



# **THE GROWING BURDEN OF NON-COMMUNICABLE DISEASES IN THE EASTERN CARIBBEAN**

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**Human Development Unit  
Caribbean Country Management Unit  
Latin America and the Caribbean Region**



The World Bank

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## **ABBREVIATIONS & ACRONYMS**

<i>API</i>	<i>Active Pharmaceutical Ingredients</i>
<i>BMI</i>	<i>Body Mass Index</i>
<i>CARICOM</i>	<i>The Caribbean Community</i>
<i>CDC</i>	<i>Center for Disease Control</i>
<i>COPD</i>	<i>Chronic Obstructive Pulmonary Disease</i>
<i>CWD</i>	<i>Caribbean Wellness Day</i>
<i>DALY</i>	<i>Disability-Adjusted Life Year</i>
<i>DMP</i>	<i>Disease Management Program</i>
<i>EPM</i>	<i>Energy Protein Malnutrition</i>
<i>FAO</i>	<i>Food and Agriculture Organization</i>
<i>FCTC</i>	<i>Framework Convention on Tobacco Control</i>
<i>GDP</i>	<i>Gross Domestic Product</i>
<i>GFATM</i>	<i>Global Fund to Fight AIDS, Tuberculosis, and Malaria</i>
<i>GYTS</i>	<i>Global Youth Tobacco Survey</i>
<i>HALE</i>	<i>Healthy Life Expectancy</i>
<i>HIV/AIDS</i>	<i>Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome</i>
<i>LAC</i>	<i>Latin America and Caribbean</i>
<i>LEB</i>	<i>Life Expectancy at Birth</i>
<i>MOH</i>	<i>Ministry of Health</i>
<i>NCDs</i>	<i>Non-Communicable Diseases</i>
<i>NGO</i>	<i>Non-Governmental Organization</i>
<i>NLTA</i>	<i>Non Lending Technical Assistance</i>
<i>OECD</i>	<i>Organization for Economic Cooperation and Development</i>
<i>OECS</i>	<i>Organization of Eastern Caribbean States</i>
<i>PAHO</i>	<i>Pan American Health Organization</i>
<i>PEPFAR</i>	<i>President's Emergency Fund for AIDS Relief</i>
<i>UN</i>	<i>United Nations</i>
<i>UWI</i>	<i>University of West Indies</i>
<i>WDI</i>	<i>World Development Indicators</i>
<i>WHO</i>	<i>World Health Organization</i>
<i>WRI</i>	<i>World Resources Institute</i>

## **CURRENCY EQUIVALENTS**

Currency Unit: Eastern Caribbean Dollar (EC\$) US\$1.0 = EC\$ 2.70  
The \$ sign in the text refers to US\$ unless otherwise stated

## **FISCAL YEAR**

Antigua and Barbuda and St. Lucia: April 1 – March 31  
Dominica: July 1 – June 30  
Grenada, St. Kitts and Nevis, St. Vincent and the Grenadines: January 1 – December 31

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# EXECUTIVE SUMMARY

Countries comprising the Organization of Eastern Caribbean States<sup>1</sup> (OECS) face a growing challenge of non-communicable diseases (NCDs). NCDs are responsible for six of the top ten leading causes of death in the region, represent a growing portion of health spending, and impose a large economic burden at the societal, community, and household level. The common underlying risk factors fueling the crisis are poor diet, physical inactivity, tobacco use, and alcohol abuse. Current policies and programs do not sufficiently focus on prevention and could be improved with a multisectoral and coordinated approach.

The World Bank undertook a review to assist them reduce the burden of NCDs. This report proposes a set of policy options to consider in developing their national NCD strategies based on a situation analysis and a review of global experiences. Data in the OECS countries on the epidemiology of NCDs are limited, preventing a fully comprehensive review. Secondary data sources and aggregate descriptive data are used to review the demographic and epidemiological transitions in the OECS countries, to assess key risk factors and make inter-country comparisons. Household survey data were available for St. Lucia, however, enabling an estimate of the economic burden of NCDs and their impact on patients and on families from poorer households.

## Main Findings

The demographic transition has resulted in a longer-living population with new demands on the health systems in OECS countries. Overall population growth rate across the six OECS countries has increased between 1990 and 2011. Women represent a larger percentage of the population and the 65+ segment of the population is growing relative to the younger segment. OECS countries are also becoming more urbanized, resulting in more crowding.

Their epidemiological transition has shifted the major causes of mortality and morbidity from communicable diseases to NCDs. Of Years of Life Lost, 70 percent are now due to NCDs; the global average is fewer than 50 percent, and for low- and middle-income countries in the Americas about 60 percent.

That NCDs are largely preventable by reducing the main behavioral risk factors is the global consensus convincingly supported by existing evidence. This study assesses and analyzes the challenges faced to tackle NCDs in the six countries.

Overweight/obesity is steadily increasing, especially among women. Dominica has the highest obesity prevalence in both gender groups in the OECS; it is projected that about 38.4 percent of males and 65.3 percent of females will be obese by 2015. It is also estimated that almost 60 percent of females in St. Lucia will be obese by 2015. WHO and FAO data confirm the shift from undernourishment to overweight among children in the OECS countries and that obesity is common among children.

Physical inactivity levels are high and females are less physically active than males in each country. The degree of physical inactivity has been steadily increasing due to growing urbanization and sedentary lifestyles.

Tobacco use and excessive alcohol consumption are widespread across the Caribbean; of particular concern is the early age of onset. Alcohol use is common across OECS countries but varies from 10.9 liters per capita in St. Lucia to 5.5 liters per capita in Antigua and Barbuda. Inadequate prevention and the late stage of seeking care heightens the financial consequences.

NCDs impose a large economic burden on patients, their families, and society at large. Available data from the WHO's Diabetes Atlas indicates that treating NCDs is costly. In the OECS countries the annual cost for treating a diabetic ranges from US\$322 to US\$769. The St. Lucia data show that NCD patients spend 36 percent of their total household expenditure annually for care. Poorer households spend 48 percent of their per capita expenditure on healthcare while better-off households spend less than 20 percent.

<sup>1</sup> Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia and St. Vincent and the Grenadines

## Policy Options:

Experiences and lessons learned from developed countries in addressing NCDs could be useful for developing national strategies to control their impact. The following policy options may be applied:

