Helpdesk Report: Under Five Mortality Ethiopia
Date: 7th October 2011

Query: How does the rate of reduction of under five mortality from the DHS results in Ethiopia compare with the rates in other countries? What comparisons can be made to the rate of reduction that was made in the UK?

Enquirer: DFID Ethiopia

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1. Overview

The 2006-2010 percentage decrease in under 5 mortality in Ethiopia is significant and among the greatest declines found in this brief search. However, there is some evidence that the percentage decrease may be less than the DHS reports and also some evidence that there was a greater percentage decrease between 2000 and 2005. There have also been greater percentage decreases in other African countries over a similar period. These include Kenya, Tanzania and Egypt.

The UK decrease in under 5 mortality was 8% between 2005 and 2009 so the percentage decrease was lower. There was a 40% decrease in under 5 mortality between 1990 and 2009. Historically, the UK took longer to make progress in lowering mortality rates in terms of the percentage decrease. It took around 20 years during the 18th and 19th centuries to make the same progress as is possible in 5 years in many developing countries in this century.

<table>
<thead>
<tr>
<th>Country</th>
<th>Baseline (per 1000)</th>
<th>Most Recent Data (per 1000)</th>
<th>Percentage Decrease</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>121.9 (2005)</td>
<td>104.4 (2009)</td>
<td>14%</td>
<td>World Bank, DHS, BUCEN (US), UNICEF</td>
</tr>
<tr>
<td>Historical Data</td>
<td>174 (2000)</td>
<td>121.9 (2005)</td>
<td>30%</td>
<td>UNICEF, DHS, DHS</td>
</tr>
<tr>
<td></td>
<td>165 (1991-5)</td>
<td>141 (1996-)</td>
<td>15%</td>
<td></td>
</tr>
</tbody>
</table>

This list is not definitive. It is a sample of countries and regions.
<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Infant Mortality Rates to compare progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>130 (1881) 109 (1909)</td>
</tr>
<tr>
<td>1885</td>
<td>138 (1885) 108 (1913)</td>
</tr>
</tbody>
</table>

Infant mortality and childhood mortality have fallen most dramatically during the last 100 years. Childhood mortality rates were nearly 50 times
higher in males and 65 times higher in females at the beginning of the 20th century.

**Notes**

Percentage decrease in under 5 mortality

\[ \left( \frac{\text{Number at later time}}{\text{Number at earlier time}} \right) - 1 \times 100 \]

* Percentages highlighted in blue indicate percentage decreases 28% and over

**Under 5 Mortality Rate (these graphs can be produced for any country combinations)**

- Sudan
- Tanzania
- Ethiopia
- Kenya
- United Kingdom

[Graphs can be found at:](http://www.google.co.uk/publicdata/explore?ds=d5ncppjof8f9_&ctype=l&strail=false&nselm=h&met_y=sh_dyn_mort&hl=en&dl=en#ctype=l&strail=false&nselm=h&met_y=sh_dyn_mort&scale_y=lin&ind_y=false&rdim=country&idim=country:ETH:GBR:SDN:KEN:TZA&ifdim=country&hl=en&dl=en)

- Niger
- Malawi
- Ethiopia
- Egypt, Arab Rep.
- United Kingdom

[Graphs can be found at:](http://www.google.co.uk/publicdata/explore?ds=d5ncppjof8f9_&ctype=l&strail=false&nselm=h&met_y=sh_dyn_mort&hl=en&dl=en#ctype=l&strail=false&nselm=h&met_y=sh_dyn_mort&scale_y=lin&ind_y=false&rdim=country&idim=country:ETH:MWI:NER:EGY:GBR&ifdim=country&hl=en&dl=en)
2. Under 5 Mortality in Ethiopia

DHS survey

For the five years immediately preceding the survey (corresponding roughly to 2006–2010): the overall under-5 mortality rate is 88 deaths per 1,000 live births. Sixty-seven percent of all deaths to children under-five in Ethiopia take place before a child’s first birthday. The 2011 EDHS shows a rapid decrease in infant and under-five mortality during the five years prior to the survey compared to the period 5-9 years prior. The levels are also considerably lower than those reported in the 2005 EDHS. For example, infant mortality has decreased by 23 percent, from 77 to 59 deaths per 1,000 births, while under-five mortality has decreased by 28 percent, from 123 to 88 per 1,000 births.

