



# Chronic Non-communicable Diseases in South Africa: Progress and challenges

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**I**n recent years, recognition of the rising threat of chronic non-communicable diseases (NCDs) as major contributors to preventable disease and premature mortality has placed these conditions firmly on the global development agenda. A United Nations resolution taken on 13 May 2010 set in motion processes that culminated in a United Nations Security Council summit on NCDs in September 2011. This action has been important in highlighting NCDs, especially in low- and middle income countries such as South Africa, and placing them on a par with other global health priorities such as HIV and AIDS.

In this chapter, we describe the current status of chronic NCDs in South Africa and point to the drivers of the high and increasing burden of NCDs in the country. Building on the review of NCDs in the 2008 South African Health Review, we reflect on progress in local policies and practices over the past five years.

Our review shows that increasing attention is currently being paid to NCDs in South Africa but that this heightened focus has to be strengthened and sustained over the next decades to combat the current trend and achieve a real reduction in the NCD-related burden. Specifically, more stringent measures are required to address the common risk factors of chronic NCDs and reverse the burden of NCDs. To achieve this, action is required from several constituencies. Ultimately, South Africa will need to invest in NCD prevention and control as an integral part of sustainable socio-economic development.

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## Introduction

“Chronic non-communicable diseases” (NCDs) refers to a group of slowly progressive medical conditions or diseases of long duration (chronic), which are characteristically non-infectious and non-transmissible among people (non-communicable). They include heart disease, stroke, cancers, diabetes, chronic obstructive pulmonary disease (COPD), asthma, cataracts, and more. The chronic character of these diseases demands long-term care and they impose a continuous burden on an already overstretched health system similar to the way HIV infection does. Their non-infectious cause however points to a different set of determinants that need to be targeted.

Chronic NCDs, which account for approximately two-thirds of all deaths globally, are the leading cause of mortality worldwide.<sup>1-3</sup> Cardiovascular disease, cancer, type II diabetes, and COPD make up the majority of the NCD-related burden. This burden is increasing in many countries that still suffer widespread infectious diseases, resulting in a double burden of disease.<sup>1</sup> For example, approximately 83% of the global mortality from NCDs occurs in low- and middle-income countries (LMICs). Furthermore, it is estimated that the total deaths globally attributable to NCDs will increase by 15% in the next decade.<sup>3</sup>

In South Africa (SA), NCDs account for an estimated 37% of all-cause mortality and 16% of disability-adjusted life years.<sup>4</sup> Ischaemic heart disease, stroke, diabetes mellitus, and COPD account for 6.6%, 6.5%, 2.6%, and 2.5% of all deaths respectively. This burden varies significantly between population groups. For example, the age standardised cardiovascular disease mortality rate is 606.9 per 100 000 for Asians and 375.3 for ‘Africans’.<sup>4</sup>

Evidence exists of a growing interest in tackling the burden of NCDs in SA. In September 2011, the South African government convened a summit on the “Prevention and Control of Non-Communicable Diseases”.<sup>5</sup> The summit, which included various governmental departments, researchers, private sector stakeholders, and civil society, produced a declaration that endorsed action aimed at various levels of risk factors (behavioural, environmental, and structural). It also acknowledged the need for intersectoral collaboration.<sup>5</sup> Furthermore, the national government will soon be releasing a “Strategic Plan for Non-Communicable Diseases, 2012-2016”, which will provide a short-term framework to reduce the burden of NCDs.

The recent acknowledgement given to NCDs in SA is important progress. Aside from the tremendous burden NCDs place on individuals, they also pose significant economic challenges to the country. NCDs can deepen poverty, reduce economic productivity, and strain an already under-resourced healthcare system. Action is urgently required: as a result of the demographic transition, NCD rates will increase regardless of progress made in reducing the prevalence of leading risk factors. For example, it is estimated that between 2001 and 2025 the proportion of the population aged 60 and older will increase from approximately 7.1% to 10%.<sup>6</sup>

However, there is reason for optimism. Many of the risk factors for NCDs are modifiable, which provides considerable opportunities for intervention. However, progress in reducing these risk factors will only be attained if appropriate attention is given to their social and structural determinants. A concerted effort from all government

