

Effects of the Civil War in Central Mozambique and Evaluation of the Intervention of the International Committee of the Red Cross

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Summary

In October 1994, a retrospective study of mortality of children was conducted in Maringué, a district of central Mozambique. Estimates based on maternity histories of 1503 women aged 15–60 years revealed complex changes in the under-5 death rate. During the colonial period (1955–1974), mortality declined from 373 to 270 per 1000. During the civil war period (1975–1991), mortality increased rapidly to reach a peak of 473 per 1000 in 1986. It declined again thereafter and reached a plateau of 380 in 1991. A health intervention conducted by the International Red Cross Committee since 1992 further reduced mortality to 269 per 1000 in 1994. Most of the 1992–1994 decline was attributable to vaccinations, in particular measles and tetanus immunizations, and to Vitamin A supplementation.

Introduction

Mozambique is one of the poorest countries in sub-Saharan Africa. Its demographic situation remains largely unknown, because of the poor quality of data, and of its great political instability for several decades. The country went through two major political crises: the anti-colonial struggle (1964–1975) and the civil war (1976–1992). The onset of the anti-colonial movement can be dated to the first actions of the FRELIMO (the Liberation Front of Mozambique) in September 1964. It ended with the declaration of independence in June 1975. The civil war followed almost immediately. The first armed actions of the RENAMO (National Resistance of Mozambique) started in March 1976 in Manica province. From March 1976 to October 1979, the RENAMO was particularly active in the Manica and Sofala provinces, then disappeared to the West. It came

back in 1981, and conducted guerrilla actions in most of the country from its bases in Manica and Sofala. Between 1986 and 1990, large portions of the country were under RENAMO control and were no longer accessible to humanitarian organizations. The civil war ended technically in July 1992, with the agreement on humanitarian assistance (July 17). Peace agreements were signed in Rome on October 4, 1992. The United Nations troops arrived in mid-1993. Democracy was reinstalled with the October 27–28 1994 elections.

Little is known about the dynamics of the population during the colonial period. The pioneer work of Don Heisel gave some indications, based on the analysis of the first two censuses conducted in 1940 and 1950.¹ Results were tabulated according to the three main geographical areas of the country: North, Centre and South. Data were found to be of poor quality. However, they indicated that the Centre had the highest mortality and highest fertility of the three areas. In the Centre, after adjustments to correct for data deficiencies, the crude death rate was estimated at 38 per 1000 population per year, life expectancy at 28 years and the under-5 mortality at 440 per 1000 live births in the few years before 1950. Despite their poor quality, more recent data based on the 1970 and 1980 censuses suggested a decline in mortality from 1950 to 1970, and then a rise from 1970 to 1980.^{2–4}

Modern health programmes started during the colonial period. After independence, considerable efforts were devoted by the new government to increase access and use of clinics (1979–1981), to develop the Expanded Programme on Immunization (EPI) since 1980, to train