<table>
<thead>
<tr>
<th>Years preceding the survey</th>
<th>Neonatal mortality (NN)</th>
<th>Post-neonatal mortality (PNN)</th>
<th>Infant mortality (1q0)</th>
<th>Child mortality (4q1)</th>
<th>Under-five mortality (5q0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>37</td>
<td>22</td>
<td>59</td>
<td>31</td>
<td>88</td>
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<tr>
<td>5-9</td>
<td>48</td>
<td>40</td>
<td>88</td>
<td>49</td>
<td>133</td>
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<tr>
<td>10-14</td>
<td>54</td>
<td>47</td>
<td>101</td>
<td>72</td>
<td>166</td>
</tr>
</tbody>
</table>

1 Computed as the difference between the infant and neonatal mortality rates

Ethiopia 2010 MDGs Report, MoFED

The under-five mortality rate has decreased to 123/1,000 in 2005/06 from 167/1,000 in 2001/02 and the infant mortality rate has declined to 77 per 1,000 live births in 2004/05 from 97 per 1,000 live births in 2001/02. In 2009/10 the under five mortality rates and infant mortality rates decreased to 101/1000 and to 45/1000 live births, respectively. Malaria (20%),
Pneumonia (28%), Diarrheal Diseases (20%) and Newborn conditions (25%) each account for the major causes of child deaths in Ethiopia.

The improvement of children’s health is an essential component of the Health Sector Development Programme (HSDP) III that focuses on poverty related health conditions. HSDP III which ends in the middle of 2010, envisaged a reduction of the mortality rates of children under-five from 123/1,000 to 85/1,000 and the infant mortality rate from 77 to 45 per 1000 live births by 2015. This prognosis is based on an increased coverage of maternal, newborn and child health, nutrition and WASH related interventions.

Although the full immunization performance has increased significantly from 22.3% in 1999/2000 to 65.5% in 2008/09, it requires further effort. As indicated below, Ethiopia is on track to reduce child mortality by two-thirds by the year 2015.

![Graph showing infant mortality rates](Source: MoFED and MoH)

Ethiopia- USAID Report

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<tbody>
<tr>
<td>Infant Mortality Rate (BUCEN)</td>
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<tr>
<td>Under-5 Mortality Rate (BUCEN)</td>
<td>147.1</td>
<td>157.6</td>
<td>133.1</td>
<td>129.4</td>
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<tr>
<td>Under-5 Mortality Rate (UNICEF)</td>
<td>109</td>
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<tr>
<td>Under-5 Mortality Rate (DHS)</td>
<td>123</td>
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3. Data From Other Countries

Guardian Development Report

There has been significant and steady progress in child health across the world but this was one of the most demanding of the goals and the world will fall short: by 2007 child mortality
had dropped by only a third. But this overall finding masks some dramatic improvement in different parts of the globe.

China halved child mortality from 46 per 1000 in 1990 to 21 in 2008 while India’s rate fell from 116 to 69 and Vietnam has achieved a remarkably low rate of 14 per 1000 for a low income country. The African child mortality average is almost twice as high as the global, and in five countries in Sub-Saharan Africa, under five mortality has actually increased since 1990. Kenya actually regressed, it increased from 105 to 128 per 1000 births despite its comparative economic strength.

UK World Bank Data

6.5-2002
6-2005
5.9-2006
5.8-2007
5.6-2008
5.5-2009
8.3% decrease over 4 years.