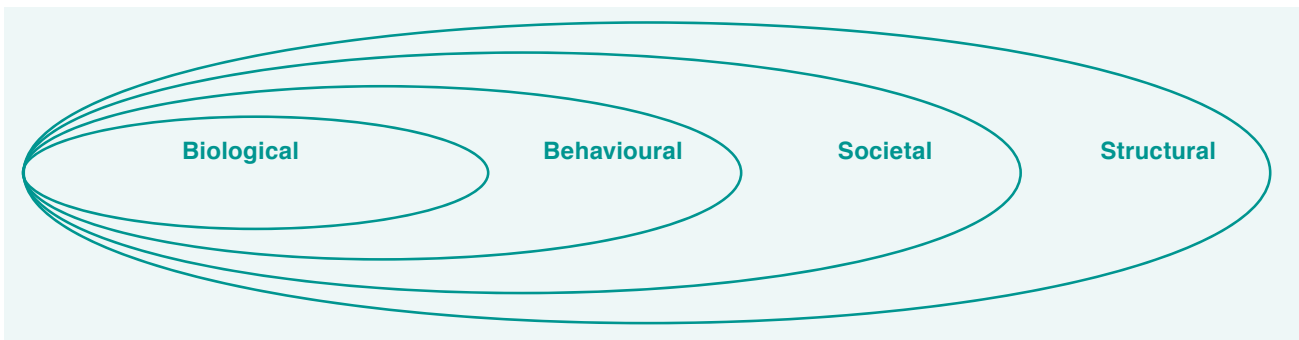
departments and sectors in society is required to mitigate the future threat that NCDs pose to the country.

In this chapter, we describe the current status of chronic NCDs in South Africa and point to the drivers of the high and increasing burden of NCDs. Building on the review of NCDs in the 2008 *South African Health Review*<sup>2</sup> we reflect on progress in policies and practices in the past five years. We deliberately focus on the ‘big four’ (heart disease, cancer, type II diabetes and COPD) because of the overall burden they make up in SA and the many risk factors they commonly share. Mental illness, a major contributor to the overall disease burden in SA,<sup>7</sup> is not covered in this chapter. We then provide examples of interventions that have been implemented in SA and other countries. Finally, we conclude by highlighting the current challenges facing public health research in SA and offer a future direction for alleviating the NCD-related burden.

## Risk factors for NCDs

Many factors increase an individual’s risk for NCDs. It is useful to visualise the various categories of risk factors or determinants as depicted in Figure 1 which highlights two main points: the relative distance of each group of risk factors to the disease outcome (i.e. “biological” – proximal; “structural” – distal), and the influence each group of risk factors has on another group (emphasised in Figure 1).

It is also useful to divide the risk factors into factors that are modifiable and non-modifiable. Modifiable risk factors are the behavioural, social, and structural determinants, in which it is feasible to intervene. Non-modifiable factors consist of an individual’s characteristics such as age, gender and genetic endowment. Success in reducing the prevalence and burden of NCDs in SA will rely on a comprehensive strategy that focuses on all modifiable determinants while recognising the role of individual and biological factors. Below we briefly review key risk factors and determinants, beginning with the more proximal and concluding with the distal, structural determinants.

**Figure 1: Determinants of health portrayed as concentric rings of risk factors**

Source: Western Cape Burden of Disease Reduction Project, 2007.<sup>8</sup>

## Individual determinants

Most NCDs are related to behavioural or 'lifestyle' factors, which in turn are significantly shaped by factors embedded in the social (working and living) environment and structured by more distal economic and political factors. However, certain populations have a heightened genetic susceptibility, which not only increases the likelihood of developing NCDs but also influences the age of onset. One of the most prominent evolutionary theories linking genetic endowment with NCDs is the 'thrifty gene' hypothesis, which explains why some populations are more susceptible to type II diabetes than others. Essentially, 'thrifty genes' increase fat storage during times of abundance to compensate for infrequent bouts of famine.<sup>9</sup> This was an important evolutionary trait that increased survival in times when food supply was especially precarious.

In SA, some ethnic groups have been shown to have an increased risk for certain NCDs. For example, South African Indians are more susceptible to insulin resistance than other ethnic groups in the country, which has resulted in an increased risk for type II diabetes among this group.<sup>10</sup> Also, approximately 1 in every 72 Afrikaners has familial hypercholesterolaemia, an autosomal dominant genetic disorder, which results in elevated low-density lipoprotein levels and an increased risk for ischaemic heart disease.<sup>11</sup> Fortunately, genetic testing and counselling programmes have contributed significantly to the identification, prevention, and management of the disease for those at greater risk of developing these disorders as a result of their genetic endowment.

It is increasingly recognised that exposure to unhealthy risk factors such as inadequate nutrition and smoking during 'critical periods' of life such as pregnancy, foetal life and early childhood can increase one's susceptibility to an array of chronic diseases later in life.<sup>12,13</sup> There is evidence that this is a concern in SA. For example, using data from the baseline birth-to-ten study cohort, Steyn and colleagues showed that in 1990 in the greater Johannesburg area, approximately 6% of pregnant women were current smokers and that a significant association was found between smoking and low birth weight.<sup>14</sup>

## Behavioural determinants

Most NCDs (heart disease, type II diabetes, and certain cancers) are associated with behavioural risk factors such as tobacco use, physical inactivity, unhealthy diets and alcohol abuse. These risk factors cluster in groups of individuals as a result of their socio-

economic status (SES) and environment, and contribute to the disparity in health outcomes between groups.

