

DAR ES SALAAM PERINATAL CARE STUDY: NEEDS ASSESSMENT FOR QUALITY OF CARE

Angelo S. Nyamtema¹; David P. Urassa²; Siriel Massawe³; Augustine Massawe⁴; D. Mtasiwa⁵; G. Lindmark⁶; J. van Roosmalen⁷

Abstract

Objective: Poor obstetric care in low income countries has been attributed to a wide range of factors. We conducted a perinatal care needs assessment in Dar es Salaam health institutions to assess the factors underlying the present poor perinatal outcome.

Methods: A cross sectional study was conducted in 2005 in all four public hospitals and all five public health centres purposively selected, and in six dispensaries selected using simple random sampling method. WHO Safe Motherhood needs assessment instruments were used to assess structural, systemic and process needs for quality perinatal care. Health care providers, administrators and clients were interviewed about perinatal care services in their respective health institutions.

Results: The majority (72%) of all deliveries in Dar es Salaam took place in the four available public hospitals. The potential coverage of comprehensive and basic emergency obstetric care (EmOC) services were 360% and 350% of the United Nations minimum recommended health institution categories per 500,000 population respectively. The coverage for health centres and dispensaries based on Tanzanian standards were 20% and 24% respectively. Two of the hospitals did not provide theatre and blood transfusion services for 24 hours per day. Two public health centres did not provide delivery services at all and 83% of the dispensaries had poorly established obstetric services. There was only one public neonatal unit that served as a referral institution for all sick newborns delivered in public health institutions in the region.

Conclusion: This paper reveals the state of inadequate infrastructure, equipments and supplies for perinatal care in Dar es Salaam public health institutions. A major investment is needed to establish new public infrastructure for maternal and neonatal care, upgrade and optimize use of the existing ones, and improve supply of essential material resources in order to achieve the Millennium Development Goals set for maternal and child survivals by 2015.

Key words: Perinatal care, quality of care, needs assessment, Dar es Salaam, emergency obstetric care

Background

In Tanzania, like in many other low income countries, maternal and perinatal mortality and morbidity are problems of public health importance. While the delivery rate in health institutions in Dar es Salaam has increased from 85% in 1991-92 to 90% in 2004 (1,2) the majority of births take place in the few available government-owned institutions with very high patients load at the expense of suboptimal care and poor outcome. In the year 2001, for example, in Temeke, the only municipality that had over 90% of health institutions reporting to the municipal Health Information Management System (HIMS) coordinator, only 1% of all deliveries (285 out of 27,504) took place in the non-government owned health institutions (3). The maternal mortality ratio (572/100,000 live births) in Dar es Salaam (4) together with a hospital-based perinatal mortality rate of 123/1000 births in 2003 at Muhimbili National Hospital (5) illustrate the existing poor quality of perinatal care in this area.

The determinants of maternal and perinatal deaths at the health care level are many and varied: structural, process and systemic. When applying the concept of quality assurance in a health system, the term “structure” has been used to mean the conditions under which care is provided e.g. premises, equipment, staff etc, while “process” means the activities that constitute the patient-provider interaction including diagnosis, treatment and prevention activities.

“Systemic” has been used to mean interactions of different items and activities which bring about certain results. For instance, referrals between health institutions – which can be hindered by bad roads, lack of transport or unaffordable transport, and inadequate procedures – may affect the state of patient’s illness and survival. It has been estimated that 88-98% of maternal deaths can be avoided in the circumstances of most low income countries (6). At Muhimbili National Hospital (MNH), the referral teaching hospital in Dar es Salaam region, persistently high maternal and perinatal mortality rates have been attributed to poor quality of care within the hospital as well as the surrounding hospitals that refer women to this institution (5). According to WHO recommendations a set of activities has been identified as essential for maternal and infant survival; the associated structural, systemic and process prerequisites have been listed, and are studied here.

In order to design an intervention plan that is grounded in existing gaps and root causes, a perinatal care needs assessment study was conducted in 16 health institutions in Dar es Salaam, from February to April 2005.

