

Mortality Theories: Relevance to Health and Demography in Nigeria

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Abstract

Mortality is a component of demographic change that can affect population size of a particular area. Mortality brings about decrease in population size. In Africa, most especially sub-Saharan Africa countries like Nigeria, mortality across the variants is high. There is need for proper understanding of various mortality theories and how relevant these theories are to health and other demographic issues witnessed in developing countries. This study embarked on extensive review of various mortality theories and their relevance to health and demographic issues in Nigeria with a view to proposing recommendations on how the Nigerian government can reduce mortality rate across the country; most especially maternal mortality, infant mortality and child mortality variants. Terror management theory, epidemiological transition theory and stochastic mortality theory were some of the theories reviewed and this study affirmed the relevance of these theories to health and demographic situation witnessed in Nigeria. It was concluded that there is need for more educational programmes on various mortality theories; understanding the connection between these theories and developmental issues in Nigeria. This is because understanding these theories will help in assessing their relevance to health and demographic issues in Nigeria and will also go a long way in guiding the government in formulating policies related to reproductive health in the country.

Keywords: development, maternal, mortality, theories, Nigeria

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1.0 INTRODUCTION

Mortality is a component of demographic change that can affect population size of a particular area. Mortality brings about decrease in population size. In Africa, most especially sub-Saharan African countries like Nigeria, mortality across the variants is high. This has led to increase in fertility, since fertility is always responsive to mortality in the demographic transition. Maternal mortality is still very high in Nigeria. This is also true

for other variants such as child and infant mortality. Maternal mortality was estimated at 814 per 100,000 live births in Nigeria; countries in sub-Saharan Africa having the highest rate in maternal mortality record 533 maternal deaths per 100,000 live births (W.H.O, 2020). Infant mortality rate is also high in Nigeria; it was estimated at 54.740 deaths per 1000 live births. These mortality variants are not only high in Nigeria but also high in other countries in sub-Saharan Africa. Post-partum haemorrhage and hypertensive diseases have been identified as major causes of maternal deaths in Nigeria.

This study is aimed at assessing the various mortality theories and their relevance to demographic situation witnessed in Nigeria. Not only the rate of mortality witnessed in Nigeria is high; the fertility rate experienced in the country is also high. Assessing the various mortality theories will be a guide in suggesting areas where government interventions are needed. This will help the government in formulating policies and programmes that are related to mortality, most especially towards reducing maternal mortality in the country. There is need for sustainability of government effort in reducing mortality across all variants in Nigeria; most especially maternal mortality in order for the country to achieve the sustainable development goals (SDGs) through improvement in the provision of maternal health services across the country (Thomas *et al.*, 2018). Understanding the various mortality theories in conjunction with the relevance of mortality situation witnessed in Nigeria will be helpful to civil society and non-governmental organisations (NGOs) on programmes that are related to reproductive health. The various mortality theories will be examined in subsequent sections of this paper.

1.1 Mortality Theories

Mortality theories came into effect due to the assumption that activities of human beings are either directed towards distracting themselves from the contemplation of death or avoiding death in totality. The theory proposes that mortality salience – the inner belief that all living creatures will die – causes anxiety that are varied from one person to another depending on individual self-esteem, exposure to cultural world view, religion and education. Most of the mortality theories have their fundamental principles on terror management theory with the word “terror” connoting an inner battle within an individual knowing that death is inevitable and trying to avoid or suppress the anxiety.

1.1.1 Terror Management Theory

The terror management theory of mortality asserts that almost all activities of human beings are driven by fear of death. Terror management theory of

mortality proposes that mortality salience causes anxiety and this anxiety varies by individual's self-esteem or cultural beliefs. Mortality salience is the awareness by individuals that they are going to die and that death is inevitable. According to Whitley *et al.* (2010), mortality salience deals with the conflict that humans have to face two contemporary inner issues of avoiding death completely and that death is inevitable; that their intellectual knowledge of avoiding death is ultimately futile. The word 'terror' in the theory was based on the feelings that humans want to avoid their death which is inevitable. The terror management theory of mortality claims that human beings contemplate death and their vulnerability to death. Mortality salience comes into effect because human beings contribute all of their actions in either distracting themselves from contemplating it or avoiding it in totality, thereby asserting that almost all human activities are driven by the fear of death.