- *Strengthen surveillance and monitoring.* To set priorities and design and evaluate interventions, more comprehensive and reliable data are needed on the prevalence of risk factors, NCDs, and health behaviors of high risk groups, including the costs and effectiveness of priority health promotion, prevention strategies, and investments in technologies for secondary and tertiary prevention. The key trends and common patterns observed across OECS countries can be countered through strengthening surveillance systems, identifying the key indicators and data available, and ensuring that they are captured in health management information systems.
- *Tackle risk factors.* WHO recommends collecting relevant data on risk factors in each country to design targeted interventions. At the April 2011 First Global Ministerial Conference on Healthy Lifestyles and NCDs Control, consensus was reached on the need to prioritize the implementation of cost-effective policies to reduce common risk factors. The four priority population-based programs would tackle excessive alcohol consumption, tobacco use, and obesity, and promote physical activity. Together with the traditional diet of starchy and high-sugar foods, these are fueling an NCD crisis in the region. Across the OECS, women tend to be more obese and less physically active. Smoking prevalence is low but is responsible for ten percent of all deaths in the Caribbean. The limited information available on alcohol consumption indicates that it has been increasing since 1961. Of particular concern is the growing trend of the risk factors affecting adolescents with increased physical inactivity and early use of tobacco and alcohol. Specific policy options would need to be developed to address the higher tendencies for women's obesity and physical inactivity, and for prevention programs to reach the adolescent population, but a first step would be education on healthy food choices, while ensuring accessibility and affordability.
- *Develop and enforce legislative and policy actions.* Develop regulations on tobacco and alcohol around pricing and taxation, smoke-free work and public places, and restrict alcohol outlets and operating hours. Develop standards and enforcement control, especially on sales restrictions, advertising and drunk driving.
- *Develop health promotion policies.* The private sector should be involved in disease prevention and health promotion, starting at the work-place and in schools. Work- place Health Promotion can go beyond occupational safety to target smoking, alcohol, stress, and healthy eating and can help reach middle-aged, employed males who often neglect their health and are a difficult target group to reach. School programs have the largest return on investment in promoting a healthy lifestyle and decreasing the future disease burden. Ministries of Health should work with education authorities to integrate health promotion and prevention into curricula and teach about the risk factors that lead to NCDs, and the importance of diet and physical activity. Strategies and incentives could encourage the food industry to manufacture, distribute, and market healthier products, and to include health messages in marketing campaigns.
- *Develop primary prevention through population-based programs that target the whole population to prevent adverse health risks from occurring in the first place.* Successful programs require an integrated approach with: (a) mass media activities to promote healthy lifestyles; (b) feasible public awareness and health education campaigns; (c) supportive structures that engage non-governmental organizations and private sectors; and (d) health promotion messages based on reliable, evidence-based information with wide distribution of material through different channels.
- *Develop secondary prevention through individual clinical intervention programs to identify high-risk individuals at the point of service delivery.* Interventions and follow-up are needed for individuals with risk factors to prevent deterioration, incapacity, and fatality. Clinical interventions require a focus on primary healthcare with an emphasis on continuity, integrated management of key chronic conditions, checking adherence, periodic retesting and adjusting of regimens. An effective primary healthcare system with close links to secondary and social care can improve prevention and management of NCDs.
- *Train health professionals in delivering preventive services.* The capacity and motivation of physicians and nurses is often key to promoting health and preventive care. The OECS countries have a history of using regional institutions for training health workers, especially physicians, so regional cooperation can develop new qualifications to prevent and treat NCDs and share faculty, didactic materials, educational strategies, learning methods and lessons learnt. They should increase involvement of health professionals in health promotion, organize continuing education on prevention, especially intervention strategies and methods, involve nurses in screening and management of risk factors, organize risk factor management services for health professionals (e.g. smoking cessation), and enhance collaboration between health professionals in primary healthcare and other public and civil society entities involved in prevention and health promotion.

- *Apply a multisectoral approach.* Experience with implementing HIV/AIDS projects has given the OECS countries tools and methods to change behavior and to advocate changes in lifestyles through awareness raising, sensitization campaigns, working with mass media and NGOs, prevention activities, and treatment programs. These could be applied to reduce the impact of NCD risk factors. Reducing this burden in the OECS countries will require coordinated regional and national intersectoral strategies that involve the public and private sectors, government and non-governmental organizations, and communities and families. The OECS Secretariat could coordinate technical assistance to member countries. The experience of high-income countries could be examined for insights into tried and tested approaches to yield results in addressing NCDs.
- *Develop a regional approach.* Harmonized legislation and policies, especially in the areas of tobacco, alcohol, food, essential medicines, and information technologies, are necessary for successful prevention. A regional strategy would be cost-effective for reasons of economies of scale and the presence of positive or negative externalities. This will be gradual, however, as countries would move at different speed according to capability and the varying degrees of difficulty in implementing regional policies and actions. Harmonization could be achieved by assigning overall coordination to an already existing regional authority. The Mesoamerican Initiative and other diagonal approaches offer learning on elements of regional approaches.
- *Mobilize resources for implementing strategies and programs.* Lessons from other countries can help identify approaches for mobilizing resources. For example, Jamaica's experience may provide insight on how NCD treatment can be financed as well as ensure that incentives are designed to focus on prevention programs. Jamaica's National Health Fund (NHF) provides free or subsidized medicines to patients with NCDs and finances prevention programs. It generates a sustained revenue stream through tobacco tax and special consumption taxes on petrol, alcohol, and motor vehicles. The OECS can also tap into the private sector as Jamaica did in involving the pharmaceutical companies in meeting claims of NCD patients under the NHF program. The Pharmaceutical Procurement Service (PPS) agency already invites tenders and awards Regional Price Contracts for procuring pharmaceuticals for OECS states. After 15 years of successful centralized tendering and pooled procurement of pharmaceuticals and medical products, it has demonstrated that regional cooperation can reduce costs and enhance the efficiency of health service delivery.
- *Raise Political Awareness.* The UN High-Level Meeting on NCDs prevention and control took place in September 2011 and provided an opportunity to create a sustained global movement against premature death and preventable morbidity from NCDs, mainly heart disease, stroke, cancer, diabetes, and chronic respiratory disease. The Caribbean region has played an instrumental role in raising the profile of the issue and was featured at the UN High Level Meeting. The OECS should build on this momentum to ensure that prioritization of NCDs on a global stage is mirrored at the country and regional level.

# I. INTRODUCTION

*The purpose of this report is to examine and propose options for policy design and implementation, based on a situational analysis for six Eastern Caribbean countries and a review of the lessons of other nations in prevention and control. A committed partner of the OECS countries, the World Bank is responding to their needs to address the increasing NCDs burden by providing this report.*

## THE WORLD BANK'S ROLE IN THE OECS

The Bank has been a committed partner. The World Bank has been assisting the independent OECS countries in enhancing competitiveness and in building capacity for economic growth through protection and improvement of human capital (social safety nets, education, and health), inter alia. The main support in the health sector over the past decade has been to combat HIV/AIDS by providing loans, grants, or credits to Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines, totaling US\$22.05 million<sup>2</sup>. That epidemic has stabilized at a prevalence rate of less than one percent in all OECS countries but requires ongoing surveillance, prevention, and treatment, and the targeting of high-risk populations. The US President's Emergency Fund for AIDS Relief (PEPFAR) provides assistance on HIV/AIDS related activities and the OECS Secretariat is trying to mobilize resources from the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GEATM) to sustain the response to HIV/AIDS in the region.

Country and donor consultation reached consensus on the need to systematically address NCDs. Through consultation at the October 2010 13th Meeting of OECS Health Ministers, as well as consultation with donor agencies and the OECS Secretariat, it has become clear that tackling NCDs in the region is urgent. Donor agencies are focusing on health system assessment and strengthening. As small states, OECS countries feel the need for a regional approach to address common health challenges, build on economies of scale, and learn from each other. Their common features and interests create opportunities to address challenges in their health sectors through an enabling environment. The proposed study is a direct response to a request from the OECS Secretariat to assist in identifying priority actions at country and regional level.

## OBJECTIVES AND SCOPE OF THIS REPORT

This report analyzes the situation, reviews lessons learnt in other countries in the prevention and control of major NCDs, and proposes policy options to address the challenges. Specifically, this report aims to provide policy makers with an overview of the NCDs and key risk factors in the region and make inter-country comparisons; assess the economic impact of key NCDs and risk factors where data are available; outline policy options and cost effective interventions for controlling major NCDs that are common to the OECS countries; and provide input for developing a regional health strategy. In the belief that powerful information can drive strategic action, the report aims to (a) raise awareness of the reality and consequences of failure to take strong action and (b) identify priority actions that are realistic and tangible for policy makers in developing strategies and allocating resources.

This report draws on available data. The report draws on publically available information and relies mainly on secondary sources of data for analysis. Limited data in the OECS imposes a major challenge for this study and preventing a more comprehensive assessment of the economic impact of NCDs in the OECS countries. While some aggregate descriptive data for all six countries are available for specific diseases such as heart disease, cancer, stroke, diabetes, and specific risk factors (tobacco use, alcohol consumption, and overweight people and obesity) from WHO, PAHO, and the World Bank, there are little or no household survey data that would permit analysis of the socio-economic aspects of the NCDs. Household survey data from 2006 for St. Lucia enabled an estimate of the economic burden of NCDs and their impact on patients and on families from poorer households. Data on expenditure and costing for NCDs are unavailable outside the country. The report uses information from the internet complemented by data provided by the Government.

