

personal hygiene in the endemic areas. Health services need to be extended to areas as yet uncovered<sup>1</sup>.

Since the tribes in this community are an underprivileged minority in Thailand, they lack education and have low socioeconomic status. Consequently, they have many health problems<sup>8</sup>. We found no other study on parasitic infection in hilltribe communities but we conclude that the soil in this area of the northern region of Thailand is highly contaminated with geohelminths, indicating that control measures and education, including primary sanitation, are needed – as in other heavily contaminated region<sup>2</sup>, in order to protect the population from parasitic infection.

### Conclusion

We performed a study of soil contamination in a hilltribe village, Thailand. We found a 66.67% parasite contamination in soil. This prevalence of soil contamination is very high compared to the previous study in other areas of Thailand. Since the tribe people walk barefoot and are in constant contact with the soil during their daily life, they are at high risk of soil transmitted disease. The finding of high contamination rates correlates with the high prevalence of human infection. The study of soil contamination is a useful tool for measuring risk in an endemic area.

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## Did maternal mortality ratio increase in Malawi between 1992–1998? Review of Malawi Demographic and Health Surveys and other data sources

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**SUMMARY** Despite various programmes aimed at reducing the maternal mortality ratio (MMR) and improving reproductive health globally, and in Malawi especially, the 2000 Malawi Demographic and Health Survey (DHS) reported an MMR for Malawi as 1221 deaths per 100 000 live births. This represented an almost 80% rise from the 620 maternal deaths/100 000 live births estimated in the 1992 DHS. The possible reasons behind the rise in the MMR include: the growing HIV/AIDS pandemic in Malawi with an estimated infection rate of 14%; and the deteriorating healthcare situation and inherent inaccuracies in the estimation of maternal mortality. Continued surveillance and identification of factors responsible for the deterioration of Malawi's MMR are suggested. It is necessary to design, implement and evaluate corrective measures in order to improve the situation.

### Introduction

The United Nations estimated that in 1990 alone, 585 000 women died as a result of complications directly related to childbirth<sup>1</sup> and another 15 million developed long-term disabilities<sup>2</sup>. At that time, the global maternal mortality ratio (MMR) stood at 430 deaths per 100 000 live births. Ninety-nine per cent of these deaths occurred in the developing world. The discrepancy between the developing and the developed countries with regard to the MMR is higher than any other major public health indicator<sup>3</sup>.

In 1987 the international community was exhorted to take action during and following the Safe Motherhood Conference in Nairobi, co-sponsored by the World Bank, World Health Organization, United Nations Fund for Population Activities and United Nations Development Programme. The conference called for the reduction of the global MMR by at least half by the year 2000<sup>4</sup>. This desirable goal is yet to be achieved.

In 1994 the Program for Action, adopted at the International Conference on Population and Development in Cairo, called for a 'quantifiable reduction in maternal mortality'<sup>5</sup>. It is clear that delegates to the conference were well intentioned and were united in their desire to see a reduction in the unacceptably high rates of

morbidity and mortality, particularly higher in the developing world and arising mostly from preventable causes. What is unclear, however, is whether delegates took time to consider that since the MMR is notoriously difficult to measure<sup>6</sup>, monitoring its decline can be a relatively difficult exercise. We present a case study of Malawi whose MMR may have risen by about 80% since the Cairo Conference.

### Some health and social indicators for Malawi

Malawi, is a small south-east African country which, according to the 1998 population census, has a population of about 10 million<sup>7</sup>. With an annual *per capita* income of US \$170, Malawi is one of the 10 most poorest countries in the world<sup>8,9</sup>. The economic performance of the country has been discouraging for the past 10 years<sup>10</sup>. Many social/health indicators are poor. The infant mortality and child mortality rates are 138 deaths per 1000 live births and 224 deaths per 1000 live births, respectively<sup>11</sup>. The bulk of morbidity and mortality arises from preventable causes such as diarrhoea, malaria, respiratory infections, including tuberculosis, HIV/AIDS and malnutrition. Maternal mortality, mostly arising from preventable causes such as obstetric haemorrhage, sepsis, anaemia and complications of abortions, is a major public health concern.

Up to the year 2000, the year of 'Health for All'<sup>12</sup>, the MMR had been estimated to be between 500–700 deaths per 100 000 live births<sup>8,11</sup>. Following the Demographic and Health Survey (DHS) 2000<sup>11</sup>, however, the MMR for Malawi was put at 1221 deaths per 100 000. In 2001, a hospital-based study at the country's major referral hospital (the Queen Elizabeth Central Hospital [QECH], Blantyre) reported an in-patient MMR during 1999 as 1224 deaths per 100 000 live births<sup>13</sup>. The study recorded 12 293 births among women aged 10–55 years and 146 maternal deaths. While community-based MMR estimation and hospital data are not comparable since they measure different things, the indication in the present setting is that even in tertiary level care facilities, death rates are still unacceptably high. The reasons for such a high level of in-patient deaths could be: co-morbidity with HIV which is high in the community serviced by QECH<sup>14,15</sup>; poor care (which may be due to increased utilization of services amid dwindling resources); and poor referral processes.

