congestion of low risk labouring mothers in Muhimbili labour ward. This resulted into redistribution of the available human and material resources to the low risk mothers, high risk mothers and obstetric emergencies leading to substandard quality of obstetric care to all three groups but of interest to the high risk and obstetric emergencies.

In view of this, the referral system in Dar es Salaam had an appreciable contribution to the poor obstetric care provided by this centre.

Potential resources for improving quality of care in Dar es Salaam

There was a feeling that, if the available potential resources were fully mobilized and utilized, priorities clearly defined and most focused cost effective interventions were to

be implemented, maternal deaths and morbidities in Dar es Salaam could be reduced remarkably.

These potential resources for improving the quality of care in Dar es Salaam include skilled manpower from medical, paramedical & nursing schools, and national hospital available within this city, government, voluntary and parastatal-owned health facilities, many governmental and nongovernmental organizations, and many voluntary agencies available in this city.

2.0 STATEMENT OF THE PROBLEM AND RATIONALE OF THE STUDY

The population in Dar es Salaam city has increased in the past few years, from 1.5 million in 1988 to 2,497,940 people in 2002, while, on the contrary, remaining with the same three district hospitals and one tertiary hospital i.e. Muhimbili National Hospital.[19] Despite the presence of many private health facilities that provided delivery services, most of the deliveries in Dar es Salaam took place in these few public facilities. Altogether, these district hospitals seemed not to provide all essential obstetric services on a 24 hour basis as recommended by the World Health Organization. Due to this and other reasons, some health centres and even individual mothers in the city bypassed district hospitals and assumed self-referral from home to Muhimbili National Hospital - the tertiary referral facility. The impact was congestion of obstetric emergencies, low risk and high risk mothers at Muhimbili National Hospital. This congestion led to redistribution of human and material resources to these groups of labouring mothers

resulting into sub optimal emergency obstetric care that led to high maternal and fetal mortalities and morbidities due to problems of delays to get appropriate and timely treatment. A sub-standard obstetric care that existed in all these levels of health care was a health system problem that needed both to be reviewed and worked on.

Studies on emergency obstetric care done at Muhimbili National Hospital also had recommended for further studies in lower levels of obstetric care within Dar es Salaam referral network. This study aimed at elucidating the available obstetric services, the gaps and underlying factors for provision of care and pregnancy outcome in Dar es Salaam district hospitals.

3.0 DEFINITION OF TERMS, WHO STANDARDS FOR ASSESSING OBSTETRIC CARE AND FORMULAE FOR OUTCOME MEASURES

3.1 DEFINITION OF TERMS

a. **Foetal outcome** was classified using an APGAR score after the first five minutes; normal score when the foetus had scored 8-10, moderate asphyxia 5-7, severe asphyxia 1-4, and still births were classified into fresh and macerated.[20]

b. **Rapid assessment method (RAM)**- A health facility-based designed method for assessing maternal and child health services. The assessment covers the availability of staff, supplies, equipment, record reviews, interviews with health staff and focus group discussions at the village level.[21] This type of study employs elements of descriptive cross sectional and observational study designs.

3.2 WHO STANDARDS FOR ASSESSING OBSTETRIC CARE

a. Essential obstetric functions.

The World Health Organization defines the following as essential obstetric functions necessary at the first-referral level of care on a 24 hour basis.[14,22,23]

i. Clinical treatments including sepsis, severe pre-eclampsia and eclampsia

ii. Manual procedures (e.g., extraction of placenta, vacuum extraction)

iii. Monitoring of labour

iv. Management of pregnancy complications including shock and haemorrhages.

v. Neonatal care (thermal control, resuscitation, hypoglycaemia etc.)

vi. Anaesthesia

vii. Surgery (caesarean section, hysterectomy, repair of laceration, episiotomy)

viii. Blood transfusions

b. WHO Indicators for monitoring obstetric care.[24,25]

i. *Availability of Basic Emergency Obstetric Care* – is the number of health facilities providing basic and comprehensive emergency care functions per unit of population.

Minimum level: 4 Basic emergency obstetric care facilities for every 500,000 population and one comprehensive obstetric care facility that provides all eight obstetric functions on a 24 hour basis

ii. *Caesarean Section Rate* - proportion of Caesarean Sections to all births

Minimum level: No less than 5% and no more than 15%.

iii. *Obstetric Case Fatality Rate in Facilities* (CFR)- proportion of women admitted to a health facility with emergency obstetric complications who ultimately die there.

Minimum level: CFR should be less than 1%

CFR is an indicator that measures the quality of care provided within facilities. It is essentially an in-service indicator, particular to each facility. It is a useful and appropriate indicator for monitoring facility performance and standards of care over time.

3.3 FORMULAE FOR OUTCOME MEASURES

a. Caesarean section rate = $\frac{\textit{No. of Caesarean sections in one year}}{\textit{Total estimated deliveries in one year}} \times 100$

b. Case fatality rate = $\frac{\textit{Number of direct obstetric deaths in the facility in one year}}{\textit{Number of admissions for emergency obstetric complications in one year}}$

c. Stillbirth rate = $\frac{\textit{number of stillbirths x 1000}}{\textit{Total live births + stillbirths}}$

d. Bed occupancy rate = $\frac{\textit{Total number of bed days}}{\textit{Total number of beds x number of days at that period}} \times 100$

e. Maternal mortality ratio = $\frac{\textit{Number of maternal deaths X 100,000}}{\text{Number of live births in the same period}}$

NOTE: The numerator includes the number of deaths regardless of pregnancy outcome (e.g. live births, ectopic pregnancies), while the denominator includes the number of live births.

f. Nurse to patient ratio = *Number of patients cared for by one nurse typically specified by job category (trained nurses etc); this varies by shift and nursing unit; some researchers use this term to mean nurse hours per inpatient day*[26]

4.0 OBJECTIVES

4.1 Broad objective

To assess obstetric care and factors affecting provision of essential obstetric care and pregnancy outcome in Dar es Salaam district hospitals in 2002.