Wojkowiak *et al.* (2011), on a study conducted on terror management theory of mortality, asserted that the theory revolved around the mortality salience paradigm. Most of the studies conducted discovered religiosity playing an intervening role in mortality salience paradigm. They discovered that religious fundamentalists and devoted religious individuals are less vulnerable to mortality salience manipulations, thereby engaging the cultural worldview as defence when compared to the non-religious individuals. Studies also discovered that mortality can be highly manipulated by one's self esteem. Individuals with high self-esteem are more likely to cope with anxiety of the fact that their death is inevitable when compared to individuals with low self-esteem. In terror management theory, it was asserted that increased self-esteem should have the tendency of enhancing cultural defence thereby serving as a protection guide against anxiety of death.

In a study conducted by Pyszczynski & Sheldon (2003), they asserted that mortality salience has the tendency of causing worldview defence which is a psychological mechanism that can strengthen people's connecting their in-group as a defence mechanism. They acknowledged that mortality salience has the tendency of leading people to be inclined towards punishing minor moral transgressions; with the mind-set that knowing we are going to die we shouldn't have done some immoral behaviours. A study of two groups of judges with one group told to reflect on mortality while the other was told not to reflect. They were then asked to set a bond on an alleged prostitute. The group that reflected on mortality set a higher bond of 455 dollars compared to the control group that set an average bond of 50 dollars. Similar studies also discovered that mortality salience has the tendency of influencing support for military intervention and martyrdom.

1.1.2 Epidemiological Transition Theory

Epidemiological transition is the process of transforming the pattern of diseases and mortality which is high among children and infants but are natural or transforming the patterns of diseases and mortality affecting all age groups to human-made diseases such as smoking. The transition from that of natural to human-made diseases and mortality is often attributed to complexities in the society due to development such as car accident, plane crash, HIV/AIDs and even the COVID 19 disease and its mutations are attributed to human manipulation of its environment and associated development in science and medicine. The theory was first pronounced by Abdel R. Omran (1971) in a paper published on theory of epidemiological transition. It was understood as a theoretical statement of shift from infectious diseases to chronic diseases that are attributed to modernisation.

In medical geography and demography, epidemiological transition is a theory that describes changes in population patterns in terms of life expectancy, fertility, mortality and leading causes of death due to modernisation. It is usually a transformation from phase of primitive society to phase of development which is attributed to improved food, agriculture, population growth rates and its associated effects in terms of diseases and mortality. The theory follows that the phase of development associated with increase in population growth rate due to innovations in public health, medicine and food security will eventually usher in decline in fertility since there is an inverse relationship between fertility and development. The transition will eventually usher in the replacement of infectious diseases with chronic diseases due to increased life span of people attributed to disease prevention, improved health care and so forth.

According to this theory, three possible factors are capable of reducing fertility rates:

- bio-physiologic factors, which are often associated with reduced infant mortality and increasing the life expectancy of parents;
- socio-economic factors, which are often associated with improving childhood survival and economic challenges of large family size; and
- emotional or psychological factors which are often associated with a situation where a society as a whole changes its opinion and rationale on family size and parental energies are thereby redirected to qualitative aspect of child-raising.

The theory is usually divided into three (3) phases with the last stage of chronic diseases replacing infectious diseases as the primary cause of death. The three phases are:

Phase 1: Age of Pestilence and Famine

In this stage, mortality is high with low life expectancy within 20 and 40 years. This stage is also characterised with malnutrition, increase in infectious diseases and famine. Some of the professions of this age are hunting, gathering, farming and so forth. This life setting is characterised with dispersed population, seasonal and unreliable food sources thereby putting the community at risk of malnutrition.

Phase 2: Age of Receding Pandemics

In this stage, mortality declines progressively with the rate of decline accelerating and epidemic peaks decreasing in frequency. In this stage, average life expectancy steadily increases to the range of 30 to 50 years. This stage is also characterised with exponential population growth rate.