This 'rise' in MMR from about 620 deaths to over a 1000 deaths per 100 000 is a cause for concern for the community, healthcare workers, planners and policy makers. The question that needs to be answered is whether MMR in Malawi has indeed risen, or if other factors are involved. We attempt to discuss the possible reasons for the 'rise' and implications for healthcare.

### Maternal healthcare services

In the Malawi DHS 2000, 55% of deliveries occurred in a health facility, 44% occurred at home and 1% occurred elsewhere<sup>11</sup>. In a study of pregnant women by Lule and Mtitimila in 1992<sup>16</sup>, 90% of women attending ante-natal clinics expressed the desire to deliver at a health facility. However, only 24% actually delivered at the nearby health centre, and the remainder delivered elsewhere assisted by either a trained birth attendant (TBA) or a non-trained attendant. Obstetric outcomes did not differ between the group that delivered outside the health facility and those who delivered at health facility. The

authors indicated that the TBAs were more selective in their choice of patients and they probably insisted on referring the 'problem cases' to a health facility. Most women do, in fact, deliver without complications whether they deliver at home or at a health facility. It is the woman who has complications who benefits from prompt referral and/or adequate health facility intervention.

In another prospective study conducted in Mangochi district, Southern Malawi, approximately 72% of deliveries among women attending antenatal clinics took place outside a modern health facility<sup>17</sup>.

The realization that maternal mortality was (sometimes) occurring due to lack of transport to health facilities resulted in the introduction of bicycle ambulance programmes run along with the communities. Recent data<sup>18</sup> suggest that even the bicycle ambulances may not be entirely acceptable to the communities. Bicycle ambulances in Mangochi were used in 20% of obstetric cases while in 80% of other medical/surgical cases such as orthopaedic and cholera, patients were carried on the ambulances.

### What is maternal mortality?

In the household surveys that were used to collect data for both the 1992 and 2000 DHS, the Sisterhood Method was used<sup>19,20</sup>. Respondents are requested to list all the deaths of female siblings that occurred after 12 years of age. Information is also sought to determine if the deceased was pregnant, or in labour or within 2 months after a termination of pregnancy. The aim is to identify possible maternal deaths but primarily the time of the death. Maternal death was defined using the direct variant Sisterhood Method in both the 1992 and 2000 DHS. Although the Sisterhood Method has been used extensively, respondents to surveys may not always know whether the death of a woman in a reproductive age group was related to pregnancy or childbearing. It may also be difficult for respondents to determine whether a deceased family member was pregnant at the time of death as in some cultures, one is expected to keep knowledge of pregnancy a secret until the abdominal distension caused by the pregnancy is obvious.

The question really is which MMR for Malawi is closest to reality? The Malawi DHS 1992 reported an MMR of 620/100 000<sup>21</sup>. The Malawi DHS 2000 reported an MMR for Malawi as 1120 deaths/100 000 live births. Has the MMR for Malawi risen by almost 80% between 1992 and 2000? There was no repeat DHS between 1992 and 2000. MMR values therefore reported in the periods between 1992 and 2000 were corrections of the 1992 figure<sup>22</sup> and therefore in some cases, the 1992 figure was quoted and in other cases adjusted. Whatever factors were being considered, it would indicate that for the most part, figures for Malawi's MMR towards 2000 were likely to be grossly inadequate. It is possible that the HIV/AIDS pandemic was not given due consideration. Inaccurate data have implications for health policy and planning.

On the other hand we have struggled to establish whether it may be a problem of the data themselves and not the actual MMR. We do not currently know the truth. One thing, however, which should be clear is that it will be difficult, if not impossible, to evaluate the effectiveness of various Safe Motherhood initiatives and other reproductive health interventions in the country<sup>23</sup> as the data thus far have been unreliable. There is an initiative by the Ministry of Health to improve its health information management systems (HIMS). Problems that are being

experienced include lack of expertise, reliance on donor funding and lack of commitment by health workers.

Although knowledge about the MMR of a country is useful for programme planning, it is difficult to estimate the parameter accurately<sup>23–25</sup>. But a jump in the ratio from 620/100 000 to 1120/100 000 demands a convincing explanation. What are the possibilities then?

### The impact of HIV/AIDS

One of the reasons for Malawi's increased overall mortality and deteriorating life expectancy has been the HIV/AIDS pandemic<sup>8,14,15</sup>. The first AIDS case to be identified in Malawi was in 1985 and by 1991, 15 715 cases of AIDS had been reported. By 1993, Malawi had Africa's highest *per capita* number of cumulated AIDS cases<sup>6,7</sup>. Current estimates are that 14% of the 15–49 year age group is infected and up to 33% of women attending antenatal clinics at QECH are infected by HIV<sup>14,15</sup>. The impact of HIV on Malawi's health indicators, possibly including MMR, cannot therefore be underestimated. It has been argued that the overall mortality amongst females in Malawi has increased by 60% between 1992 and 2000, mostly due to the HIV/AIDS pandemic<sup>11</sup>, and this has affected the MMR for Malawi. As the DHS utilizes the Sisterhood Method and considers all deaths while pregnant and 2 months after termination of pregnancy, the rise in overall mortality will be reflected in the rise of maternal deaths.

