Neonatal and perinatal mortality

Mohamed Salih Mahfouz

Jazan University, Saudi Arabia

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Short summary of the document

This document is of 20 pages and provides Neonatal and Perinatal Mortality estimates for the year 2004. It was produced by the WHO as an updated version of the 2000 report using the updated vital statistics and new surveys data conducted between the two years. The estimates are based on the assumptions and methodology of the old report produced in 2000 and adjusted to the WHO estimated under-five mortality for 2004.[1] In the document four tables as well as two figures are presented. The first table provides the data sources for the estimate, the second portrays the Global estimates of stillbirths, early neonatal, perinatal and neonatal mortality rates and numbers by level development and geographical (United Nations) region and subregion, 2004. The third table presents estimates of stillbirths, early neonatal, perinatal, and neonatal mortality rates and numbers by WHO region and subregion, 2004. The fourth table shows country estimates of stillbirths, perinatal, early neonatal and neonatal mortality rates and numbers for the year 2004. The document is based on three main references all of them WHO reports produced between the period 1996 and 2006.[2]

Neonatal and perinatal mortality rate in Sudan

Literature about Neonatal and Perinatal Mortality Rate in Sudan are scarce this because of non availability of data. The available data is about Infant Mortality Rate and Under five Mortality Rate. Only recent surveys like Sudan Health Household Surveys provide information on Neonatal and postnatal Mortality rate. Here we will mention the result of the national studies on Infant and Under five mortality, which will provide a closer picture to Perinatal and Neonatal Mortality in Sudan.

The four national population censuses conducted in 1955/56, 1973, 1983 and 1993 contained information on infant and child mortality. The accuracy of mortality information in theses four censuses is questionable for several reasons. Most likely, respondents were reluctant to give the correct number of birth and deaths because of fears and superstitions. As a result many deaths, particularly infant deaths, were not reported. Also, because deaths are unhappy events people tend to forget them. Also the four censuses differ in terms of methodology, time, frame and coverage.[3]

The first census 1955/56 was conducted on a adjure basis and enumeration took place over a period of about 14 months. By contrast, the 1973, 1983 and 1993 censuses were de facto and carried out over a much shorter time period.[3]

First population census 1955/1956 characterized by absence of specified age data even for children under 15 years of age. Mortality estimates were based on questions related to the number of deaths occurring in the household during the twelve months preceding the census. The data reported that the crude death rate was about 18.5 per 1000 and infant mortality rate of 94 per 1,000 although the sample surveys carried out in various part of tropical Africa in the late 1950s and early 1960s showed that rates in excess of 200 per 1,000 live births were common.[3]

Farah and Person (1981) carried out a study on child mortality differentials in Sudan. They estimated the probability of dying between birth and exact age two (q^2) for the Sudan using 1955/56 census at about 183 per 1000 and the expectation of life of about 43.09 years. Findings from all studies based on 1955/56 census pointed out that, infant

and child mortality rate is very high during that time and accordingly life expectancy at birth is very low.[4]
The second national population census was conducted in April 1973. The scope of this census was wider than the 1955/56 census. Questions about children ever born, living and child's survival status at the census data were addressed to women having had at least one live birth. Infant Mortality Rate (IMR) was about 137 per thousand. An indirect estimate of life expectancy at birth was 48.0 years for both sexes, 46.0 years for males and 50 years females.[5]

The 1983 national population census as compared with the previous censuses was an operation of greater magnitude. The 1983 census statistics on mortality shows that infant mortality rate of 108 per thousand live births and a life expecting averaging 49 years for both sexes.[6]

