

EPIDEMIOLOGICAL PROFILE OF SOKOTO STATE

1.0 INTRODUCTION

An epidemiological profile describes the burden of diseases on the population of an area in terms of sociodemographic, geographic, behavioral and clinical characteristics of persons with such diseases, as well as the risk factors that underlie the diseases. The profile serves as a valuable tool used at the state and local levels by those who make recommendations to create intervention and prevention strategies, allocate healthcare resources, plan programs and evaluate programs and policies. The paper is a modest attempt to critically analyze the epidemiological profile of Sokoto from the past and contemporary perspective using proportional mortality rate. After a critical evaluation of data on proportional mortality from Sokoto State Health Strategic Plan (2016), we concluded that the high mortality in Sokoto State is attributable to communicable diseases, maternal, perinatal and nutritional conditions (73% of all deaths), although mortality due to Non-Communicable Diseases (NCDs) is also on the rise (NCDs < cancer - 29% of all deaths). This conclusion systematically supported the premise that Sokoto state is experiencing the third stage of epidemiological transition – the age of unfinished set of health problems; rising new health problems and ill-prepared health systems.

2.0 EPIDEMIOLOGIC TRANSITIONS

The epidemiologic transition describes changing patterns of population age distribution, mortality, fertility, life expectancy and causes of death.

2.1 Western Transition

Based on the Western transition, there are 5 epidemiologic transitions;

2.1.1 First Epidemiologic Transition – Omran posited the first transition called the “Age of pestilence and famine,”¹ which is characterized by high and fluctuating mortality and fertility rates, variable life expectancy with low average life span of about 30 years. Armelagos et al.,² propose that this transition dates back to approximately 10,000 years ago. This transition was a result of transformation from hunter-gatherer societies to agrarian societies. The contact between humans and animals increased and this shift led to infectious diseases, zoonotic diseases, epidemics, endemics, nutrient deficiencies and increased contact with disease vectors during agricultural activities

2.1.2 Second Epidemiologic Transition – Omran posited the second transition called the “Age of receding pandemics,” which is characterized by declining mortality, population growth, increase in average life span from about 30 years to 50 years, decline in deaths from infectious diseases and increase in deaths from chronic degenerative diseases. This transition occurred in the early modern period as a result of improvement in nutrition, standard of living, public health and

¹ Omran, A.R. (1971). The Epidemiologic Transition. *Milbank Mem Fund Q.* 49: 509-538. {PubMed: 5155251}

² Armelagos, G.J., Brown, P.J. and Turner B. (2005). Evolutionary, historical and political economic perspectives on health and disease. *Soc Sci Med.* 61: 755-765. {PubMed: 15950089}

clinical medicine as well as environmental hazards that came with industrial development and increased urban living.

2.1.3 Third Epidemiologic Transition – Omran posited the third transition called the “Age of degenerative and man-made diseases,” which is characterized by degenerative diseases associated with aging as the major causes of death, declines in mortality rates, increase in average life span from about 50 years to 75 years and decline in fertility rate. This transition is typically associated with the late 19th and 20th centuries in developed countries.

In the latter half of the 20th century, death rates from chronic degenerative diseases began to decline among middle and older ages. This phenomenon was neither anticipated nor explained by Omran’s epidemiologic transition theory. Olshansky and Ault (1986)³ proposed a fourth stage of epidemiological transition labelling it “The age of delayed degenerative diseases”

2.1.4 Fourth Epidemiologic Transition – This stage is characterized by the presence of the degenerative diseases described in Omran’s third stage and a significantly delayed average age of death – death rates declined at older than younger ages. Life expectancy increased to 80 or 85 years. This delay is attributed to the influence of medical technology.

2.1.4.1 Another fourth stage extension – Rogers and Hackenberg (1989)⁴ posited this stage called the “The hybistic stage,” which is characterized by the emergence of causes of death strongly influenced by demographic factors such as an interplay between infectious and chronic diseases that could give rise to an increase in infectious diseases, extrinsic social pathologies such as homicide and suicide, individual behaviors and social factors such as economics and public policy.

2.1.5 Fifth Epidemiologic Transition – This stage is characterized by emerging and re-emerging infectious diseases. Communicable diseases causing morbidity in this transition can be avoided by existent technologies such as clean water, sewage disposal and treatment, flush toilets, change in behaviors, immunizations etc. but inability to use these existent technologies as well as financial and political factors contribute to the continuous spread of these diseases.

2.2 Non Western Transition

The non-western transition follows Omran’s first and second epidemiologic transition theory and then a paradigm shift from the western pattern occurs at the third epidemiologic transition.