Methods

Study setting

The study was conducted in Dar es Salaam, the largest business city in Tanzania. The city is located along the coast of the Indian Ocean, in the east of the country. Though not recognized politically as the capital, the headquarters of the majority of the ministries, many other governmental and nongovernmental organizations as well as foreign embassies are located here. In 2002, the city had a population of 2,497,940 people with an annual growth rate of 4.3% (7).

In Dar es Salaam, there are a total of 18 hospitals, 10

Corresponding to: Angelo S. Nyamtema, P.O Box 39, Ifakara, Tanzania. E-mail: nyamtema_angelo@yahoo.co.uk

¹Tanzanian Training Centre for International Health, Ifakara, Tanzania, ²Department of Community Health, Muhimbili University of Health & Allied Sciences (MUHAS), ³Department of Obstetrics and Gynaecology, MUHAS, ⁴Department of Paediatrics and Child Health, MUHAS, Dar es Salaam, Tanzania, ⁵City Medical Office of Health, Dar es Salaam Tanzania, ⁶Department of Women’s and Children’s Health, Uppsala University, Sweden, ⁷Department of Obstetrics, Leiden University Medical Centre, The Netherlands.

health centres and 60 dispensaries (owned by the government and non-government agencies) that provide maternity services. The government health institutions in the region include Muhimbili National Hospital which is a university teaching hospital, three municipal hospitals and five health centres. There are fourteen hospitals and five health centres that are non-government owned, providing reproductive and child health (RCH) services. As in many other countries, health centres and dispensaries in Tanzania are expected to provide basic emergency obstetric care (EmOC) while hospitals should provide comprehensive EmOC services on a 24 hour basis (8). The later provides caesarean section and blood transfusion services in addition to the basic EmOC services.

Sampling and size of studied institutions

For overall data, a list of public health institutions that provide perinatal care services was made according to the level of care (9). For in-depth study, a purposive sampling method was employed to select all four public hospitals (Muhimbili National Hospital and the three municipal hospitals) and all five public health centres (although two health centres did not provide delivery services). Simple random sampling was used to select six dispensaries from a list of all public dispensaries that provided perinatal care services. The focus on government health institutions was justified, firstly because they serve the majority of the population (since maternity service is provided free of charge in Tanzania) and, secondly the problems in the most funded institutions by the government were likely to occur throughout the system. A total of 13 (21%) health institutions were involved in the full analysis, just short of the recommended 25% of the health institutions when assessing quality of care for a specific area (10-11).

Data collection

We obtained the total number of health institutions with reproductive and child health services and number of deliveries in the region from the Dar es Salaam city medical office of health and then determined the coverage of the services. The WHO Safe Motherhood needs assessment tool with its checklist was used to assess the availability of basic equipment, human resources, drugs and supplies, total number of births, caesarean sections, maternal and perinatal deaths in 2004 (12). We also used a structured questionnaire with closed- and open-ended questions from the same tool to interview 53 service providers and 16 administrators of the perinatal care units or institutions. A separate in-depth interview with the heads of institutions or maternity units was used to explore the systemic issues related to care and outcome. Exit interviews with closed- and open-ended questions were also conducted with 397 mothers attending postnatal clinics who had previously attended antenatal clinic during their last pregnancy and/or had delivered in the same institution to gather their experiences and perception with the care they had received. All data were then entered and analyzed using Epi-Info 6 software program.

Ethical clearance was obtained from Muhimbili University of Health and Allied Sciences and permission to conduct the assessment was obtained from the respective authority of the institutions. Informed consent was also obtained from all interviewees in each health institutions and all the contacted interviewees agreed to participate.

Results are presented in absolute numbers and proportions. We did not conduct inferential statistical tests due to the reliance on inclusive data for some results and on a purposive (non-random) sample for others.