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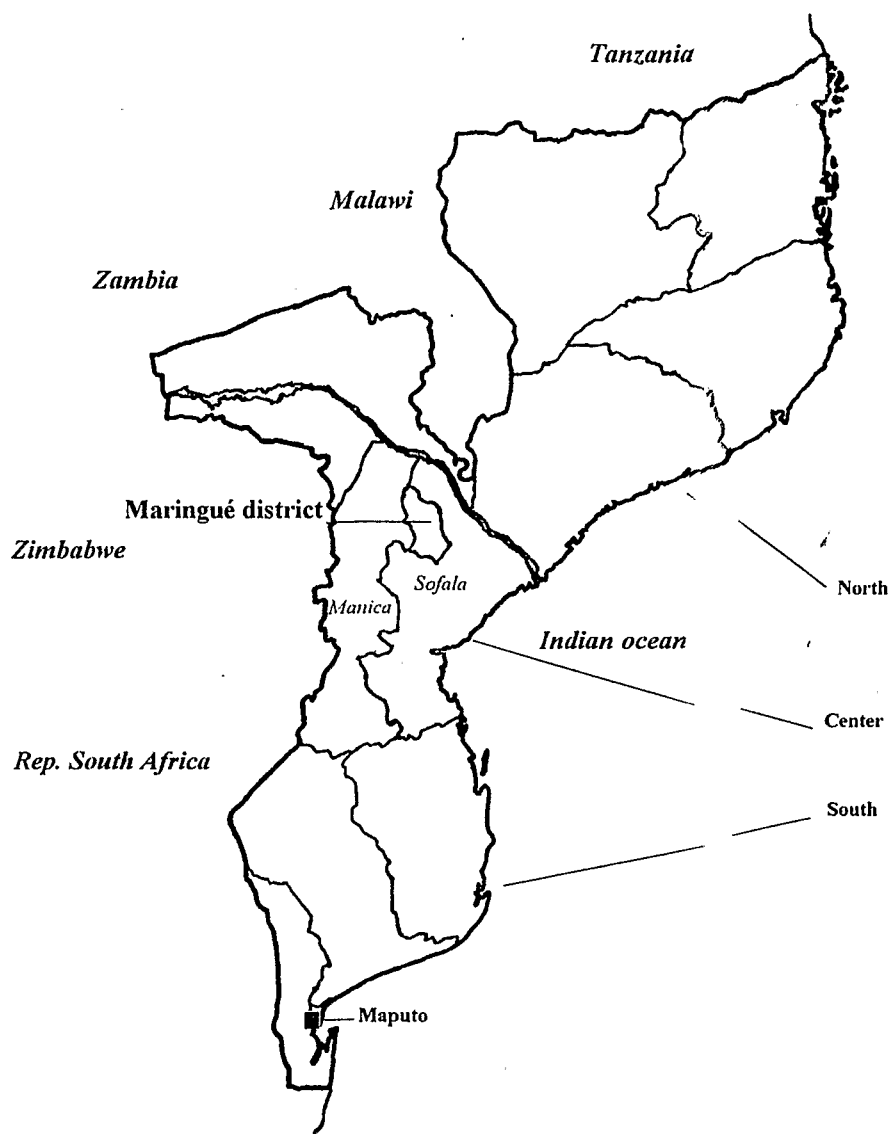


FIG. 1. Map of Mozambique and location of the study area.

midwives (1976–1982) and nurses (1983–1986).⁵ However, during the civil war, these programmes have reached only a small part of the territory, since the strategy of the RENAMO was to close and even destroy health centres and schools. For instance, 729 primary health care centres had been closed between 1982 and 1987.⁵ During the civil war, immunizations stopped in many areas. In addition to war actions, epidemics, malnutrition and famines struck most of the country, and in particular the 1983 drought had a major effect on mortality.⁶

Even before the formal signature of the peace agreement, the humanitarian organizations tried to help reorganizing the health services. An example of this action is the project conducted by the International Committee of the Red Cross (ICRC) in the Maringué district since the end of 1991. A survey was conducted in 1994 in this district, which is analysed in this paper. It was aimed at measuring trends in mortality during the war period and to evaluate the effect of the ICRC intervention on child survival.

Materials and Methods

Study area

The Maringué district is located in the Sofala province, in the central area of the country (Fig. 1), where the RENAMO had its headquarters. The population of the district was estimated by the United Nations Office for Humanitarian Assistance Coordination (UNOHAC) to be 88,500 inhabitants in October 1992.

The survey

The survey was conducted in October 1994, on a random cluster sample of women aged 15–60 years. Thirty village clusters were selected in the whole district proportionately to their population. In each cluster about 50 women were randomly selected. Altogether, 1503 women were interviewed, that is about one out of 15 women in the district. For each woman, a full maternity history was recorded, with the following information: pregnancy outcome, gender, twin status, survival status, approximate date of birth, and when applicable age at

TABLE 1
Estimates of under-5 mortality during the colonial period, Mozambique, Central region and Maringué district

Geographical area	Period	<i>q</i> (5)	
		(per 1000) ^a	Number of deaths
Central Mozambique ^b	1945-1949	440	(Large)
Maringué district	1955-1959	373	(26)
	1960-1964	350	(58)
	1965-1969	245	(98)
	1970-1974	270	(175)

^a The under-five death rate, usually noted *q*(5), is the probability of dying before the fifth birthday, per 1000 live births.

