

Poverty and child mortality in different contexts: Can Mozambique learn from the decline in mortality at the turn of the 19th century in Stockholm?

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SUMMARY

Child mortality has declined in many low-income countries. However, in Sub-Saharan Africa, childhood mortality is still a major public health problem, which is worsening with some countries experiencing new increases in mortality due to HIV/AIDS. This lack of success in reducing child mortality is not only due to HIV/AIDS, but also to high numbers of deaths in other causes of death such as diarrhoea, pneumonia and neonatal causes, for which there are effective curative and preventative interventions. One problem seems to be in the access, coverage and implementation of these interventions, particularly among the poorer sections of the population. A related problem is the interventions that sometimes, when implemented, take place in environments in which they can only be expected to have limited effects. On the other hand in many developed countries infant and child mortality declined as social and economic changes of modernisation took place. However, the mechanisms that did bring about the decline are still not well understood. This paper discuss whether analyses of the historical decline of mortality in industrialised countries could contribute to knowledge in reducing the high child mortality in poor countries today, based on studies of child mortality in different social contexts in Mozambique 1973-1997 and Stockholm 1878-1925.

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Introduction

Child mortality has declined in many low-income countries. However, in Sub-Saharan Africa, childhood mortality is still a major public health problem, which is worsening with some countries experiencing new increases in mortality due to HIV/AIDS [1,2]. This lack of success in reducing child mortality is not only due to HIV/AIDS, but also to high numbers of deaths in other causes of death such as diarrhoea, pneumonia and neonatal causes, for which there are effective curative and preventative interventions. One problem seems to be in the access, coverage and implementation of these interventions, particularly among the poorer sections of the population [3,4] A related problem is the interventions that sometimes, when

implemented, take place in environments in which they can only be expected to have limited effects.

Selective or comprehensive primary health care?

The primary health care concept launched by the World Health Organisation in Alma-Ata in 1978 [5] proposed a broad and comprehensive strategy to improve health, including involvement of many sectors and addressing the underlying social, economic and political causes of poor health. In the 1980s there was also a discussion on the benefits of selective or comprehensive primary health care. Many specific preventive and curative interventions to reduce child mortality were already in place

(e.g. vaccinations against measles, diphtheria, pertussis, tetanus, polio; oral rehydration therapy to prevent diarrhoea death; growth monitoring to prevent malnutrition etc), and were promoted as an interim strategy of selective primary health care to reduce mortality [5]. Some argued that the concentration on these selective components of primary health care by governments and donor agencies de-emphasised and diverted interest from the other components of primary health care, such as intersectoral collaboration and infrastructural investments into improvement of water and sanitation. A recent follow-up of the achievements of comprehensive versus selective primary health care concludes that the selective model has not been successful in addressing the interrelationship between health and socioeconomic development and that a shift in emphasis is needed from short-term measures to addressing also the social, economic and political causes of poor health. [5]. Therefore, as the currently implemented selective interventions are not optimally effective, it may be useful to revisit the historical decline of child mortality in today's wealthy countries, to analyse what specific factors and interactions between different factors, which brought about the decline in mortality.

Learning from history?

In many developed countries infant and child mortality declined as social and economic changes of modernisation took place. However, the mechanisms that did bring about the decline are still not well understood. Re-examining data for England and Wales in the 19th and early 20th centuries, Szreter [6] forwarded a view that it was sanitary reform and other active public health interventions that ultimately played an important role in the mortality decline rather than improvements in living standards and particularly improvements in nutrition that were claimed earlier by McKeown.

This historical view by Szreter is of importance for low-income countries since in many studies of child mortality there have been difficulties in demonstrating clear effects of interventions. There is a suggestion of the need and importance of highlighting the mechanisms through which the decline in

mortality actually takes place in order to improve effective interventions [7]. Furthermore, as previous studies have suggested, [3,4,7] it may be important to understand better what factors need to be in place in order to accelerate health improvement, and how these factors may interact.

The purpose of the present paper is to discuss whether analyses of the historical decline of mortality in industrialised countries could contribute to knowledge to reducing high child mortality in poor countries today, based on studies of child mortality in different social contexts in Mozambique 1973-1997 and Stockholm 1878-1925.