The fourth population census of Sudan was carried out between 15 and 30 April 1993. The estimates based on the census gave an expectancy of life at birth of 55 years and an infant mortality rate close to 110 infant deaths per 1000 live births. These estimates indicate that there has been no improvement in the health situation in Sudan. This situation will be worth if the data for the southern states are included. The live expectancy at birth ranged from 57 years in Khartoum to 52 years in the Eastern states. The infant health situation in the urban areas was slightly better than that in the rural areas, infant mortality rates are 109 versus 110 per 1000 live birth, respectively. The infant mortality rates reaches its maximum in Kordofan state 129 per 1000 for males versus 107 per 1000 for females and its minimum in the eastern state 123 per 1000 for males versus 115 per 1000 for females.[7]

The Sudan Fertility Survey (SFS) was carried out during the period December 1978 and April 1979. The SFS was originally a two – phase survey covering the North and South of the Sudan, but for operational reasons, the survey was conducted only in the North of the Sudan which represents about 80 percent of the total population during that time. The data suggest that more than 100 out of every 1000 live births die before the age of five; there is some indication of under estimate of infant and child mortality based on this survey. The SFS 1979 was retrospective and the results are prone to several reporting errors, including the misreporting of dates, ages, and age at death, as well as the omission of live births and death. The survey further suggested substantial differentials in child mortality; it is considerably lower for women with some education than for uneducated and for women living in urban areas than for those in rural areas.[8]

The 1989-90 Sudan Demographic and Health Survey (SDHS) was conducted by the Department of Statistics in close cooperation with the Ministry of Health. A sample of 5,860 ever- married women aged (10- 49) were interviewed. The sample covered six regions in northern Sudan; the three southern regions could not be surveyed for security reasons. The results of this survey indicate that less than five mortality has declined 14 percent, from 143 deaths per 1,000- live births in the period 1975- 1979 to 123 in the period 1985-1990. While this represents only a small improvement compared with data for the same period from other developing countries, the survival status during the past neonatal period (1-11 months) has shown particular gains, while there has been little change in neonatal mortality. Regional differential in child mortality are marked. Khartoum has the lowest level of under five mortality (108 per 1000) while much higher levels are seen in Darfour 161 per 1000 and in the eastern region 179 per 1000. Mortality

between the age of one and five shows the most pronounced regional variation in this survey.[9]

The Sudan Maternal and Child Health Survey (SUDMCHS) was conducted by Ministry of Health in collaboration with the Pam Arab Project for Child Development (PAPCHILD). The survey was implemented during the period December, 1992 and August, 1993. It covered the six Northern states of Khartoum, Central Eastern, Darfour, Kurdofan, and Northern, and the Southern states of Bahar ElGazal, Upper Nile, and Equatoria. In addition, the nomadic population in northern Sudan was also covered.[10]

The SUDMCHS data shows that the level of infant and under-5 mortality has declined during the last two decades. Infant mortality rate (IMR) has declined from 82 per 1000 live births during the late 1960s and early 1970s to 70 per 1000 live births during the early 1990s. Under-5 mortality has declined during the same period from 147 per 1000 live births to 113 per 1000 live births. The data of the non- infant child mortality reflect a much faster decline than the decline in infant mortality.[10]

Using the direct method, the 1999 Safe Motherhood Survey (SMS) data suggest that the infant mortality rate (IMR) was 68 per 1000 live births with little difference between urban and rural areas. Under-five mortality rate (U5MR) was 104 per 1000 live births in the north (101 urban, 105 rural). The Blue Nile, Red Sea and Kassala states have the highest IMR (101, 116 and 101, respectively) and U5MR rates (172, 165 and 148 per 1000 live births, respectively). Conversely, Gezira, Northern and Nahr El Niel states have the lowest U5MR (59, 78 and 81 per 1000 respectively). The SMS estimates the IMR and U5MR in the main urban towns of Juba, Wau and Malakal in the south at 82 and 132 per 1000 live births, respectively (the indirect method).[11]

Sudan Household Health survey is the recent survey conducted in Sudan in 2006 and provided recent information on Neonatal and Postnatal Mortality Rate. Table 1 shows the Neonatal Mortality with different characteristics, for Sudan the indicator is 40 per thousand live births. The survey definition of Neonatal is deaths during the first four weeks of birth.[12]