^b Source: Heisel (1968).¹

death and cause of death as perceived by the family. Data were analysed on microcomputers, using classic life table techniques. More details on the survey have been described elsewhere.⁷

ICRC interventions

Since late 1991, the ICRC team working in Maringué helped reorganizing health services, and undertook EPI vaccinations and Vitamin A supplementation. EPI vaccinations (BCG, DPT, OPV, and measles) were targeted at children from 6 months to 5 years. In addition, women aged 15 to 45 years were given tetanus toxoid (TT) immunization. In September 1994, vaccination coverage among children aged 1-5 years was estimated at 41 per cent fully vaccinated and 42 per cent partially vaccinated. Among women who had given birth over the past 12 months, 82 per cent had received at least one dose of TT, and 35 per cent had received two doses at least 15 days before delivery. Vitamin A started being distributed in 1993. It was given at first EPI contact, and then every 6 months. Children aged 1-4 years received 200,000 international units (IU) and children less than 12 months of age received 100,000 IU.

Results

Fertility

Birth histories included 6567 live births, 177 still births and 243 late abortions, spread out over the past 45 years. The quality of the data appeared to be remarkably good, despite some evidence of minor age misreporting. On the average, women had a total fertility rate (TFR) of 6.91 over the 10 years preceding the survey (1985-1994), which is a higher value than found in earlier censuses. The sex ratio at birth was 107 males for 100 females, not significantly different from 105 ($P = 0.44$). There was one twin delivery for 46 deliveries (one twin birth for 22 births), a very high rate common in Africa. Sterility was abnormally low: the proportion of women aged 35-60 years who never had a pregnancy was 0.7 per cent, which suggests that sterile women had been selected out of the sample. This result differs also markedly from previous census results, which on the contrary tended to overestimate the proportion of sterile women. However, this could not affect the quality of mortality estimates.

Child mortality

The under-five death rate was declining during the

TABLE 2
Estimates of under-5 mortality, Maringué district, Mozambique, 1975-1994

Year	<i>q</i> (5) (per 1000)	Number of deaths	Year	<i>q</i> (5) (per 1000)	Number of deaths
1975	268	(42)	1985	449	(102)
1976	285	(48)	1986	473	(115)
1977	296	(50)	1987	443	(109)
1978	262	(48)	1988	396	(100)
1979	282	(52)	1989	365	(101)
1980	316	(64)	1990	374	(109)
1981	324	(60)	1991	380	(113)
1982	352	(68)	1992	369	(110)
1983	364	(72)	1993	324	(90)
1984	406	(94)	1994	269	(83)

