

An Upsurge in early childhood mortality in Kenya: A search for explanations

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SUMMARY

This study seeks to document recent trends in early childhood mortality in the country and to offer some plausible explanations for the upsurge in the trends. Data and information from various sources are used in this paper to achieve this purpose. The results obtained show that infant, child and under-five mortality rates had declined in the 1960s and 1970s but were taking an upward trend since early 1990s. This situation is attributable to a combination of factors, including increased poverty, adverse effects of economic hardships and cost recovery programs associated with structural adjustment programs, increased childhood malnutrition, decreased use of certain maternity care services, decline in the coverage of child immunisations, inability of the public health system to provide services, and the HIV/ AIDS epidemic and the recent ethnic clashes that rocked some parts of the Rift Valley, Coast, Nyanza and Western province. In order to reverse the upward trend in mortality, there is an urgent need to intensify efforts to reduce poverty, to enable most people to have adequate food supply, improve the public health sector so that it can deliver health care to all people; to make greater efforts to raise the living standards of rural populations and improve the quality of housing, sanitary and sewerage conditions in urban slums. In addition, concerted efforts must continue to be made to contain the spread of HIV/AIDS, to assist Aids orphans and to eliminate completely and to avoid recurrence of ethnic clashes and cattle rustling.

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Introduction

Since Independence in 1963, Kenya's policy initiatives and development programs have been concerned with the reduction of morbidity and mortality, particularly infant and child mortality. Consequently, an extensive public health infrastructure to provide both curative and preventive services (including family planning) has been established. Efforts have also been made to improve food security and distribution, provision of clean drinking water and adequate sanitation. Furthermore, a set of social and economic reforms intended to improve the average standards of living have been implemented since 1963 [1, 2]. Although infant and child mortality rates have declined, they are still high, and there are indications they are on the rise. This study seeks to document recent trends in early childhood mortality in the country and to

offer some plausible explanations for the upsurge in the trends. Infant and child mortality rates are considered the most sensitive indicators of a nation's health status and socio-economic development [3, 4]. Consequently, a study of infant and child mortality is relevant to various aspects of social, economic and health policy, planning and programming since high infant and child mortality rates are associated with poverty and deprivation [3, 5]. Infant and child mortality differentials can be indicative of the success of development programs undertaken to improve the well being of a given people. For example, Caldwell and Ruzicka (1985) observed that infant and child mortality differentials among strata of a given society provide an assessment of the extent of health problems and assist in identification of the most vulnerable groups [6].

Hence data on the levels and determinants of infant and child mortality are essential for planning, judicious resource allocation and implementation of development programs in any country.

Recent trends in early childhood mortality

Kenya experienced a rapid decline in mortality during the last four decades prior to 1989 [7]. Table 1 shows a considerable decline in infant and under-five mortality and improvement in life expectancy at birth between 1948 and 1989. The crude death rate was estimated at 25 deaths per 1000 population in 1948; it was 17 in 1969 and 12 deaths per 1000 population in 1979 and was estimated at about 14 in 1989. Levels of mortality in Kenya declined steadily during the four decades prior to 1989. Infant mortality declined from 194 deaths per 1000 live births in 1948 to 104 deaths in

1979 and 62 deaths in 1989. Life expectancy at birth (e_0) also increased from 34 in 1948 to 54 in 1979 and to about 60 years in 1989.

The improvement in mortality observed in Table 1 and part of Table 2 is one of the results of the improvements in the social and economic conditions coupled with the application of modern medical technology and public health measures. As indicated earlier, since Independence in 1963, Kenya has been implementing various development programs aimed at improving the average standards of living and to reduce mortality particularly infant and child mortality. These include massive investment in the education sector and the development of an extensive public health infrastructure to provide both curative and preventive services (including family planning), and provision of clean drinking water [1, 2].

Table 1: Trends in mortality in Kenya: 1948-89

Year	Infant Mortality Rate	Under-five mortality rate	Life expectation at birth (e_0) (both sex)	Crude death rate per 1000 population
1948	194	262	35	25
1962	146	211	44	20
1969	118	167	49	17
1979	84	150	54	12
1989	62	105	59	14

Source: Extracted from various census reports. The 1989 figures are from NCPD (1989).