Kenyan DHS Data
http://www.measuredhs.com/publications/publication-SPA17-SPA-Final-Reports.cfm

<table>
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<tbody>
<tr>
<td>Under-five mortality rate (per 1,000 live births)</td>
<td>89.8</td>
<td>96.1</td>
<td>111.5</td>
<td>114.6</td>
<td>73.6</td>
</tr>
</tbody>
</table>

This is a 36% decrease in the 5 years between 2003 and 2008/9.

The under-five mortality rate was estimated at 74 deaths per 1,000 live births, meaning that 1 in every 14 Kenyan babies does not survive to the fifth birthday. Neonatal mortality now accounts for approximately 60 percent of under-five mortality in Kenya (KNBS and ICF Macro, 2010).

Malawian DHS Data
2005-2010-23% reduction using DHS figures

<table>
<thead>
<tr>
<th>Table 8.1 Early childhood mortality rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonatal, post-neonatal, infant, child, and under-5 mortality rates for five-year periods preceding the survey, Malawian DHS 2010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years preceding the survey</th>
<th>Approximate time period of estimated rates</th>
<th>Neattonal mortality (NN)</th>
<th>Neattonal mortality (PPP)</th>
<th>Post-neonatal mortality</th>
<th>Infant mortality (Iq5)</th>
<th>Childhood mortality (Iq5)</th>
<th>Under-5 mortality (Iq5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>2005-2010</td>
<td>31</td>
<td>35</td>
<td>66</td>
<td>50</td>
<td>112</td>
<td>112</td>
</tr>
<tr>
<td>5-9</td>
<td>2000-2005</td>
<td>36</td>
<td>46</td>
<td>61</td>
<td>69</td>
<td>143</td>
<td>143</td>
</tr>
<tr>
<td>10-14</td>
<td>1995-2000</td>
<td>40</td>
<td>52</td>
<td>92</td>
<td>97</td>
<td>180</td>
<td>180</td>
</tr>
</tbody>
</table>

Note: Estimates are for deaths per 1,000 live births except for child mortality, which is deaths per 1,000 children age 12-59 months.

Computed as the difference between the infant and neonatal mortality rates.
Statistically significant declines in under-five mortality have occurred in Malawi, Niger, Nigeria, Egypt, Bangladesh, India, Indonesia, Nepal, Brazil, and Peru. The largest declines were in the three African countries where there was the most room for improvement.

In much of sub-Saharan Africa, improvements in child survival over the past few years are being reversed. There are significant increases in under-five mortality in four of the sub-Saharan countries for which comparative data are available. An additional five countries appear to have non-significant increases. Rwanda and Zimbabwe are the most notable examples, with under-five mortality estimates increasing from 151 to 196 in Rwanda and 77 to 102 in Zimbabwe.

Of the 60 countries that account for 94 percent of child deaths, only Bangladesh, Brazil, Egypt, Indonesia, Mexico, Nepal and the Philippines are currently on-track to achieve their MDG 4 targets.
Progress towards Millennium Development Goals 4 and 5 on maternal and child mortality: an updated systematic analysis


http://download.thelancet.com/pdfs/journals/lancet/PIIS0140673611613378.pdf?id=e16241398b8eb460-52016045:13320266f47:319f1319099106451

Overall, 31 countries will achieve the original (MDG 4) target by 2015 with a further 11 countries achieving the target by 2020. In sub-Saharan Africa, Madagascar is likely to achieve MDG 4 by 2015, whereas eight countries (Eritrea, Ethiopia, Ghana, Liberia, Malawi, Rwanda, São Tomé and Príncipe, and Sierra Leone) are likely to achieve it by 2025. 23 countries in sub-Saharan Africa are unlikely at the present pace to achieve MDG 4 before 2040.

