CHAPTER 3

MORBIDITY AND MORTALITY

3.0 Morbidity and Mortality

3.0.1 Summary

This section covers mortality and morbidity in Kenya. A lot has been written on infant and child mortality, but less on mortality levels of other population sub-groups. Indeed, most of the research works have dwelt on the factors affecting child survival either due to socio-economic, cultural, demographic or environmental factors. In addition, issues on malaria and STIs have been discussed including their spread and management systems.

3.0.2 Methodology

Many studies in this chapter have used secondary data mostly from the KDHS. Other data sources have been the Kenya population census analytical reports on morbidity and mortality, vital registration data, death registers, and document review of hospitals patients' records. Numerous studies have also utilized primary data from population-based studies but on small coverage. The main tools used for data collection have been structured questionnaires, FGDS and interview schedules and observation checklists. Most of the studies have used cross-tabulations and multiple and logistic regression in data analysis. However, some studies have used notable methods of analysis as multi-level logistic regression and least square method of analysis.

3.0.3 Issues

- Lack of reliable and complete data on vital events from the registration system has been apparent recently and demand for data on mortality has grown for a number of uses. In attempting to meet this demand, major efforts have been directed at conducting population censuses and demographic surveys.
- Death clustering of infants and children in families at neo-natal, post-natal and child deaths and their implications on child survival and maternal health.
- Regional mortality disparities.
- Seasonality of death in Kenya based on variation in vital events such as deaths occurring largely due to environmental, socio-economic and socio-cultural factors.
- Timing, spacing of births and their effects on infant and child mortality and overall fertility levels in Kenya.
- Estimation of mortality levels and impact of major causes of death on mortality.

3.0.4 Findings

The key findings are mainly on the factors affecting mortality such as mother's educational level and occupation, toilet facilities, sanitation and hygiene. Overall, the health indicators have shown a continuous decline (KDHS, 2003). This has cast doubt on the country's ability to realize the health related MDGs by 2015.

It was established that data collected through the civil registration system has considerable value. It includes information on migration; differential census enumeration, but sometimes it has distortions in age misrepresentation and age dependent registration affects completeness and mortality estimates. This has demonstrated the importance of applying different estimates procedures as consistency checks.

Generally, in Kenya, there is a marked seasonality of deaths with minor peaks occurring in April and major peaks in July/August period. The dry seasons occur during peak periods of

heavy workload but less food, since it is pre-harvest time. The periods of low deaths between November through February coincide with the resting seasons when little agricultural labour is demanded and there exists sufficient food.

The most important factor causing birth spacing differentials is the survival status of the index child for all birth order transitions, while survival status of the previous child is not significant. The effect of education is more inclined towards the probability of stopping rather than spacing of births. There is also a higher hazard rate at early births among educated women. The better-educated women appear to restrict the number of children but not through wide spacing.

Different factors influence infant and child survival at different ages and that as mortality begins to decline, the bulk of deaths occur in the pre-natal and neo-natal periods. Pre-maturity is a major contribution to neo-natal and post-neonatal deaths.

3.0.5 Recommendations

- Review of the vital registration procedures especially in the rural areas to ensure completeness.
- Identification of factors that explain birth timing, spacing and accompanied differentials in Kenya.
- Expand and improve the quality and efficiency of delivery of pre-natal and post-natal care.
- Ensure education for young women and girls and improving the socio-economic status of women, which have relationships with mortality levels.

3.0.6 Research Gaps

From the literature, data on adulthood mortality and old age mortality is mainly lacking and little or none has been written in this area. This is critical in a country like Kenya where the vital registration system is not perfect and death is mostly reported but the cause is not given. This makes empirical studies on adulthood and old age necessary to undertake. In addition, few longitudinal studies have been undertaken in Kenya, thus limiting cohort mortality related studies.

It has been observed that little documentation on orphanhood and widowhood exists. Further, the country lacks an up to date data on orphanhood or widowhood. This raises great concern especially in this era of HIV/AIDS, where an estimated 1.1 million children have be orphaned by HIV/AIDS.