Phase 3: Age of Degenerative and Man-Made Diseases

At this stage, mortality continues to decline and will continue until mortality eventually reaches a stability level, a relatively low level. In this stage, mortality is related to cardiovascular diseases, cancer, substance abuse, violence, accidents and so forth which are degenerative. Most of these diseases are attributed to behavioural attitudes such as smoking. The average life expectancy at this stage rises, exceeding 50 years. At this stage, fertility becomes the crucial factor in population growth. In this final stage, there is inequality and diseases are largely controlled through access to health care facilities, education. Also, cardiovascular diseases due to changes in lifestyle, diet, culture and the prevalence rate of diseases associated with aging increases tremendously. Epidemiological transition occurs when a country undergoes transformational process, transiting from developing nation to developed nation. The development of medicine such as antibiotics and improvement in modern health care reduces infant mortality rates drastically and extends average life expectancy. The increased life expectancy coupled with decline in fertility rates will usher in the transition to chronic and degenerative diseases as major causes of death. The theory uses health and diseases patterns as well as economic, demographic and sociological determinants and associated outcomes as framework for its explanations.

1.1.3 Economic Impact of the Theory to Developing Countries

The transition can also be associated with demographic movements – movement to urban areas, shift from labour-based production output and agriculture to technological and service sector-based economies. Developing countries are presently undergoing shift to diseases and demographic profiles when compared to the developed countries where the transition is based on socio-political and geographical factors. The transition in developed countries is attributed to the following factors:

- socio-economic improvements;
- improvement in public health programmes, which are also happening in many developing countries;
- decrease in infectious diseases and mortality;
- increase in economic productivity through increase in participation of adults in the labour force (that is, employment); and
- increase in the proportion of children that are surviving to maturity as productive members in the society.

1.1.4 Stochastic Mortality Theory

Stochastic mortality theory has its fundamental root in terror management theory which lays its premise on the fact that mortality salience causes existential anxiety about death which are varied by individual cultural exposure and self-esteem. The stochastic mortality model is that model that gives room for the possibility of identifying the impact of uncertainties when examining the relationship between deaths and causes of deaths. The stochastic theory of aging is that theory that enables us to have more understanding about aging attributed to a set of random changes that might have accumulated over time. Stochastic theories are usually based on assumptions that are not predictable. There are four types of stochastic theories of aging: error theory, wear and tear theory, connective tissue or cross-linking theory and free radical theory.

There are two types of non-stochastic theories; these are immune or immunological theory and programmed aging theory. The difference between stochastic and non-stochastic theory of aging is that stochastic theories tend to explain aging as an event that occur randomly and are accumulated over some period while non-stochastic theories of aging tend to view aging as a certain predetermined and timed phenomenon.

1.1.5 Economic Change, Mortality and Malthusian Theory

Traditionally, the Malthusian theory relates mortality to economic development and performance. According to Malthus, mortality is closely linked and associated with economic development and performance. This is because mortality is one of the population dynamics that have the possibility of determining population growth rate and population growth is also determined by output growth. The Malthusian mortality theory states that there is a direct relationship between income per head and mortality (Malthus 1826). This follows that the higher the income per head of individuals, the lower the mortality rate since people will be able to have access to proper health care services thereby improving their standard of living. The Malthusian model of mortality posited a direct relation or connection between living standards of the people and population dynamics (mortality), asserting that positive checks such as poor health, bad economic conditions, malnutrition will ultimately lead to increased mortality rate thereby lowering population growth. The theory was of the opinion that food supply cannot meet up with population growth, which will eventually have the tendency of resulting to famine, disease, war and calamity. His model gave a good description of possibility of stagnation affecting population growth and economic relationship by asserting that mortality transition is usually triggered by income per head of the individuals by allowing people to invest in health and education of their children.

2.0 Relevance of Mortality Theories to Health and Demography in Nigeria

The epidemiological transition theory is relevant to demographic situation of Nigeria. In Nigeria, the pattern of mortality is now tilting more towards complicated and chronic diseases due to modernisation and advancement in the society. The epidemiological transition theory posits transformation in patterns of diseases and mortality affecting all age groups to human-made diseases such as smoking due to complexities and advancement in the society. The theory opined that mortality is often attributed to complexities in the society due to development such as car accident, plane crash, HIV/AIDs and even the COVID 19 disease and its mutations are attributed to human manipulation of its environment and associated development in science and medicine. It is usually a transformation from phase of primitive society to phase of development, which is attributed to improved food, agriculture, population growth rates and its associated effects in terms of diseases and mortality. This is applicable to demographic situation in Nigeria as the country is witnessing high population growth rate coupled

with advancement in the society as a result of modernisation. Hence, the pattern of mortality is now advancing from natural to man-made causes.