4.2 Specific objectives

1. To assess the coverage of essential obstetric functions in Dar es Salaam district hospitals.
2. To determine immediate maternal outcome following pregnancy-related complications in Dar es Salaam district hospitals
3. To determine the immediate foetal outcome in Dar es Salaam district hospitals.
4. To determine the human resources available in Dar es Salaam district hospitals.
5. To assess the availability of material resources (equipment, drugs and supplies) necessary for essential obstetric care in Dar es Salaam district hospitals.
6. To determine the health facility-related factors that affect obstetric care, provision of essential obstetric functions on a 24 hour basis and pregnancy outcome in Dar es Salaam district hospitals

5.0 RESEARCH DESIGN AND METHODOLOGY

5.1 Study Design

This survey used a rapid assessment method (RAM) to assess obstetric care in Dar es Salaam district hospitals.

5.2 Study Area

Dar es Salaam is the largest business city in Tanzania. The city is located along the coast of Indian Ocean. Though not being politically a capital city, most of the ministries, and many other governmental and nongovernmental organizations' headquarters are located in this city. The background information on population and health facilities in Dar es Salaam is summarized in table 1 below.

Table.1. Distribution of population and health facilities with maternal child health services in Dar es Salaam

	Health facilities					
	Ownership				Facilities with	Total
District	Gov't	Voluntary	Parastatal	Private	MCH services	HFs
Ilala						
Hospitals	1	1	1	7	9	10
Health centres	1	1	0	6	1	8
Population 637,573						
Temeke						
Hospitals	1	0	0	2	3	3
Health centres	2	0	1	1	3	4
Population 771,500						
Kinondoni						
Hospitals	1	0	1	9	10	11
Health centres	2	0	1	1	3	4
Population 1,088,867						

NOTE: Govt = government, HFs = health facilities
1. Muhimbili national hospital was excluded from this account
2. Populations according to the index census[19]

The government owned hospitals reported in this table were Amana, Temeke and Mwananyamala. Of all government run health centres only 3 (60%) provided delivery

services. In this city majority of women come from the low socio-economic communities, and cannot afford to pay for private obstetric care costs. Statistics from the Health Information Management System (HIMS) coordinators in the these districts showed that regardless the poor private health facility reporting rates, total deliveries that took place in these facilities were extremely low.

In the year 2001, for example, in Temeke, the only municipal that had over 90% private health facility reporting rate, only 1% of all deliveries (285/27,504) took place in the private health facilities. It is possible that the proportion in Ilala, the municipal with more private health facilities, was higher than that found in Temeke. It was from these findings of high deliveries in public facilities that this study focused to these public hospitals.

5.3 Sources of data

Information for this study were collected from:

1. Staff registry books – for the number of staff allocated to the labour ward, theatre and blood unit (see a list of staff in appendix A)
2. The equipment inventory – for the availability of equipment (a list of equipment in appendix B)
3. Medical record books including admission, delivery, nurse report books, operation books in theatres – for the number of admissions, deliveries, pregnancy-related complications, caesarean sections, maternal deaths, foetal outcome and referred patients (see appendices C,D).
4. The hospital personnel including the hospital administrators, labour ward nurse

incharge, doctors, nurse-midwives allocated to the labour wards and theatres, and anaesthetists in the three district hospitals. In this study only one obstetrician and head of obstetrics and gynaecology department at Mwananyamala hospital was interviewed.

Two obstetricians at Amana and Temeke hospitals did not consent for the interview.

All trained personnel, equipment, supplies and drugs that were assessed in this study included mainly those recommended in the national guideline standards for health facilities.[27,28,29]

Essential supplies and drugs were assessed in terms of whether they were always available, available in most of the time or whether they were rarely or never available throughout the year (2002). Information on the availability of these items was obtained from the labour ward nurse incharges, nurses and doctors working in the labour ward in these hospitals.

5.4 Data Collection Techniques and Tools

Two data-collection techniques were employed in this study i.e. using available information and interview techniques.

Using available information technique

Three research assistants (nursing officers) assisted the principal investigator in the process of data collection. These were assigned to collect data on the top-most five direct obstetric causes of maternal deaths and the corresponding obstetric outcome in the year 2002.

The principal investigator using the structured checklists collected the data on foetal outcome, human and material resources. Equipment were assessed and ascertained whether they were functioning or non-functioning. Those equipment which the principal investigator did not physically assess information were ascertained from the personnel who usually operated them to confirm whether they were functioning or not. These included the anaesthetic machines, sterilizers, sets of equipment for operation etc.

The major direct obstetric causes of maternal deaths that were studied were; eclampsia, obstetric haemorrhages, obstructed labour with or without ruptured uterus, puerperal sepsis and abortion-related complications. The indirect obstetric causes of maternal deaths were also established. These included anaemia, malaria, HIV/AIDS in pregnancy and others. The immediate maternal outcome following the top-most five direct obstetric causes of maternal deaths were assessed in terms of treated at a health facility and survived, died or referred to the tertiary-referral hospital. Maternal deaths related to the indirect causes of maternal deaths were also established. Data on the foetal outcome was collected and classified into; live foetuses- severe asphyxia, moderate asphyxia or normal using the World Health Organization APGAR scoring system, early neonatal death and stillbirths – macerated or fresh. This information was collected from the delivery report books commonly known as MTUHA report books.