The authors are silent on the ways of eliminating preventable mortality and causal factors in mortality upturn.

3.0.7 Research Agenda

- Determine the current causal factors of high mortality upturn in some regions in Kenya.
- Determine the impact of SAPs on mortality in Kenya
- Effects of birth spacing on child survival.
- Parental perception of child survival risks and how these perceptions relate to their reproductive behaviour and decisions.

3.1 DISEASES

3.1.1 Summary

Even with remarkable breakthrough in medical science, several diseases continue to pose overwhelming challenges to development and are reversing the little gain in health that we might have achieved before. For example, two million people die of TB each year worldwide. Most of them are from Africa. Diabetes is considered as a lifestyle disease, which affects 170 million people globally. It is an emerging threat in Africa in general and Kenya in particular.

3.1.2 Issues

- Physical environmental factors leading to diarrhoea diseases in children, maternal knowledge, attitudes and practices in the management of childhood diarrhoea.
- High prevalence of STI.

- Socio-cultural determinants of the spread of STIs, among adolescents.

- Influence of socio-cultural and economic risk factors in the spread of HIV/AIDS and other STDs.

- Management of STIs among pregnant women.

- Socio-cultural and operational factors affecting tuberculosis control.

- Prevalence of food borne pathogens among food handlers in Kenya.

- Food handling practices as a public health problem.

3.1.3 Findings

The authors of the reviewed works in this section were particular about some common diseases in Kenya. For example, educational level was significantly associated with the knowledge, attitude and practices in diarrhoea management.

Many studies also found tuberculosis to be a major cause of morbidity and mortality in Kenya affecting all age groups, especially the economically productive and people who are HIV positive. Many of them have no access to adequate TB treatment. The advents of HIV epidemic, urbanization, increasing poverty and declining socio-economic trends have reversed the earlier declining trend of tuberculosis in Kenya. A 20% annual increase has been observed in the last 5 years (Global Tuberculosis Control Report for 2005, WHO).

The cost of managing diabetes is frighteningly high. Changes in lifestyle, urbanisation, consumerism, sedentary lives, diet, aging and hereditary factors are the main causes. Although the disease is a deadly killer, it is attracting little attention from policy makers.

The disease is stealing the show from HIV/AIDS, malaria and diarrhoea. The management of HIV/AIDS has posed a great threat to the struggle against diabetes because the use of ARVs provokes attacks by diabetes in some patients. The studies have also noted that either out of ignorance or poverty, children who get diabetes early in life are left to die.

3.1.4 Recommendations

- Education should be provided to mothers as a means of improving their knowledge, attitude and practices in management of childhood diarrhoea. Intensify educational campaigns to raise awareness about the advantages of seeking treatment early for those infected with STDs/HIV.

- Have disease preventive measures taken, supported and adopted to offer greater chances for survival. Nurses have a great role to play in advising the patients on healthy eating, active lifestyle and taking medicine as prescribed. MOH should develop and implement health programs that will increase longevity of life.

- It is of paramount importance that the NLTP increases its effectiveness and efficiency in order to contain the expected increase of tuberculosis.

- Government to especially work with the private sector, health care providers, institutions, to protect the health and well-being of vulnerable populations. The interventions should include implementation of behaviour change projects, policy dialogue, and capacity building.

- Health stakeholders, GOK, health professionals to work in tandem.

- Measures should be undertaken by the government to ensure effective and efficient enforcement of Public Health Act Cap. 242 (Laws of Kenya) and the Food, Drugs and Chemical Substances Act Cap. 254 (Laws of Kenya) and training of food handlers.

- Although this may be labour intensive, MOH should have health workers go where groups of patients are.

3.1.5 Research Gaps

- Effects of STIs/HIV/AIDS and TB on mortality curve.
- Effects of re-emerging diseases on changes in the risks of death.
- Investigation of the regional disease incidence disparities and their linkages to mortality curve.

3.1.6 Research Agenda

- Risk factors affecting younger age groups, who are more exposed to any behavioural change characteristics.
- Most prevalent diseases mainly cause high malnutrition, morbidity and mortality. Use cohort study to establish accurate relationship between diseases, nutritional status and mortality.
- Factors that influence the management of STIs in Kenya.
- Socio-economic and cultural determinants of transmission of STIs.