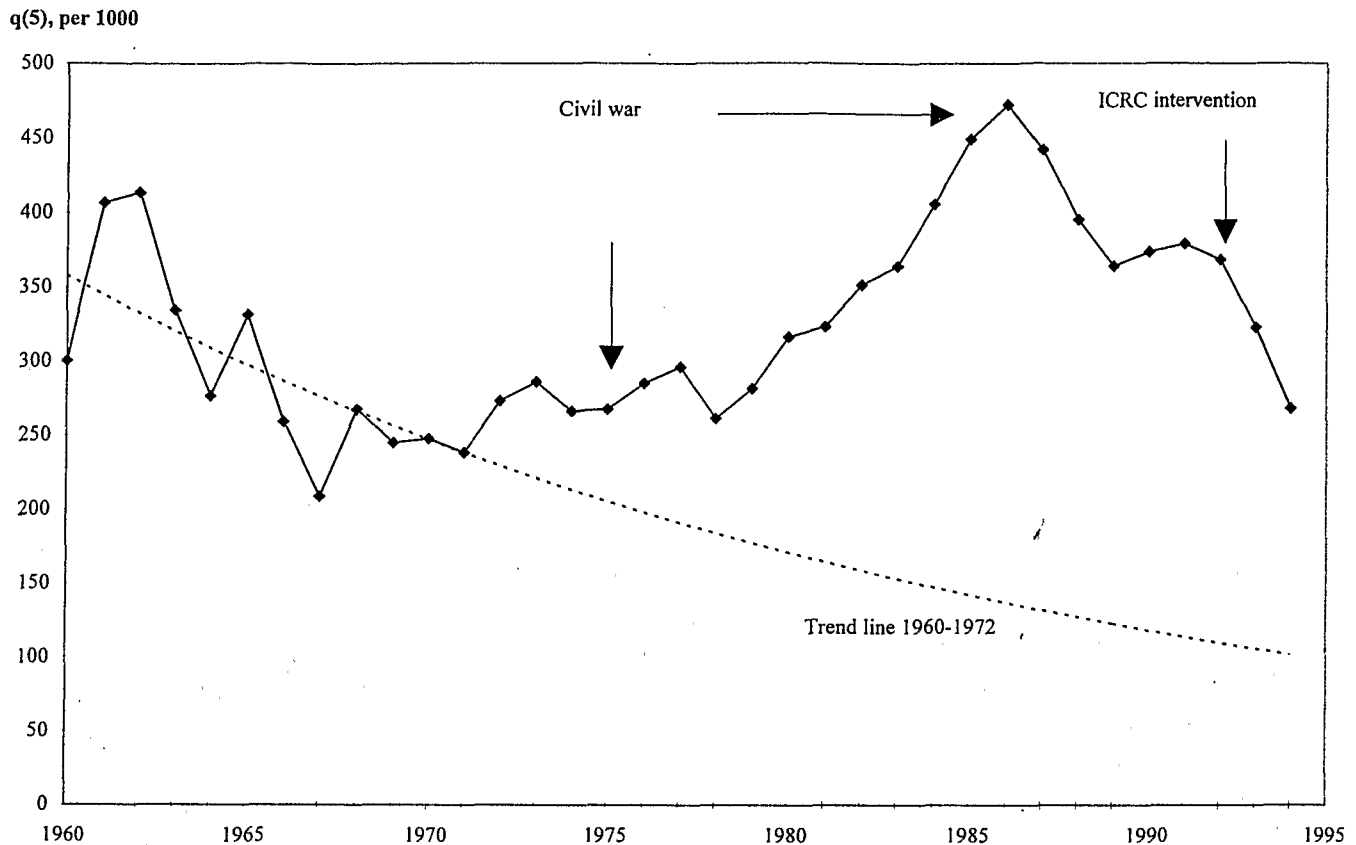


FIG. 2. Changes in under-5 mortality, Maringué district, Mozambique 1960–1994.

colonial period, and estimates derived from the survey were consistent with previous (corrected) estimates from the Central region (Table 1).

After independence (1975), the mortality of children started to increase dramatically, and culminated in 1986 to reach the highest value ever recorded in this area (473 per 1000), bringing the level of mortality back to what it was 40 years before and even higher (Table 2, Fig. 2). This dramatic increase in mortality of children reveals the terrible effect of the civil war.

After the peak of 1986, mortality went down for a few years, and reached a plateau around 373 per 1000 in years 1989–1991. Mortality, started to decline again in 1992, just after the beginning of the ICRC intervention,

and reached a relatively low value of 269 per 1000 in 1994, i.e. a mortality decline of 28 per cent in 3 years, a remarkable achievement (Fig. 2).

Causes of death

The mortality decline during the intervention period (1992–1994) was highly significant ($P = 0.017$) and could not be explained by the trends in the 3 years before 1992. It could be confirmed by the analysis of changes in mortality by cause of death. Although the information on causes of death was limited, it was considered informative for a few causes, such as diarrhoea, measles, tetanus, severe malnutrition, accident, and violence. Analysis of changes in death rates revealed that 90 per cent of the

TABLE 3
Changes in cause specific mortality from 1991 to 1994 (per 1000) Maringué district, Mozambique

Cause of death	Period mortality: $q(5)$ per 10000				Percentage mortality decline explained
	1991	1992	1993	1994	
Measles	88.2	94.7	35.6	11.8	68.6
Tetanus	27.1	13.1	11.9	11.8	13.7
Diarrhoea and dysentery	71.2	71.9	86.1	59.2	10.8
Malnutrition and anaemia	30.5	29.4	23.7	21.7	7.9
Other and unknown	162.8	160.0	166.2	163.9	-1.0
Total	379.9	369.1	323.6	268.6	100.0

TABLE 4
Distribution of major causes of death, by period, Maringué district, Mozambique