The contexts being compared

The basic premises for the comparison of Mozambique 1973-1997 and Stockholm 1878-1925 were that the population of both settings experienced a similar degree of poverty and material deprivation (e.g. deficiencies in housing, overcrowding, water and sanitation). In addition overall mortality rates were of the same magnitude. For instance in Mozambique, between 1987-1997 the infant mortality rate was 147/1000 and child mortality [1-4] was 83/1000 [8] and in Stockholm 1885-1910 the infant mortality rate was 160/1000 and child mortality was 36/1000 [9]. Furthermore, in both contexts children died by similar causes of death. In Stockholm 1878-1925, children died due to diarrhoea, pneumonia, immaturity/congenital causes, measles, tuberculosis and meningitis [10, 11], diseases that are also leading causes of death in Mozambique today as well as in other sub-Saharan African countries [10]. However, in spite of those similarities described above there were important differences regarding the way society was organised as well as threats to health in both contexts. For instance in Stockholm society was highly organised and people participated actively in the different issues regarding the society, a contrast with the reality in Mozambique. Female literacy levels were higher in Stockholm due to universal education [11] than in Mozambique (as in other sub-Saharan African countries) where the majority of women are illiterate [10].

The age structure of mortality was different in the two contexts although under-

five mortality rates were of the same magnitude. Infant (<1 year) mortality rates were higher in Stockholm 1878-1925 than infant mortality rates in Mozambique 1973-1997. On the other hand child (1-4 years) mortality was higher in Mozambique compared with Stockholm 1878-1925. This difference in age structure may be partly due to different breastfeeding patterns. Contrary to historical Stockholm, in Mozambique breastfeeding is universal and the majority of mother's breastfeed at least for 24 months [10].

Mortality rates were higher in urban than in rural areas in historical Sweden compared to Mozambique where mortality rates are higher in rural than in urban areas [10,11]. In Mozambique as well as in many other sub-Saharan African countries children have the extra burden of malaria, a leading cause of death among children under- five in many of these contexts as well HIV/AIDS [10,11]. On the other hand the extreme cold winters experienced by children in Stockholm 1878-1925 may have played an important role in deaths due to respiratory disease [11].

The evidence

In Mozambique, a study of the contribution of household environmental factors to urban childhood mortality found that children of mothers who lived in households with no toilet facility or with well as a source of drinking water had a high risk of dying compared to children who lived in households with flush toilet and piped water [12]. Furthermore these differences were explained largely by demographic and socioeconomic factors, especially mother's education [12]. In addition, a study on registered and autopsied deaths in Maputo City did show that diarrhoea disease mortality was one of the three leading causes of death. On the other hand, in Stockholm 1878-1925, diarrhoea mortality among children aged less than two years declined from an average of 59 per 1000 in the period 1878-1882 to 2 per 1000 in 1918-1925 compared to a decline of overall mortality that went from 130 per 1000 to 31 per 1000 [3]. Furthermore, in the periods 1878-1882, the diarrhoea mortality rate for children in the lowest socio-economic group was about fifty percent higher than the rate in the highest

socioeconomic group and the pattern continued until 1909-1917 and 1918-1925. However, by 1918-1925, there was no longer an evidence of a socioeconomic pattern in diarrhoea mortality. Results from successive investigations of child mortality in Stockholm 1878-1925 have also shown that the mortality decline was primarily due to the decline of postneonatal mortality. It is suggested that postneonatal mortality is related to socioeconomic development and environmental and perinatal mortality is linked to health services performance [10,11]. In Stockholm 1878-1925, neonatal mortality remained largely unchanged [10].

Discussion

Looking at the evidence with caution and bearing in mind the above outlined contextual differences between Mozambique and Stockholm 1878-1925 it is possible to point out that household environmental factors influenced child survival chances in a similar way in both contexts. This fact per se is of an important magnitude since as a result of industrialisation many low-income countries are experiencing an exodus from the villages to the cities. It is suggested that in Africa, population will increase in the cities in the next thirty years due to strong rural-urban economically driven migration with people seeking education and job opportunities outside subsistence farming [14]. Therefore as already felt in many cities in low-income countries, urbanisation gives rise to squatter populations leading to problems of housing, sanitation, drinking water and health care facilities among an array of other possible problems [14,15].

In the light of the Millennium Development Goals (MDG) launched by the United Nations in which the target is to reduce under-five mortality by two thirds by 2015 [16], there has been a renewed debate of the role of comprehensive primary health care versus selective primary health care in reducing mortality levels. Therefore, it may be important to investigate which were the non-medical factors that may have contributed to health improvement and mortality declined in Stockholm at the turn of the 19th century. In Stockholm at that time, there were three different bodies who jointly implemented

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different interventions: the *Swedish state, the Stockholm board of health and the public health movement*.

