Statistical analysis: causes and death and illness

ASSIGN BUSTER

- Meagan Atcheson

The statistics around causes of death are imperative as well as vital in determining and monitoring the health status of populations as well as for identifying critical priorities for various health systems. Most industrialized countries have effective systems in place to determine the main causes of death. In contrast to this, developing countries are not as advanced in placing such systems which proves detrimental in trying to improve the overall health of the nation. Indeed, there are vast differences in the top causes of death within developed countries versus the developing countries. This essay will compare and contrast the top five causes of death in the United States of America and in South Africa as well as provide evidence and explanations for these differences. Moreover, it will critically discuss the risk factors, health policy, disease progression and treatment advances or lack thereof with regard to particular causes in each context. Finally, it will address certain approaches needed to improve the health of populations.

The most fundamental aspect of any health policy looks at methods to maintain as well as improve the health status of a population. Defining the health of a nation as well as how health is measured is critical to any health care system (Kronenfeld, 2002). The World Health Organization defines health not only in terms of the negative definition where health is seen as the absence of disease but also incorporates physical, mental and social well being (World Health Organization, 1948). Mortality rates are the basic form of measurement needed to asses health status. By counting the number of deaths in a year and comparing it to preceding years, the health status of various populations can be determined (Ogden, 2007).

Health statistics have shown that diseases, their occurrence as well as mortality rates differ from one country to the next; more specifically developed countries as opposed to developing countries (Tool & Tool, 2004). Developed or industrialised countries such as the USA are typically more economically advanced with a high level of economic growth and standard of living as well as advanced technological infrastructure. In contrast to this, developing countries like South Africa have a lower standard of living, are under industrialised and have poorer economic growth (Szirmai, 2005).

Ranking causes of death is an extremely useful method for representing mortality statistics (Ogden, 2007). The U. S department of health and human services released a report at the end of 2009 on the leading causes of death in the United States by age, sex and race. The top five causes death in rank order were found to be; diseases of the heart; malignant neoplasms; chronic lower respiratory diseases; cerebrovascular disease and accidents (unintentional injury). It is imperative to note the differences in ranks for age. For example the leading causes of death for infants were accidents; congenital malformations; deformations; chromosomal abnormalities and malignant neoplasms. This differed to the age group of between 2-44 years where the leading causes were unintentional injuries, homicide as well as suicide. For individuals over 45, the primary causes of mortality respectively were heart disease and cancer. Certain variations and similarities exist between the different genders. For both genders, heart disease and cancer were the first and second leading causes of death. The third cause for men was unintentional injury versus stroke for women. The fourth leading cause for both sexes was chronic lower respiratory disease followed by stroke for

men and Alzheimer’s for women. Little deviation was found among the different races (Heron, 2012). These results remained the same for data collected in 2011 (Hoyert & Xu, 2012).

The South African statistical release for 2010 showed Tuberculosis (TB) to be the leading natural cause of death. The second leading cause of death was influenza and pneumonia. The third primary cause was intestinal infectious diseases followed by other forms of heart disease (not Ischaemic) and then cerebrovascular diseases. The first two causes; tuberculosis and influenza and pneumonia were the top two causes for both male and female. The third leading cause for women was cerebrovascular disease followed by intestinal infectious disease and then other forms of heart disease. This differed to that of the male group whose third leading cause of death was intestinal infectious disease followed by other forms of heart disease and then cerebrovascular disease. The age group as well as the various provinces in South Africa were included in this statistical report to illustrate slight differences in the top causes of death. In the Free State as well as in Limpopo, the leading cause of death was influenza and pneumonia unlike all other states where tuberculosis remained the main cause of death. The major death cause for children below the age of fifteen years was intestinal infectious disease compared to the age group 15-64 whose main reason for death was due to TB. For those aged over 65, cerebrovascular disease caused the most deaths (Statistics South Africa, 2010).