A *tallying process* was employed in the process of data collection. This process was carried out manually into the checklist. From this data several outcome measures were established.

Health workers – interview

A *small-scale flexible interview technique* was employed in order to attain the in-depth information on the health facility-related factors that affected provision of essential obstetric services and pregnancy outcome in these hospitals for the year 2002.[30]

A random sampling technique was used to obtain the nurses allocated to the labour ward and theatre for interview. Open-ended questions were used during the interview (see appendix E). Inquired information given by the respondents was collected in a narrative form. The respondents' opinions were recorded as much as possible in their own words, especially the key statements. Some doctors were very busy for this type of interview, therefore, they opted for self-administered questionnaires and filled them at their convenient time. During collection of the filled questionnaires the principal investigator immediately went through them and inquired clarification in cases of any responses that were not clear to him. This type of self administered interview was used for all three hospital directors, one doctor at Amana, three doctors at Temeke and two doctors at Mwananyamala hospital. All nurses were interviewed using a flexible interview technique. Of all interviewees at Amana hospital there were 4 doctors including the hospital incharge, 4 trained nurses working with the labour ward and theatre, and one anaesthetist. At Temeke hospital 5 doctors including the hospital incharge, 4 trained nurses and one anaesthetist were interviewed. At Mwananyamala hospital the respondents were 4 doctors including the hospital incharge, 7 trained nurses working with the labour ward and the theatre.

Preparation of the respondents

Prior to the interview, the general purpose and usefulness of the findings of this study were clarified and made understood by all respondents. Appointments for the interview were sought from individual respondents.

A topic and written guidelines for the interview were provided in advance in order to enable the respondents explore the inquired information and respond to the questions with evidence based responses, whenever it was necessary. So as to obtain adequate and relevant information from the respondents, efforts were made to build and maintain rapport prior as well as during the interview.

5.5 Data processing and analysis

At the end of each interview, the researcher reviewed and completed the notes taken during the meeting with the respondent. The responses that were given by all respondents at each hospital were compared, and summarized coherent responses were ascertained and interpreted separately at each hospital. Data from all three hospitals were processed manually and analysed separately. The results were compared with the national standards and those recommended by the World Health Organization.

5.6 Limitations of the study

I. Missing data or /and incomplete information.

Any delivery that missed either birthweight or Apgar score of the baby, or both, was considered incomplete.

a. Temeke hospital:

- *Missing data*: Nurse report books for 1st January to 4th April 2002 for critically ill patients admitted to the gynaecological ward were missing. The maternal deaths due to these complications in this period solely depended on the monthly nurse return (report).
- *Incomplete information*: 348 i.e.2.7% of all deliveries

b. Mwananyamala hospital:

- *Missing data:* Labour ward admission books from January to June 2002. Delivery record book from 1st to 25thJanuary 2002. Nurse report books for the gynaecologic ward from 23rd February to 25th April 2002. Monthly nurse returns (reports) at the health facility- Health information management system (HIMS) coordinator.
- *Incomplete Information*: 83 i.e. 0.9% of all babies.

All deliveries that were incompletely filled were excluded from the final analysis. ***Despite of poor recording keeping in these facilities we felt it was still good enough to provide us with some useful information.***

II. Because of the nature of the study coupled with poor record keeping it was not possible to prove or disprove the diagnosis including the APGAR score of foetuses recorded in the medical record books.

With regards to this, the validity of the findings in this study depended on the acumen of the health providers who attended these patients.

Misdiagnosis was evident in Apgar scoring of newborns. For example, an Apgar score of 8 after five minutes was wrongly commented as a low score 33 times at Amana, 21 times at Temeke and 28 times at Mwananyamala hospital. During this study the Apgar score was considered rather than the comment that was given to the score.

III. Lack of follow up of patients who were referred to secondary referral hospital in order to establish their obstetric outcome.

5.7 Exclusion criteria

a. All labour ward deliveries of foetuses that weighed below 1 kg whether alive or dead were considered as abortions and were excluded from the foetal outcome analysis. There were 33, 42 and 31 abortions at Amana, Temeke and Mwananyamala labour wards respectively. These abortions recorded at Mwananyamala labour ward were those from January 25th to December 31st, 2002.

b. All foetuses that had incomplete information regarding their birth weight and Apgar score.

c. Two obstetricians at Amana and Temeke hospitals did not consent for the interview and were excluded from the study.

5.8 Ethical considerations

Ethical issues: While in the field, the principal investigator was ready to assist the host health providers to provide appropriate life saving services in case of obstetric emergences whenever was necessary. For the four month of study there was no any obstetric emergency that needed a help from the principal investigator as most of the

time these emergences were appropriately and timely handled without a need for help from this researcher. A verbal consent was obtained from all interviewees.

Ethical clearance for this study was obtained from the publication and ethical committees of Muhimbili National Hospital. The permission for data collection and interview for health workers in these facilities was obtained from the city medical officer's office and all three municipal medical offices.

6.0 RESULTS

Coverage of essential obstetric functions

Table 2. Coverage of essential obstetric functions on a 24 hour basis in Dar es Salaam district hospitals.

Essential obstetric functions	Coverage in hours		
	Amana	Temeke	Mwananyamala
Clinical treatments including			
Sepsis	24	24	24
Eclampsia	24*	24*	24*
Manual procedures (e.g., extraction of placenta, vacuum extraction)	24	24	24
Monitoring of labour	24*	24*	24*
Manag't of pregnancy complications including shock and haemorrhages.	24	24	24
Neonatal care (thermal control, resuscitation, hypoglycaemia etc.)	0	0	0
Anaesthesia	12	12	24*
Surgery (caesarean section, hysterectomy, repair of laceration, episiotomy)	12	12	24*
Blood products transfusion	12	12	24*

* Though these services were provided for 24 hours still there were shortfalls

- At Mwananyamala hospital: The coverage of surgical and blood services were reported to be 24 hours. These services, however, were not provided at comprehensive level. There were days when the theatre and blood bank services were not provided due to either lack of anaesthetist, anaesthetic drugs or blood.