## Tobacco use

According to the World Health Organization (WHO), "tobacco is the single most preventable cause of death in the world today".<sup>15</sup> Approximately five million people in the world die each year as a result of tobacco use. Tobacco use has been causally associated with numerous NCDs such as ischaemic heart disease, COPD and a wide variety of cancers. Although great success has been achieved in many developed nations in reducing the prevalence of smoking, the burden is shifting to many LMICs, largely as a result of an aggressive business strategy by the tobacco industry.<sup>16</sup>

In SA, the prevalence of smoking is relatively high. The most recent national survey indicates that in 2003, 35% of adult men and 10% of adult women were considered to be daily or occasional smokers.<sup>17</sup> The high prevalence of smoking in SA is also reflected in cancer rates. For example, lung cancer is the leading cause of death from cancer in men.<sup>18</sup> Although SA has developed and implemented a comprehensive tobacco control policy, 2008 data suggest that virtually no progress has been made in decreasing the prevalence of smoking in SA youth over the past decade.<sup>19</sup> Approximately 21% of youth in grades 8 to 11 are current smokers, measured by self-reported tobacco use in the past 30 days.<sup>19</sup> Lack of progress on this front should be of concern for public health advocates in SA, given the well-established relationship between the age of onset of smoking and the likelihood of lifetime use.

## Obesity

SA is currently experiencing an obesity epidemic. Obesity is associated with many chronic diseases, including type II diabetes, heart disease, certain cancers, and osteoarthritis. So strong is the link between obesity and type II diabetes that the term 'diabesity' has been coined to describe their dualistic occurrence in the population.<sup>20</sup> A survey conducted in July 2010 among 500 adults in the country's four biggest cities, on behalf of the pharmaceutical company GlaxoSmithKline (GSK), found that 72% of the residents of Cape Town, 68% of residents of Pretoria, 59% of those of Johannesburg, and 52% of those of Durban are overweight.<sup>21</sup> In 2000, it was estimated that 87% of cases of type II diabetes and 7% of all deaths were attributable to excess body weight.<sup>22</sup>

According to national data obtained from the South Africa Demographic Health Survey (SADHS) of 2003, approximately 55% of women and 30% of men are considered overweight or obese.<sup>17</sup> Disturbingly, youth appear to be following a similar pattern. For example, according to the South African Youth Risk Behaviour Survey of 2008, approximately 17% to 20% of youth aged 13 to 19 are overweight and 4% to 5% are considered obese.<sup>19</sup>

The continuing rise in prevalence of overweight and obesity in most 'developed' countries and in an increasing number of LMICs has been associated with a dramatic transition from diets constituted by 'whole' foods to diets increasingly composed of processed foods. Specific dietary components are associated with chronic diseases; for example, diets with high levels of saturated fat, salt, and refined carbohydrates are associated with cardiovascular disease and type II diabetes.<sup>23</sup>

In SA, limited data are available on individual or household dietary consumption patterns. Much of our knowledge of dietary patterns is derived from commercial sales statistics, a nationally representative survey of food consumption for children (one to nine years old), and small-scale dietary intake studies in various sub-populations throughout the country. These studies highlight the similarities and differences in diets according to SES, socio-demographic factors, and geography.<sup>23</sup> For example, a 2011 study that investigated the prevalence of street food- and fast food consumption indicates that 19% of black Africans were considered frequent ( $\geq 2$  a week) street food consumers in comparison to Indians (1.9%) and Whites (2.9%).<sup>24</sup> Interestingly, when measuring fast food consumption, the rates were reversed: 14% of Indians, 12.5% of Whites, and 5.4% of Blacks were considered frequent consumers. Contrary to most developed nations, fast food consumption from large commercial outlets in SA is highest in high socio-economic groups.<sup>25</sup>

It is increasingly evident that an emerging trend of unhealthy 'western' eating is occurring in SA. A review undertaken in 2012 suggests that sugar consumption in SA is increasing.<sup>26</sup> This is especially the case in regard to soft drink consumption. For example, from 1992 to 2010, per capita – per year consumption of Coca Cola products rose from 130 to 254 units.<sup>27</sup> Furthermore, between 2005 and 2010 ready meals and snack bar sales increased by 43.1% and 42.6% respectively.<sup>27</sup> Traditional diets, high in legumes and low in processed/refined carbohydrates, are being replaced by a 'western' diet that is implicated in NCDs.<sup>28</sup> Although a noticeable difference in the dietary composition among South Africans still exists, the increasing changes to the food environment (discussed later) suggest that it is quite plausible that the 'western' unhealthy diet will one day be pervasive across the country.