Table 2: Recent Trends in early childhood mortality rates in Kenya: Kenya, 1974-98

Period	Infant mortality (IMR)	Child mortality (CMR)	Under- five Mortality (US)
1974-1978	64.1	44.2	105.5
1979-1983	57.6	37.8	93.1
1984-1988	59.6	31.5	89.2
1989-1993	61.7	36.7	96.1
1994-1998	73.7	40.8	111.5

Source: Compiled from the 1989 KDHS, 1993 KDHS and 1999 KDHS Country Reports published by NCPD *et al.* 1994 and 1999, respectively.

However as from 1989, early childhood mortality rates have taken an upward trend. Infant mortality rose from 59.6 for the 1984-88 periods to 61.7 in the 1989-1993 periods to 74.7 in the 1994-1999 period. Child mortality increased from 31.5 for the 1984-88 period to 46.7 during the 1989-93 period and to 40.8 in the 1994 -98 period. Similarly, the under-five mortality rose from 89.2 in the 1984-88 periods to 96.1 during the 1989-93 periods and to 111.5 in the 1994 -98 period (See Table 2).

Table 3 shows early childhood mortality rates for two ten-year periods, that is 1979-88 and 1989-

1998. It is clear from this table that early child mortality rates, in Kenya as a whole, have increased during the last decade. The increase was particularly substantial in the case of infant and under-five mortality: an increase of 12.1 and 14.3 deaths per 1000 live births respectively, over the decade. Over the same period, early child mortality declined significantly in Nairobi, Central and Coast provinces. They declined only marginally in Western province. They increased significantly in Eastern, Nyanza and Rift Valley provinces. There is no comparable data for the North Eastern province, as it was not covered in all the recent national DHS inquiries due to its sparse population.

Table 3: Recent Trends in early childhood mortality rates in Kenya by province: Kenya, 1979-98

Province	1979-1998			1989-1998		
	IMR	CMR	U5	IMR	CMR	U5
Nairobi	46.1	35.7	80.4	41.1	26.1	66.1
Central	37.4	10.0	47.0	27.3	6.3	33.1
Coast	107.3	54.5	156.0	69.8	27.9	95.8
Eastern	43.1	22.2	64.3	53.1	26.1	77.8
Nyanza	94.2	60.0	148.5	135.3	73.4	198.8
Rift Valley	34.6	16.9	50.9	50.3	18.5	67.8
Western	74.6	62.9	132.9	63.9	62.5	122.5
National	58.6	34.3	90.9	70.7	37.1	105.2

Source: Compiled from the 1989 KDHS, 1993 KDHS and 1999 KDHS Country Reports published by NCPD et al., 1989, 1994 and 1999, respectively.

Is the upsurge in mortality unique?

The vast majority of country experiences indicate that mortality has been improving steadily with only minor fluctuation. Gwatkin (1980), however, postulated that the pace of mortality decline has been steadily decelerating due to the low levels of mortality has already attained [8]. Acute crises can temporarily increase mortality rates in all age groups, as in the case of famine (Sudan, Ethiopia), war (Cambodia, Rwanda), and disaster (Turkey).

These reversals of mortality declines are usually temporary or confined to population subgroups. Nevertheless, there are instances of rising age-specific mortality rates or 'counter-transitions' as described by Frenk *et al.*, (1989) reporting on Mexican experience [9]. In the demographic literature there are a number of counter-transitions, mostly occurring in the Western World. In instance, Anderson (1955) noted that age-specific mortality rates for males over the age of 35 years in France increased by 10 to 20 per cent from 1850 to 1900.

This slow deterioration of mortality in the adult deaths was followed by more than 50 years of improvements in the adult death rates [10]. In Eastern Europe adult male death rates increased over the period 1952 to 1985 [11, 12]. From 1970 to 1985, age standardised male death rates (ages 30-69 years) did not change in uniform fashion across Eastern Europe. The changes ranged from an improvement of 3 per cent in East Germany to a worsening of 33 per cent in Hungary. For most other Eastern European countries, adult male mortality from 1952 to 1985 did not change significantly. Uemura and Pisa (1988) have shown that a significant percentage of the increase was due to a substantial increase in cardiovascular deaths [11]. The Pacific Island State of Nauru has experienced rising adult male mortality largely attributable to accidents, cardiovascular disease and diabetes mellitus [13]. Within the African continent, the AIDs pandemic is projected to significantly increase mortality in many countries [14, 15]. Thus, Kenya's upsurge in mortality is not unique.