3.2 MALARIA

3.2.1 Summary

Malaria is a major killer disease and global public health problem in more than 90 countries inhabited by 40% of the world population. In Kenya, the disease takes about $^{1}/_{3}$ of the country's health budget. Recent surveys have shown that 26,000 children under 5 years die from direct consequences of malarial infections every year.

3.2.2 Issues

- Malarial prevalence
- Insecticides treated bed nets
- Mosquito resistance
- Malarial control
- Treatment

3.2.3 Findings

Insecticides treated bed nets have been effective measures in malaria control and have shown the potential for preventing malaria morbidity and mortality. Insecticides treated bed nets (ITBNs) have proven effective in reducing exposure to malaria parasites. However, there is concern that sustained reduction in exposure from birth in endemic areas may result in a shift from severe anemia in younger children towards cerebral malaria in older ones. Such a shift may lead to a paradoxical rise in disease risk throughout childhood. WHO and other partners have particularly recognized insecticides ITNS in *"roll back malaria initiative"* as effective measures in reducing malarial burden. Lack of evidence on the impact of use of ITBNs on malaria specific morbidity has generated considerable debate and speculation, which has caused concern among WHO, UNDP, UNICEF, the World Bank and other organisations which are engaged in promoting their use in epidemic areas within tense malaria transmission.

There have been attempts to control malaria through promotion of ITNs. However, under $^{1}/_{4}$ of the homes countrywide have bed nets and fewer homes use treated nets. The adoption of ITNS has also been slow due to problems in net making, insecticides availability to populations at risk and surety that the nets are correctly used, well maintained and routinely treated with insecticides. The national initiative to control malaria is characterized by efficacy and distributor credibility queries. Revelation that even treated ones are not effective adds to the already grim malaria reality in the country.

The KDHS (2003) reported 25% drop in malaria battle, which might partly be attributed to failure of the treated nets. MOH further reported that poor distribution and mosquito resistance to insecticide used in treating the nets has further hampered the campaign against malaria.

3.2.4 Recommendations

- Reduce malaria related mortality among infants and children in Kenya.
- Improve quality of the treated bed nets.

- Increase speed with which the sick are treated.
- Intensive HE on prevention and control of malaria be carried out, provide adequate drug supply in health facilities during epidemics, network to mitigate, training and capacity building of CHWs.

- Provide communication, advocacy and health education to the community on malaria prevention and control, and on STIs.

3.2.5 Research Gaps

- Lack of updated database on malarial prevalence.

- Effects of sustained use of ITBNs on malaria specific morbidity in childhood.

- Role of health management programmes in the prevention and control of malaria.

- Socio-economic factors in community-based malaria control in Kenya.

3.2.6 Research Agenda

- Set up a database with statistics to show the impact of the use of the treated nets on malaria reduction.

- There is need to inform policy through further research on the nets' quality especially with information that inferior quality nets are entering Kenyan market to meet the high demand.

- Establish ways of reducing the high cost of nets despite their high failure rate to protect users against malaria. Undertake a research on possibility of bed nets cost sharing between the government and respective households or provision of credit facilities to purchase bed nets especially among the poor to increase net acquisition.

- Effect of poor distribution and mosquito resistance to the insecticide treating the nets on the malaria campaign. This new development demands further research on how to produce more effective and long lasting insecticides.

- Monitor and evaluate the management of the roll back malaria programme in the country to prevent re-emergence of malaria in areas it is under control.

- Develop aggressive effective bed nets marketing strategies.

3.3 INFANT AND CHILD MORTALITY

3.3.1 Summary

There are differentials in levels of infant and child mortality in the country. The causes vary depending on varied socio-economic and cultural factors prevailing in respective areas.

3.3.2 Issues

- Influence of principal household environment and behavioural patterns on child morbidity and mortality differentials among boys and girls.

- Determinants of infant and child mortality in the low and high mortality regions.