## Physical inactivity

Physical inactivity or sedentary lifestyles in general can be seen as a defining characteristic of modern life, especially in urban regions. Technological advancements, urbanisation, and infrastructural changes are some of the factors associated with sedentary lifestyles. This is of concern because physical inactivity is a risk factor for many NCDs. Aside from being a key determinant of body weight, physical activity is independently associated with a reduction in heart disease, type II diabetes, hypertension, and cancers of the breast and colon.<sup>29</sup>

In SA, an unfavourable trend of inactivity among youth appears to

be developing. The 2008 National Youth Risk Behaviour Survey indicates that an increasing number of youth (42% from 38% in 2002) neither participate in any activity nor perform a sufficient amount of exercise on a weekly basis.<sup>19</sup>

## Alcohol misuse

Alcohol, when consumed in excess quantities, is associated with a wide range of social and biological maladies.<sup>30</sup> In SA approximately 12% of adolescents initiate alcohol use before they are 13 years old.<sup>31</sup> Consumption patterns for adolescents (aged 13 to 19) between 1998 and 2008 largely remained the same. Although significant differences in alcohol consumption patterns between genders still exist, binge drinking among female adolescents, which was historically low, appears to be increasing.<sup>31</sup>

## Social determinants

Social determinants generally refers to the conditions in which people live, work, and grow. The social determinants of health provide insight into how factors such as one's employment, educational attainment, living accommodation, and ability to participate in society fully can affect the equitable distribution of health.

### Employment, poverty and education

Poverty is the most obvious and significant determinant of poor health outcomes, which include many NCDs. Statistics South Africa data from 2012 Quarter 3 (the most recent data available at the time of writing) indicate that the unemployment rate is at a staggering 25%.<sup>32</sup> Youth (15 to 24) are disproportionately affected, with an unemployment rate of 31.4%. Nationally, 22.3% of households receive their main source of income from grants.<sup>33</sup> Provincial variation highlights the challenge of poverty. For example, 37.9% of the Eastern Cape population relies on grants for its main source of income, whereas this applies to only 10% of the Gauteng population.

The percentage of individuals aged 20 and older who had completed their Grade 12 increased from 21.5% in 2002 to 27.4% in 2011. Also, the percentage of people with no formal education decreased from 10.8% in 2002 to 6.5% in 2011.<sup>32</sup>

SA has a long history of occupational hazards, most notably in the mining sector.<sup>34</sup> These hazards, which workers – often migrant labourers – have been exposed to for a long time, are strongly associated with COPD and other chronic diseases, and include tuberculosis.<sup>35</sup>

### Accommodation

An important way of measuring standard of living is through the quality of accommodation. In SA, approximately 12.1% of the population resides in informal settlements.<sup>33</sup> This section of the population is particularly concentrated in the Gauteng (20.4%), North West (18.4%), and the Western Cape (15.1%) provinces. Progress is being made in regard to living conditions. For example, the percentage of the population that received a government housing subsidy increased from 5.5% in 2002 to 9.5% in 2011. During the same period, the proportion of households connected to the main electricity supply increased from 76.8% to 82.7%.<sup>33</sup>

Families that cook and heat their homes with biomass fuels such as wood substantially increase their risk of developing COPD and other conditions associated with indoor air pollutants.<sup>36</sup> In SA, progress is slowly being made in eliminating this risk. For example, between 2002 and 2011 the proportion of households that used wood as a primary source of energy decreased from 19.7% to 13.3%.<sup>33</sup> Moreover, the percentage of households that used electricity for cooking increased from 57.9% to 73.1% during the same period. The variation between provinces is significant. For example, in Limpopo approximately 44.5% of households cook with wood, whereas in Gauteng only 1.2% do so.<sup>33</sup>

### Socio-economic status and behavioural risk factors

The relationship between SES and behavioural risk factors for NCDs in SA is beginning to follow a pattern that is commonly found in developed countries. For example, smoking and educational attainment (proxy for SES) are inversely related in SA.<sup>17</sup> The 2003 SADHS<sup>17</sup> showed that men who had only completed schooling up to grades 6 and 7 had a 35.4% prevalence of smoking. In comparison, men with an education level of higher than Grade 12 had a 22.3% prevalence of smoking.<sup>17</sup> However, the evidence is not nearly as clear for risk factors such as obesity and hypertension.<sup>37</sup> For example, a 2005 study in Limpopo, one of the poorest provinces in SA, reported that 51.7% of rural women are overweight or obese, which illustrates that risk factors for NCDs are not only present among the affluent.<sup>38</sup> This observed phenomenon is perpetuated by the increasing penetration into poor communities of cheap processed and packaged food; the pattern of high obesity rates shifting from the affluent to the poor, which is commonly seen in the developed world, is likely to be occurring in SA already.