*The following chapters will consider the emergence and predominance of NCDs in the OECS countries, the risk factors that are contributing to this burden of disease, the responses of OECS countries in dealing with NCDs, an assessment of the economic impact of NCDs in the OECS countries, lessons from other countries which are applicable to addressing NCDs in the OECS countries, and policy options for addressing NCDs effectively.*

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<sup>2</sup> These projects came to an end in 2009 with the exception of the St. Vincent and the Grenadines HIV Project, which closed in April 2011.

## II. THE EMERGENCE AND PREDOMINANCE OF NCDs

*The demographic transition and epidemiological transition involve an increase in NCDs as the major cause of death in the OECS countries. This chapter reviews both transitions and their impact on the OECS countries and considers life expectancy, the shift in age distribution, and the results of urbanization.*

### Key Messages

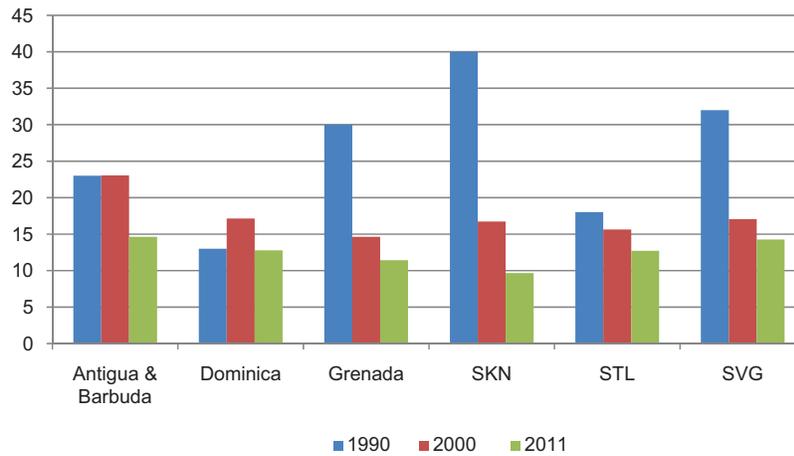
1. Mortality rates in the OECS countries are declining as a result of the combination of lower overall death rates and infant mortality rates.
2. The longer-living population in the OECS countries is creating new demands on the health systems of each country.
3. The population growth across the OECS countries has resulted in an increasingly older, female, urban population.
4. Across the OECS countries, six out of ten leading causes of death are NCDs.
5. Mortality from cardiovascular diseases and diabetes is higher for women than men.

**THE DEMOGRAPHIC TRANSITION**

*Mortality*

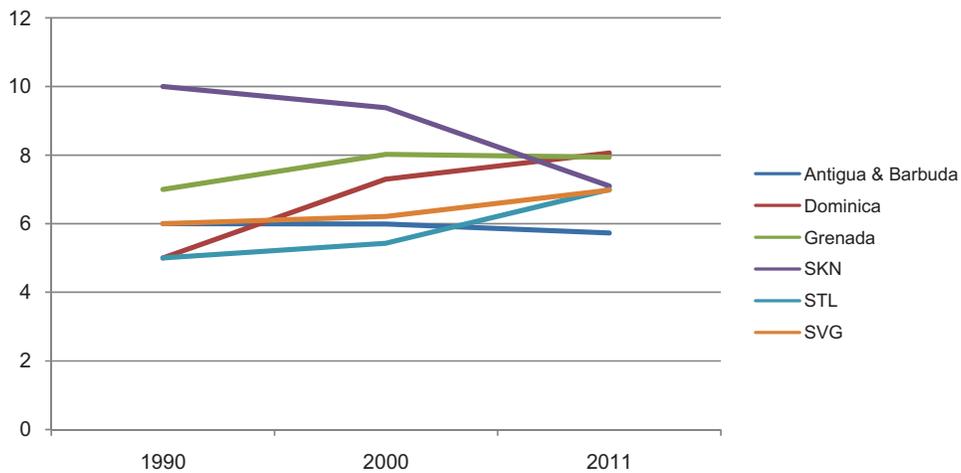
The OECS countries have experienced a decline in Infant Mortality. The Infant Mortality Rate declined in all six countries from 1990 to 2011 (Figure 1). In Dominica this increased from 13 to 17.1 deaths per 1,000 live births between 1990 and 2000 but this dropped below 1990 levels in 2011. The general death rates in some countries have declined, while others have experienced an increase. Antigua and Barbuda, Grenada, and St. Kitts and Nevis (SKN) have experienced declining death rates but these have increased in Dominica, St. Lucia (STL), and St. Vincent and the Grenadines (SVG). (Figure 2).

**FIGURE 1. INFANT MORTALITY RATES (DEATHS PER 1,000 LIVE BIRTHS)**



Source: (Central Intelligence Agency n.d.)

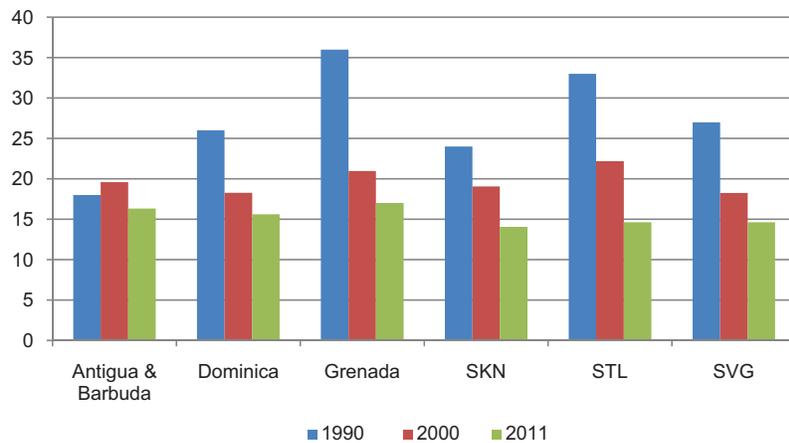
**FIGURE 2. DEATH RATES PER 1,000 POPULATION**



Source: (Central Intelligence Agency n.d.)

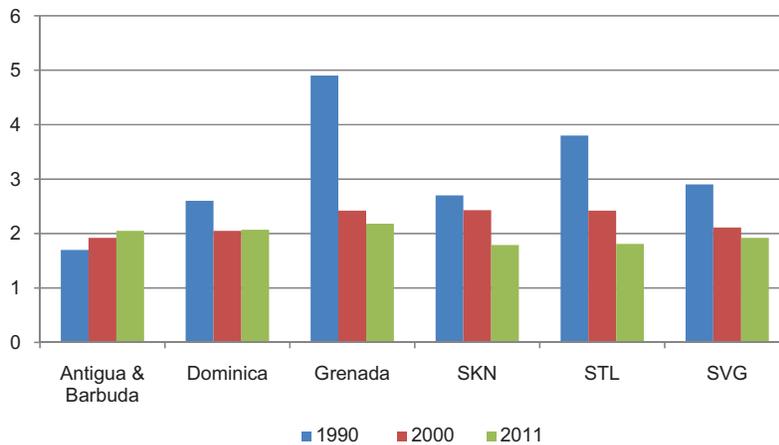
Birth rates fell from 1990 to 2011, with the total fertility rate remaining consistent and even increasing in the case of one country. Birth rates fell across the region from 1990 to 2011 with the largest decline in Grenada, where the total nearly halved from 36 to 17 live births per 1,000 (Figure 3). The total fertility rate, by contrast, presents a mixed picture: Antigua and Barbuda, Dominica, and Grenada continue to hold rates above 2.0; Antigua and Barbuda increased this rate over the two decades; and while Grenada is on a decreasing pattern, it continues to have the highest rate of all six countries at 2.2 children per woman of reproductive age (Figure 4).

