HIV and Health - Child mortality (IMR & U5MR)

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Definition

The Infant Mortality Rate (IMR) is defined as the probability of dying within the first year of life. The IMR refers to the number of babies under 12 months old who die in a year, per 1000 live births during the same year.

The Under-five mortality rate (U5MR) is defined as the probability of dying between birth and before the fifth birthday. It is an overall measure of child mortality that usually encompasses the probability of dying during infancy, between ages 1-4 years and overall before the 5th birthday. The U5MR refers to the number of children under five years old who die in a year, per 1000 live births in the same year.

PROVINCE	INFANT MORTALITY RATE BY PROVINCE 1988-1997 (rates for 10-year period)	UNDER-FIVE MORTALITY, BY PROVINCE 1988-1997 (rates for 10-year period)
	N / 1000	
Eastern Cape	61	81
Free State	53	72
Gauteng	36	45
KwaZulu-Natal	52	75
Limpopo	37	52
Mpumalanga	47	64
North West	42	56
Northern Cape	42	56
Western Cape	30	39
South Africa	**45**	**59**

Source Department of Health. 1998. South African Demographic and Health Survey 1998. Pretoria: Department of Health.

Notes

1. The national infant mortality rate is given for the five-year period (1993-mid 98) preceding the SA Demographic and Health Survey. Due to small numbers, disaggregated data (by province, population group and sex) is given for the ten-year period (1988-1997) preceding the SADHS of 1998.
2. Rates for three provinces (Western Cape, Free State and North West) were adjusted on the basis of the relationship between SADHS and the 1996 census data observed in the remaining provinces.
3. In the population group delineation, the figure for "whites" is based on less than 500 cases and should be treated with caution. Results for the "Asian" group were suppressed in the SADHS report because they were based on less than 250 and could not be regarded as reliable.

What do the numbers tell us?

South Africa relies on survey data to measure infant and child mortality because the vital registration and health information systems are not adequate for this purpose. The last empirical estimates of childhood mortality thought to be reliable were collected from the 1998 South African Demographic and Health Survey. The quality of the 2001 Census and the 2003 South African Demographic and Health Survey data were compromised to such an extent that it was not possible to derive a plausible trend consistent with the estimates from the previous enquiries. South Africa urgently needs nationally representative information that will inform provincial and population group child mortality indices. In the meantime, the Centre for Actuarial Research at the University of Cape Town is revising its ASSA model which, once finalised, will play a role in monitoring infant and child mortality trends.

Infant and under-five mortality rates are the most widely used indicators of health status and socio-economic development because they reflect not only child mortality levels but also the health status of the broader population. The infant mortality rate (IMR) is defined as the probability of dying within the first year of life and refers to the number of babies under 12 months old who die in a year, per 1,000 live births during the same year. In 1998 the IMR was 63 deaths per 1000 live births.

Most infant deaths are concentrated in the first week or month of life, and the IMR is therefore often broken down into three mortality rates: the Early, Late and Post-Neonatal Mortality Rates.
Early neonatal mortality refers to deaths that occur during the first 6 days of life (under 1 week). All child mortality rates are calculated excluding the still births from the denominator. (The perinatal mortality rate, which includes stillbirths, is therefore excluded from the IMR.)
Late Neonatal mortality refers to deaths that occur during the first 28 days of life (within the first month) and Post-Neonatal mortality refers to deaths between 4 and 52 weeks (1-11 months).

The under-five mortality rate (U5MR) is defined as the probability of dying between birth and the fifth birthday. It is an overall measure of child mortality that encompasses the probability of dying during infancy and before the fifth birthday. The U5MR refers to the number of children under five years old who die in a year, per 1,000 live births in the same year. It was measured at 87 deaths per 1,000 live births in the 1998 South African Demographic and Health Survey.

A child's growth and development are heavily dependent on the living conditions of the family, and on the services and resources in the surrounding community. These conditions generate the biological risk factors that act directly on the child's health through the occurrence of disease and its prognosis, of which death is the most extreme outcome. The infant and under-five mortality rates in developing countries are therefore associated with a broad range of bio-demographic, health and related social factors. These include maternal and child health care services such the number of antenatal care visits; maternal nutrition status, breast-feeding and infant feeding; environmental health factors such as safe drinking water and hygiene and sanitation provision in households; socio-economic factors such as women's education and available energy sources for cooking and heating; social security and protection. The IMR and U5MR as indicators of health and overall societal development are therefore intrinsically linked to the right to a healthy and safe childhood.

Reducing child mortality is one of the eight Millennium Development Goals (MGDs) for reducing poverty and inequality in the world. The target for MDG 4 is to reduce under-five mortality by two-thirds between 1990 and 2015. However measuring this indicator and monitoring progress towards this goal is proving a challenge for South Africa and other developing countries.