- At Amana and Temeke hospitals the theatre and blood bank services were only provided for 12 hours of the day i.e. from 0800 – 2000 hours. All obstetric emergencies that were encountered thereafter were referred to Muhimbili National Hospital. It was not uncommon, however, to find obstetric emergencies that needed surgical intervention or blood transfusion being referred to Muhimbili National Hospital during the working hours.
- Eclampsia was managed using magnesium sulphate regime in all hospitals. There were no appropriate premises suitable for management of eclampsia in all facilities. Thus, eclamptic patients who presented with recurrent fits while on or after magnesium sulphate treatment were referred to the tertiary referral hospital.
- There was no timely monitoring of labour despite the partographs being available most of the time. All respondents associated this with congestion of patients and shortage of staffing.
- There was inadequate care of newborn particularly those which required thermal control and intensive resuscitation.

Immediate maternal outcome following life-threatening obstetric emergencies

- Obstetric emergency referral rates were as high as 59% found among mothers who had succumbed to obstructed labour at Mwananyamala hospital.
- The referral rate due to eclampsia at Amana and Temeke hospitals was 53%.
- The highest maternal mortality ratio was found at Amana i.e. 215 /100,000 live births. The highest cause-specific case fatality rate was 12.5% for eclampsia at Amana hospital despite of high referral rate for eclampsia (i.e. 53%)

Table 3. Immediate maternal outcome following major obstetric causes of maternal deaths in Dar es Salaam district hospitals

Hospital/ Maternal outcome	Pregnancy related complications: Obstructed/ ruptured ut. n (%)	Eclampsia n (%)	Puerp. Sepsis n (%)	Obstetric h'ges n (%)	Abortion compl'tns n (%)	Indirect causes n
Amana						
Treated- survived	386 (56.8)	35 (41)	24 (92)	72 (63)	774 (99.5)	
- died	1 (0.1)	5 (6)	1 (3.8)	6 (5)	2 (0.2)	11
Referred to MNH	293 (43)	46 (53)	1 (3.8)	36 (32)	2 (0.2)	
Total	680	86	26	114	778	
Case fatality rate	0.3	12.5	4	7.7	0.3	
Maternal mortality ratio	215					
Temeke						
Treated – survived	103 (65)	86 (47)	52 (95)	66	616 (97.4)	
- died	3 (1.6)	0	2 (3.6)	2 (1.7)	8 (1.3)	4
Referred to MNH	52 (33)	98 (53)	0	48 (41)	7 (1.1)	
Total	158	184	55	116	631	
Case fatality rate	2.8	0	3.7	2.9	1.3	
Maternal mortality ratio	162					
Mwananyamala						
Treated - survived	205 (40.6)	19 (61)	14 (88)	19 (68)	141 (88)	
- died	2 (0.4)	0	0	0	3 (1.9)	5
Referred to MNH	298 (59)	12 (39)	2 (12)	9 (32)	16 (10)	
Total	503	31	16	28	160	

Note: At Temeke hospital one death was due to ruptured ectopic pregnancy.

Foetal Outcome

Table 4. The foetal outcome in Dar es Salaam district hospitals

	Amana		Temeke		Mwananyamala	
Foetal outcome	No.	%	No.	%	No.	%
Total deliveries (≥1kg)	12,455	(100)	12,674	(100)	9,214*	
Live foetuses (≥1kg)	12,092	(97)	12,296	(97)	8,981*	(97)
normal score	11,862	(95)	12,075	(95)	8,847	(96)
moderate asphyxia	118	(0.9)	154	(1.2)	84	(0.9)
severe asphyxia	112	(0.9)	67	(0.5)	50	(0.5)
early neonatal death	102	(0.8)	69	(0.5)	43	(0.5)
Stillbirths - fresh	167	(1.3)	81	(0.6)	84	(0.9)
- macerated	186	(1.5)	225	(1.8)	124	(1.3)
Stillbirth rate	28		30		25	

* The data for Mwananyamala labour ward from 1st – 24th January 2002 were missing. Fetuses with missing or incomplete information: Amana 283 (2.2%), Temeke 348 (2.7%) and Mwananyamala 83. Stillbirths that were not classified whether fresh or macerated: Amana 10(2.8%), Temeke 72(18.9%) and Mwananyamala 25(10.7%) of all stillbirths.

- Of all foetuses 95% had normal apgar score. Stillbirth rates were high in all hospitals ranging from 25 to 30 per 1000 total births. Macerated stillbirths were as high as 73% of all stillbirths (found in Temeke hospital). Of all fresh stillbirths, 33% - 49% weighed below 2.5kg.

Manpower and Material Resources

Maternity Infrastructure

- The architectural plan and capacities of maternity and theatre premises were almost the same in all hospitals. Each facility had only one delivery room with a capacity of only 2 delivery beds though there were 3 delivery beds at Temeke

and Mwananyamala hospitals being put very close to each other. At Amana hospital three more delivery beds were placed somewhere but in the same maternity ward.

- Each antenatal and postnatal ward had a capacity of 12-14 beds except at Amana hospital where there was an extension for the postnatal ward making a postnatal capacity of 31 beds.
- All respondents in all hospitals cited inadequacy of premises as one of the major constraints in provision of essential obstetric care. All respondents reported that '*the capacities of the delivery rooms, antenatal and postnatal wards were inadequate compared to number and rate of deliveries.*' The midwives at Mwananyamala and Temeke hospitals complemented this by reporting that '*due to compromised capacities of these premises it was not uncommon for some deliveries to take place on the floor in the antenatal wards*'. All respondents at Temeke and Mwananyamala hospitals associated too many floor patients with premises inadequacy.