The theory follows that the phase of development associated with increase in population growth rate due to innovations in public health, medicine and food security will eventually usher in decline in fertility since there is an inverse relationship between fertility and development. However, in Nigeria, even though the country is witnessing decline in fertility, the fertility rate is still high. The high rate of mortality across all variants might have induced the high fertility rate witnessed in the country since fertility is responsive to mortality in the demographic transition. Advancement and complexities in the society will eventually usher in the replacement of infectious diseases with chronic diseases due to increased life span of people attributed to disease prevention, improved health care and so forth. The theory also posited three possible factors that are capable of reducing fertility rates:

- bio-physiologic factors which are often associated with reduced infant mortality and increasing the life expectancy of parents;
- socioeconomic factors which are often associated with improving childhood survival and economic challenges of large family size;
- emotional or psychological factors which are often associated with a situation where a society as whole changes its opinion and rationale on family size and parental energies are thereby redirected to qualitative aspect of child-raising.

The epidemiological transition theory, as earlier discussed, can also be associated with demographic movements; that is, movement to urban areas which often result to shift from labour-based production output and agriculture to technological and service sector-based economies.

Non-communicable diseases (NCDs) pose significant health challenges in Nigeria. Non-communicable diseases (NCDs) account for over 30 percent (approximately 41 million) deaths globally each year with 77 percent of these deaths occurring in low- and middle-income countries like Nigeria. In Nigeria, 30 percent of total deaths is attributed to cardiovascular diseases, which is the leading cause of death attributed to non-communicable disease. There is a 22 percent risk of premature death from cardiovascular disease, respiratory diseases, cancer and diabetics among Nigerians that are within the age bracket 30-69 years. Over 21 million overweight and 12 million people are obese in Nigeria. In Nigeria, the most common non-communicable disease are cancers, cardiovascular diseases, chronic respiratory diseases and diabetics (W.H.O, 2023). Non-communicable diseases (NCDs) pose serious economic challenge to households in Nigeria

with about 28.5 percent of households experiencing catastrophic health expenditure due to non-communicable disease and about 58.5 percent lost workdays per year due to non-communicable diseases (NCDs).

Another mortality theory that needs to be examined in conjunction with demographic situation in Nigeria is the stochastic mortality model. The stochastic mortality model is that model that gives room for the possibility of identifying the impact of uncertainties when examining the relationship between deaths and causes of deaths. In many developing countries, most especially sub-Saharan Africa countries like Nigeria, many deaths that occur to adults occur to those that are of the working age and these deaths often arise from unforeseen circumstances. The male gender is often victims of unforeseen death in developing countries like Nigeria. The stochastic theory of aging enables us to have more understanding about aging attributed to a set of random changes that might have accumulated over time. In many developing countries like Nigeria, young adults engage in many forms of livelihood activities, even though they may not be aware of the consequences of their action on their health and aging.

The Malthusian theory relates mortality to economic development and performance. According to Malthus, mortality is closely linked and associated with economic development and performance. This is because mortality is one of the population dynamics that have the possibility of determining population growth rate and population growth is also determined by output growth. The Malthusian mortality theory states that there is a direct relationship between income per head and mortality. This follows that the higher the income per head of individuals, the lower the mortality rate since people will be able to have access to proper health care services thereby improving their standard of living. Even though the theory posited the possibility of high income per head leading to more access to health care services, there are many factors, apart from income, that determine access and utilisation of health care services. Such factors, in sub-Saharan African countries like Nigeria, include cultural beliefs and practices, family structure, women autonomy and religious beliefs, especially as they affect family planning and other reproductive healthcare-service utilisation.

The Malthusian and stochastic model applies to the high maternal and infant mortality witnessed in Nigeria. Even though maternal mortality rates have declined globally, the progress of decline in Nigeria still remains slow. Maternal mortality ratio (MMR) is alarming in Nigeria with about 1,047 deaths per 100,000 live births, which makes the country to rank third globally. This translates to about 111 women dying daily in Nigeria from

complications related to pregnancy and childbirths, and the lifetime risk of maternal mortality is 1 in 13. In similar vein, even though infant mortality rate (IMR) revealed a declining trend in Nigeria, the pace of decline remains insufficient in meeting the sustainable development goals (SDGs) in reducing child mortality in Nigeria. Infant mortality ratio (IMR) in Nigeria is about 72 deaths per 1,000 live births, which is one of the highest in the world. Risk of infants dying before age one is estimated to be six times higher in Africa when compared to Europe. There are regional disparities with north east and north west sub-regions recording high infant mortality rate (IMR) at 67.2 and 75.0 per 1,000 live births respectively when compared to south east, south west and south-south sub-regions (W.H.O, 2023).

