

A study of maternal mortality at the University Teaching Hospital, Lusaka, Zambia: the emergence of tuberculosis as a major non-obstetric cause of maternal death

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SUMMARY

SETTING: The Department of Obstetrics and Gynaecology, University Teaching Hospital, Lusaka, Zambia.

OBJECTIVES: To ascertain 1) the non-obstetric causes of maternal mortality, 2) the importance of tuberculosis as a cause of maternal deaths, and 3) the trends in the aetiology of non-obstetric causes of maternal deaths during the past decade in the light of the human immunodeficiency virus epidemic.

DESIGN: A 2-year retrospective study of the aetiology of all maternal deaths occurring at the University Teaching Hospital (UTH), Lusaka, Zambia between 1 January 1996 and 31 December 1997. Comparison of these data with available data published between 1974 and 1989.

RESULTS: There were 251 maternal deaths recorded during the study period. Of these, 106 (42%) were due to direct (obstetric) causes and 145 (58%) were due to indirect (non-obstetric) causes. Malaria (30%), tuberculosis (25%) and unspecified chronic respiratory tract infections (22%) accounted for 77% of non-obstetric causes of maternal deaths and 44% of all causes of

maternal deaths. The diagnosis of AIDS was closely linked with that of tuberculosis (92% of cases), and unspecified chronic respiratory illnesses (97%), but not with malaria (37%). The maternal mortality ratio for UTH was calculated at 921 per 100 000 live births, a significant increase from the 118 noted in 1982 and 667 in 1989.

CONCLUSIONS: Despite improved obstetric services, the maternal mortality ratios at UTH, Lusaka, have increased eight-fold over the past two decades. This dramatic increase is mainly due to non-obstetric causes of death. Malaria and AIDS-associated tuberculosis and unspecified 'chronic respiratory illnesses' are now major causes of maternal death in Zambia. Greater emphasis is urgently required on early detection, accurate diagnosis, treatment and prevention of malaria and tuberculosis in pregnancy. Further definition of chronic 'unspecified' respiratory illnesses is also required.

KEY WORDS: tuberculosis; malaria; Zambia; antenatal; maternal mortality; AIDS

WOMEN in sub-Saharan Africa currently have a 1 in 21 lifetime risk of dying from pregnancy-related causes, compared to 1 in 71 for Asia, 1 in 131 for Latin America and 1 in 2228 for Europe.¹ Zambia now has one of the highest maternal mortality ratios (MMR) in Africa.² In the early 1980s, before the advent of the human immunodeficiency virus (HIV) epidemic, a steady decline in maternal mortality as a result of improving obstetric services was observed. For example, studies on trends in maternal mortality in Lusaka, Zambia,³⁻⁵ led to projections that the MMR for Zambia would be less than 40 per 100 000 live births by the year 2000.⁵ Clinical observations in sub-Saharan African countries made over the past 10 years, however, indicate an ominous and worsening

situation, with dramatic increases in MMR over the past 15 years. Much of this increase is thought to be due to the rapid spread of the HIV epidemic throughout the region. Recent rural and urban serosurveys of antenatal Zambian women have shown that one in four pregnant women are infected with HIV.⁶ Despite these observations, there are no firm data on the impact of the HIV infection, and its associated complications, on maternal mortality. The absence of data on the specific aetiology of maternal deaths for most sub-Saharan African countries makes it difficult to identify and target preventable or treatable causes of such deaths.

This study was undertaken to ascertain the non-obstetric causes of maternal mortality, with particular

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reference to tuberculosis, at the University Teaching Hospital, Lusaka, Zambia over the 2-year period 1996–1997. The data are compared with those obtained from previous studies at the same hospital^{3–7} in order to determine changing trends in the aetiology of maternal mortality.

BACKGROUND AND METHODS

Description of Lusaka maternity services

The University Teaching Hospital (UTH) is the only tertiary care referral hospital in Lusaka, a city with a population of approximately 1.3 million. There were an estimated 30 000 live births in Lusaka in 1996 and 32 000 in 1997, of which 13 400 and 13 844 respectively were at UTH. The non-UTH deliveries were conducted in ten urban maternity clinics which are staffed exclusively by midwives. Apart from the normal antenatal, intra-partum and post-partum care, all complications at any stage of pregnancy, labour or puerperium are referred to UTH from these clinics. An ambulance service operates 24 hours a day for transfer of cases. All maternal deaths are entered into a 'maternal deaths' register at UTH and are reviewed at a weekly maternal mortality meeting of departmental staff.