Being a developing country, South African individuals face a high risk of contracting and dying from Tuberculosis. Tuberculosis is a disease where bacteria enters and invades various body tissues such as the lungs, brain

and kidney. It is spread from individuals who contain the untreated, active form of the Tuberculosis bacteria through droplets releases into the air via coughing, sneezing or speaking (Wouk, 2010). Although there are numerous risk factors for TB, it mostly affects poorer individuals who are living in rural areas with a lack of affordability for transport as well as treatment, people with weak immune systems, those who lack access to Directly Observed Treatment, Short course (DOTS) as well as those who are uninsured. Furthermore, the strongest risk factor for the development of TB is HIV. These two diseases continue to have a deadly association as each drives the development of the other. Drug resistant strains of the TB bacteria is a huge risk factor leading to the enormous amounts of deaths in South Africa (Davies, 2005). Moreover, the poor health care system as well as the limited number of properly trained health workers in South Africa threatens the majority of people who contract Tuberculosis (Downing, Gwyther, & Mwangi-Powell, 2012).

The National Department of Health in South Africa implemented the National Tuberculosis control programme which aimed to reduce mortality due to TB as well as prevention of drug resistance development by 2005. However, the health policy surrounding TB in South Africa needs to be strengthened considerably in various areas. Firstly, public health services need to improve DOTS implementation as well as more emphasis needs to be placed on access and utilisation of health services (World Health Organization, 2009). Moreover, different approaches need to be taken in regard to the HIV on TB relationship. Furthermore, higher quality strategies are needed for better TB diagnosis and treatment (South African Department of health, 2004)

Although TB is curable, it is the progression from latent TB infection to multidrug- resistant TB that results in the high mortality figures in South Africa. Individuals with latent TB infection show no signs and symptoms of the disease as it is still in the harmless stage. However, if these individuals do not receive proper treatment, reflecting majority of the cases present in South Africa, it develops into TB disease. It usually starts out with damage to lung tissue but often lands up affecting many body tissues and organs. Moreover, TB is extremely resilient and adaptable. Often in developing countries, the right combination of drugs are not taken for the right amount of time due to a large number of reasons such as poverty and this then leads to multidrug-resistant TB. If left untreated multi-drug resistant TB can be fatal (Dyer, 2010).

There have been major efforts to improve TB control and treatment in South Africa. Fixed dose combination tablets (FDC'S) were introduced in 2000 in the hope of prevention of resistance and easier administration. Together with the combination tablets, directly observed treatment is enforced to ensure treatment adherence and to help prevent emergence of drug resistance (South African Department of health, 2004). Despite these efforts, the TB incidence and fatality rates still continue to increase. It is therefore not a lack of treatment that hinders South Africa from reaching their target for TB control, but rather a lack of appropriate infection control measures in public health settings together with the high prevalence of HIV that results in increased numbers of drug resistant TB cases (Weyer, 2007).

Heart disease in developed countries like the United States is mostly attributed to individual behaviour and lifestyle unlike TB in South Africa. This

disease can be linked to risk factors such as smoking, unhealthy diet, alcohol abuse, diabetes, lack of physical activity as well as high blood cholesterol and blood pressure. Age, heredity and gender also play a role in the development of heart disease (Brannon & Feist, 2010). In contrast to developing countries, Americans face very different risk factors which can often be attributed to their fast paced and busy lifestyles.

America implemented a public health action plan to prevent heart disease and stroke which addresses an urgent need for the action of prevention. This is in contrast to South Africa’s health policy that still needs to be strengthened. Public health agencies together with the general public of America are needed to help promote the national goals of preventing heart disease as support for these health programmes continue to remain low. The American health action plan aims to improve cardiovascular health through prevention, early detection as well as treatment of various risk factors. This plan also includes developing new health policies that includes innovative intervention programmes for especially high risk groups that will result in measurable impacts (U. S. department of health and human services, n. d.)

Heart disease is a chronic condition that tends to get worse over time. Unlike TB, heart disease is not infectious and cannot be spread from one person to the next which is often the case in small areas such as the townships in developing countries. Heart disease is mostly a direct result of lifestyle choices. Furthermore, the progression of heart disease can become extremely unpredictable as it is different for each person. In some instances, the symptoms of the disease can remain stable over months or even years before becoming worse, while in others these symptoms may rapidly

development. In America, early stages of heart disease are seen as early as age 15. Hypertension as well as other cardiovascular risk factors has all been linked to the progression of heart failure (Abraham, 2001).