### Structural and environmental determinants

The rise of NCDs in LMICs should be seen as a symptom of a larger transformative force. Globalisation has been increasingly altering the social, political, economic and environmental landscape over the past few decades. An important and fundamental feature of globalisation has been a dramatic increase in international trade and foreign direct investment, driven largely by multi-national corporations' need to seek new markets to increase profits. In the following section, we use the food environment as a prime example of this transformative force.

#### Food environment

Food systems (production, manufacturing, and distribution) have undergone significant changes in the last few decades. These changes have resulted in a 'nutrition transition' in many LMICs as dietary consumption patterns have become more 'westernised'.<sup>39</sup> As a result of the growth of multi-national food corporations, the liberalisation of international food trade and investment, and an increase in the marketing of unhealthy food products, traditional diets, which were largely prepared from raw ingredients, are often being substituted by ready-made and energy-dense meals along with energy-dense and nutrient-deficient snacks.<sup>40</sup> Much of this ready-made food is increasingly processed and linked to chronic diseases.<sup>41</sup>

In SA, this 'transition' has dramatically accelerated since the mid-90s when the post-apartheid government, under immense international pressure, opened the borders to an influx of trade and foreign direct investment. Since then, 'Big Food' (large commercial entities that dominate the food and beverage environment) has dominated the food supply by making its products more available and affordable. This has facilitated a shift in normative food culture, resulting in these products also becoming more acceptable.<sup>27</sup> The increasing market share captured by large supermarket retailers and fast food outlets in urban and rural areas has catalysed a shift in dietary patterns. Many rural populations are purchasing the majority of their food in large supermarket chains that are heavily stocked with processed foods.<sup>42</sup> Dietary diversity (the increasing quantity of available food options) is critical in preventing undernutrition and overnutrition; yet such healthier options are usually higher priced (especially when the costs of energy for cooking are included) and as a result out of reach for many South African families. For example, a study published in 2010 on the availability and price of healthy food options in rural Western Cape showed that for a family of five to purchase the healthier equivalents of their usual food items (e.g. whole wheat rather than white bread) would require an additional R1 090/month.<sup>43</sup>

### Marketing of unhealthy products and behaviours

The diffusion of unhealthy products and behaviours could not have happened to the extent that it has, or certainly not as quickly, without the vigorous marketing efforts of many industries.

In SA, some progress has been made in limiting these marketing methods. In 1999, an amendment was made to the Tobacco Products Control Act, which prohibited the advertising and promotion of tobacco products.<sup>44</sup> In 2007, an additional amendment was made to clarify various definitions, among other things, and close existing loopholes. These are important steps in cleansing the environment of posters, statements, and promotions that present tobacco products in a positive light.

Controlling the tobacco industry is supported by strong scientific evidence and political feasibility in several jurisdictions. This is not necessarily the case for other unhealthy products such as alcohol and food, for which there has been less success in regulation. For example, around R2 billion is spent annually in SA on marketing alcoholic beverages.<sup>45</sup> Children are also bombarded with images that support unhealthy food options and diets. For example, a study undertaken in 2006 examined the content of commercial food advertisements during children's television programming and found that over half of the food advertisements were for products that were of poor nutritional quality.<sup>46</sup>

### Cultural determinants

Many traditional and cultural factors contribute to the increase in NCDs in SA. Various factors are altering the way of life for many South Africans. Arguably, no greater force exists than the increasing role that corporations play in 'manufacturing lifestyles' by affecting an individual's tastes, desires, preferences, and activities.<sup>47</sup> A disturbing trend that is contributing to a sedentary lifestyle for South African youth is the rise in television viewing. In 2008, 29% of South African youth reported viewing more than three hours of television

a day, in comparison to 25% in 2002.<sup>17</sup> Another cultural factor that is contributing to the increasing risk of NCDs is the perception that many black women in SA hold, which is that being overweight is considered attractive, appropriate, and a sign of affluence and success.<sup>48</sup> These beliefs appear to be prevalent in adolescents and are likely to be a strong factor in preventing many females from addressing their weight.<sup>49</sup>

## Interventions to address chronic NCDs

Responding to chronic NCDs and their risk factors, a menu of interventions and strategies exists in SA. In line with the determinants of chronic NCDs, as outlined in Figure 1, interventions addressing NCDs can be grouped as those addressing the health service management of chronic NCDs which respond to biological risks including ensuring secondary prevention once disease is present; community-based responses, which respond to behavioural and societal risks; and broader policy or structural interventions. These interventions are described in more detail below.