- Impact of infant and child mortality on fertility especially fertility preference.

- Levels of infant and child mortality sex differentials by socio-economic environmental, health and demographic factors at national and provincial levels.
- Effects of nutritional status on infant and child mortality.

3.3.3 Findings

The key socio-economic factors influencing infant mortality in Kenya are maternal education, while breastfeeding and preceding birth interval were noted to be the key demographic factors. Source of drinking water and type of toilet facility were noted to be the key environmental factors. Mothers, who reside in urban areas, breastfeed, are married, had pre-natal care, use tap water, live in modern houses and have modern toilet facilities experience a low infant

and child mortality than their counterparts who do not have these qualities. The influence of socio-economic, socio-cultural, demographic, nutrition and health care factors on the proportion of children deaths.

Some studies show results on differentials of child mortality by education of mothers re-affirmed that child mortality decreases with increase in mother's education level for all age groups. Mother's level of education and marital status had significance influence on the survival rate of children. The educational level of mothers and fathers is inversely related to infant and child mortality. Primary, secondary and further education have a reducing effect on the risk of infant death compared to those with no education. The risk of infant death progressively reduces as maternal education increases.

Child mortality and morbidity disparities are attributed to uneven distribution of health services. Households that have higher familiar risk to child loss are mainly poor and have negative attitude towards modern medicine, and have low hygienic standards. Higher rates of mortality are associated with age of the women at birth of the child. Children whose mothers delivered with the help of a doctor were observed to have a lower risk of neo-natal deaths, but those whose parents were living together had lower risk than those who were living separately or were not married. A child born to a married mother was almost twice as likely to survive when compared to the one whose mother was never married. Child loss had a positive effect on fertility preference because a child loss induced desire for more children than the average number of children considered as ideal for the specific periods.

3.3.3 Recommendations

- An intensification of immunisation promotion programmes placing greater emphasis on equal immunisation coverage for male and female, and reduce immunisation drop out rates for subsequent doses after the first dose of DPT and polio vaccines is encouraged. Ensure control of under-five mortality through immunization coverage.
- The quality of children's lives is inextricably linked to the health and education of their parents. To reduce infant and child mortality, mothers' and fathers' education need to be accelerated to secondary level and above. Specifically, expansion of education for young women and girls and improvement of the socio-economic status of women to reduce risk of infant deaths is encouraged.
- Emphasis on policies on child survival in an attempt to reduce fertility.
- There is a need to expand and improve the quality of delivery of pre-natal and post- natal care.
- Programmes aimed at reducing infant and child mortality should be integrated into fertility reduction programmes. Child nutrition and childcare, contraceptive use and age at first marriage should be promoted and supported.
- Mothers should be accorded flexible work environments to allow them time for nursing their infants especially in their early age before weaning.

3.3.5 Research Gaps

- Level of early childhood mortality using different socio-economic, socio-cultural, healthcare and environmental variables.
- Multi-sectoral approach to the problem of child morbidity and mortality, paying attention to both social determinants and the biological variables that influence disease and health.
- Effects of migration on infant and child mortality.
- Child mortality rates according to maternal age at first birth, parity and preceding birth intervals.
- Demographic and socio-cultural factors that influence child survival in Kenya.

- Differentials in infant and child deaths by mother's educational status, place of residence and marital status.

3.3.6 Research Agenda

- Determinant of levels and differences of infants and childhood mortality by sex.
- Relationship between infant and child mortality and fertility.
- Determine pathways through which education influences the survival chances of children.
- The role of socio-cultural factors in influencing neo-natal mortality.
- Household level analysis of family composition on mortality differentials by sex.
- Upsurge in infant and child mortality.
- Assess the child survival strategy instituted within FP and RH programmes.
- Evaluate child survival and nutrition programme.

3.4 MATERNAL MORTALITY

3.4.1 Summary

ICPD recommended that all governments should increase attention and money allocated to reproductive and other health issues. Summit in New York, to tackle the scourges of poverty and underdevelopment by 2015 were measures to reduce maternal mortality by three quarters. More recently, among the eight Millennium Development Goals that were set by global leaders at the Un Millennium, complications of pregnancy and childbirth cause maternal deaths worldwide – about one woman every minute. But, the governments in the East African region do not have any specific RH budget allocation.