Study period

The maternal deaths register and case notes relating to all maternal deaths at UTH were reviewed over a period of 2 years, from 1 January 1996 to 31 December 1997.

Review of case notes

The following data were extracted from the notes: 1) classification of maternal deaths ('direct' obstetric and 'indirect' non-obstetric causes), 2) the main cause(s) of maternal deaths recorded, and 3) the 'AIDS' status recorded based on clinical criteria for AIDS.

Definitions

Maternal death

The World Health Organization definition is used at UTH, i.e., death of a woman while pregnant or within 42 days after termination of pregnancy, irrespective of the duration and site of the pregnancy from any cause related to, or aggravated by, pregnancy or its management, but not from accidental or incidental causes.¹

'Direct' (obstetric) causes of death

The International Classification of Diseases (ICD) defines direct obstetric deaths as those resulting from obstetric complications of the pregnancy state (pregnancy, labour, and puerperium), from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above.¹

'Indirect' (non-obstetric) causes of death

The ICD defines non-obstetric deaths as those resulting from previous existing disease, or disease which developed during pregnancy, and which was not due to direct obstetric causes but was aggravated by physiological effects of pregnancy.

Maternal mortality ratio

The maternal mortality ratio is defined as the number of maternal deaths per 100 000 live births.

RESULTS

Between the period 1 January 1996 and 31 December 1997 there were a total of 251 maternal deaths. Of these, 106 (42%) were due to direct obstetric causes and 145 (58%) were due to non-obstetric (indirect) causes. There were 27 244 live births at UTH during the study period, giving a maternal mortality ratio of 921 per 100 000 live births.

Non-obstetric causes accounted for 145 out of a total of 251 deaths (58%); these are listed by disease in Table 1. Malaria (30%), tuberculosis (25%) and 'unspecified' chronic respiratory tract illnesses (22%) were the top three causes of indirect deaths. The diagnosis of AIDS based on clinical criteria was associated with 92% of cases with tuberculosis, 97% of cases with 'unspecified' chronic respiratory tract illnesses and 37% cases who died of malaria. Other non-obstetric causes of death are listed in Table 1.

Maternal deaths from tuberculosis have risen dramatically, from none in 1974³ and 1982,⁵ to two out of 101 deaths in 1989,⁷ to 36 out of 251 (14%) in this study (Table 2). For the years 1974, 1982 and 1989 the percentage of deaths from toxæmia declined from 25%, 20% and 12%, to 9% in this study. Deaths due to haemorrhage decreased from 15%, 10% and 7%, to 5% in this study.

Table 1 Indirect causes of maternal mortality at UTH, Lusaka for 1996–1997

Diagnosis	Total n (%)	No. with AIDS n (%)
Malaria	43 (30)	16 (37)
Tuberculosis	36 (25)	33 (92)
Unspecified chronic respiratory tract illnesses	32 (22)	31 (97)
Cryptococcal meningitis	6 (4)	6 (100)
Gastroenteritis	8 (6)	8 (100)
Kaposi's sarcoma	4 (3)	4 (100)
Others	16 (11)	4 (25)
Bacterial meningitis	4	
Septicaemia	3	
Cardio-respiratory failure	3	
Perforated appendix	1	
Guillain-Barre Syndrome	2	
Suicide	2	
Head injury	1	
Total number of non-obstetric deaths	145	102 (70)

Table 2 Trends in maternal mortality due to specific causes at UTH, Lusaka, Zambia recorded over the past two decades

Study period	1974–1976 ⁴	1982–1983 ⁵	1989 ⁶	1996–1997
Total number of deaths	80	60	101	251
MMR	160	118	667	921
Direct causes*				
Abortion	8	23	24	14
Toxaemia	25	20	12	9
Haemorrhage	15	10	7	5
Puerperal sepsis	17	15	15	8
Ruptured uterus	14	7	3	2
Others	15	5	9	4
Indirect causes*				
Malaria	0	5	13	17
Tuberculosis	0	0	2	14
Others	6	15	15	26

* % of total deaths recorded in study.
MMR = maternal mortality ratio.

Compared to data available from previous studies from Zambia, the maternal mortality ratio increased eight-fold during the past two decades: from 118 per 100 000 live births in 1982–1983⁵ to 921 in 1996–1997 seen in this study (Table 2).