Equipment

- There were only EMO and OMV anaesthetic machines at Temeke and Mwananyamala hospitals. The Boyle's anaesthetic machine was only available at Amana hospital. Both anaesthetic machines at Mwananyamala hospital were broken down for a whole a month of December 2002. That led to a closure of all elective and emergency surgical obstetric procedures for all that period.

Table 5. Availability of essential equipment necessary for obstetric care in Dar es salaam district hospitals

	Amana		Temeke		M/nyamala		National
Equipment/facilities	f(x)*	nonf(x)+	f(x)	nonf(x)	f(x)	nonf(x)	std[25,41]
Labour ward							
Capacity (in terms of del. beds)	2		2		2		
Delivery beds	4	1	3	3	-	2	4
Light source for examination	-	1	-	2	1	-	
Delivery trays	30	-	10	-	6	3	
Vaginal examination trays	5	-	-	-	-	-	
Resuscitation trays	-	-	-	-	-	-	1[δ]
Oxygen cylinders	1	-	1	-	1	-	1[δ]
Sterilizers	1	-	1	-	2	-	8[♣]
BP machines –adult cuff	5	3	3	2	2	1	13[♣]
Fetoscopes	20	-	3	-	3	-	10
Suction machines	2	-	1	1	2	-	23[♣]
Vacuum extraction sets	1	1	1	-	1	-	8
Theatre							
Operating beds	1	2	1	1	2	1	2
Caesarean section sets	5	-	3	-	4	-	2
Laparotomy sets	2	-	1	-	3	-	2
Dilatation & curettage sets	1	-	1	-	-	1	2
Suction machines	3	-	1		1	-	23[♣]
Anaesthetic machine(s)							
.Boyles	1		-	-	-		1
.OMV	1		1	-	1	-	1
.EMO	1		1	-	1	-	1
Others							
Ultrasound machines	1	-	1	-	1	-	-
Autoclaves	1	-	1	-	1	-	2

* f(x) stands for a functioning equipment

\+ nonf(x) stands for a non-functioning equipment

♣ These numbers were recommended for whole hospital not only for delivery or theatre units.

δ- Recommended for each delivery room

- There were no resuscitation trays in all hospitals.

- All respondents (100%) at Amana and Mwananyamala hospitals cited shortages of equipment necessary for emergency obstetric care as one of the major factors that impeded provision of obstetric services in these facilities.

Table 6. Health providers' views on health facility-related factors for obstetric care and pregnancy outcome.

Factors	Respondents who cited the factor as a problem		
	Amana n= 10	Temeke n=10	Mwananyamala n= 9
Medical infrastructure			
.Labour Ward Poorly developed	6 (60)	8(80)	6 (67)
Inadequate capacity to handle all admissions	10 (100)	10 (100)	9 (100)
.Operating theatre inadequate to handle all obstetric emergencies	5 (50)	2 (20)	2 (22)
Health staff-related factors			
Shortage: Trained nurses in labour ward	10 (100)	10 (100)	9 (100)
Doctors allocated to dep't of OG	10 (100)	1 (10)	9 (100)
Anaesthetists	10 (100)	10 (100)	8 (89)
Lack of skills to handle life threatening obstetric emergencies	6 (60)	5 (50)	6 (67)
Lack of morale	10 (100)	10 (100)	9 (100)
Shortage of equipment necessary for emergency obstetric care	10 (100)	10 (100)	7 (78)
Shortage of supplies and drugs necessary for emergency obstetric care	8 (80)	6 (60)	6 (60)
Heavy obstetric workload (congestion of patients)	10 (100)	10 (100)	9 (100)

Essential supplies and drugs

Table 7. Availability of essential supplies and drugs in Dar es Salaam district hospitals

Supplies/drugs	Amana		Temeke		Mwananyamala	
	1	2	1	2	1	2
Intravenous fluids	x		x		x	
Giving sets	x		x		x	
Partograms	x			x	x	
Sterile gloves	x		x			x
Syringes and needles	x		x		x	
Oxytocin	x			x		x
Ergometrine	x		x			x
Antibiotics		x		x		x
Anaesthetic drugs		x		x		x

Note: 1 -always available; 2- available most of the time but not always

- Antibiotics and anaesthetic drugs were available most of the time but not always in all facilities. None of the recommended essential supplies and drugs was reported to be rarely or never available in any facility.
- More than 50% of all respondents reported that when the required intravenous fluid and antibiotics were not available, patients were compelled to buy them out of the facilities.

Human resources

- At Mwananyamala hospital there was only one medical officer, two assistant medical officers and one obstetrician allocated to the department of Obstetrics and Gynaecology out of total 17 assistant medical officers and medical officers in the whole hospital.

Table 8. Distribution of human resources in Dar es Salaam district hospitals-labour ward, theatre and blood transfusion unit

Unit/personnel	Amana	Temeke	Mwananyamala
Doctors in OG dept			
Ass. Med. Officers	4	3	2
Medical officers /GPs	0	3	1
Obstetricians	1	1	1
Labour ward			
Trained nurses	13	13	13
Theatre			
Trained nurses	7	3	8
Ass. Anaesthetists	3	2	1
Anaesthetists (AMO)	1	1	0
Blood transfusion unit			
Assist. Technicians	4	1	1
Technicians	4	3	4

- All respondents (100%) at Amana and Mwananyamala hospitals admitted that these facilities were understaffed of doctors.
- There was only one assistant anaesthetist and other two assistant anaesthetists who were working on a part time basis at Mwananyamala hospital. There were other two assistant anaesthetists at Mwananyamala hospital who were in upgrading schools somewhere during the period of study. Almost all interviewed health workers in this facility admitted that understaffing of anaesthetists was a major setback in obstetric care in this facility (see table 6).