The state promoted universal education to the whole population, and passed laws to improve the health of vulnerable groups. At the local level, a city board of health was created that enforced the political decisions and legislation of the state, and the local city sanitation ordinance. The board took on two tasks from 1876: [1] the distribution of clean water in the city and [2] the removal of garbage and human and animal excreta from the city. The expansion of piped water was coupled with improved sanitation and handling of waste. During the period 1878-1920 the board employed health inspectors (*health police*) who scrutinised the sanitary conditions of streets and yards, did intensive housing inspections and gave advice on sanitation, child care and hygiene in general (hand and body washing as well as washing of clothes) [17]. The inspectors were mostly women and thus could easily influence sanitary ideas in the home environment [17]. Non-governmental organisations provided the society with materials such as books, calendars, brochures, and leaflets, handouts and posters that were published with hygienist advice especially towards enhancing personal hygiene [17].

The developments that took place in Stockholm 1878-1925 regarding the decline of diarrhoea mortality are in line with Szreter's findings that highlighted the importance of specific public health interventions (e.g. improved water and sanitation) rather than just economic improvement [5,18] and illustrate Nathanson's hypothesis [19] that public health policies play a critical role in disease prevention and that the implementation of such policies is facilitated in strong, centralised states. Furthermore, those developments that brought about the mortality decline in Stockholm 1878-1925 are to some extent in accordance with the principles of Alma Ata declaration which emphasised the importance of universal accessibility and coverage of disease prevention and health promotion, community participation, self-reliance and intersectorial collaboration, but the mortality decline was also a result of a through implementation of policies. One important reason for the decline of diarrhoea

mortality among children born in and out of wedlock in Stockholm 1878-1925 is likely to have been the wide coverage of both water and sanitation interventions to all segments of the population. Therefore, one important lesson for low income countries is that it is possible to reduce the high levels and social differentials in mortality if public health interventions are well organised and cover all segments of the population, especially the poor.

There is a suggestion that ingestion of unsafe water, inadequate availability of water for hygiene, and lack of access to sanitation contributes to about 1.5 million child deaths and is a risk factor for almost eighty-eight per cent of diarrhoea disease mortality in developing countries [1]. For instance, in Maputo City, the biggest city in Mozambique, diarrhoea was found to be one of the three leading causes of death among children under age of five [20]. Many areas of the city are not fully covered with water and sewerage systems in particular the squatter settlements. Furthermore, the environment in the capital is worsening due to the unsteadiness of its public areas and poor handling of excreta which in part are responsible for the spreading of infectious diseases mainly diarrhoea. In 2003, UNICEF reported that fifty-five children under age of five were killed every day in the country due to unsafe water and poor sanitation [21]. Thus, attempts of the authorities to lower mortality levels due to diarrhoea and other main killers should include a combination of measures such as improvements in water and sanitation and increased health education. In addition, other actions such as cleanliness of public places, removal of garbage and improving the population hygienic behaviours must also be promoted.

Another historical lesson that can be learned by Mozambique as well as other low-income countries is that in spite of the powerful interventions and action that took place, the decline of diarrhoea mortality in Stockholm took quite some time to happen. This demonstrates the need for long-term, sustained efforts and patience when evaluating also large-scale intervention projects in poor countries today. It may also be difficult to link the effect of one specific action to reduced

morbidity and mortality rates, since these are the product of many different causes.

In Stockholm 1878-1925, the successful reforms were those that became completely integrated into society. They became common practice and acceptable by most, regardless of socio-economic class, education, or ethnic background (e.g. hand washing after using the toilet, frequent bathing, etc). Furthermore it is important that interventions to reduce inequalities in child mortality in low-income countries should ideally be more effective, or at least as effective, in lower as in higher socio-economic groups. This may be very obvious, but seldom happens in these settings. Since higher social classes have lower mortality, improvements of the average level of health in a country depend on wide coverage of interventions that have an impact in lower social classes, for instance wide coverage of improved water and sanitation and removal of environmental contamination.

Finally, as it was the case in Stockholm at the turn of the 19th century, the key to these accomplishments may rely on good governance, strong political will to meet all citizens' basic health needs and active popular participation which can lead to increased social equity. Work to reduce high levels of child mortality in poor countries today may benefit from an improved understanding of what brought about the historical decline of child mortality at the turn of the 19th century.

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