DISCUSSION

In Lusaka, Zambia, there has been a rationalised and improved maternity service since the early 1980s. The urban maternity clinics now deal with a large proportion of normal pregnancies while the UTH deals with both normal pregnancies and an increasing number of high risk pregnancies. Over the past 20 years, increased antenatal care uptake and strengthened maternity services have led to a steady decline in the traditional 'direct obstetric' causes of maternal mortality (Table 2). Despite this decline, Zambia has one of the highest maternal mortality ratios in Africa: 921 per 100 000 live births compared to 961 in Tanzania,⁸ 426 in Malawi,⁹ and 320 in Mozambique.¹⁰

The incidence of maternal mortality can be assessed by either community or hospital based studies. The latter introduce selection bias since they involve only those mothers who die in hospitals. These women may differ from those dying at home with respect to causes of death, social, economic, cultural and behavioural features, and ability to access the health services. With the improved delivery of obstetric services seen in Lusaka over the past twenty years, this bias may be less of a problem. This study was performed to substantiate or refute mounting clinical impressions that this increase in maternal mortality was mainly due to 'indirect non-obstetric' causes, and was linked to the general increase in mortality of young Zambian adults seen over the past ten years due largely to the HIV epidemic. Furthermore, an increase in malaria-related deaths as part of the national increase in the number of cases of malaria was anticipated. This study confirms both these clin-

ical impressions. Our study illustrates that non-obstetric conditions are now major killers of Zambian women of reproductive age. The tragedy of the situation is that the majority of the indirect causes of maternal deaths are due to two treatable and preventable diseases, tuberculosis and malaria.

Urgent studies are required to delineate the problem further and to develop stringent management guidelines for these two diseases in pregnancy. Furthermore, 'unspecified' chronic respiratory tract illnesses are an important cause of maternal deaths, and while many of these cases are likely to be undiagnosed tuberculosis, data emerging from Central Africa indicate that *Pneumocystis carinii* pneumonia and other pathogens may also be important.^{11,12} Further studies on improved diagnostic criteria for these 'undiagnosed' chronic respiratory illnesses is required. This paper will not deal with the specific problem of malaria in pregnancy.

Among infectious diseases, tuberculosis is the world's number one killer, being responsible for 3 million deaths annually.¹³ This disease is closely associated with poverty and thus 95% of cases, and 98% of deaths due to it, occur in developing countries. It is estimated that 70% of deaths due to tuberculosis occur in the age group 15 to 40 years, which for women is the childbearing age.¹⁴ Thus about one third of deaths due to tuberculosis, around 1 million annually, occur among women of childbearing age. The gender-related epidemiology of tuberculosis infection rates and overt disease in non-HIV-infected woman has recently been extensively reviewed.¹⁵ Varied opinions have been expressed in the literature as to whether pregnancy and/or childbirth lead to progression of recent or past latent infection by *M. tuberculosis* to active tuberculosis.¹⁶ One of the reasons why the specific problems of tuberculosis and pregnancy have received little recent attention is that, in the industrialised countries, tuberculosis is relatively uncommon, and within the majority of populations it tends to affect older people. In ad-

dition, the enormous overall and rapidly growing problem of HIV-related tuberculosis in young persons has resulted in the specific problem of tuberculosis in pregnancy becoming sidelined.

HIV infection is both widespread and increasing, with an estimated 30 million persons infected worldwide in December 1997.¹⁷ Despite this, there are no data from Africa on the number of women of reproductive age co-infected with HIV and *M. tuberculosis*. It is estimated that around 50 per cent of women of child-bearing age range living in sub-Saharan Africa have been infected by *M. tuberculosis*.¹⁴ In Zambia, 25 per cent of antenatal women are infected with HIV,⁶ thus one in eight pregnant Zambian women can be assumed to be co-infected. Such co-infected persons have a high risk of developing overt tuberculosis, around 8% annually,¹⁸ but as the effect of pregnancy on this risk is unknown, the actual percentage of co-infected women who develop overt tuberculosis during pregnancy needs to be determined by epidemiological studies.