Table 1 Neonatal Mortality SHHS, by state, area, Sex, Mother Education, and Wealth index. Sudan 2006

Characteristics	**Neonatal Mortality**
Northern States	64.53
Southern States	43.65
Area	
Urban	65.45
Rural	58.53
Sex	
Male	54.54
Female	54.53
Mother Education	
Illiterate	53.55
Primary	63.43
Secondary+	54.58
Wealth Index	
Poor	54.54
Second	55.56
Middle	63.35
Fourth	65.55
Richest	68.64
Total	**37.04**

Document appraisal

Neither the objectives of the report nor the underling questions are clearly stated, but it was mentioned that the report is based on the methodology of previous report in which the objectives and questions are very clear. The target population is clearly stated in the document.

The document doesn't mention that it have been prepared with the involvement of different relevant professional groups. The involvement of the target group is not applicable since it is statistical document. The report could be utilized by a wide range of audiences ranging from policy makers to health professionals. A concrete methodology was build to conduct the perinatal and Neonatal country estimates. The report has no recommendation, only short conclusion was provided. The estimates are peer reviewed and statistically tested. The guidelines used for calculating these estimates are well known and used routinely. The estimates are necessary for at least to give a picture about Perinatal and Neonatal in my country especially there is scarce estimates, due to lack of vital registration. In most community surveys there is question about neonatal mortality

but nothing about perinatal mortality.[12] I strongly recommend using these estimates as quick indicators for implementing maternal and infant health plan in my country.

Conclusion

The above mentioned pages were about reviewing neonatal and perinatal mortality report produced by the WHO, 2006. The report is an updated version of previous one, this why it contained only 20 pages presenting only statistical tables. The rest of the criteria mentioned for reviewing the document are not used because they are not applicable in most cases. Most of the literature mentioned is about infant and child mortality, this because there is no literature about perinatal mortality in Sudan.

The report reflect a huge effort exerted to provide updated information for policy makers and health professionals , but two points should be mentioned regarding the quality of the estimates produced, first the quality of data used to produce the estimates is questionable, since Stillbirth data from less developed countries remain incomplete and surveys continue reporting unrealistic low stillbirth. Another point is the over use of statistical modeling (Linear Regression), this may affect negatively the reliability of the estimates add to that R^2 in some models approach zero.

References

1. Neonatal and Perinatal Mortality. Country, Regional and Global Estimates. WHO 2004.
2. Neonatal and Perinatal Mortality. Country, Regional and Global Estimates. WHO 2006.
3. Mahfouz M. Salih, (2009) Level and Determinants of Infant and Child Mortality in Sudan. Gezira University Press, Medani Sudan.
4. Abdul-Aziz Farah and Samuel H. Preston *Population and Development Review*, Vol. 8, No. 2 (Jun., 1982), pp. 365-383.
5. Department of Statistics, (1980). *Second Population Census* 1973, Volume II, population, Dynamics, Khartoum.
6. Department of Statistics, (1985). *Third Population Census* 1983, Principal Report, Volume I & II. Khartoum.
7. Department of Statistics, (1995). *The Fourth Population Census*, 1993, Principal Report Volume I & II, Khartoum.
8. Department of Statistics, (1982). *The Sudan Fertility Survey 1979*, Principal Report Vols. I & II, Khartoum.
9. Department of Statistics, (1992). *Sudan Demographic and Health Survey*, Principal Report Volume II, Khartoum. 1989/90.
10. Ministry of Health (Sudan) and SMCH-93. *Sudan Maternal and Child Health Survey*, Principal Report.
11. The Federal Ministry of Health, CBS and United Nations Population Fund (UNFPA). Safe Motherhood Survey, National Report, 1999.
12. Government of National Unity/ Government of Southern Sudan. Sudan Household Health Survey (SHHS) – 2006.