- By extrapolation from the available trained nurses in the maternity block, each shift in all facilities had a maximum of 3 trained nurses. These nurses were required to care for patients in the antenatal ward, delivery room and postnatal ward. Shortage of trained nurses in theatres particularly at Temeke hospital was also reported to affect delivery of theatre services in these hospitals.
- There were great concerns among the respondents that *"staff shortages compromised the quality of obstetric care and that created patient safety issues".*
- All respondents in all hospitals admitted that there was lack of morale among health workers. The reasons given included lack of incentives, low wages while they were overworked, very few updating seminars, on-job training and so on.
- Over 80% of the interviewees reported that despite lack of morale, there was no passivity towards handling obstetric emergencies because of fear of being accountable in cases of maternal and foetal deaths.
- At Mwananyamala hospital 67% of all interviewees cited lack of skills in management of obstetric emergencies among doctors who were allocated to other departments but were supposed to take care of obstetric emergencies when they on call.

Measures of Obstetric Care Workload

- Due to compromised delivery space the first stage of labour took place in the antenatal wards and mothers were transferred to the delivery bed after reaching the second stage. This was a common practice in all hospitals.

Table 9. Measures of obstetric care workload in district hospital- labour wards

Indicators	Amana	Temeke	Mwanayamala
Total number of admissions/ year	13,633	18,429	*
Total deliveries including abortions/year	12,771	13,064	9360*
Total caesarean sections	374	114	145
Delivery rate (per day)	35	36	28
Total no. of delivery beds	4	3	3
Bed occupancy rate-Postnatal ward	113	255	197
Caesarean section rate	3.0	0.9	1.4
Nurse-to-patient ratio *(labour ward)***	1:7	1:7	1:6

* Missing information: Labour ward admission records from January–June and deliveries from 1st-25th January 2002.

** Labour ward here included the antenatal ward and the delivery room because labouring mothers were in both wards

- There were many floor patients in the postnatal wards at Temeke and Mwananyamala hospitals. The bed occupancy rates in these wards were as high as 255% at Temeke hospitals (*calculation based on postnatal hospital stay of 24hours, the minimum time accepted by many authorities following uncomplicated vaginal delivery*).[31,32] These rates, however, were reduced to almost half by a practice of very early postnatal hospital discharge i.e. 8 to 12 hours following uncomplicated delivery. A practice that was adopted in all hospitals.
- Caesarean section rates in all three hospitals were lower than 5%, the minimum rate accepted by the World Health Organization for a first referral health facility. The rate was as low as 0.9% at Temeke hospital.

- Based on the assumption that a maximum of two trained nurses took care of labouring mothers in the labour ward i.e. the antenatal ward and delivery room, per shift (as outlined above). The nurse-to-patient ratio was as high as 1:7 at Amana and Temeke hospitals.
- Shortage of blood products, poor socio-economic status and ignorance of most patient, and a poor referral system were also cited as factors that affected obstetric care and pregnancy outcome in these facilities.

7. DISCUSSION

Coverage of essential obstetric functions

Despite being recognized as first referral hospitals, none of these facilities provided essential obstetric functions at comprehensive level as recommended by the World Health Organization for such facilities. Theatre services and blood transfusion were severely under-utilised in all hospitals. While at Mwananyamala hospital theatre services were irregularly provided, at Amana and Temeke hospitals these services were provided only for 12 hours a day. Caesarean section rates in all hospitals ranged from 0.9% at Temeke hospital to 3% at Amana hospital. All these rates were lower than the minimum rate recommended by the World Health Organization for a first referral hospital which is 5%.[24,25] These findings were reflected by very high referral rate of obstetric emergencies that required surgical intervention. The referral rate for obstructed labour at Mwananyamala hospital was as high as 59%. Failure to provide theatre and blood

transfusion services in the first-referral facility enhances delay to institute treatment of obstetric emergencies. A delay to treat life threatening obstetric emergencies is associated with increased maternal and foetal mortalities and morbidities. Failure to offer these services at comprehensive level in these facilities could have contributed to the high maternal and foetal morbidities and mortalities at Muhimbili National Hospital – the tertiary referral facility in Dar es Salaam.

All facilities lacked appropriate premises for management of eclampsia such that none of them could accommodate two or more eclamptic patients at a time. Any patient who presented with recurrent fits while on or after starting her on Magnesium sulphate regime was referred to the tertiary facility. Lack of proper premise for management of eclampsia was one of the drawbacks in obstetric care in these facilities because eclampsia is one of the commonest causes of maternal and foetal mortalities and morbidities in this study area. Management of eclampsia in the general ward is associated with recurrence of fits due to noises and light. Recurrence of fits following management of eclampsia in the general ward could explain the high referral rates that were found among eclamptic patients in all facilities.