### Health service management of chronic NCDs

Health management of chronic NCDs comprises a package of care whose primary aim is to improve the health outcomes of the individual. Interventions that focus on individuals are as important as the population-based approaches to NCDs in the management and control of these conditions. This means that it is important to complement population-wide approaches with healthcare interventions for individuals who already have NCDs or who are at high risk of developing them.<sup>50,51</sup> In SA people with chronic NCDs have access to health services through the private and public sectors. However, the health services have done little to identify those at risk and intervene. The focus has been primarily on management and the control and prevention of complications among individuals who are already diseased. A 2008 publication by Steyn and colleagues reported suboptimal primary care for patients with hypertension at public sector community health centres.<sup>52</sup> The study was, however, based on a primary care audit conducted in the Western Cape Province that took place in 1999.<sup>52</sup> There is a dearth of similar systematic audits, thus making it difficult to assess the current status of primary care management in public sector facilities. The government has adopted the primary health care (PHC) re-engineering strategy as a means of strengthening the effectiveness of the current health system. This approach, which is being piloted in several districts, has great potential to address NCDs comprehensively as it will focus on health promotion, disease prevention and referral for curative care to improve health outcomes.<sup>53</sup> Furthermore, this approach will build the capacity of community health workers in the management of chronic conditions.

To strengthen the management of chronic diseases further the Practical Approach to Lung Health and HIV/AIDS (PALSA PLUS) programme has been expanded to address 40 common presenting symptoms and 20 chronic conditions.<sup>54</sup> This is a standardised symptom-based approach to routine care of chronic disease and has been piloted in certain provinces in SA. It has improved the cost effectiveness of care for patients with chronic diseases, such as diabetes, hypertension, and chronic respiratory diseases, and the detection of depression.<sup>54</sup>

## Community-based interventions

Community prevention programmes are important in influencing behaviours and health beliefs and for this reason such initiatives can be empowering to communities. The initiatives that are listed in Table 1 include programmes provided by a private medical aid company, government and research institutions. The interventions mentioned focus on one or two risk factors only; this shows that there is a lack of intervention programmes that encompass several risk factors.

## Policy responses

### Food-related policies

According to Charlton et al., in 2007 salt intake among South Africans exceeded the international guidelines of <6 g salt/day and the greatest contributing source of salt was bread.<sup>63</sup> In response the government has drafted Regulations in the Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972), published in the Government Gazette (11 July 2012) to reduce the salt intake in processed foods.<sup>64</sup> The process of reducing salt will occur in phases and food manufacturers will have until June 2016 to comply with the first set of sodium targets and another two years to reach the next targets.

Trans fatty acids have been found to increase the risk of cardiovascular diseases and, according to the WHO, the recommended amount of energy that can be derived from trans fatty acids should not exceed 1% of the daily energy consumption. In order to prevent the problems caused by trans fatty acids, Regulations relating to trans fat in foodstuffs were passed in the Foodstuffs, Cosmetics and Disinfectants Act, 1972 in 2011.<sup>65</sup> Under these Regulations, the sale, manufacturing and importation of any processed foods that exceed 2 g per 100 g of partially hydrogenated fats and oils are prohibited. However, these Regulations are not specific about the labelling of naturally produced trans fatty acids and, therefore, companies such as those in the dairy industry will not be affected by the Regulations. This means that the content of fatty acids in products may exceed 2 g per 100 g if the trans fatty acids in these products are not industrially produced.

New food labelling and advertising legislation came into being in March 2012. This legislation will ensure that food labels and advertising conform to a standard format. Furthermore, according to the amended Regulations, any claims used on food labels and in advertising will be removed. This will ensure that consumers are not misled by false health claims.

### Tobacco control

Tobacco control is said to be one of the most effective programmes for the prevention of cardiovascular disease in the world.<sup>66</sup> SA has implemented progressive policies for tobacco control. Since 2008, several amendments have been made to the Tobacco Act 1993. In March 2012, a Regulation in the Tobacco Products Control Act, (Act 83 of 1993) was passed to prohibit smoking in public places and certain outdoor public places. The Regulation is aimed at protecting the public from the dangers of passive smoking.<sup>67</sup>