Results

The total number of deliveries in Dar es Salaam region in 2004 was 71,907 of which 14,845, 25,314 and 31,748 were from Ilala, Temeke and Kinondoni municipality respectively (13). Approximately 83% (59,816/71,907) of all deliveries in Dar es Salaam region took place in the 16 examined institutions and 72% of these deliveries (51,787/71,907) took place in the four government hospitals. In the 16 studied institutions only 13% of all deliveries (8,029/59,816) took place in the dispensaries, health centres and Hindu Mandal private hospital combined. The delivery bed capacity, performance and outcome statistics in the Dar es Salaam government facilities are presented in Table 1.

Structural needs

There are 18 hospitals and 70 basic health institutions (health centres and dispensaries) in Dar es Salaam providing potential coverage of 360% comprehensive EmOC services and 350% of basic EmOC respectively based on the United Nations (UN) minimum recommended health institution categories per 500,000 population. As noted below, this potential was not well realized in practice. The coverage of hospitals, health centres and dispensaries based on standards of the Ministry of Health of Tanzania were 138%, 20% and 24% respectively (Table 2).

Among the studied institutions, two municipal hospitals did not provide theatre and blood transfusion services for 24 hours per day. Theatre services were irregularly provided at Mwananyamala hospital and were provided for only 12 hours a day at Amana hospital. Two out of five public health centres did not provide delivery services at all and the majority (83%) of the dispensaries had poorly established delivery services reporting delivery rates as low as two deliveries for a period of six months prior to the study. Even the health centres and dispensaries that offered delivery services did not perform all six functions required for a basic emergency obstetric health institution. The least performed functions included assisted vaginal delivery. Vacuum extractors were found in only two health centres and in none of the dispensaries. Forceps delivery was never performed at all. The average distance from dispensaries to the first referral institution was 21 km, taking an average of 40 minutes. Only one (7%) out of 15 public health institutions had a neonatal care unit. Women were discharged on the same day of delivery, unless they

had a problem that necessitated transfer to Muhimbili National Hospital. Basic equipment and other items required for maternal and perinatal care were available in all hospitals. On the contrary, two (40%) health centres lacked either infant weighing scales, speculums, clothes/towels to dry a baby, blankets to wrap a baby, masks, ambu bags and/or resuscitation tables.

Most of the essential drugs and consumable supplies were available in all institutions. The few supplies that were lacking in some included cord ties (found only in 50%), and intravenous kits, blank partograms and syphilis test kits that were found in 81-94% of the institutions. While antibiotics like ampicillin, benzathine benzyl penicillin or procaine benzyl penicillin and ceftriaxine, and sulfamethoxazole + trimethoprim were available in the majority (69- 88%) of the institutions, gentamycin injections were only found in 44% of them. The findings related to human resources have been reported elsewhere (14).

Process needs

Maternal and perinatal mortality audits existed only at the national hospital and both were established less than one year before the study. The other health institutions discussed maternal and perinatal care outcome variably, during routine daily or weekly clinical meetings and/or monthly health management team meetings together with other issues. The quality of the partograms used to monitor labour in this region was suboptimal and has also been reported in detail elsewhere (15).

Systemic needs

While each municipal hospital had one functioning ambulance, this was only true for one health centre. All respondent administrators argued that one ambulance at the municipal hospital cannot satisfy the referral service needs for the dispensaries and health centres that refer patients to these hospitals. Most dispensaries and health centres reported that; "even if we call for an ambulance

from the referral health institution, commonly the ambulance does not come or would be brought very late". The reasons offered included lack of fuel or the ambulance not being available or used for other purposes. Among the dispensaries, two had neither a functioning radio call nor a telephone.

There was no functioning formal networking relationship between the major stakeholders of perinatal care in the region i.e. the national hospital and municipal health institutions. The guidelines for antenatal care were found in 5 (31%) health institutions while those for intrapartum, postnatal and neonatal care were each found in one (6%) institution. Educational materials showing warning signs for the complications of pregnancy, and those for postpartum care, newborn care, breast feeding and maternal nutrition were available in less than half of the institutions. Only educational materials for family planning and sexually transmitted diseases including HIV/AIDS existed in over half of the institutions.