3.4.2 Issues

- Contribution of social, cultural, economic and environmental, patient, socio-demographic characteristics and hospital factors, quality and availability of medical care to maternal mortality.
- Prevention of maternal mortality in Kenya in order to design appropriate and effective interventions.
- Exact extent of maternal death.
- Poor maternal mortality data quality and incomplete reporting.
- Regional differentials in maternal morbidity and mortality.
- Effectiveness of Safe Motherhood Programme.
- Low level of TBA training.

3.4.3 Findings

It is alarming that each minute a woman dies at childbirth in the developing countries. In Kenya, childbirth claims many mothers daily. There are wide maternal mortality differentials in Kenya with Western, Coast and Nyanza Provinces having very high maternal mortality ratios, while Central Province seems to have one of the lowest maternal mortality risks in Kenya. Social, economic and demographic factors affect maternal mortality and morbidity thus, exhibiting regional differentials in maternal mortality.

Some studies reported that maternal mortality exhibits a j-shaped trend with regard to age and parity. Single women had higher maternal mortality risk than married women. While educated women were found to be less likely than uneducated women to suffer maternal deaths, over $^{1}/_{3}$ of all maternal deaths occur outside the optimum reproductive age i.e. women less than 20 years or more than 35 years.

Nationally, the main causes of maternal deaths were found to be haemorrhage, infection, hypertensive disorders, obstructed labour and unsafe abortion in addition to poor quality care. Anaemia was found to be responsible for many maternal deaths at ages 40^{+} and that pregnancy complications were more common among younger ages (10-14 years old) and older (40^{+}

years old) than among middle age groups (20-39 years) with haemorrhage and sepsis being the leading causes of maternal mortality. Shortage of drugs, including antibiotics, blood, and other necessary facilities such as laboratories and health personnel contribute significantly to maternal deaths. Transport to health institutions is also a major constraint due to poor roads, limited availability of ambulance services, poor conceptualization of FP and provision of maternal health services.

A recent study identified that in every 35 maternal deaths, the birth attendants were: health workers (11%), TBAs (32%), relatives (54%), and self (4%). Poverty is believed to be the cause for the low number of women who go to hospitals for proper medical attention.

Overall, the authors agree that effective safe motherhood initiatives should contribute to the reduction of maternal and peri-natal morbidity and mortality in Kenya.

3.4.4 Recommendations

To achieve substantial reduction in maternal morbidity and mortality and high maternal health the following is necessary:

- Control maternal mortality through RH interventions.

- Provide basic essential equipment and expendable supplies that are critical to the provision of safe motherhood services.
- Kenyans need to pool their efforts using local knowledge and partnerships to save the many lives claimed.

- Hospitals should provide improved healthcare and that women are educated on the risks of child bearing at older ages.
- Communities will be encouraged to utilise skilled health providers attending to women in their homes and assisting their deliveries.

- Survey-based estimates of maternal mortality be publicized as a means of promoting appropriate interpretation.

- Improvement of the civil registration system in the country, complemented with proper records of death, hospital visits and any other information that can be used to establish causes of maternal death.

3.4.5 Research Gaps

- Much has been learnt on the causes of maternal mortality and how to control them, but there is little evidence of the significant progress towards ambitious goal of curbing maternal mortality. In addition, in Kenya, it becomes a national concern if a calamity claims more than 99 people. Maternal mortality should be declared a national disaster because of the many lives lost.

- The relationship between maternal mortality, age, parity, marital status, birth interval, antenatal clinic attendance and occupation.

- Absence of national data on maternal mortality is a glaring gap that needs to be filled.

3.4.6 Research Agenda

- Regional socio-cultural, economic and environmental factors associated with maternal deaths.

- Assess the impact of safe motherhood initiatives in the country.

- Evaluate the impact of TBAs' activities so that an effective referral system is maintained for optimal service delivery at home and at the health facilities.

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