The additional burden to the pregnant woman posed by HIV co-infection with *M. tuberculosis* may seriously compromise maternal health. Infection by HIV has a deleterious effect on the course of tuberculosis, and vice versa. Thus, not only does HIV infection worsen the risk and clinical course of tuberculosis,¹⁹ but overt tuberculosis accelerates progression of disease caused by HIV-1 infection.²⁰ Several explanations have been advanced for this synergism. It is now well known that tuberculous process enhances HIV-1 replication in vivo, probably due to activation of latently HIV-infected cells by cytokines produced in tuberculous lesions, resulting in virus replication.²¹ While HIV-infection predisposes to the development of active tuberculosis in those infected by *M. tuberculosis*, the question remains as to whether pregnancy increases this risk. A study from Kenya indicated that recent pregnancy in HIV-positive women predisposed to the development of active tuberculosis;²² others, however, revealed no such association.²³

With increasing maternal mortality due to tuberculosis, there is an urgent need for attention to be paid to the specific problems posed by this disease in pregnancy. For many women in many parts of the world, pregnancy leads to an otherwise rare encounter with health services, often the first encounter. The attendances at antenatal clinic provide a unique opportunity to screen for tuberculosis and other infections. The diagnosis of tuberculosis in pregnancy, especially in those co-infected with HIV, may, however, not be straightforward, as there is a similarity between certain symptoms of tuberculosis and physiological changes in pregnancy, such as fatigue and an increased respiratory rate. Other opportunistic infections in pregnancy may mimic the classical symptoms and signs of tuberculosis, and the atypical clinical and radiological presentations of HIV-related

tuberculosis are likely to cause diagnostic difficulties.^{24,25} Guidelines for screening for tuberculosis in pregnancy are required, but little research on the user-friendliness and cost-effectiveness of the various diagnostic procedures has been conducted. Most of the literature is either outdated or only applicable to industrialised countries such as the USA.²⁶

The increasingly frequent occurrence of tuberculosis in HIV-infected pregnant women raises several key questions, including some ethically sensitive ones.²⁷ What is the aetiology of the 'unspecified' chronic respiratory illnesses diagnosed in large numbers of antenatal women? How prevalent is active tuberculosis in pregnant Zambian women? How many antenatal women develop tuberculosis in pregnancy? What proportion are misdiagnosed? How many are diagnosed late and have to receive in-patient hospital care? How many actually receive adequate medical treatment? What are the outcomes of pregnancy and maternal health in antenatal women diagnosed as having tuberculosis? (The whole issue of the effects of maternal tuberculosis and its effects on the neonate requires separate study). What are antenatal women's perceptions of contracting tuberculosis in pregnancy? What are their attitudes, anxieties and beliefs regarding the disease and its treatment? What would they want done to improve compliance in taking their medication and attending follow-up clinics? Can patient and health worker information leaflets be developed to assist in improving compliance rates? Are there opportunities for the early diagnosis of tuberculosis in antenatal women? Can appropriate training and education of antenatal health workers be provided to improve the diagnosis and management of medical conditions in pregnancy? Can politicians and donor agencies be convinced to invest more in antenatal health services? Can appropriate diagnostic, screening and surveillance methods and protocols be developed for routine use in antenatal clinics? Is the increase in maternal mortality due to tuberculosis related to the general problem of inadequacy of resources for controlling this disease?

Similar questions require answers as regards malaria in pregnancy, a subject which has been extensively studied. A reduction in the number of maternal deaths by 50% in Zambia by the year 2000 is one of the major goals stipulated in the National Programme of Action, a policy expressing the Zambian government's commitment to improving the welfare of Zambian women and children. While this objective cannot be achieved within the remaining year, studies that will provide answers to the questions posed above may well play a key role in meeting this target soon after the commencement of the third millennium.

CONCLUSION

Non-obstetric conditions are now major killers of Zambian women of reproductive age. Urgent studies

are required to delineate the problem further and to develop stringent management guidelines for these two diseases in pregnancy. Furthermore, 'unspecified' chronic respiratory tract illnesses are an important cause of maternal deaths, and while many of these cases are likely to be undiagnosed tuberculosis, further studies on improved diagnostic criteria for these 'undiagnosed' chronic respiratory illnesses is required. A large percentage of the indirect causes of maternal deaths in Zambia are now due to two treatable and preventable diseases: tuberculosis and malaria. This finding suggests that immediate action must be taken to ensure early and proper diagnosis, treatment and management of these patients.