With regards to monitoring of labour, none of these health facilities used partogram appropriately as recommended by the World Health Organization. The reasons for inappropriate monitoring of labour were associated with shortages of staff and congestion of patients. Inadequate monitoring of labour is an indicator of poor quality of obstetric care, and it is associated with poor obstetric outcome as it was observed in this study. A proper use of partogram in monitoring of labour is associated with early

detection of complications of labour and hence a call for a timely intervention. Early detection and timely intervention of obstetric complications is the most important intervention to prevent maternal mortality and morbidity.[2]

Similar findings were reported in Benin where most public facilities that were reviewed did not provide emergency obstetric services for 24 hours.[7] Our findings, however, differed from those found in Zanzibar whereby all five surveyed hospitals had fully coverage of all essential obstetric functions for 24 hours. These included caesarean section and blood transfusion services.[33] Our findings also differed from the study done among government owned hospitals in the Midland province in Zimbabwe that reported caesarean section rate of 8%.[34] The lower caesarean section rates found in this study reflected the poor quality of obstetric care in these district hospitals. In keeping with the Ministry of Health of Tanzania recommendations, obstetric services in the first referral hospital must be available regularly and at all times convenient to the members of the community.[35] The current obstetric services output is insufficient in terms of quality and quantity and these services must be improved so as to exert any beneficial effect to the community.

Maternal outcome

In this year of study, Amana hospital had the highest maternal mortality ratio of 215 per 100,000 live births and the highest cause-specific case fatality rate i.e.12.5% which was found among eclamptic patients managed in this facility. At Temeke hospital the highest cause-specific case fatality rate was 3.7% found among patients who had puerperal sepsis. Due to poor record keeping at Mwananyamala hospital the total number of

maternal deaths and live births for the year 2002 in this hospital were not established. Prual A et al (2000) reported higher cause –specific case fatality rates in six countries in West Africa i.e. sepsis (33%) and eclampsia (18.4%). In that study it was commented that these higher case fatality rates reflected a poor quality of obstetric care. The relatively lower case fatality rates found in our study does not imply that there is good quality of obstetric care in these facilities because there were very high referral rates of obstetric emergencies. In this study it was found that most critically ill patients were referred to Muhimbili National Hospital. Although the World Health Organization recommends use of case fatality rate as an indicator that measures the quality of care provided within the facility, its accuracy is affected by several factors. For instance, the denominator being the number of obstetric emergencies managed in the facility may be affected by over or under diagnosing an obstetric emergency e.g. obstructed labour etc.

Foetal outcome

There were high stillbirth rates in all hospitals ranging from 25 – 30% for Mwananyamala and Amana hospitals respectively. Studies have shown that majority of stillbirths are avoidable. Surveys done in the state of Victoria, Australia reported that 57.9% of all stillbirths were avoidable. It was also reported that avoidable stillbirths were caused by poor quality of obstetric care that includes inadequate antenatal monitoring and intrapartum care, inadequate management of obstetric complications like maternal hypertensive complications, prolonged labour, diabetes, poor consultation in high-risk pregnancies and so on.[36,37] Though this study did not explore the possible causes or the avoidability of all these stillbirths, it would be reasonable to conclude that

the poor quality of obstetric care contributed to high stillbirth rates and early neonatal deaths in these facilities.

Underlying factors for obstetric care

Health facilities in Dar es Salaam

Taking into account that majority of deliveries in Dar es Salaam take place in public health facilities we reviewed the statistics and found that there was only one public hospital (Muhimbili National Hospital) that provided all essential obstetric functions at a comprehensive level. District hospitals suboptimally, provided surgical and blood transfusion services. Only three out of five public health centres provided basic obstetric services. The World Health Organization recommends that for every population of 500,000 people there should be at least one health facility that provides all essential obstetric functions at a comprehensive level on a 24 hour basis and at least 4 health facilities that provide the 6 basic obstetric functions.[24,25] Extrapolation from the index population in Dar es Salaam (2,497,940), based on these WHO standards there should have been at least 5 health facilities that provide all essential obstetric functions at comprehensive level and at least 20 health facilities that provide basic obstetric services in this city. These estimates reveal a very wide gap between the currently available and the expected number of health facilities in this city.

Though there were a total of 29 health facilities that provide maternal to child health services in this city, majority of them were private owned facilities. Majority of the city residents come from the low socio-economic communities and cannot afford the delivery costs in these private health facilities. Lining together with this account it was

established in this survey that the currently available public health facilities are too inadequate to cope with the rapid increase in population that has recently been observed this city. Inadequacies of public health facilities particularly those with basic obstetric services could have contributed to congestion of patients in these district hospitals.

Maternity infrastructure

Infrastructure for obstetric care in these hospitals, particularly, maternity wards i.e. delivery rooms, antenatal and postnatal wards, were grossly inadequate such that they could not cope with the number of admissions and deliveries. Though the available number of delivery beds fulfilled the requirements for a district hospital of two delivery beds, there were so many deliveries that exceeded the capacity of available delivery beds. At Temeke and Mwananyamala hospitals it was reported that due to this inadequacy of delivery beds some deliveries took place in the antenatal wards and even on the floor in the antenatal wards where labouring mothers were compelled to stay throughout the first stage of labour. These inadequacies compromised the quality of care. It should be remembered that these so-called district hospitals are municipal facilities that have bigger catchment population than even the regional hospitals (secondary referral hospitals).

The postnatal bed occupancy rates at Mwananyamala and Temeke hospitals were as high as 255% (calculation based on 24 hours the minimum maternity hospital stay accepted by majority of the authorities). This high bed occupancy rate was evidenced by high number of floor postnatal patients, which was a common finding in these two hospitals. Though the bed occupancy rate was reduced by the practice of very early

postnatal discharge of 8 –12 hours following uncomplicated vaginal delivery it was still high in the two hospitals. This practice was below the acceptable early postnatal discharge. There are various reports about the standard time of postnatal hospital stay following uncomplicated normal vaginal delivery. Majority of the authorities, however, regard any discharge before 48 hours after uncomplicated vaginal delivery as an early discharge.[31,32,38] The Ministry of Health of Tanzania recommends the optimal care of 2 days of delivery and should involve provision of important information to the mother on how to care for herself and her baby.[39] In Australia, Sweden and other developed countries the standard-length-of-stay following uncomplicated vaginal delivery is 72 hours below that is considered as early discharge.[32,40] Though this survey did not look for the adverse effects that were associated with this practice of very early postnatal discharge, studies have reported maternal and foetal adverse effects due to this practice, especially in places where there are no midwifery home care services. These adverse effects are associated with decreased time for staff to provide important information to the mother on how to care for herself and her baby, delayed diagnosis and treatment of neonatal problems, i.e. neonatal jaundice, sepsis, etc, delayed diagnosis and management of puerperal problems and increased hospital re-admission.[32,41]

It should be emphasized here that postnatal care is one of the most important components of obstetric care because approximately 60% of all maternal deaths occur in this period mostly in the first 48 hours after delivery. Though most follow antepartum and intrapartum problems others develop spontaneously following uncomplicated vaginal delivery.