Patient interviews

Of all 397 interviewed women, 73% reported that they had discussed the place of birth with a health worker, 54% had discussed the benefit of birth in the health institution and what to do when there was an emergency pregnancy complication, and 49% had been advised on how to take care for the newborn. More than one third (37%) had discussed how to reach the health institution in case of emergency. Among the groups of danger signs suggested in the WHO needs assessment instruments only two (a group of hypertension/headache/swelling/fits, and that for haemorrhage/heavy bleeding) were mentioned by at least a quarter of the respondents. Although more than 94% of the women were satisfied with maternal and perinatal care, almost half of them (51% - 57%) reported that their blood pressure, abdomen and their babies were not assessed after delivery, and that they were neither taught how to care for the baby nor counselled about family planning.

Table 1: Maternity and labour ward bed capacity, performance and outcome statistics in Dar es Salaam government facilities in the year 2004.

	Health Institutions						Total
	DISP (n= 6)	HC* (n= 3)	AMN	MNY	TMK	MNH	
Bed capacity and performance							
Total maternity admissions	0	0	14,845	13,196	18,729	24,793	71,563
Number of births	413	7349	12,432	12,465	15,347	11,543	51,787
Delivery rate (per day)	1	20	34	34	42	32	142
Total maternity beds	0	45	76	36	47	246	405
Total delivery beds	6	7	4	4	3	12	47
Caesarean section rate (%)	0	0	3	3	4	32	10
Perinatal outcome							
Maternal mortality ratio	0	0	166	115	220	646 [‡]	477 [†]
Perinatal mortality rate	9	16	29	27	25	94	41

DISP = dispensaries, HC = health centres, AMN = Amana, MNV = Mwananyamala, TMK = Temeke, MNH = Muhimbili National Hospital

*Two health centres did not provide delivery services and a private hospital were excluded from this analysis, [‡] Only nurses working in the labour ward were included, [†] When including the 102 women who died at MNH having delivered elsewhere MMR was 1602/100,000 live births and the overall MMR was 852/100,000 live births[†].

Table 2. The coverage of health institutions potential for EmOC services in Dar es Salaam region (with a total population of 2,497,940 people).

Types of health institution/ standards	Set standards (health institution category per specified population)	Minimum Expected number	Actual number	Coverage (%)
<i>UN standards</i>				
Comprehensive EmOC	1/500,000	5	18*	360†
Basic EmOC	4/500,000	20	70*	350†
<i>Tanzanian standards</i>				
Hospitals	1/200,000	13	18	138
Health centres	1/50,000	50	10	20
Dispensaries	1/10,000	249	60	24

* Government and non-government owned health institutions potential for EmOC services.

† Coverage of health institutions potential for provision of EmOC services

Discussion

The United Nations process indicator for availability of EmOC services requires a minimum of one comprehensive and four basic EmOC facilities for every 500,000 population. Assuming that all 18 hospitals (public and private) in Dar es Salaam could provide comprehensive EmOC services, the coverage would be 3.6 times higher than the UN minimum recommended per 500,000 population and for basic EmOC service the coverage would be 350%. Despite such a high potential coverage for EmOC services the majority (72%) of all deliveries in Dar es Salaam took place in the four public hospitals i.e. Muhimbili National Hospital and the three municipal hospitals.

Such a skewed utilisation of maternal care casts serious doubts on the quality of care provided in these health institutions. These four public institutions were severely congested with perinatal patients that largely exceeded available infrastructure and material resources. The infrastructures for obstetric care, particularly the labour rooms, antenatal and postnatal wards at the municipal hospitals were grossly inadequate such that they could not cope with the number of admissions and deliveries. The high congestion of perinatal patients in the public health institutions despite the presence of many non-government health institutions could be explained partly by the national policy of providing delivery services free of charge. It could also be due to existing poverty among the people such that they cannot afford the costs for delivery services in the non-government owned health institutions. Such congestion of perinatal patients in the public hospitals could also be contributed by under-utilization of the available public dispensaries and two health centres that did not provide delivery services at all.