**FIGURE 3. BIRTH RATE PER 1,000 LIVE BIRTHS**



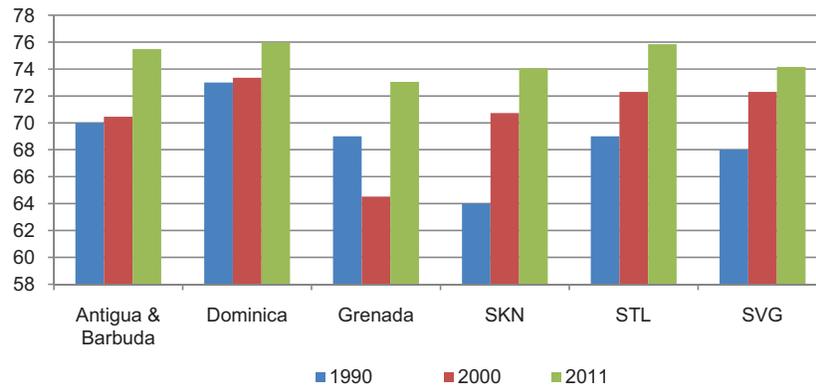
Source: (Central Intelligence Agency n.d.)

**FIGURE 4. TOTAL FERTILITY RATE**



Source: (Central Intelligence Agency n.d.)

Populations are living longer. All six OECS countries experienced an increase in life expectancy at birth between 1990 and 2011, with a high of 76 in Dominica and St. Lucia (Figure 5). The increase in life expectancy at birth, decrease in the death rate, and increase in infant mortality rates result in populations living longer. At the same time, the decreasing birth rates and a constant total fertility rate favor growth of the older population segment.

**FIGURE 5. LIFE EXPECTANCY AT BIRTH**

Source: (Central Intelligence Agency n.d.)

### Age Distribution Shift

Population growth rates have fluctuated across the OECS countries with an overall increase from 1990 to 2011. While the total population across the six OECS countries decreased from 1990 to 2000, by 2011 it has increased beyond the 1990 levels. Antigua and Barbuda experienced the highest growth rate of 1.3 percent in 2011 but all other countries remained below 1.0 percent or experienced decreases in this range in either 2000 or 2011 (Table 1).

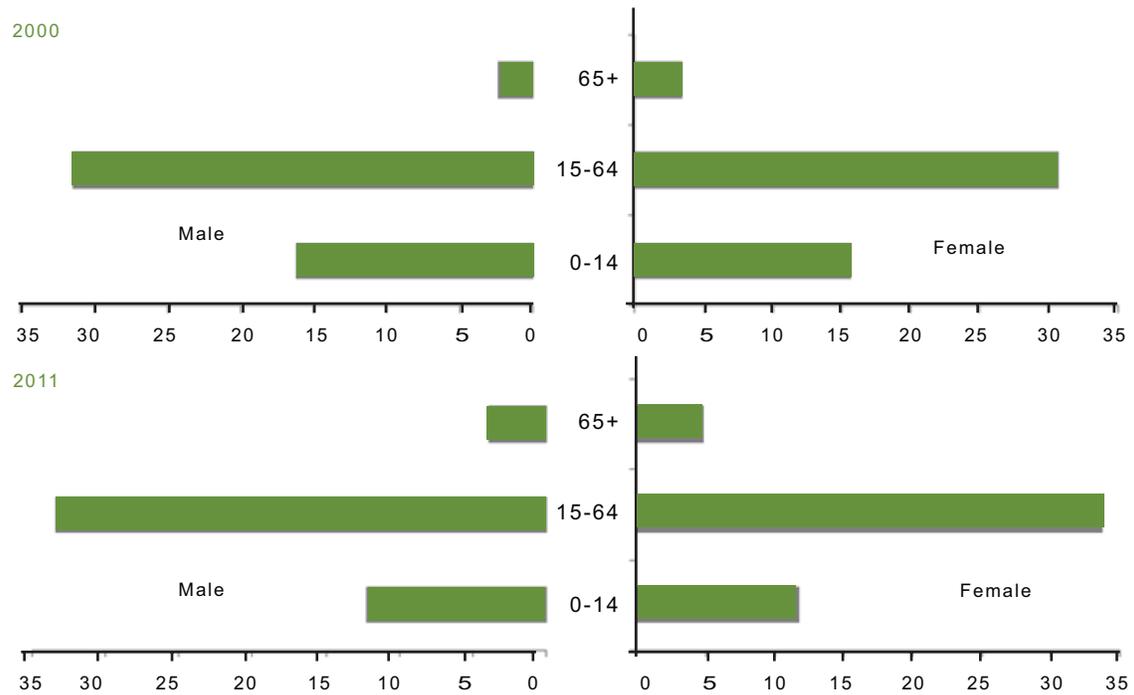
**TABLE 1. POPULATION AND POPULATION GROWTH RATE**

	Population			Population Growth Rate (%)		
	1990	2000	2011 (est.)	1990	2000	2011 (est.)
Antigua and Barbuda	63,726	66,422	87,884	NA	0.73	1.289
Dominica	84,854	71,540	72,969	NA	-1.14	0.214
Grenada	84,135	89,018	108,419	NA	-0.36	0.551
St. Kitts and Nevis	40,157	38,819	50,314	NA	-0.22	0.823
St. Lucia	153,196	156,260	161,557	NA	1.21	0.389
St. Vincent and the Grenadines	112,646	115,461	103,869	NA	0.43	-0.327
Total	538,714	537,520	585,012			

Source: (Central Intelligence Agency n.d.)

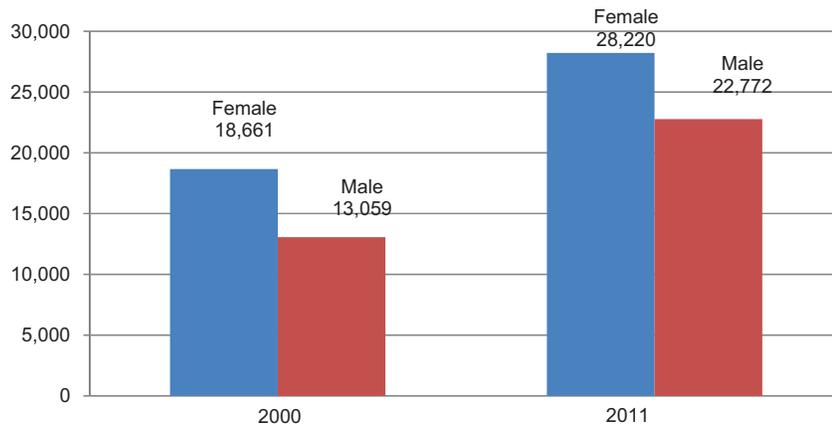
The overall age structure of the population reflects three trends: a declining 0-14 age group, an increasing 15-64 age group, and an increasing 65+ age group. There is a lack of data on mortality by age group with the result that a population projection by age structure is not available. Nevertheless, available data for the six study countries show the changing age structure from 2000 to 2011 (Figure 6). Even though the changes are slight, a decrease in the 0-14 age group can be observed from 2000 to 2011. Data for the 15-64 age group, however, reflect a population increase. Both men and women increased in the 65+ age group.

**FIGURE 6. DISTRIBUTION OF POPULATION BY AGE GROUPS AND SEX (%), 2000 AND 2011**



Source: (Central Intelligence Agency n.d.)