**Table 1: Examples of initiatives and programmes targeting chronic NCDs in South Africa**

Programme	Programme Description	Programme Outcome
Discovery Vitality <sup>55,56</sup>	<ul style="list-style-type: none"> <li>Created by Discovery Insurance, this programme encourages members to lead healthier lifestyles by providing incentives, with the goal of lowering future healthcare costs</li> <li>Participants assess their health status, then participate in activities intended to improve their health (e.g. joining a gym, buying nutritious food)</li> <li>Completing an activity rewards the member with points, which accumulate to achieve blue, bronze, silver, or gold status</li> <li>Higher status allows the member to access higher levels of travel, leisure, and shopping discounts</li> </ul>	<ul style="list-style-type: none"> <li>As of 2006, the programme had 591 134 members</li> <li>Members with higher point statuses were found to have lower costs per patient, shorter stays in hospital, and fewer admissions compared with those less engaged</li> <li>Admission rates were 7.4% lower for cardiovascular disease, 13.2% lower for cancers, and 20.7% lower for endocrine and metabolic diseases in the highly engaged group compared with those less engaged</li> </ul>
HealthKick <sup>57,58</sup>	<ul style="list-style-type: none"> <li>Commenced in 2007 as an intervention among school-aged children to promote healthier diets and more physical activity</li> <li>Took place in 16 low-income disadvantaged urban and rural schools in the Western Cape</li> <li>Eight intervention schools were provided with an action planning process, and provided with a toolkit containing lesson plans, informational resources, and physical activity equipment to carry out the programme</li> <li>The control schools were given printed resources, but no help in implementing the programme</li> </ul>	<ul style="list-style-type: none"> <li>Outcome and process evaluations are ongoing</li> </ul>
Moving Matters <sup>59-61</sup>	<ul style="list-style-type: none"> <li>A programme for school children in grades 4 to 7 intended to improve the motor skills necessary for them to participate in physical activities successfully</li> <li>Focuses on balance, manipulation, and locomotion</li> <li>Teachers are provided with a manual of lesson plans, and learners are provided with an activity manual and equipment bag</li> </ul>	<ul style="list-style-type: none"> <li>In 2011, 62 schools in Gauteng and the Eastern Cape participated</li> </ul>
Siyadlala <sup>62</sup>	<ul style="list-style-type: none"> <li>A programme created by Sports and Recreation South Africa intended to increase participation in organised sports in disadvantaged communities in order to increase health and mobilise the community</li> <li>Hub and activity coordinators are trained in sports coaching, first aid, project planning, and events management</li> <li>Participation is encouraged among youth, the elderly, women, and people with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>In the Western Cape, 35 hubs were established to target six regions</li> <li>Identifies young talent and offers them support for further development</li> </ul>

Smoking rates have decreased in SA; however, this may be unrelated to the country's tobacco control policies. Peer and colleagues observed in 2009 that the decrease in smoking had been higher among the poor and this may be attributed to the increase in tax imposed on tobacco products.<sup>68</sup> A positive outcome of the decline in smoking rates has been its consistency with the stabilisation in the number of smoking-related cardiovascular deaths.<sup>69</sup>

Recently the National Department of Health (NDoH) has made further amendments to the Tobacco Act (August 2012) by passing a draft Regulation that relates to the display of tobacco products at wholesale and retail outlets. Studies have shown that tobacco displays at retail stores are an important form of advertising and promoting tobacco products and such advertising has been linked to increased tobacco sales and use.<sup>70</sup> Such legislation may assist in decreasing sales by making smoking less enticing.

## Alcohol control

NCDs such as cancer, cardiovascular disease, liver disease, pancreatitis and diabetes have been linked to alcohol consumption.<sup>71</sup> Despite this link, alcohol control has had little effect on reducing the rates of alcohol misuse.<sup>72</sup>

Studies in several countries have found that alcohol advertising has an influence on young people's behaviours.<sup>73</sup> Current national policies to reduce alcohol consumption in SA include restrictions on alcohol advertising and counter-advertising, regulation of retail alcohol sales, control of alcohol packaging, and increased alcohol taxation.<sup>31</sup>

Several new policies have been proposed at the national and provincial levels, but have not yet been implemented. Among these policies is a Bill that would ban all alcohol-related advertising in SA.<sup>74</sup> However, the Bill has been met by strong opposition from the Department of Trade and Industry because of its economic implications.

Several provinces such as the Western Cape have formulated their Liquor Act to include trading hours; however, days and hours in which liquor can be sold in these provinces will be determined by the municipalities. The proposed Gauteng Liquor Bill of 2011 intended to prohibit the sale of alcohol to pregnant women in an effort to reduce foetal alcohol syndrome.<sup>75</sup> The proposal drew criticism for limiting gender equity.

## Proposed national policy and strategy for NCDs

Government has made progress in formulating and implementing population-wide interventions as highlighted in the section above. However, there are still a number of interventions that need to be focused on. Box 1 below outlines national policy and strategies that should be considered to address the main risk factors for NCDs.