Mortality models

To guide us in the search for explanations for the upsurge in mortality, it is instructive to briefly consider some of the major factors that led to the decline in mortality in the world in the past. The mortality decline in different countries has been divided into three distinct categories also commonly known as models of mortality decline, according to the timing and tempo of the decline and the major factors accounting for the decline [8]. The three models of mortality decline are the Western or Classic model, the Accelerated model and the Delayed or Contemporary model. The Western model seeks to describe the mortality decline in Western Europe, Australia and North America that began in the late 18th century and spanned a period of approximately 200 years. The western countries achieved a life expectancy at birth of about 70 years around the 1950s [8]. The decline was largely due to improvements in socio-economic conditions and was later accelerated by public health and medical advances and measures [16].

The Accelerated model covers the mortality decline in Eastern and Southern Europe and Japan. In these countries the mortality decline started in the 19th century and was faster than in the case of the Western model. It was propelled by sanitary and

medical advances as well as improvements in the socio-economic conditions [16]. The Delayed or Contemporary model describes the relatively recent mortality decline in most of the developing countries. The decline in mortality occurred mainly as a result of the application of imported medical technology without concomitant improvements in the material conditions of life [16]. Generally, the decline began in the early 20th century and was more rapid after the Second World War [8, 16].

However, some recent studies on mortality decline in developing countries such as Sri Lanka, Kerala State in India, Costa Rica, and China indicate that political will, ideology and organisation played an important role in the mortality transition [17]. Mortality decline in Sri Lanka, Kerala State in India, Costa Rica and China has been attributed to other factors such as commitment to health as a social goal, equitable distribution of health and other welfare services, land tenure reforms, widespread mass participation in decision-making (especially in political processes), significant improvements in female educational attainment and autonomy [17, 18, 19, 20, 21].

Some scholars, notably Gwatkin (1980), Azefer (1981) and Ruzicka and Hansluka (1982) have demonstrated and argued that there was a deceleration in the rate of mortality decline in the developing countries in the late 1960s and early 1970s [8, 22, 23]. The explanation for the deceleration lies in the relative contribution of socio-economic development and application of imported medical technologies to the mortality decline in the developing countries. It has been argued that, when mortality levels are high, health and medical interventions are effective in reducing mortality but when mortality falls to relatively low levels, economic development, education and nutrition become crucial factors in determining further mortality decline [24, 25]. The preceding discussion on the factors underlying mortality decline suggests that socio-economic factors, environmental sanitation, and medical technology act in complementary ways to improve the mortality situation in developing countries. A certain level of socio-economic development is necessary for health programs to become fully effective. There also appears to be a limit beyond which the effectiveness of health measures in

reducing mortality declines: Once that stage is reached, any further gains in mortality reduction will depend on further improvements in socio-economic conditions and positive changes in personal behaviour.

Some plausible explanations for the mortality upsurge

As previously explained, the improvement in mortality in Kenya from 1948 to 1989 was a result of the improvements in the social and economic conditions coupled with the application of modern medical technology and public health measures. These improvements included those in transport and communications that facilitated the movement of food and other necessary resources from areas of plenty to areas of scarcity and thus reduced the threat of localised famines. The first Independence decade witnessed tremendous expansion and improvement of medical care services, both curative and preventive, sanitary conditions, introduction of more efficient cash and food crops, child nutrition programmes, massive investments in the education and employment sectors. Therefore, explanations for the upsurge should lie with what has happened to these factors.