The population is aging with more women in older age groups. From 2000 to 2011, the 65+ population increased as a share of the total population from 5.9 to 8.7 percent. Women accounted for a larger share of the 65+ population as a percentage of the total population than men (3.47 percent women versus 2.43 percent men). By 2011, women aged 65+ further increased their share of the total population to 4.82 percent compared to men at 3.89 percent.

**FIGURE 7. INCREASING FEMALE AND MALE POPULATION IN THE 65+ AGE GROUP**

Source: (Central Intelligence Agency n.d.)

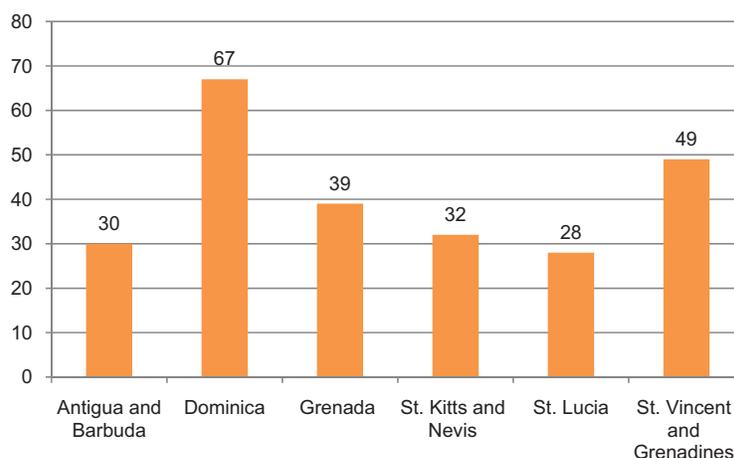
**TABLE 2. AGE STRUCTURE ACROSS SELECTED OECS COUNTRIES (%)**

	0–14 years		15–64 years		65+	
	2000	2011	2000	2011	2000	2011
Antigua and Barbuda	28	25.8	67	67.4	5	6.8
Dominica	29	22.9	63	66.8	8	10.3
Grenada	38	25.4	58	65.7	4	8.9
St. Kitts and Nevis	30	22.8	61	69.6	9	7.6
St. Lucia	33	22.8	62	67.5	5	9.7
St. Vincent and the Grenadines	30	24.5	63	67.4	7	8.1

Source: (Central Intelligence Agency n.d.)

*Urbanization a Consequence of Demographic Transition*

The OECS countries are also facing urbanization. Countries on the whole usually experience urbanization as part of the economic development and modernization, the OECS countries are no different. What is unique about the OECS countries is that, because of their relatively small geographic size, urbanization trends would perhaps be felt more immediately than in larger countries, due to visibly limited resources and services. Dominica has a far larger urbanized share of population (67 percent) but this is occurring at the lowest rate among all six countries (0.3 percent). St. Kitts and Nevis has the highest annual rate of change in urbanization (2010 to 2015 est. of 1.8 percent). This is followed by Grenada and St. Lucia (both 1.6 percent), Antigua and Barbuda (1.4 percent), and St. Vincent and the Grenadines (1 percent) (Figure 8). Urbanization carries health risks from more crowded living conditions, congested traffic, noise, environmental pollution and also increased emotional stress and loss of traditional family structure, which can have negative impact on health.

**FIGURE 8. URBAN POPULATION AS A PERCENTAGE OF TOTAL POPULATION, 2011**

Source: (Central Intelligence Agency n.d.)

The demographic transition requires planning for an increasingly older, female, and urban population, placing stress on social and healthcare services. With women surpassing men as a percentage of the overall population, particularly in the 65+ age group, OECS countries face the challenge to ensure that social services are made available to reduce their vulnerabilities. The elderly are more likely to require treatment and care for chronic diseases, which can be costly and difficult for them to access and place additional burdens on overstretched healthcare systems. Urbanization also calls for an adequate scale-up and availability of needed social services for newly migrating population groups. The impact of overcrowding and proximity of living environments to industry suggests a greater need for health services and a greater need to plan appropriate prevention interventions. Finally, modern lifestyles have contributed to changing disease patterns that need more sophisticated technology for diagnosis and treatment.

#### *The Epidemiological Transition*

The OECS countries have made significant progress in improving the health status of their populations in the past two decades. Key demographic and health indicators compare favorably with those of developed countries: the total fertility rate is around replacement level, there are relatively low mortality rates of infants and under-five-year-olds, and there is a low percentage of low birth weight in most of the OECS countries (Table 3).

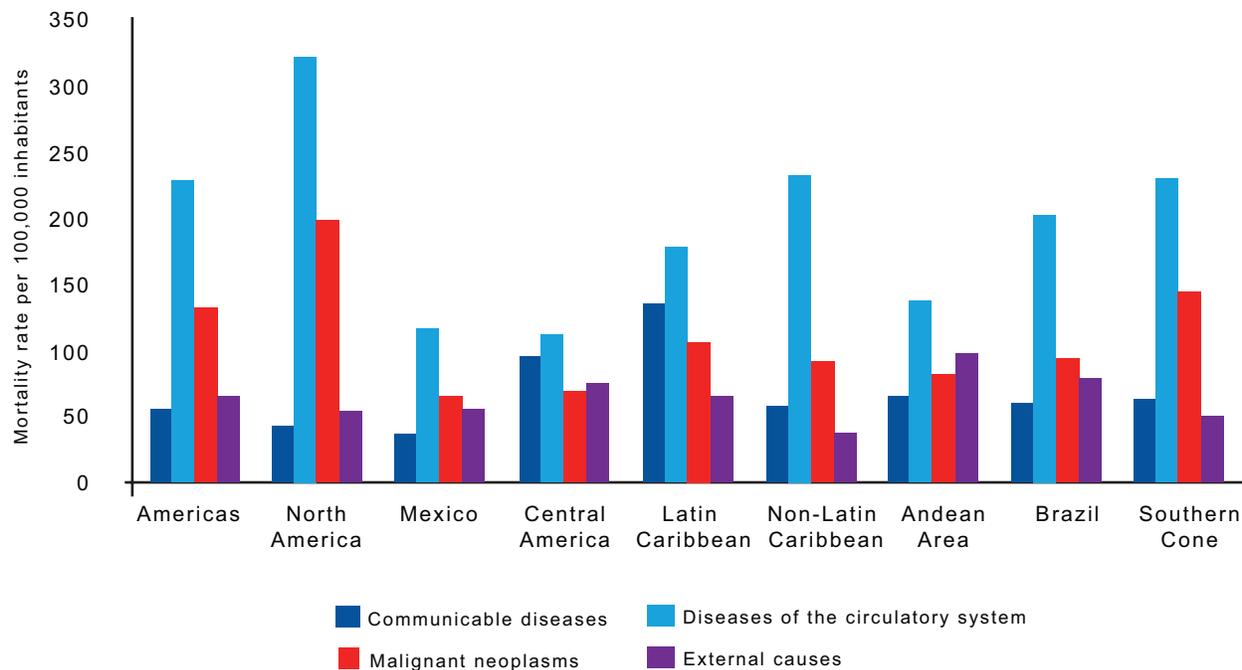
**TABLE 3. DEMOGRAPHIC AND HEALTH INDICATORS**

	Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines
Population	90,800	73,193	103,538	49,190	170,205	109,117
Birth rate, crude (per 1,000 people)	18.1	14.9	19.4	17.3	14.0	17.6
Death rate, crude (per 1,000 people)	5.1	7.5	6.1	10.8	6.7	7.5
Infant mortality (per 1,000 live births)	18.0	9.0	13.0	14.0	13.0	12.0
Under 5 mortality per 1,000 live births	25.0	11.0	15.0	16.0	13.0	13.0
Low birth weight (% <2500 grams)	5.3	9.4	9.0	9.0	11.2	7.9
Total fertility rate	1.7	1.9	2.3	2.1	2.0	2.1
HALE at birth (years)	61.9	63.7	59.2	61.5	62.7	61.0
Life expectancy at birth (years)	71.4	73.3	67.4	70.4	72.2	69.8
Prevalence of undernourishment (% of population)	22.0	5.0	20.0	14.0	8.0	5.0

Data source: World Bank, WHO. Latest year available

Population ageing and economic development have shifted mortality from communicable diseases to NCDs. This shift is expected to intensify in the next decades. Chronic, age-related illnesses become more prevalent as the demographic transition accelerates the epidemiological transition, mortality from infections and from maternal and childhood causes of disease decreases, and the average population age increases, (Tsounta 2009). NCDs in Caribbean countries have replaced communicable diseases, in line with other countries in the Americas, (Figure 9).