Cause of death	Period					
	<1975		1975-1991		1992-1994	
	%	n	%	n	%	n
Diarrhoea	26.0	(99)	24.9	(340)	24.2	(59)
Measles	7.9	(30)	11.3	(154)	7.4	(18)
Malaria	11.5	(44)	10.0	(137)	11.5	(28)
Tetanus	6.0	(23)	5.4	(74)	4.1	(10)
Malnutrition	7.1	(27)	8.1	(111)	7.8	(19)
Other diseases	23.6	(90)	22.5	(308)	27.0	(66)
Accident	1.8	(7)	0.8	(11)	0.8	(2)
Violence	0.5	(2)	0.6	(8)	1.2	(3)
Unknown	15.5	(59)	16.4	(225)	16.0	(39)
Total	100.0	(381)	100.0	(1368)	100.0	(244)

changes from 1991 to 1994 was attributable to a decline in mortality from measles, tetanus, and malnutrition, the target diseases of the intervention, and the remaining 10 per cent to diarrhoea, a common associate of malnutrition (Table 3). In contrast, mortality from other causes of death did not change over the same period. This showed *a posteriori* that the mortality decline could reasonably be attributed to the health intervention.

Direct and indirect effects of the civil war

Violent deaths accounted only for a small fraction of the total 2121 deaths (Table 4). Only 15 deaths of all ages were directly attributed to the war, one in 1969 (during the struggle for independence), two in 1980, 10 between 1983 and 1991, one in 1993, and one of unknown date. Most of them (12) occurred to young men aged 12-26 years. To those war deaths, one could add the 16 deaths attributed to famine. A majority (11) of famine deaths occurred during the civil war, one occurred before 1975, and four after 1991. It should be noted that these data are very likely a strong under estimation of the direct effect of civil war. Only deaths among children of surviving mothers were counted here. If the family had been exterminated or displaced (common fates during the civil war), or if the mother had been killed or died from natural cause, or was older than 60 years, the deceased person could not appear in this survey. In any case, these data show that, besides deaths directly attributable to war, mortality from infectious diseases increased dramatically during the civil war period. This gives a measure of the indirect effects of the war, which seem to have been even more important than the direct effects.

Discussion

Results from the Maringué survey indicate that very informative demographic data could be gathered at a relatively low cost and a simple survey technique. Birth

histories gathered on a sample of 1503 women aged 15-60 years were enough to reconstruct most of the child mortality changes over the past 40 years, showing the mortality decline during the colonial period, the marked increase during the civil war and the effect of the ICRC intervention. The last point is particularly relevant for developing countries, and many authors have stressed the need to evaluate the impact of health interventions.⁸⁻¹⁰

The information on causes of death gathered in this survey was limited. More information could be gathered by conducting comprehensive verbal autopsies in evaluation projects. Although time consuming, verbal autopsies have been used successfully in research settings.^{11,12} They can provide the best information possible in places where access to modern health facilities is limited and where a large proportion of deaths occur outside of hospitals. Unfortunately, their use is still rare. Their use could dramatically improve the quality and quantity of information to demonstrate the effect of either a negative situation (a crisis) or a positive improvement in mortality (a health intervention).

The mortality decline noted during the 1955-1974 period paralleled the mortality decline seen in most African countries.⁴ This is most likely a product of the development of health infrastructure, of various interventions conducted during this period, and of improving communications and living conditions. The mortality changes between 1975 and 1991 revealed the disastrous effects of political crisis on child survival. Mortality (in the non-displaced and non-exterminated population) increased by 73 per cent in 7 years, reversing 40 years of health improvements. This increase seems to be due to the systematic destruction of the health system by the RENAMO, and to the famines and undernutrition which accompanied the moves of the guerrilla movement. In the past 25 years, similar crises have been witnessed in several parts of Africa (Angola, Somalia, Sudan,

Ethiopia, Rwanda, Liberia, etc.), but their effects have seldom been documented.

Among the interventions conducted by the ICRC, the EPI programme seems to have been most successful. Together with vitamin A supplementation, it contributed to most of the 28 per cent mortality decline observed during the 3 years of the project. These effects were consistent with those found in research projects and therefore seem realistic.¹³⁻¹⁵ They show the potential of simple interventions to improve child survival in such severe conditions.

A lot remains to be done in Mozambique to improve child survival. Despite the recent improvements, the under-5 death rate in 1994 was still higher than in 1965-1969, the most favourable years so far in this district. Even by African standards, this is a high level of mortality. This is a challenge that the new authorities of the country will have to meet.

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