Infant mortality is a good indicator of the welfare of the people in a given society. It is a complex indicator. It includes elements of maternal health and delivery care as well as the interaction between nutrition and infection. In normal situations, high infant mortality is associated with poor or deteriorating living conditions of a given people. On the other hand low or rapidly declining mortality indicates improving material conditions (welfare) of the people. Since Independence in 1963, Kenya's economy has passed through four major phases and started its fifth phase as from 1990. In phase One (1963-1973) sometimes referred to as 'golden age', the country enjoyed low inflation, high employment creation, a relatively stable balance of payments position, and gross domestic product (GDP) growth rates estimated to have averaged 6.5 per cent per annum. Three major external shocks upset this record and characterise phase two (1974-1979). The first shock, associated with the Arab-Israeli war of 1973, was the sharp increase in oil prices, which created considerable external and internal imbalances in the country. When Brazil's coffee crop was destroyed by frost in

1976-77, Kenya experienced a second shock- arise in coffee prices-which immediately improved the balance of payments position, but subsequently created major internal imbalances as the economy failed to respond creatively to the windfall gains. The third shock was experienced in 1979, when oil prices rose again. Despite these setbacks, Kenya enjoyed GDP growth of about 5.2 per cent per annum, indicating a moderate reduction in the high momentum achieved in phase one.

By contrast, phase three (1980-185) was a period of low GDP growth, averaging about 2.5 per cent, though some years experienced negative growth. This economic decline resulted from several factors working together, including the continued high cost of oil, the global recession of 1980-1982, and poor internal economic management. In phase four (1986-1989), Kenya entered a period of structural adjustment. Beginning in late 1986, the Government implemented structural adjustment programmes in agriculture, trade and industry and began introducing cost sharing in the social sectors of health and education. External resource flows, principally from the World Bank and IMF, adequately supported these programmes and GDP recovered substantially, averaging about 5.8 per annum over the period.

In 1990 the Kenyan economy entered the fifth phase, characterised by sluggish growth reminiscent of the early 1980s: the GDP growth rate fell to 4.3 per cent. In 1991 it fell to 2.2 per cent and remained low throughout the period under review. The reform process started in 1986, though effective in terms of reducing protection and encouraging manufacturing exports, has not so far brought any meaningful improvements of the economy. In fact, the economic performance has continued its downward trend as evidenced by the decline in GDP growth rate from 4.3 per cent in 1990 to 0.5 per cent in 1992, 0.2 in 1993. Although the economy picked up a bit in 1994-95 period, it is still constrained. In 1995 it grew at the rate of 4.8 per cent but again fell to 4.6 per cent in 1996. This declining trend has developed because external resource inflows have fallen, Kenya's main exports have performed poorly in international markets, the economy has been unable to attain macro-economic balance and internal management has been poor, with policies often being implemented

inconsistently, poor rainfall and reduced agricultural output.

Since the mid 1980s, the living standards of average Kenyans have been on the decline with increasing cost of living and increased unemployment rate. Several attempts have been made to estimate the extent of poverty in the country. The results obtained from the 1981/82 Rural Household Budget Survey, the 1992 and 1994 Welfare Monitoring Surveys, (WMS), indicate that poverty in the country is quite high, pervasive and is on the increase. These surveys indicate that poverty rates the country rose from slightly below 30 per cent in the mid 1980s to over 45 per cent in 1994. For example, the 1994 WMS shows that the incidence of income absolute poverty in Kenya was about 47 per cent. In terms of actual numbers, out of the 26.4 million Kenyans in 1994, eleven and a half were absolutely poor, of which 10.3 million lived in the rural areas and 1.2 million in the urban areas. The results show that the level of poverty varied across geographic regions reaching as high as 80 per cent or more in districts such as Isiolo and Marsabit. Generally, the very poor provinces are Western, Eastern and Coast and North Eastern. Nyanza and Rift Valley are poor provinces and Central province is relatively well off. These surveys indicate that most of the poorest districts are also to be found in the poor provinces [26].

Deterioration of the poverty situation in Kenya is partly attributable to the adoption and implementation of the Structural Adjustment Programmes (SAPs) in the country and partly to a combination of other domestic and international factors such as the increases in the prices of crude oil and declines of the prices of coffee and tea in the international markets, and the worsening unemployment situation raising from liberalisation and stagnating agricultural sector, the downtrend in economic growth and rapid influx of jobseekers. SAPs were initiated and implemented in Kenya in the mid 1980s with the purpose of re-vitalising the economy towards higher rates of growth and to reduce government budget deficits.