References

- World Health Organization. Maternal mortality ratios and rates. A tabulation of available information. Geneva: WHO, 1991.
- LeBacq F, Rietsema A. High maternal mortality levels and additional risk from poor accessibility in two districts of northern province of Zambia. *Int J Epidemiol* 1997; 26: 357-363.
- Hickey M U, Kasonde J M. Maternal mortality at University Teaching Hospital, Lusaka. *Med J Zambia* 1977; 11: 74-78.
- Grech E H. Obstetric deaths in Lusaka. *Med J Zambia* 1978; 12: 45-53.
- Mhango C, Rahat R, Arkutu A. Reproductive mortality in Lusaka, Zambia, 1982-83. *Stud Fam Plann* 1986; 17: 243-251.
- Fylkesnes K, Musonda R M, Kasumba K, et al. The HIV epidemic in Zambia: socio-demographic prevalence patterns and indications of trends among childbearing women. *AIDS* 1997; 11: 339-345.
- Cerne A, Odeback A. Maternal deaths at the University Teaching Hospital, Zambia. Minor field study report. Karolinska Institute, Stockholm: IHCAR, 1989; 1: 90-91.
- McLeod J, Rhode R. Retrospective follow-up of maternal deaths and their associated risk factors in a rural district of Tanzania. *Trop Med Int Health* 1998; 3: 130-137.
- Chiphangwi J D, Zamaere T P, Graham W J, et al. Maternal mortality in the Thyolo district of southern Malawi. *East Afr Med J* 1992; 69: 675-679.
- Granja A C, Machungo F, Gomes A, Bergstrom S, Brabin B. Malaria related maternal mortality in urban Mozambique. *Ann Trop Med Parasitol* 1998; 92: 257-263.
- Russian D, Kovacs J A. *Pneumocystis carinii* in Africa: an emerging pathogen? *Lancet* 1995; 346: 1242-1243.
- Machiels G, Urban M I. *Pneumocystis carinii* as a cause of pneumonia in HIV-infected patients in Lusaka, Zambia. *Trans Roy Soc Trop Med Hyg* 1992; 86: 399-400.
- World Health Organization. The World Health Report 1998. Geneva: WHO, 1998.
- Connolly M, Nunn P. Women and tuberculosis. *World Health Statist Quart* 1996; 49: 115-119.
- Holmes C B, Hausler H, Nunn P. A review of sex differences in the epidemiology of tuberculosis. *Int J Tuberc Lung Dis* 1998; 2: 96-104.
- Miller K S, Miller J M. Tuberculosis in pregnancy: interactions, diagnosis and management. *Clin Obstet Gynecol* 1996; 39: 120-142.
- UNAIDS/WHO. Fact sheet: Report on the global HIV/AIDS epidemic, December 1997. Geneva: WHO, 1997.
- Dolin P J, Raviglione M C, Kochi A. Global tuberculosis incidence and mortality during 1990-2000. *Bull World Health Organ* 1994; 72: 213-220.
- Stoneburner R, Laroche E, Prevots R. Survival in a cohort of human immunodeficiency virus infected tuberculosis patients in New York City. *Arch Intern Med* 1992; 152: 2033-2037.
- Whalen C, Horsburgh C R, Hom D, et al. Accelerated course of human immunodeficiency virus infection after tuberculosis. *Am J Respir Crit Care Med* 1995; 151: 129-134.
- Goletti D, Weissman D, Jackson R W, et al. Effect of *Mycobacterium tuberculosis* on HIV replication: role of immune activation. *J Immunol* 1996; 157: 1271-1276.
- Gilks C F, Brindle R J, Otieno L S, et al. Extrapulmonary and disseminated tuberculosis in HIV-1-seropositive patients presenting to the acute medical services in Nairobi. *AIDS* 1990; 4: 981-985.
- Mofenson L M, Rodriguez E M, Hershov R, et al. *Mycobacterium tuberculosis* infection in pregnant and non-pregnant women infected with HIV in the woman and infants transmission study. *Arch Intern Med* 1995; 155: 1066-1072.
- Huebner R E, Castro K G. The changing face of tuberculosis. *Ann Rev Med* 1995; 46: 47-55.
- Tumba T, Mwinga A, Pobee J O M, Zumla A. Radiological features of pulmonary tuberculosis in 963 HIV-infected adults in three Central African Hospitals. *Clinical Radiology* 1997; 52: 837-841.
- Bush J J. Protocol for tuberculosis screening in pregnancy. *J Obstet Gynecol Neonatal Nurs* 1986; 15: 225-230.
- Grange J M, Ustianowski A, Zumla A. Tuberculosis and pregnancy. In: Diwan V K, Thorson A, and Winkvist A. eds. Gender and tuberculosis. Goteberg, Sweden: Nordic School of Public Health, Report 1998; 77-89.

RÉSUMÉ

CADRE : Département d'Obstétrique et de Gynécologie, Hôpital Universitaire d'Enseignement (UTH) de Lusaka en Zambie.