**FIGURE 9. ESTIMATED MORTALITY RATES BY GROUPS OF DISEASE FOR THE AMERICAS AND ITS MAIN SUB-REGIONS, 2002-2004**



Source: (Pan American Health Organization 2007)

## THE BURDEN OF NCDs IN THE OECS COUNTRIES

The OECS countries increasingly face the challenges of NCDs, which represent the major causes of death in the region. The burden of NCDs has escalated in the OECS as a result of demographic and epidemiological transition, increasing urbanization, and population ageing (Table 4). In 2004, NCDs accounted for 75–85 percent of total deaths in OECS countries, higher than in the low- and middle-income countries of the Americas and even higher than the global average of 59.6 percent. Deaths attributable to communicable diseases were only about 10 to 20 percent of the total. Across OECS countries, six out of ten leading causes of death are chronic illness. The single largest cause of death was cardiovascular disease, accounting for roughly 30–46 percent of total deaths, followed by malignant neoplasms (10 to 20 percent) and diabetes mellitus (3 to 14 percent) (Table 5). No region in the world has higher death rates from diabetes mellitus than the Caribbean. The prevalence of people aged 20 to 79 living with diabetes in the six OECS countries is estimated at from 7.1 percent in Antigua and Barbuda to 11.5 percent in Dominica and there is no indication that this rate is slowing. Those three NCDs are all substantially higher in the OECS relative to global averages as well as relative to low- and middle-income country averages in the Americas. St. Kitts and Nevis has the highest share of deaths from cardiovascular diseases (46 percent) and the lowest percent of deaths from diabetes mellitus (3 percent) among the six countries. The major NCDs share common underlying risk factors, such as unhealthy eating habits, obesity, physical inactivity, tobacco and alcohol use, and an inadequate utilization of preventive health services.

**TABLE 4. BURDEN OF DISEASE IN OECS COUNTRIES: AGE STANDARDIZED DISABILITY ADJUSTED LIFE-YEARS PER 100,000 OF POPULATION BY CAUSE**

		Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines
All causes*		16,511	16,395	20,810	18,234	16,329	20,278
Communicable diseases		2,103	2,317	3,582	3,227	2,109	4,128
NCDs	Selected causes	12,871	12,798	15,601	13,433	11,856	13,828
	Malignant neoplasms	1,363	1,768	2,136	1,073	1,333	1,655
	Diabetes mellitus	869	629	784	506	915	1,301
	Endocrine disorders	694	303	–	672	400	376
	Neuropsychiatric conditions	3,554	4,141	3,626	3,713	3,609	3,674
	Cardiovascular diseases	2,616	2,117	4,065	3,569	1,849	2,804
	Respiratory diseases	750	646	1,169	530	782	833
	Digestive diseases	654	691	1,199	702	573	700
	Genitourinary diseases	214	241	437	414	200	241
Percentage of NCDs		78%	78%	75%	74%	73%	68%

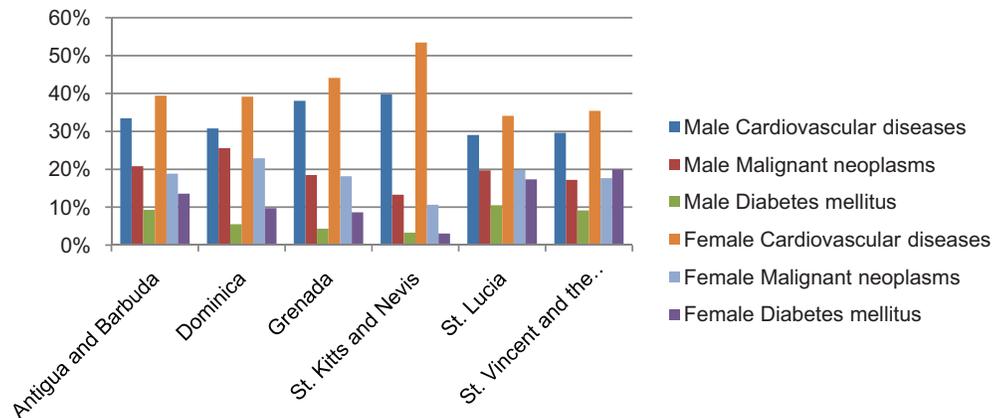
Data source: WHO 2004  
\* Communicable diseases, NCDs, and injuries

**TABLE 5. LEADING CAUSES OF DEATH IN OECS COUNTRIES, 2004 (% OF TOTAL DEATHS, AGE ADJUSTED)**

Leading Cause of Death	Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines	Global	America low and middle income
Cardiovascular disease	36.29	34.85	41.13	46.44	31.20	32.09	29.0	28.49
Malignant neoplasms	19.60	23.99	18.00	11.88	19.51	16.83	12.6	15.50
Diabetes mellitus	11.11	7.50	6.68	3.16	13.45	13.97	1.9	4.99
Infectious and parasitic disease	5.73	5.35	6.69	7.66	3.76	9.26	16.2	8.02
Digestive disease	5.15	5.13	4.23	4.48	4.08	3.77	3.5	6.03
Unintentional injuries	4.29	2.42	3.73	3.46	5.38	4.21	6.6	6.23
Respiratory infections	3.32	3.29	5.28	7.70	3.02	3.60	7.2	5.57
Respiratory disease	2.62	3.56	2.47	1.32	4.12	2.40	6.9	6.06
Genitourinary disease	2.15	1.96	3.30	3.53	1.78	1.20	1.6	2.45
Perinatal conditions	1.70	2.32	2.42	2.42	2.72	3.05	5.4	3.83

Data source: (WHO 2008)

Leading causes of death are similar among men and women in OECS countries with mortality from cardiovascular diseases and diabetes being higher for women. Deaths attributed to cardiovascular diseases and diabetes mellitus are higher among women than among men in all six OECS countries. Compared with the global average of 31.5 percent for women and 26.8 percent for men, cardiovascular disease deaths in OECS member countries are much higher for both women and men at 40 and 33 percent of the total, respectively (Figure 10).

**FIGURE 10. THREE LEADING CAUSES OF DEATH BY OECS COUNTRIES AND GENDER, 2004 (% OF TOTAL DEATHS, AGE ADJUSTED)**

Data source: (WHO 2008)

NCDs represent a growing portion of health spending and impose a large economic burden at the societal, community, and household levels. The costs of NCDs include direct costs of individual health spending as well as indirect loss of earnings in addition to the economic burden to families, communities, and private and public healthcare systems. Chapter 5 deals with these in some detail. In addition, NCDs cause lost productivity and reduced economic growth from lost earnings, lost work days, restricted activity days, lower productivity at work, mortality, and permanent disability.