As the HIV/AIDS scourge progresses and many women (and men) become infected, the proportion of pregnant women carrying the virus will increase. The deterioration of the immune status of the infected may result in increased susceptibility to sepsis. As sepsis is already a major cause of maternal deaths, the high prevalence of HIV may make the situation worse.

### Deterioration of health services

It has also been suggested that HIV/AIDS may have been a factor in the deterioration of health services in Malawi<sup>11</sup>. The explanation for this deterioration is: the decrease in the number of trained healthcare workers due to death from HIV/AIDS; increased utilization of resources for the treatment of HIV-related conditions; over working of staff resulting in the deterioration of the quality of (overall) health care. To date there has been insufficient evidence to conclude that this has affected MMR to any significant degree.

There has been increased public healthcare funding as a proportion of overall government spending in Malawi since 1995. However this funding has not matched the rising inflation or the increased requirements due to HIV/AIDS and in addition, prioritization of expenditure has been a problem. It is possible that spending on efforts to reduce maternal mortality may have been marginalized.

The increase of poverty in Malawi<sup>10,11</sup> has also been proposed as an explanation for the rise of the MMR. The exact mechanism of the link between the deteriorating general socio-economic situation and rising MMR for Malawi has not been explained fully as yet. But we know that the poor are unlikely to be properly nourished and they are unlikely to access preventative and curative services.

### Looking to the future

Over a decade and half of Safe Motherhood programmes in Malawi has not achieved the desired outcome of reducing maternal mortality to anywhere near the 1990 global average of 430 deaths/100 000 live births. Current estimates put the MMR for Malawi at over 1000 deaths per 100 000 live-births which is about twice the 1992 data. There is a need for continued surveillance and the implementation of a programme of mitigating interventions against HIV/AIDS and other factors, as yet unknown, that have affected the MMR adversely. It is also important to realize that the Sisterhood Method is useful in population surveys but like other methods, has its own limitations<sup>20,28,29</sup>.

In order to improve the quality of data regarding deaths and births, the Malawi government has launched a birth registration programme. In the DHS 2000, 19% of women and 32% of everyone surveyed knew about the birth registration programme<sup>12</sup>. There is a need for a concerted community/public awareness exercise about the programme but it is necessary to consider incentives to encourage the community to respond positively. For instance, a birth certificate could be a requirement for school enrolment, voters' registration and many other social services.

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## Case Series

### Ocular cysticercosis – a profile

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**SUMMARY** A retrospective study was conducted on all histopathologically proven cases of ocular cysticercosis spanning a decade in a tertiary referral centre of North India. The symptomatology, presentation, complications and treatment therapies of 18 of these patients are discussed. The most common age group to be affected was 11-20 years (50%), while the most common site involved was subconjunctival (78%), followed by lid (11%). Spontaneous extrusion was documented in three cases. Medical treatment with albendazole under the cover of corticosteroids was found to be a useful adjunct to surgical excision.

#### Introduction

Neurocysticercosis as a cause of convulsions was known as far back as Hippocrates and Aristotle. However, ocular cysticercosis was first documented by Schell and Sömmerring in 1829, as a live cyst floating in the anterior chamber.

Since then this entity has been documented from many countries and quite a few of these reports have been from India. Human cysticercosis occurs when man eats vegetables, food and water contaminated by eggs of *Taenia solium* tapeworm. The disease can also occur by self infection from the presence of adult worm in the intestine and rarely by reverse peristalsis of the gut<sup>1</sup>. Ocular cysticerci initiate symptoms either by their location or on inciting inflammation. The latter is often true once the cyst dies<sup>1,2</sup>.

We report our findings in a retrospective series of histopathologically proven cases of ocular cysticercosis over a 10-year period. The clinical manifestations, complications and associations along with the treatment regimen and the outcome are reviewed in detail.

#### Methods

A retrospective search of histopathological data of all specimens sent from ocular cyst excision biopsies to the pathology department of a tertiary referral hospital of North India, was performed. During the period spanning the decade of 1991-2000, 318 such cases were identified. Of these, 18 patients (6%) were histopathologically confirmed to have cysticercosis. The medical records of these 18 were retrieved and analysed. A detailed record of the epidemiological data, clinical presentation with special emphasis on the site of presentation and ocular complications if any was obtained.

#### Results

In our case series the most common age group affected with ocular cysticercosis was 11-20 years (50%), followed by 21-30 years (28%) and 1-10 years (22%). The right eye was by far more commonly involved 56% (10/18). Males and females were equally affected (50% each). In our series all patients except one were Hindus and strict vegetarians.