### Box 1: Population-wide interventions to promote healthy diet, physical activity, healthy environment and no smoking or harmful alcohol use

- ❖ Strengthen tobacco control, particularly among young people, and decrease passive smoke exposure of children in the home
- ❖ Support quitting-smoking programmes
- ❖ Promote healthy eating patterns that are low in fat and sugar and high in fruit and vegetables, in part by addressing access through intersectoral programmes that involve the agricultural sector
- ❖ Restrict access to alcohol (through addressing physical availability and pricing) and extend alcohol control legislation (particularly in the areas of alcohol marketing, and drinking and driving)
- ❖ Promote physical activity in schools and workplaces, and through urban planning for active commuting and access to safe public green space
- ❖ Reduce exposure to indoor biomass pollutants through electrification of households
- ❖ Control air pollution, including through reviewing and enforcing legislation related to polluted places of work
- ❖ Develop media and communication strategies to prevent NCDs
- ❖ Tax unhealthy foods and subsidise healthy foods
- ❖ Restrict import of processed foods

Source: Adapted from Bradshaw, Steyn, Levitt and Nojilana, 2011.<sup>76</sup>

## Challenges in research and surveillance for NCDs

Strategic planning and effective policy development to address NCDs require a functional information system to track NCDs and their risk factors. Programmes and activities in epidemiological surveillance and research form the basis of an information system that would enable the assessment and monitoring of disease trends. Where set appropriately, this system would not only allow the measurement of health status (i.e. mortality and morbidity related to NCDs) but also track the prevalence of NCD risk factors and would be able to measure behavioural and social determinants of health. Unfortunately, these information systems are limited in SA.

Funding opportunities for research related to chronic NCDs are scarce. This has resulted in a large proportion of studies being cross-sectional and descriptive in nature, and often sub-national in extent, which makes them of limited generalisability. National surveys such as the Demographic and Health Survey and the Youth Risk Behaviour Survey have not been conducted in the past five years. However, in 2011-2012 the Human Sciences Research

Council launched the South African National Health and Nutrition Examination Survey, which will provide comprehensive information on the health and nutritional status of males and females of all ages in support of the priority health indicators of the NDoH.<sup>77</sup>

There are very few cohort studies in SA. Prospective cohort studies can provide valuable information on the association between the exposure to risk factors and health outcomes; they can help in calculating the incidence rate in both the exposed and non-exposed and can permit the assessment of multiple outcomes in the same study. Existing cohort studies include the "birth-to-twenty" cohort, which is a study of more than 3 200 children and their families in Soweto, Johannesburg.<sup>78</sup> SA is also part of the Prospective Urban Rural Epidemiology (PURE) study, which is a global adult cohort study of 17 countries and more than 150 000 participants.<sup>79</sup> Two PURE study sites have been set up in SA, with participants drawn from urban and rural communities in three provinces: North West, Eastern Cape and Western Cape. The PURE investigation in the country is led by researchers at the North West University and the University of the Western Cape and over 2 000 participants are enrolled at each site.

Also useful in providing epidemiological data to track NCDs and their risk factors in SA are health and socio-demographic surveillance sites (HSDSSs). In SA these include the Agincourt HSDSS and Africa Centre site in Hlabisa.<sup>80,81</sup> However, these HSDSSs are currently based in rural parts of the country. A need exists to expand this work to different parts of the country so that issues such as rural-urban differences in NCDs, societal differences in NCDs and, more importantly, the drivers of the risk factors can be identified.

## Conclusion

Chronic NCDs among South Africans are on the rise. Although NCDs affect all population groups, the poor are at increased risk because of their exposure to structural and environmental factors that are beyond their control.

The good news is that the South African government has made significant strides in formulating and implementing policies to address NCDs. These policies include strengthening tobacco control; enforcing Regulations relating to food; and implementing policies to reduce alcohol use.

Public health interventions need to be targeted at individual behavioural risk factors; however, these interventions need to be implemented in conjunction with policy responses whose aim is to address the structural environment in which these risk factors are shaped.

In addition there is a need to focus on structural determinants of health as they are more distal than behavioural risk factors, which both health professionals and government tend to emphasise. Future research should focus on defining and tracing the explicit pathways through which structural determinants affect health.



## Recommendations

- Comprehensive and integrated actions should be developed to prevent and control NCDs. A multisectoral approach needs to be adopted, including at policy and implementation levels.
- Actions to prevent NCDs should include:
  - Policies to deal with the built environment in order to address physical inactivity;
  - Community interventions that target those at risk and those already affected to prevent complications; and
  - Risk assessment tools applied at community level that identify those at risk and can be used by less qualified health workers such as community health workers.

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