OBJECTIFS : S'informer sur 1) les causes non-obstétricales de mortalité maternelle, 2) l'importance de la tuberculose comme cause de décès maternel, et 3) les tendances dans l'étiologie des causes non-obstétricales de décès maternel pendant la dernière décennie, au cours de l'épidémie de VIH.

SCHÉMA : Etude rétrospective pendant deux ans sur l'étiologie de tous les décès maternels survenant à l'Hôpital Universitaire d'Enseignement de Lusaka, Zambie entre le 1^{er} janvier 1996 et le 31 décembre 1997.

Comparaison de ces données avec celles disponibles publiées entre 1974 et 1989.

RESULTATS : Pendant la période d'étude, 251 décès maternels ont été enregistrés. Parmi ceux-ci, 104 (42%) étaient dus à des causes directes obstétricales et 145 (58%) à des causes indirectes non-obstétricales : la malaria (30%), la tuberculose (25%), et les infections chroniques non spécifiées du tractus respiratoire (22%) ont rendu compte de 77% des causes non-obstétricales de décès maternel et de 44% de l'ensemble des causes de décès maternel. Le diagnostic de SIDA a été étroitement lié à celui de tuberculose (92% des cas), ainsi qu'à celui d'affections respiratoires chroniques non spécifiées (97%),

mais pas à celui de la malaria (37%). Le ratio de mortalité maternelle pour l'UTH se situe à 921 pour 100 000 naissances d'enfants vivants, une augmentation significative par rapport aux 118 notés en 1982 et aux 667 de 1989.

CONCLUSIONS : Malgré une amélioration des services obstétricaux, le ratio de mortalité maternelle à l'UTH de Lusaka a augmenté de huit fois au cours des deux dernières décennies. Cette augmentation dramatique est principalement due aux causes non-obstétricales de

décès. La malaria, la tuberculose associée au SIDA, ainsi que les 'maladies respiratoires chroniques' non spécifiées sont actuellement les causes principales de décès maternel en Zambie. Il y a lieu d'insister davantage et d'urgence sur la détection précoce, le diagnostic précis, le traitement et la prévention de la malaria et de la tuberculose au cours de la grossesse. Il est indispensable en outre de définir davantage les 'maladies respiratoires chroniques non spécifiées'.

RESUMEN

MARCO DE REFERENCIA : Departamento de Obstetricia y Ginecología, Hospital Universitario de Lusaka, Zambia.

OBJETIVOS : Determinar 1) las causas no obstétricas de la mortalidad materna, 2) la importancia de la tuberculosis como causa de muerte materna y 3) las tendencias en la etiología de las causas de muertes maternas durante la última década en relación con la epidemia del virus de la inmunodeficiencia humana (VIH).

MÉTODO : Un estudio retrospectivo de la etiología de todas las muertes maternas ocurridas en el Hospital Universitario (UTH) de Lusaka, Zambia, entre el 1 de enero de 1996 y el 31 de diciembre de 1997. Se compararon estos datos con los datos accesibles publicados entre 1974 y 1989.

RESULTADOS : En el período del estudio hubo 251 muertes maternas. De ellas, 106 (42%) fueron debidas a causas obstétricas directas y 145 (58%) a causas indirectas (no obstétricas). La malaria (30%), la tuberculosis (25%) y las infecciones respiratorias crónicas no específicas (22%) representaron el 77% de las causas no obstétricas de muertes maternas y el 44% de todas las

causas de muertes maternas. El diagnóstico de SIDA estuvo únicamente ligado con el de la tuberculosis (92% de los casos) y con el de las enfermedades respiratorias no específicas (97%), pero no con el de la malaria (37%). La relación de mortalidad para el UTH se calculó en 921 por 100 000 nacidos vivos, un aumento significativo frente a los 118 anotados en 1982 y a los 667 de 1989.

CONCLUSIONES : A pesar de los servicios obstétricos mejorados, las relaciones de la mortalidad materna en el UTH, Lusaka, han aumentado ocho veces en las últimas dos décadas. Este aumento dramático es debido principalmente a las causas de muerte no obstétricas. La malaria, la tuberculosis asociada al SIDA y las enfermedades respiratorias crónicas no específicas son ahora las mayores causas de mortalidad materna en Zambia. Se requiere con urgencia poner énfasis en el diagnóstico temprano y seguro, en el tratamiento y en la prevención de la malaria y la tuberculosis durante el embarazo. También, es necesario aclarar la definición de enfermedades respiratorias crónicas no específicas.