The huge differences between health service coverage using the UN versus Tanzanian set standards could be explained by the fact that the Tanzanian standard was meant for rural populations and uses both health institution per specific population and specified geographical accessibility whereas the international standard uses institutions per population without specifying geographical accessibility. In a city like Dar es Salaam within a radius of

10 kilometers the population is far more than 10,000 and 50,000 that dispensary and health centre institution are required to handle respectively, hence explaining the findings of more hospitals. On the other hand, the UN standard which is based on a regional population of at least 500,000 population can be easily achieved given the number of health institutions, the geographical accessibility can be undermined since all the institutions could be skewed towards the urban and leave the rural area unattended.

The presence of only one neonatal unit that served all public health institutions raised questions about how well this unit could provide care for all newborns in need of special care who have been delivered in Dar es Salaam. Based on the understanding that about 10-15% of newborn infants develop problems requiring special care (16), it can be estimated that more than 6000 newborns born annually in Dar es Salaam public health institutions need special care at this neonatal unit. This figure is too huge to be handled by one unit and the findings reflect the existing limitations in management of the newborns in Dar es Salaam health institutions.

Failure to provide theatre services for 24 hours in two municipal hospitals which are first-referral institutions enhances delay to institute treatment of obstetric emergencies. A delay to treat life-threatening obstetric emergencies is known to be associated with increased maternal and foetal mortalities and morbidities. Similar findings were also reported in a survey done in the same health institutions in 2003 indicating that there have been no improvements ever since (3). Lack of 24 hour perinatal services at the district hospitals is an endemic problem in low income countries (17). Lack of comprehensive services in Dar es Salaam municipal hospitals could have contributed to the high maternal and foetal morbidity and mortality at Muhimbili National Hospital, the tertiary referral institution. 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 and conveniently to the members of the community (18).

Although all health institutions had almost all basic equipment needed for perinatal care, it was noted that

some of these were not adequate. With the use of the WHO designed perinatal care needs assessment tool it was not possible to determine the adequacy of the available equipment. This finding indicates the existing limitations of the tool that must be addressed in order to optimize its use. In an earlier study in the same area also reported shortage of equipment for emergency obstetric care as one of the major factors that impeded provision of obstetric services in these institutions (3). Shortage of simple essential supplies like cord ties in 50% of the health institutions indicated the existing huge limitations to safe clean delivery. Lack of guidelines for antenatal, intrapartum, postnatal and neonatal care in most institutions (69 – 94%) was a critical observation that could have been associated with suboptimal care. Guidelines for clinical management are crucial in order to provide evidence based management and optimal care. Lack of reliable means of transport at the dispensaries and in most health centres made the link with first referral hospitals very unpredictable and unreliable, and contributed to delay in transporting emergencies. Ready availability of transport to link all levels of maternity care especially in emergencies is one of the fundamental characteristics of a well-organized system of formal maternity care (19). The problems of maintenance and lack of fuel for the ambulances at the first referral hospitals, as excuses for their unreliability, need special attention. With increasing awareness of the benefits of hospital delivery, the absence of reliable transport for referral cases could have contributed to the severe under-utilization of delivery services in these dispensaries. Telephone or radio communication to the referral centres are important items even in the presence of an ambulance and need to be in place in all the institutions in the referral chain.

Failure of the majority of the interviewed women to immediately recall most of the danger signs of complications of pregnancy indicated the low coverage of health information delivery and the gaps of knowledge. Such poor performances of the health system could be explained by shortage of staff and educational materials. In the domain of perinatal care, communication strategy is a crucial element in a national plan, as is its successful implementation by countries (20). The gaps of knowledge found in this study call for review of the reproductive health education provision from the antenatal to the postnatal period. This is important because knowledge helps to make the right decisions whenever health problems arise. There is a need to have a checklist to remind health workers when they give messages to clients during this period of time.

Conclusion:

This paper reveals the state of inadequate infrastructure, equipments and supplies for perinatal care in Dar es Salaam public health institutions. A major investment is needed to establish new public infrastructure for maternal and neonatal care, upgrade and optimize use

of the existing ones, and improve supply of essential material resources in the Dar es Salaam regional health delivery system in order to achieve the global Millennium Development Goals set for maternal and child survivals by 2015.

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