Future challenges of population ageing and the health of older persons in South Africa

Introduction

While population ageing has become a well-publicized phenomenon and public concern in most developed societies, it is not a similarly-publicized issue in developing societies—despite the fact that many developing countries currently are ageing at a faster rate than developed countries, that the most rapid increases in older populations are currently happening in the developing world, and that the numbers of older persons in developing countries currently exceed those in developed nations (United Nations, 2002; Kinsella & Velkoff, 2001). Developing countries are often least prepared to meet the challenges of an ageing society (WHO, 2004).

Concomitant child mortality and fertility declines have been experienced in South Africa since the mid 1980s (Dorrington *et al.*, 2001), and South Africa is currently one of the most rapidly ageing populations in Africa (May, 2003). The proportion of older persons was 7.3% in 2001 (Statistics South Africa, 2003) and although lower than in the developed nations, is among the highest of the African countries.

South Africa is experiencing a major AIDS pandemic, dramatically changed from a relatively low-level epidemic during the late 1980's, then mainly affecting men who have sex with men, to a profound heterosexual epidemic with exceptionally rapidly-spreading infection rates. South Africa is currently the country with the largest number of HIV-positive persons, i.e. over 5 million, accounting for 30% of the estimated infections world-wide (UNAIDS, 2004).

Theoretical background

The work for our paper is informed by two theoretical foci, i.e. the demographic transition theory, and the theory of epidemiological and health transition.

Demographic transition theory

Over the past half a century, the interpretation of past population change and the expectations about future trends, rest to a considerable degree on a body of observations and explanations referred to as the *Demographic Transition Theory*. We acknowledge the arguments around whether it qualifies as a theory, paradigm or conceptual framework, and recognize the work that has been done around different forms of the demographic transition. However, in our paper, population ageing are perceived as an outcome of the population's mortality and fertility changes as assumed in the classical demographic transition theory.

Epidemiological and health transition theory

The changing age structure of a population resulting from demographic change is generally associated with a transformation of cause of death patterns in the population. As fertility declines and populations begin to age, the prominent causes of death change from those associated with childhood mortality to those associated with older age (Kalache, 1996). This has been termed the 'epidemiological transition', referring to the long-term and complex changes in the cause of death patterns and changes in health and disease that occur during demographic and socio-economic transformation in a population (Mosley *et al*, 1993: 676.)

A theory of epidemiological transition was initiated by Omran (1971) who posited different stages or sequences of epidemiological transition in a population, identifying three phases, i.e. the age of pestilence and famine, the age of receding epidemics, and the age of degenerative and man-made diseases in that population. Because of progressive declines in mortality rates from some chronic diseases associated with the steady gains in life expectancy among older persons in the United States and other industrial countries, Olshansky and Ault (1986, cited in Mosley *et al.*, 1993: 676) proposed a

fourth phase in the epidemiological transition, i.e. the age of delayed degenerative diseases.

Simplistically-stated, Omran's theory refer to a long-term change in the leading causes of death, from infectious and acute causes, to chronic and degenerative cause. However, based on observations in some large middle-income populations, Frenk *et al* (1989) proposed changes to Omran's work with their protracted-polarised model of epidemiological transition, suggesting the long-term co-existence of infectious and lifestyle diseases in the same population.

The aggregate processes at work in the demographic and epidemiological transitions have become known as the 'health transition', referring to the combined changes in fertility, mortality, risk factors, cause of death and morbidity profiles, as well as health systems' response to these (Mosley *et al*, 1993: 674).

Aim

The paper will explore the impact of population ageing on the future health of older persons in South Africa by examining (i) the current cause of death profile in the older population (60 years or older); (ii) the current risk/life style factor profile of adults (15 years or older); and (iii) the projected increases in the number of older persons taking into account the demographic effect of the country's huge HIV/AIDS epidemic.

Research methods and data sources

Descriptive analyses from existing data sources and demographic projections will be performed, utilizing data from the *South African National Burden of Disease Study (2000) (SA NBD)*, the *South African Demographic and Health Survey (1998) (SA DHS)*, the most recent *Population Census (2001)*, and *ASSA2002*—the latest revised AIDS and Demographic Model of the Actuarial Society of South Africa.

Mortality estimates from the SA NBD will be used, which utilized an adapted version of the 1990 Global Burden of Disease Study (Murray & Lopez, 1996a, b). Multiple data sources, local and international expert consultants, and a modeling approach calibrated to empirical data, have been used to develop estimates of the levels and underlying causes of death and disease in South Africa. Full methodological details are available in Bradshaw *et al*. (2003).

Data on risk factors for chronic disease will be extracted from the SA DHS, which included nearly 14 000 adults aged 15 years or older who lived in a randomly selected sample of households. The survey included the measurement of blood pressure and anthropometry of adults, as well as questions about lifestyle factors and quality of care. Methodological details are available from Department of Health *et al*. (2001).