The salient features of the SAPs are the reduction on budgetary allocations to the social sectors, mainly health and education, relating prices to market levels, liberalising trade,

adjusting exchange rates (mainly through devaluation of currency), and controlling the supply of money and credit [27, 28, 29]. These measures have adversely affected most Kenyans, particularly the poor, and have exposed them to high levels of risks in their existence. For example, Mwega and Kakubo [1993] have the following to say about the effects of SAPs on education and health sectors in Kenya:

The direct effects of structural adjustment programmes in the education sectors is reflected in massive increase in school fees and other charges, a reduction in the quality of educational programmes, and in an increase in the number of drop-outs from the school system. This skews access to education opportunities away from the poor, marginalizes them and may even worsen social inequalities. Structural adjustment measures in the health sector have also adversely affected the poor, who can hardly afford the fees needed to pay for services. The situation is aggravated by lack of drugs in government health institutions [29].

Similarly, Bwire (1994) had the following to say:

The direct impact of SAPs on education and training can be evidenced in the fee hikes and other educational costs that have led to high dropout rate especially among girls and others from poor families, and reduction in quality of education. This is likely to slow down the rapid decline in fertility that has been experienced in the recent past. SAPs also have an adverse effect on the vulnerable groups especially mothers and children who can neither afford to pay even the modest fees charged in public health institutions nor purchase drugs exorbitantly from private pharmacies. This likely to slow down or reverse the declining

mortality trend especially maternal and infant mortality [30].

The SAPs coupled with mismanagement have adversely affected the delivery of health services in the public. Almost everyday, there are articles in the local press complaining about the inability of the public health sector to provide services. In almost all the interviews that the author carried out in Central and Western provinces in 1993 [31], complaints of frequent and often prolonged shortages of drugs and medical supplies and equipment in government health institutions were raised from time to time, even by the health personnel. Most of the interviewees said that the problem of shortages of medical and lack of maintenance of medical equipment in government health institutions had become increasingly bad during the preceding five years or so with the reduction of budgetary allocation to the Ministry of Health and the introduction of cost sharing, and increase in corruption. Most of the interviewees, including health personnel, strongly believed and predicted that infant and child mortality as well as adult mortality would rise because of the inability of the public health system to provide health services, particularly maternal and child health care, and because of increasing poverty.

Agriculture is the mainstay of Kenya's economy and nearly 85 per cent of Kenya's population depend on the agricultural sector for their livelihood. In the recent past the sector has been adversely affected by mainly bad weather conditions. In 1996 there was drought in most parts of the country and most farmers suffered crop failure. However, in 1997 and part of 1998 there was a lot of rain commonly known as El Nino in most parts of the country. These caused a lot of floods; even human deaths and many crops were adversely affected. Thus, since 1996 there have been persistent crop failures, arising from bad weather conditions, in most parts of the country. These have not only contributed to increasing poverty but also have led to famine in the affected areas, such as Turkana district, where a number of people, including children, have reportedly died of hunger. Usually, women and children are the most adversely affected when famine strikes as has been in the case in most

rural parts of North Eastern, Eastern, Western, Rift Valley and Nyanza provinces.

In addition to vagaries of weather, food production has been hampered by increases in prices of inputs and lower prices as a result of market liberalisation, pursued under the Structural Adjustment Programmes. Of the food crops, maize is the primary staple and most important in terms of food security and accounts for over 80 per cent of total cereal produced in the country. For this reason, famine in the country is associated with the shortfall in its production. Total maize production declined markedly in 1984 due to drought to around 1,422 thousand metric tonnes. However, with improved rainfall in the preceding years, the production increased with relatively low variability. Between 1982 and 1992, the highest production of 2898 thousand metric tonnes was recorded in 1986 while the lowest in the drought period of 1984, 1993, 1422 and 1748 thousand tonnes, respectively.