The high rate of infant and maternal mortality rates in Nigeria will invariably lead to low level of life expectancy in the country when compared with global averages. Hence, improving infant and maternal health outcomes are very crucial in increasing life expectancy and achieving the sustainable development goals (SDGs) in Nigeria. Some of the factors that have contributed to high infant and maternal mortality in Nigeria include:

- limited access to health care services such as antenatal care, emergency obstetric care and skilled birth attendants;
- poverty and socio-economic factors such as lack of education and low socio-economic status, both of which have exacerbated infant and maternal mortality in the country;
- social and cultural norms such as limited decision-making power of women and child marriage, which have negatively impacted infant and maternal health in the country.

Strengthening health care systems through improved access to quality antenatal care, emergency obstetric care and skilled birth attendants; and addressing socio-economic challenges through implementing policies towards reducing poverty will be helpful in addressing the above issues and challenges. Education and empowerment of women; developing cultural-sensitive interventions against harmful practices and promoting healthy behaviours will go a long way in improving better infant and maternal health outcomes in Nigeria, thereby raising the life expectancy of the people in general.

3.0 CONCLUSION

There is need for more educational programmes on various mortality theories and for understanding the connection between various mortality theories and development in Nigeria. Understanding these theories will help in assessing relevance of these theories to demographic issues in Nigeria, as this will go a long way in guiding the government in formulating policies related to reproductive health. Government also needs to strengthen measures towards reducing mortality rate, most especially maternal and child mortality through policies that will be tailored towards preventing maternal and infant deaths in the country in order to achieve the sustainable development goals (SDGs) on maternal and new-born health (MNH) in Nigeria by 2030.

4.0 RECOMMENDATION/POLICY IMPLICATIONS OF FINDINGS

The Nigerian government needs to embark on programmes towards strengthening political support for maternal health through policies in areas of using new-born screening in detecting hidden conditions, creating safe infant sleep environment, prenatal and pre-pregnancy care, addressing low birth weight, preterm birth and preventing birth defects. Human rights perspective in strengthening health care systems, increasing state accountability for maternal health, increasing women's access and entitlement and integrating rights perspective into aid instruments need to be holistically implemented by federal and state governments. This will go a long way towards the speedy achievement of the mortality transition in Nigeria, thereby reaping the demographic dividend through demographic transition.

Policies on preventing maternal deaths in Nigeria, such as the National Health Act (NHA) of 2014 and Nigeria's Maternal and Perinatal Death Surveillance and Response (MPDSR) policy framework, should be implemented more vigorously. Nigerian states should be supported in their duties towards saving and sustaining maternal health during postpartum period, pregnancy and childbirth. More effort should be made to eliminate disparities in maternal health outcomes on deaths associated with pregnancy and to identify solutions towards improving quality of health care in Nigeria. Mortality policies in Nigeria over the years have been directed towards reducing maternal and child mortality in accordance with achieving the millennium development goals (MDGs) of maternal and child health and sustainable development goals (SDGs) on maternal and new-born health (MNH) in Nigeria by 2030.

Maternal mortality reduction is very central to the sustainable development goals (SDGs). The sustainable development goals (SDGs) on maternal and new-born health in Nigeria was directed towards reducing maternal fatalities in Nigeria by reducing the number by more than 90 percent to less than 3,000 per year. Maternal and child health (MCH) and subsidy reinvestment and empowerment programmes in Nigeria were introduced in order to reduce maternal mortality through increase in skilled maternal health care services. The programmes were aimed at increasing availability and affordability and improving accessibility of quality health care services in Nigeria. The strategies for implementation were based on the availability of primary health cares (PHCs) at entry level, which was about 34,000 covering all the health wards and hard-to-reach communities in the country with the objective of reducing the high rate of maternal and neonatal mortality rate in Nigeria.

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Writers' Brief Data



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