The lack of effective financial protection from illness further compounds the challenges to the health system. More than half of the total of healthcare services in OECS countries (ranging from 49 to 69 percent) was financed by governments in 2007. Private expenditure is mostly made up of out-of-pocket payments (ranging from 84 to 100 percent), complemented by a very small commercial insurance sector. Spending on health ranges from 4.6 to 7 percent of GDP. Expressed in purchasing power parity, the total expenditure on health per capita varies from \$457 to \$964 (Table 6). Antigua and Barbuda and St. Kitts and Nevis have the highest incomes and lowest rates of poverty and unemployment while Dominica and St. Vincent and the Grenadines, with the lowest income, have higher rates. Inequity in all six OECS countries is rather high, indicated by a Gini coefficient around 0.45 but slightly higher in Antigua and Barbuda at 0.52.

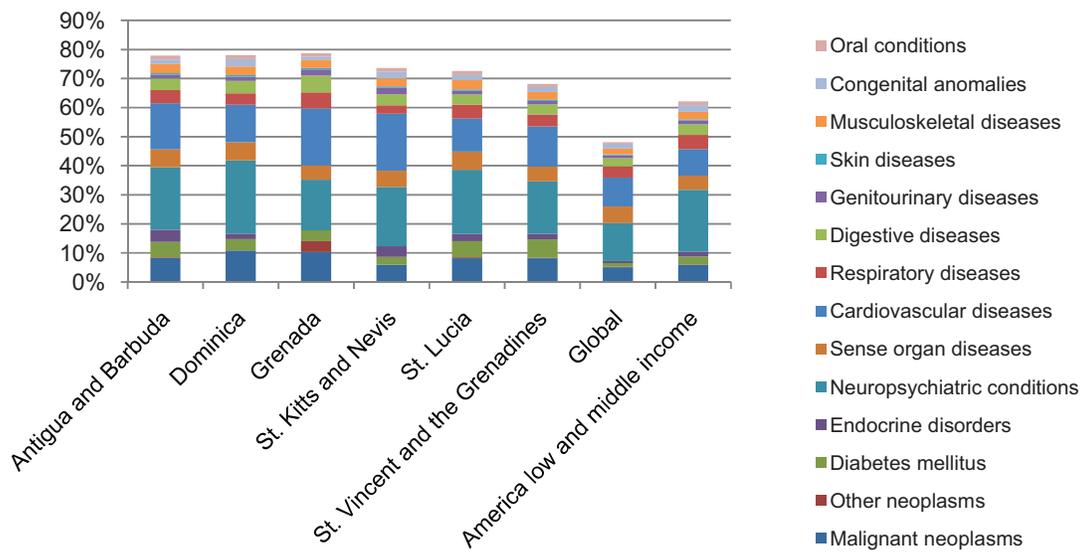
**TABLE 6. HEALTHCARE FINANCING OECS COUNTRIES (LATEST YEAR AVAILABLE)**

	Antigua and Barbuda	Dominica	Grenada	St. Kitts and Nevis	St. Lucia	St. Vincent and the Grenadines
Total expenditure on health as % of GDP	4.6	6.2	7.0	6.0	6.8	4.9
External resources on health as % of total expenditure on health	0.0	0.5	0.0	0.0	0.0	0.0
General government expenditure on health as % of total expenditure on health	69.1	62.5	48.9	57.9	58.8	61.3
General government expenditure on health as % of General government expenditure	11.0	8.2	8.0	8.0	10.8	7.0
Out-of-pocket expenditure as % of private expenditure on health	87.2	84.2	97.4	94.4	94.6	100.0
Total expenditure on health per capita at purchasing power parity (National Currency Units per US\$)	964.0	584.0	619.0	959.0	677.0	457.0
General government expenditure on health per capita at purchasing power parity (National Currency Units per US\$)	666.0	365.0	303.0	555.0	398.0	280.0

Data source: WHO. Latest year available

NCDs account for more than 70 percent of years of life lost in the OECS countries. The global average for years of life lost is less than 50 percent and the low- and middle-income countries average in the Americas is roughly 60 percent. The total disease and injury burden is estimated to be between 9,000 and 25,000 disability-adjusted life-year (160–200 per 1,000 people) in OECS countries (Figure 11). Grenada and St. Vincent and the Grenadines suffer from the highest burden of disease attributable to all causes while St. Lucia and Dominica are among the lowest. Neuropsychiatric conditions become the leading cause of disease burden in all six countries, ranging from as low as 23.2 percent in Dominica to as high as 30.4 percent in St. Lucia. The next largest category of burden of disease is cardiovascular disease (15 to 20 percent) and malignant neoplasms (7 to 14 percent), similar to estimates globally and for low- and middle-income countries of the Americas.

**FIGURE 11. DISTRIBUTION OF DISABILITY ADJUSTED LIFE-YEARS BY NCDs AND OECS COUNTRIES, 2004 (% IN TOTAL DISABILITY-ADJUSTED LIFE-YEARS, AGE ADJUSTED)**



Data source: (WHO 2008)

*The predominance of NCDs in the OECS countries that have been identified in this chapter indicate an urgent need to fully understand the risk factors directly responsible for causing them; these are therefore considered in the next chapter.*



# III. RISK FACTORS CONTRIBUTING TO THE BURDEN OF DISEASE

*The most common high-risk factors that contribute to NCDs are few and highly preventable. This chapter evaluates the relative burden from these behavioral factors in the OECS countries, namely tobacco use, physical inactivity, alcohol abuse, and unhealthy diet.*

## Key Messages

1. There is ample evidence in the region of high levels of the four main preventable behavioral risk factors that lead to NCDs: unhealthy diet, physical inactivity, smoking, and harmful use of alcohol.
2. Overweight or obesity and physical inactivity levels are higher among women than men in the OECS countries.
3. Limited data on tobacco use and alcohol consumption in the OECS countries indicate a disturbing trend of tobacco and alcohol use among youth.

This report assesses the four most common preventable behavioral risk factors (tobacco use, physical inactivity, alcohol abuse, and unhealthy diet) for NCDs in the six OECS countries. The WHO estimates that by 2020 the number of people dying annually from tobacco use will increase to 7.5 million and account for 10 percent of all deaths. Smoking prevalence is the highest in low- and middle-income countries. People who are insufficiently physically active have a 20 to 30 percent increased risk of mortality from all causes. Approximately 2.3 million people die each year from the harmful use of alcohol that accounts for about 3.8 percent of all deaths in the world. Unhealthy diet is rising quickly in lower-resourced settings; data suggest that since the 1980s fat intake has been rising rapidly in low-middle-income countries. Unhealthy diet and physical inactivity contribute to the epidemic of overweight people and obesity in the OECS, which in turn causes various NCDs.

Over 84 percent of the total global burden of disease occurs in low- and middle-income countries and on their poorer populations, reflecting the underlying socio-economic determinants of NCDs (WHO 2010). In 2009, the major four risk factors together accounted for over three-quarters of ischemic heart diseases – the leading cause of death worldwide. If the risk factors were reduced, global life expectancy could go up by almost 5 years (WHO 2009).