Projections of future numbers and proportions of older persons will be obtained from ASSA2002, a spreadsheet simulation model that is an update of earlier ASSA models of the demographic impact of the heterosexual HIV/AIDS epidemic in South Africa. The model has been calibrated to various relevant data sources, and allows for five HIV/AIDS prevention and treatment programmes, namely: social marketing, improved treatment for sexually transmitted diseases, voluntary counseling and testing, mother-to-child transmission prevention, and anti-retroviral treatment. Methodological details can be obtained from Actuarial Society of South Africa (2004).

Results and expected results

Non-communicable diseases (NCDs) are responsible for 84% of deaths in the population 60+; communicable diseases and nutritional deficiencies for 13%; injuries for 3%; and HIV/AIDS for 0.4%. NCDs are dominated by ischaemic heart disease and stroke, the two leading single causes of death that account for almost one-third of older deaths, followed by hypertensive heart disease, chronic obstructive pulmonary disease and diabetes mellitus. Malignant neoplasms were responsible for large numbers of

deaths in older persons, and the ranking for specific cancers differed between men and women. In older men, lung/trachea/bronchi cancer was the leading cause of cancer deaths, followed by prostate, oesophageal, stomach, liver and colo-rectal cancer. In older women, breast cancer led cancer deaths, followed by lung/trachea/bronchi cancer, cervix, oesophageal, colo-rectal and other malignant cancers (Joubert & Bradshaw, 2004).

From the 1998 SA DHS, in adults 15 years+, the prevalence of asthma was 7% in men, and 9% in women. As a crude measure of airways function, peak expiratory flow rates were assessed, and 4% of men and women had abnormal peak flow rates. In 52% of men and 60% of women, a blood pressure reading of ≥ 140/90 mmHg was measured. About one-fifth of men and about a quarter of women were overweight, while about a tenth of men and a third of women were obese. In men and women, 37% and 9% respectively, smoked daily at the time of the survey. Over a third of men and women were exposed to environmental tobacco smoke (ETS) in the home, while 28% of men and 12% of women were exposed to ETS in the workplace. Of men and women, 45% and 17% were current consumers of alcohol. Over a quarter of men and a tenth of women were alcohol dependent as measured by the CAGE questionnaire. Of current consumers of alcohol, about a third of both men and women reported risky drinking over weekends (Department of Health *et al*., 2001).

Evidence exists of a causal association between hypertension and increased risk of ischaemic heart disease, stroke, hypertensive heart disease, other cardiovascular and renal disease. Overweight and obesity have been found to lead to adverse metabolic effects on blood pressure, cholesterol, triglycerides and insulin resistance with a range of poor health outcomes. Evidence also suggests that smoking causes substantially increased risk of mortality from lung cancer, upper aero-digestive cancer, several other cancers, all vascular diseases, heart disease, chronic obstructive pulmonary disease and other respiratory diseases (Ezzati *et al*., 2002; WHO, 2003). In a Comparative Risk Assessment Study, we are currently assessing the contribution of some of the mentioned risk and life style factors to the burden of disease in South Africa, and will report hereon in our presentation.

South Africa has one of the most rapidly ageing populations in Africa (May, 2003), and the proportion of older persons (7.3%), although lower than in the developed nations, is higher than in any of the African regions, and among the highest of African countries. Figure 1 shows that AIDS is projected to affect the population size in most age groups but that the older age groups will be affected least. Despite the impact of AIDS, it is projected that by 2015 both the number and proportion of persons 60+ are projected to increase to 4.24 million and 9.5% respectively (Joubert *et al*., 2003).

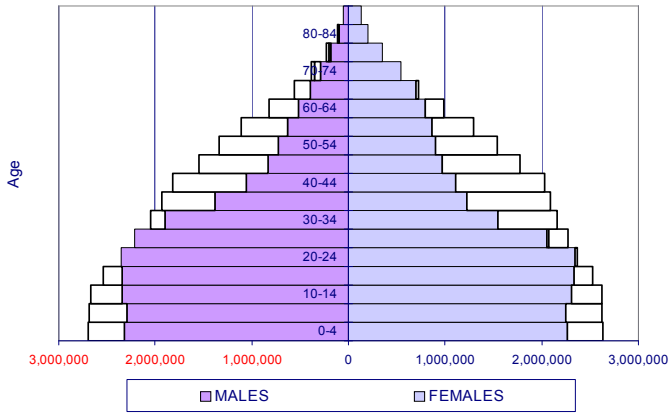

Figure 1: Population age structure projected with and without HIV/AIDS, 2015

Future challenges

It is projected that South Africa will continue ageing. In the older population, the country is currently struggling to control pre-transitional causes of morbidity and mortality; is dealing with very high

intentional injury rates; while simultaneously bearing a huge burden of chronic and degenerative disease. Considering the projected increases in the older population on the one hand, and on the other hand, the current risk factor profiles of adults combined with poor levels of awareness, treatment and control, it seems inevitable that the country's health system will be facing unprecedented increases in the volume and diversity of chronic health problems. Given the health care demands from a *quadruple* burden of disease in the total population and the alarming extent of premature mortality in younger ages, concerted efforts of age-friendly health promotion and disease prevention in the community, and disease management within primary care services are needed to better prepare the country to meet the challenges of its rapidly-ageing population.

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