Human resources

Shortage of staff was one of the major factors that affected obstetric care in all these health facilities. Shortages were encountered in almost every cadre of health providers that was assessed. Extreme shortages were found among the anaesthetists and trained nurses allocated to the maternity wards. During the period of study there was only one assistant anaesthetist at Mwananyamala hospital who was assisted by two assistant anaesthetists who were employed on a part time basis. This shortage was reflected by irregular provision of surgical procedures in this hospital. With only one assistant anaesthetist it was impossible to provide this service for 24 hours, which is a requirement for any first referral hospital. This resulted into suboptimal coverage accompanied with high referral rate of obstetric emergencies that needed surgical intervention.

Shortage of trained nurses in these labour wards was demonstrated by high nurse-to-patient ratios that were as high as 1:7 at Amana and Temeke hospitals. Though no standard nurse–to-patient ratio per specific medical unit, several institutions have recommended ratios in the delivery units. The Ministry of Health of Tanzania generally recommends a trained nurse-to-patient ratio of 1:3 per shift, but this recommendation does not distinguish units according to level of emergency care needed to patients.[27] In the United State of America, the California Nurses' Association recommends the minimal nurse staffing ratio in labour and delivery units to be one to two patients.[42] Shortages of nurses have been reported by several studies inside and outside the country including developed countries.[5,33,42,43]

Though this study did not assess the adverse effects associated with shortage of trained nurses, several studies have reported significant association between shortages of skilled nurses and patients' morbidities and mortalities.[26,44,45] The World Health Organization states that shortages of staff leads to high workload pressure and this leads to staff spending much less time on average on each activity than is set by the activity standards and this indicates that the quality of service being delivered is very much poorer than the quality of service (acceptable professional standards in the circumstances of the country) on which the activity standards are based.[46] In this study there were great concerns among the respondents that staff shortages compromised the quality of obstetric care and that created patient safety issues.

Other human factors that were reported to affect obstetric care included lack morale, job dissatisfaction and lack of skills among doctors who were not allocated to the department of Obstetrics and Gynaecology, but were required to take care of obstetric emergencies when they were on call after the normal working hours. The reasons for lack of morale and job dissatisfaction were reported to be due to high caseload, poor working environment, low salaries and lack of incentives. Similar findings were identified in Kigoma regional hospital before the strategic intervention that was launched in 1987.[5]

Equipment, drugs and supplies

Shortages of equipment, drugs and supplies necessary for obstetric care were some of the factors that affected provision of obstetric services in these facilities. Similar findings have been reported in other parts of this country.[5,33]. In the study done in

Kigoma regional hospital before launching the strategic intervention to reduce maternal mortality (1987) it was reported that apart from none availability of proper equipment most were old fashioned or outdated.[5]

Record keeping

Medical record keeping is one of the World Health Organization indicators for the quality of obstetric care. Though the Ministry of Health of Tanzania requires a hospital to have proper record keeping for patients, poor record keeping was one of the drawbacks encountered mainly at Temeke and Mwananyamala hospitals. Haphazard filing and inadequate record keeping has been reported to be a familiar problem commonly encountered in these types of studies.[37]

8. CONCLUSION

The data show that there are major constraints to the provision of essential obstetric care services in these health facilities. These constraints are evidenced by lower coverage of emergency obstetric services than the standards recommended by the World Health Organization. Suboptimal coverage of essential obstetric services in these health facilities is affected by inadequate maternity infrastructure coupled with shortages of skilled staff of almost all medical cadres, inadequacy of necessary equipment and blood transfusion. Congestion of patients, heavy staff workload, high referral rates and very early postnatal discharge were a reflection of inadequate human and material resources, and poor coverage of essential obstetric services. These results indicate a widening gap between provision of obstetric services versus the needs of the patients in this city. This

gap must be urgently bridged as a prerequisite for these obstetric services to be beneficial to this community.

9. RECOMMENDATIONS

In keeping with the major shortfalls of obstetric care found in this survey, I recommend the following strategic interventions to the local government in Dar es Salaam and Ministry of Health of Tanzania:

1. To introduce basic obstetric services in all public health centres in Dar es Salaam that, currently, do not provide these services so as to reduce the congestion of patients and consequently reduce the index high nurse to patient ratios in these first referral hospitals
2. Expansion of maternity infrastructure / premises for antenatal, labour and postnatal wards so as to cope with the rapidly growing population in Dar es Salaam
3. To strengthen the theatre and laboratory services so as to backup emergency obstetric care in these health facilities.
4. To capacitate these hospitals with adequate number of skilled personnel of all cadres including trained nurses, doctors, anaesthetists and others that are still understaffed so that the quality of services provided may reach the acceptable professional standards set by the Ministry of Health and the World Health Organization.
5. To improve record keeping in these district hospitals so as to facilitate assessment and monitoring of quality of obstetric care in these facilities.

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