Nutritional status of young children is a sensitive indicator of health status and nourishment levels of a population. Nutritional status gives current health status of the child in terms of immediate (acute) factors such as inadequate current food intake, childhood diseases and diarrhoea. Acute diarrhoea leads to wasting while the accumulated impact of chronic deprivation of adequate food intake leads to stunting. Since 1977 national nutrition surveys have been conducted by the Government to monitor child nutritional status in the country. Most of the surveys carried out in the 1980s indicate 34 per cent of Kenyan children age 6-60 months are moderately stunted and about 15 per cent of them severely stunted. However, in the recent past malnutrition in Kenyan children is on the rise: it is now estimated at 37 per cent from 35 per cent four years ago. This study indicates that level of malnutrition in the country is now 17 per cent higher than in developing countries. This study indicates that nutritional status of the Kenyan children has deteriorated markedly in the past five years because of the declining standards of living. In addition to being fatal itself, malnutrition makes children vulnerable to killer diseases such as malaria and diarrhoea.

Immunisation against the major childhood diseases (TB, Diphtheria, poliomyelitis, whooping

cough and measles) can greatly enhance child survival. Since the independence the Kenya government has been promoting child immunisation as part of primary health care. In the 1980s this programme was revamped and called Kenya Expanded Immunisation Programme (KEPI) and made significant progress in increasing child immunisation coverage. However, in the recent past there are strong indications that the immunisation coverage is on the decline. For example, the 1998 DHS revealed that immunisation coverage for children aged below five years against six major killer diseases, among them measles, tetanus and diphtheria, had declined significantly from an overall time high of 85 per cent in the late 1980s to 67 per cent in 1999. This means that more children would die of the preventable diseases than did a decade ago. The DHS report attributed the worsening situation to a decline in measles vaccine coverage and to an increase in the drop out rate between first and third dose of DPT and polio vaccines. Vaccination coverage has declined in all areas of Kenya, but the declined most in Nyanza province, to less than 50 per cent of the eligible children [32].

HIV/AIDS epidemic is another important factor in the reversal of the early childhood mortality in Kenya. The spread of HIV/AIDS is threatening by itself to eradicate the gains recently made in reducing infant, child and adult mortality. The direct and indirect costs of AIDS are expected to increase from 2-4 per cent of the gross domestic product (GDP) in 1991 to 15 per cent by the year 2000. The National AIDS Control Program estimates that there were 250,000-300,000 orphans in Kenya in 1994 that had lost their parents due to AIDS. It is projected that there will be 600,000 AIDS orphans by the year 2000 and one million by the year 2010. The majority of these orphans ended being forced into poverty that leaves them with no choice but to expose themselves to HIV [44]. Currently, crude estimates indicate that there are 150,000 HIV positive orphans in the country. Information on infant and child deaths due to AIDS is hard to

come by. However, indications are that they are quite high and on the increase. Increases in the mortality rates of both children and young adults have and will continue to have substantial impact on the life expectancy at birth. It is estimated that due the impact of HIV/AIDS life expectancy at birth will decrease from 58 years in mid 1995 to 53 years by the year 2010. In addition to its direct fatal effects, AIDS epidemic is causing a lot of poverty in rural areas. Ignorance about the fact that AIDS is incurable, many families exhaust their resources and some even sell their land and livestock in the search for treatment for sick relatives. Most families in rural areas seek treatment from witchdoctors, herbalists, spiritual healers and from modern medicine doctors, on discovering that their relatives are suffering from AIDS. Furthermore, as in the case of SAPs, deaths and absenteeism from work due to HIV/AIDS has adversely affected the health sector. It has been reported in the local media, that is Kenyan press, that many public health service providers have died, lost close relatives and have been affected in many different ways by the AIDS scourge. This has worsened the already ailing public health sector.

Utilisation of maternal and childcare is important for both the health and survival status of the mother and the newborn baby. Whereas the available statistics show high level of utilisation of antenatal care, the percentage of the births being delivered in health facilities under medical supervision has significantly declined over the last decade. As shown in Table 4, the percentage declined by 15.9 per cent over the decade in the whole country. The decline was greater in rural than in urban areas, greater among women with little or no education than among those with at least secondary education and among older and very young women. It occurred in all provinces except in Eastern province where it increased by 20 per cent over the decade. Among the provinces, the greatest declined occurred in Nyanza, Central and Western provinces.