Deaths drop by half globally, but double in Africa

Under-five deaths in the World (excluding sub-Saharan Africa) and Sub-Saharan Africa, 1960-2000

Global under-five deaths over the last four decades have fallen from 20.4 million to 10.9 million annually. During this time deaths in sub-Saharan Africa almost doubled from 2.3 million to 4.5 million annually.

The report also explains how this was calculated, it is based on the annual rate of change from 1990 to 2011 for 137 developing countries.

5. Information about the DHS

Monitoring trends in under-5 mortality rates through national birth history surveys
EL Korenromp, F Arnold, BG Williams, BL Nahlen and RW Snow

The interpretation of changes in under-5 mortality rates between surveys needs to take into account statistical significance. DHS birth history surveys with their present sampling design would be able to statistically confirm under-5 mortality reductions in African countries if true reductions were 15% or larger, and are highly relevant to tracking progress towards existing international child health targets.

Key Messages

- Demographic and Health Surveys (DHS), conducted at 5-year intervals in an increasing number of countries, are a main source of high quality estimates of under-5 mortality rates in African countries.

- In interpreting under-5 mortality rates and trends in mortality rates from DHS, statistical precision and significance must be taken into account. Across actual surveys conducted between 1986 and 2002, only half of the trends observed in mortality rates at national levels were statistically significant.

- With levels of precision observed in previous African DHS, reductions in all-cause under-5 mortality rates between successive surveys of 15% or more are detectable. This is highly relevant to tracking progress towards international child health targets; the detection of smaller mortality reductions would, however, require increases in sample size, from a current median of 7060 to over 20 000 women.

6. UK Mortality

Twentieth Century Mortality Trends in England and Wales
http://www.ons.gov.uk/ons/search/index.html?pageSize=50&newquery=under+5+mortality+1900

Infant mortality and childhood mortality have fallen most dramatically during the last 100 years. Infant mortality rates at the beginning of the century were nearly 30 times higher than those at the end. Childhood mortality rates were nearly 50 times higher in males and 65 times higher in females.
The infant mortality rate for England and Wales in the early 1850s was 150 deaths per 1000 live births; in Scotland it was 120 per 1000. In the 1890s there was a deterioration in the Scottish figures as infant mortality rose to 129 per 1000 live births. By 1913 the Scottish rate was only slightly better than the English. But if we look at the poorest areas of, say, Glasgow then the Scottish figures are as bad as anywhere else. As late as 1898 the infant mortality rate in Glasgow Gorbals was 200 per 1000 live births. The reason for this was the increased concentration of the population in urban areas and their poverty. Scotland really only fared better than England in the first half of the 19th century because a higher number of its people were living in the countryside.

Health, Wealth and Population in the Early Days of the Industrial Revolution,
During the Industrial Revolution, the life expectancy of children increased dramatically. The percentage of the children born in London who died before the age of five decreased from 74.5 per thousand in 1730–1749 to 31.8 per thousand in 1810–1829.

<table>
<thead>
<tr>
<th>Date</th>
<th>Under 5 Mortality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1730-49</td>
<td>74.5%</td>
</tr>
<tr>
<td>1750-69</td>
<td>63%</td>
</tr>
<tr>
<td>1770-89</td>
<td>51.5%</td>
</tr>
<tr>
<td>1790-1809</td>
<td>41.3%</td>
</tr>
<tr>
<td>1810-29</td>
<td>31.8%</td>
</tr>
</tbody>
</table>

Carlisle Tables

1779-87- 82.3 per 1000

1818-24- 45.6 per 1000

Recent UK under five mortality data can be found from:

The World Bank World Development Indicators: http://www.google.co.uk/publicdata/explore?ds=d5bnpqoj8f9 &ctype=l&strail=false&nselm=h&met_y=sh_dyn_mort&hl=en&dl=en#ctype=l&strail=false&nselm=h&met_y=sh_dyn_mort&cale_y=lin&ind_y=false&rdim=country&idim=country:IND:IDN:ETH:THA&ifdim=country&hl=en&dl=en


7. Additional information

Author
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