New treatments for heart disease have dramatically improved the life expectancy of these individuals in America. Drugs such as statins, antihypertensive agents, thrombolytic agents, anti-platelet as well as anti-coagulation therapies have all proved to be effective treatments. Moreover, novel device based therapies is an advancement in treatment that has contributed to a decline in cardiac mortality in the United States. Through being a developed country, they have access to modern genetics and genomics that will allow for more targeted use of drugs to emerge in the future which will greatly improve the effectiveness of therapy. This is in contrast to South Africa’s limited resources and modern medical advances that still allow drug resistant TB to be a major cause of death (Weisfeldt & Zieman, 2007).

Apart from cerebrovascular disease and some forms of heart disease, the leading causes of mortality differed significantly between the United States and South Africa. These variations can be explained by the different risk factors, health policies, disease progressions as well as treatment advances or a lack thereof between the two countries. In contrast to developed countries, developing countries have vastly different health priorities due to a diverse set of risks. The many factors such under industrialization, high unemployment rates, underdeveloped health care system as well as the low standards of living is the answer to why causes of death are so unalike. Moreover, the problems in the quality of health care need to be addressed in

order to see the health of South Africans improve. In America, additional intervention programmes need to be introduced to help better the health status of the nation. Furthermore, through the comparisons of the approaches South Africa takes in regard to Tuberculosis versus the approach to heart disease taken in America, proper explanations of the mortality cause differences can be seen.

References:

Abraham, W. T. (2001). Anti- adrenergic therapy in hypertensive patients with concomitant disease. In L. Ryden (Eds.). *Disease progression throughout the cardiovascular continuum.* (pp. 25-26). Germany: Springer-Verlag Berlin Heidelberg.

Brannon, L., & Feist, J. (2010). *Health psychology: an introduction to behaviour and health* (7 th Ed.). USA: Wadsworth Cengage Learning.

Davies, P. O. (2005). Risk factors for Tuberculosis. *Monaldi Arch Chest Dis* , *63* (1), 37-46.

Downing, J., Gwyther, L., & Mwangi- Powell, F. (2012). Public health and palliative care: a perspective from Africa. In L. Sallnow, S. Kumar, & A. Kellehear (Eds.). *International perspectives on public health and palliative care.* (pp. 69- 84). Oxon: Routledge.

Dyer, C. A. (2010). *Biographies of disease: Tuberculosis.* California: Greenwood Press.

Heron, M. (2012). Deaths: Leading causes for 2009. *National vital statistics reports* , *61* (7). Hyattsville, MD: National Centre for Health Statistics.

Hoyert, D. L., & Xu, J. Q. (2012). Deaths: Preliminary data for 2011. *National vital statistics reports;* vol 61 no 6. Hyattsville, MD: National Centre for Health Statistics.

Kronenfeld, J. J. (2002). *Health care policy: issues and trend.* USA: Praeger Publishers.

Ogden, J. (2007). *Health Psychology* (4 th Ed.). England: Open University Press.

South African Department of Health. (2004). *The South African National Tuberculosis Control Programme: Practical guidelines.* Retrieved fromhttp://www. kznhealth. gov. za/

Statistics South Africa. (2010). *Mortality and causes of death in South Africa: findings from death notification* (P0309. 3). Pretoria: Statistics South Africa. Retrieved fromwww. statssa. gov. za/publications/P03093/P030932010. pdf

Szirmai, A. (2005). *The dynamics of socio-economic development.* UK: Cambridge University Press.

Toole, G., & Toole, S. (2004). *Essential AS Biology for OCR.* UK: Nelson Thornes Ltd.

U. S. Department of Health and Human Services, Centers for disease control and Prevention.(n. d.). *A public health action plan to prevent heart disease*

and stroke. Retrieved fromwww. cdc. gov/dhdsp/action_plan/pdfs/action_plan_full. pdf

Weisfeldt, M. L., & Zieman, S. J. (2007). Advances in the prevention and treatment of cardiovascular disease. *Health Affairs, 26* (1), 25-37. doi: 10. 1377/hlthaff. 26. 1. 25

Weyer, K. (2007). Case study: South Africa. *Bulletin of the World Health Organization, 85* (5), 325-420.

World Health Organization. (1948) *Preamble of the Constitution of the World Health*

Organisation as adopted by the International Health Conference. Geneva: Switzerland.

World Health Organization. (2009). *WHO policy on TB infection control in health care facilities.* Geneva: WHO

Wouk, H. (2010). *Tuberculosis.* NY: Marshall Cavendish Corporation.