Table 4: Percentage of the births that occurred five years preceding the survey that were delivered in health facilities in Kenya: 1989-98

Maternal characteristic	1989	1993	1998	Percentage change 1998 over 1989
Maternal age				
< 20	57.1	50.4	42.7	-25.2
20-34	50.6	46.5	44.0	-13.0
35+	39.9	32.7	29.0	-27.3
Type of place of residence				
Rural	45.7	40.5	36.2	-20.8
Urban	77.4	78.8	68.3	-11.6
Maternal education				
None	33.5	23.3	24.3	-27.5
Primary Incomplete	45.0	34.9	28.0	-37.8
Primary Complete	54.4	51.4	42.5	-21.9
Secondary +	78.2	72.5	71.2	-8.9
Province				
Nairobi	83.2	80.5	75.6	-19.9
Central	73.3	73.4	69.2	-30.8
Coast	40.9	32.1	33.0	-19.3
Eastern	40.8	47.4	49.0	+20.0
Nyanza	53.8	39.0	35.6	-32.0
Rift Valley	44.7	40.2	36.1	-19.2
Western	34.8	34.0	26.6	-23.6
National	50.1	45.4	42.1	-15.9

Source: Compiled from the 1989 KDHS, 1993 KDHS and 1999 KDHS Country Reports published by NCPD et al., 1989, 1994 and 1999, respectively.

Urban population has been growing rather rapidly in Kenya. It has been growing at the rate of about 7.0 per cent per year, mainly as a result of massive rural to urban migration. Like in most African countries, population growth in Kenya since Independence has exceeded increases in investment in housing, medical infrastructure, sanitation and sewerage facilities. Thus in most Kenyan towns a general deterioration of housing, sanitary and living conditions has led to the upsurge and entrenchment of many communicable

diseases and increased the menace from such epidemics as cholera and measles. Increases in the cost of living and unemployment have created slum settlements in towns such as Nairobi in which hygienic conditions have deteriorated to levels lower than those obtaining in rural areas. The prevailing low salaries and raising cost of protein-rich food render the urban poor, particularly their children, increasingly more malnourished and more susceptible to infections. The breakdown of social and cultural values regulating child birth and child care in slum

settlements in urban areas have resulted in reduced intervals between births and a correspondingly higher than expected level of infant and child mortality.

Another factor that may have contributed to the deterioration of the mortality situation in Kenya is the ethnic clashes that rocked the Rift Valley province, parts of Nyanza, Western and Coast provinces in 1992 and in 1997. Most families were displaced in the affected areas, many lives were lost and property of unknown value was destroyed causing misery and hardships to the victims, particularly women and children. In addition, ethnic clashes have the disruptive effect of reducing productivity and increasing malnutrition and famine. It creates a state of chronic sickness regularly supported by acute infections and producing high death rates. The movement of large number of internal 'refugees' across administrative boundaries retards progress in morbidity and mortality reducing programmes [22]. It should be noted that infant and child mortality has actually increased in those parts of the country where the clashes took place.

Conclusion

The results obtained in this study provide ample and plausible evidence that early childhood mortality in the country is taking an upward trend. Although the analysis of factors that could be associated with the surge is speculative and intuitive rather than statistical, the factors discussed in this paper are among the main suspects in the upward turn in the mortality trends. These include increasing absolute poverty, the inability of the public health sector to provide care to the majority of the Kenyans, increasing childhood malnutrition, decreasing utilisation of ante natal care, deterioration of the living conditions for the majority of urban dwellers, adverse effects of the spread of HIV/AIDS; the recent ethnic clashes, and the endemic cattle rustling in the pastoral areas.

In order to reverse the upward trend in mortality there is an urgent need to intensify efforts to reduce poverty, to enable most people to have adequate food supply, improve the public health sector so that it can deliver health care to all people; to make greater efforts to raise the living standards of rural populations and improve

the quality of housing, sanitary and sewerage conditions in urban slums. In addition, concerted efforts must continue to be made to contain the spread of HIV/AIDS, to assist Aids orphans and afflicted families and to eliminate completely ethnic clashes and cattle rustling.

In the meanwhile, research efforts into the actual causes, in a statistical sense, of the upward trends in mortality should be encouraged. In these efforts both qualitative and quantitative investigative methods should be used in order to provide a comprehensive understanding of the real factors responsible for the situation.

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