The most reliable estimates of child mortality in South Africa are for the mid-1990s – and in 2010 are extremely out of date. The trend in the age pattern of child mortality, illustrated in figure x, shows a substantial drop in child mortality during the 1980s. But mortality rates started to rise from 1992, when infant mortality was about 32 per 1,000 live births, and have increased to about 63 per 1,000 live births in 1998.

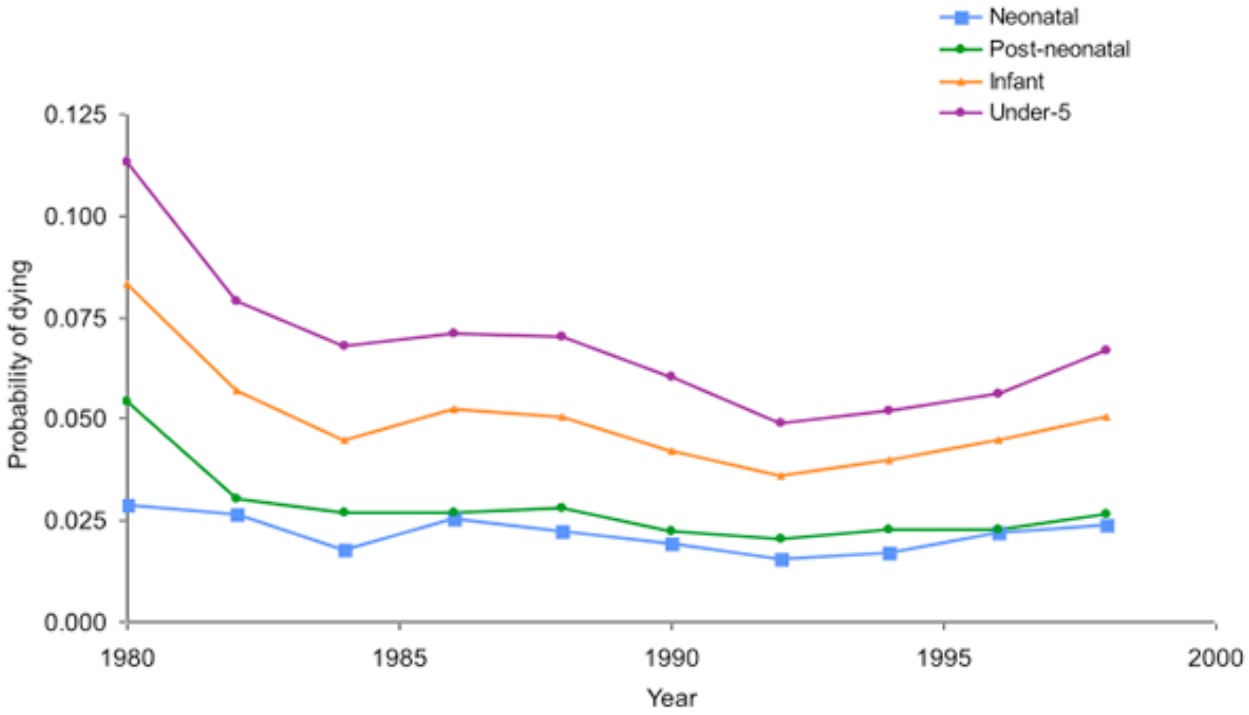

Figure 1: Age pattern of child mortality trends in South Africa, 1980-1998 using 1998 South Africa Demographic and Health Survey. [1])

South Africa is one of the few countries in the world that has experienced an increase in infant mortality over this period. Over the same period (1992 – 1998) the HIV-prevalence rate in pregnant women increased from 7.6% to 22.8%. Given the limited treatment available to HIV-positive women during pregnancy during the 1990s, most of the actual rise in infant mortality can be attributed to AIDS.

South Africa's infant mortality has for decades been characterised by inequalities based on population group, urban/rural residence, province and socio-economic status. Estimates for the period 1988 – 1997 highlight perverse provincial and racial inequalities. This indicates a need to investigate and monitor inequalities in health status and socio-economic conditions. In light of the aggressive HIV pandemic that South Africa has experienced the IMR takes on new meaning and importance in assessing the impact of vertical transmission and PMTCT programmes.

Technical notes

The vital registration system and the Health Information System in South Africa remain inadequate for monitoring levels of and trends in infant and child mortality. South Africa is therefore reliant on survey data in this regard. The most reliable estimates of childhood mortality are collected from Demographic and Health Surveys (DHS), conducted every five years.

Demographic and Health Surveys are considered a 'gold standard' for measuring child mortality in developing countries 2. The last reliable empirical estimates come from the 1998 DHS. The failure of the 2001 census and the 2003 DHS to collect the information necessary for the calculation of childhood mortality rates, renders these estimates in 2009 severely outdated.

Strengths and limitations of the data

The last reliable empirical estimates come from the 1998 DHS. The failure of the 2001 census and the 2003 DHS to collect the information necessary for the calculation of childhood mortality rates, renders these estimates in 2009 severely outdated.

References and related links

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