2.2.1 Third Epidemiologic Transition – Age of triple health burden in non-western societies. This stage entails three major health burdens superimposed upon one another: unfinished old health problems; rising new health problems; and ill-prepared health systems and medical training.

The unfinished old set of health problems – despite relative but a clear decline in mortality, the old set of health problems persisted as a health burden. This old set of health problems includes

³ Olshansky, S.j. and Ault, B. (1986). The fourth stage of the epidemiologic transition: the age of delayed degenerative diseases. *The Milbank quarterly*. 64 (3): 355-391.

⁴ Rogers, R. and Hackenberg, R. (1989). Extending epidemiologic transition theory: A new stage. *Social Biology*. 34 (3-4): 234-243.

communicable diseases, perinatal and maternal mortality, malnutrition, poor sanitation, poverty, low literacy, over population and limited access to health care and safe water especially in rural areas

A rising new set of health problems – there is a gradual increase of degenerative diseases, stress and accidents which is greatly influenced by lifestyle, health behaviors and dietary habits. Also rising are emerging and re-emerging infections from the fifth stage of Western transition which coincides with this third stage of non-western transition.

Lagging or ill-prepared health systems and medical training – In most western countries, the health systems are weak and health professionals are ill-prepared for the rising health problems. Health professionals are better equipped for managing acute diseases or short term care and not chronic diseases or rehabilitative / long term care.

Critically looking at the non-western third stage of epidemiologic transition, we can say that Sokoto State is currently experiencing this transition. This explains the high mortality due to communicable diseases, rising mortality due to non-communicable/degenerative diseases, high fertility rates and high neonatal and perinatal mortality in Sokoto State.

Fourth and fifth epidemiologic transitions? – Non-western societies are likely to experience the fourth and fifth epidemiologic transitions of the western societies but the prevailing disease patterns and health care responses will be more hybrid with significant inequities compared to west. It is important that non-western societies build resilient health systems in anticipation of shifts or deviations that might occur.

3.0 All-Cause Mortality

Based on the International Classification of Diseases, Murray and Lopez (1996a)⁵ classified diseases into three broad cause groups: Communicable, maternal, perinatal and nutritional conditions; Non communicable diseases; Injuries and accidents.

Distribution of mortality health outcomes (disease and injury) in Sokoto state was discussed under these three broad cause groups

- Communicable, maternal, perinatal and nutritional conditions – communicable diseases plaguing Sokoto discussed in this paper include: HIV/AIDS, tuberculosis, leprosy, malaria, diarrhea, schistosomiasis, meningitis and polio. However on august 25th 2020, WHO declared Nigeria polio free after three consecutive years since the last reported case. Therefore, is it valid to include polio? Perinatal and maternal conditions discussed include maternal health, infant and child health, fertility and vesico-vaginal fistula while nutritional conditions discussed include acute malnutrition, underweight, stunting, wasting and overweight
- Non communicable diseases – non communicable diseases discussed include diabetes, cancer, cardiovascular diseases and obesity

⁵ Murray, C.J.L. and Lopez, A.D. (1996a). Evidence-based health policy – lessons from the global burden of disease study. *Science*. 274, 740-743

- Injuries and Accidents – the paper discussed this classification under non communicable diseases rather than a separate entity. Injuries discussed include wounds, systemic organ injuries, fractures and brain trauma. While accidents include road traffic accident, terrorist attacks and Small Arms and Light Weapons (SALW)

In discussing the diseases of the various cause groups, the following guidelines should be followed;

- Reference should be made to the epidemiologic transitions. This gives retrospective, present and future insight into the epidemiological profile of Sokoto
- A specific geographic location (which is Sokoto in this study) should be picked
- Describe disease burden based on socio demographic factors such as gender, age, poverty level and education
- Identify risk factors of diseases – variables associated with increased risk of developing the diseases.
- Reference should be made to the clinical characteristics of diseases.
- Use prevalence to measure the health outcome of interest such as mortality, morbidity or disability.
- Odd ratios with respect to risk factors and socio demographic factors should be calculated.
- Intervention strategies at individual and structural levels – action, progress and gaps
- Prevention strategies at primary, secondary and tertiary levels – action, progress and gaps

We discussed the diseases following only some of the guidelines due to the paucity of available data on population health in Sokoto state. Therefore the government and relevant stakeholders should make accurate and sufficient health information available and accessible. This would help to compile comprehensive information on the epidemiological profile of Sokoto State. However, a few data available on Sokoto's epidemiological profile was clearly shown using well-designed info graphics.

Providing a clear and precise insight into the epidemiological profile of Sokoto State will help in redirecting attention and resources towards diseases and risk factors that threaten the lives and well-being of its population as well as caution against daunting health challenges.