## **OBESITY**

Overweight people and obesity are steadily increasing in all OECS countries; women are affected more than men and there is a rising trend of obesity in children. WHO and FAO data confirm that there has been a change in the nutritional profile with a shift from undernourishment to being overweight and obesity among children in all six OECS countries. In the last decade, Dominica has had the highest obesity prevalence in both gender groups in the region. About 38.4 percent of males and 65.3 percent of females are estimated to be obese by 2015. Obesity is also high among females in St. Lucia – it is estimated that by 2015 almost 60 percent of them will be obese. The male group in St. Lucia has the lowest obesity rates in the region although this has been increasing since the 2002 baseline. Antigua and Barbuda and St. Kitts and Nevis have seen similar trends and levels of obesity in both gender groups over the period 2002–15 (WHO, Global Database on BMI n.d.). It has also been reported that preschool rates of obesity in the Caribbean region are as high as in the United States (Gardner 2009). Diabetes and hypertension associated with obesity are among the leading causes of morbidity and mortality in almost all countries in the region

Figure 12 and 13 present OECS country-data on overweight and obesity levels respectively, using the WHO international classification that sets the principal cut-off points for being overweight and obese at a BMI (kg/m<sup>2</sup>) of  $\geq 25.00$  and  $\geq 30.00$  respectively and WHO projections for 2015 are included (WHO, Global Database on BMI n.d.). These statistics cover the adult population of 30 years and older. Dominica has the highest prevalence of overweight people in both gender groups<sup>3</sup>. St. Lucia comes second in the region overall, with the highest prevalence of overweight females. The prevalence of overweight men in St. Lucia is the lowest in the region, however, giving St. Lucia the widest gender gap. St. Vincent and the Grenadines shows relatively stable overweight levels during the study period (2002–15), averaging 56.6 percent of men and 64.1 percent of women in the overweight category. St. Kitts and Nevis shows the second highest prevalence of overweight males after Dominica. In 2002, the lowest overweight figures for males were in St. Lucia (44.7 percent) while for females the lowest figures were found in St. Vincent and the Grenadines (61.2 percent). It is estimated that by 2015 St. Vincent and the Grenadines will have the lowest prevalence of overweight people in both gender groups.

<sup>3</sup> Data based on the STEPwise approach to surveillance chronic non communicable diseases risk factor surveys, 2007–2009 provides lower obesity rates for Dominica, i.e. 9 for males and 33 for females in a sample of 1,059 households

**BOX 1: OBESITY**

Obesity is the “disease in which excess body fat has accumulated to such an extent that it adversely affects the health”. However, the amount of excess fat and its distribution within the body as well as the health consequences vary substantially among obese individuals. The WHO classified the Body Mass Index (BMI) as a simple index of weight-for-height commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in meters (kg/m<sup>2</sup>)<sup>4</sup>.

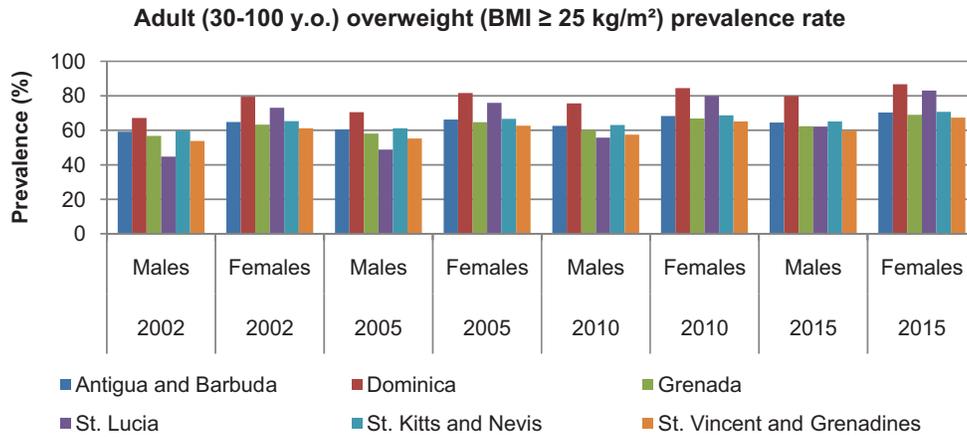
The International Classification of adult underweight, overweight and obesity according to BMI

Classification	BMI(kg/m <sup>2</sup> )	
	Principal cut-off points	Additional cut-off point
Underweight	<18.50	<18.50
Severe thinness	<16.00	<16.00
Moderate thinness	16.00 - 16.99	16.00 - 16.99
Mild thinness	17.00 - 18.49	17.00 - 18.49
Normal range	18.50 - 24.99	18.50 - 22.99
		23.00 - 24.99
Overweight	≥25.00	≥25.00
Pre-obese	25.00 - 29.99	25.00 - 27.49
		27.50 - 29.99
Obese	≥30.00	≥30.00
Obese class I	30.00 - 34.99	30.00 - 32.49
		32.50 - 34.99
Obese class II	35.00 - 39.99	35.00 - 37.49
		37.50 - 39.99
Obese class III	≥40.00	≥40.00

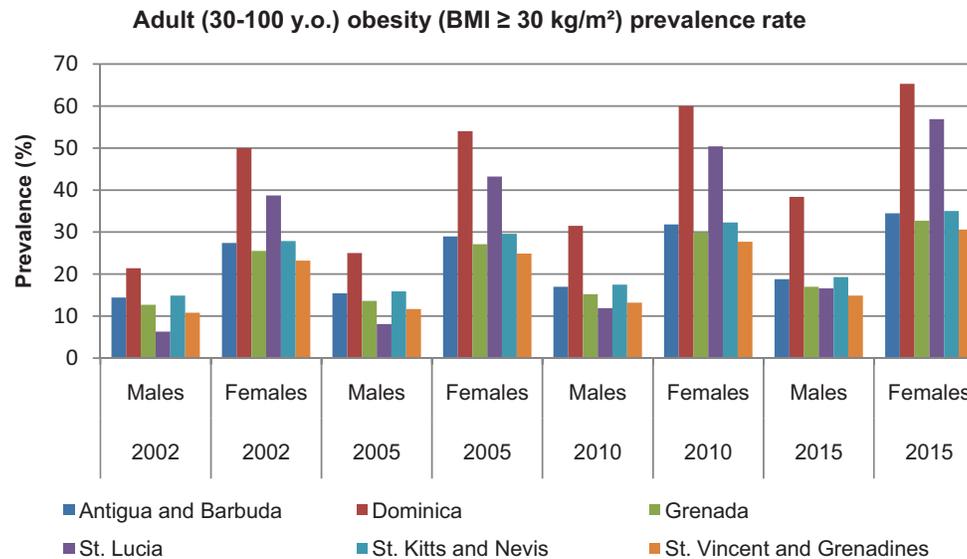
Source: (WHO, Global Database on BMI n.d.).

Individuals with excess fat in intra-abdominal depots are at a particular risk of adverse health consequences of obesity and hence the measurement of waist circumference is the simple and practical method of identifying overweight patients with increased risk of obesity-related illnesses. Representatives of different ethnicities have different association with the level of obesity risks and therefore there is not yet a single internationally applicable system grading the waist circumference. Other tools characterizing the obese state include the methods of measuring body composition, determining the anatomical distribution of body fat, measuring energy intake and energy expenditure. The classification of children and adolescent obesity and that of adults is treated differently (WHO, Obesity: Preventing and Managing the Global Epidemic 2000).

<sup>4</sup> WHO used formula of BMI: e.g. an adult who weighs 70kg and whose height is 1.75m will have a BMI of 22.9 (BMI = 70 kg / (1.75 m<sup>2</sup>) = 70 / 3.06 = 22.9). BMI values are age-independent and the same for both sexes. However, BMI may not correspond to the same degree of fatness in different populations due, in part, to different body proportions. In recent years, there was a growing debate on whether there are possible needs for developing different BMI cut-off points for different ethnic groups due to the increasing evidence that the associations between BMI, percentage of body fat, and body fat distribution differ across populations and therefore, the health risks increase below the cut-off point of 25 kg/m<sup>2</sup> that defines overweight in the current WHO classification.

**FIGURE 12. PREVALENCE OF OVERWEIGHT PEOPLE IN THE OECS COUNTRIES**

Source: (WHO, Global Database on BMI n.d.)

**FIGURE 13. PREVALENCE OF OBESITY IN THE OECS COUNTRIES**

Source: (WHO, Global Database on BMI n.d.)

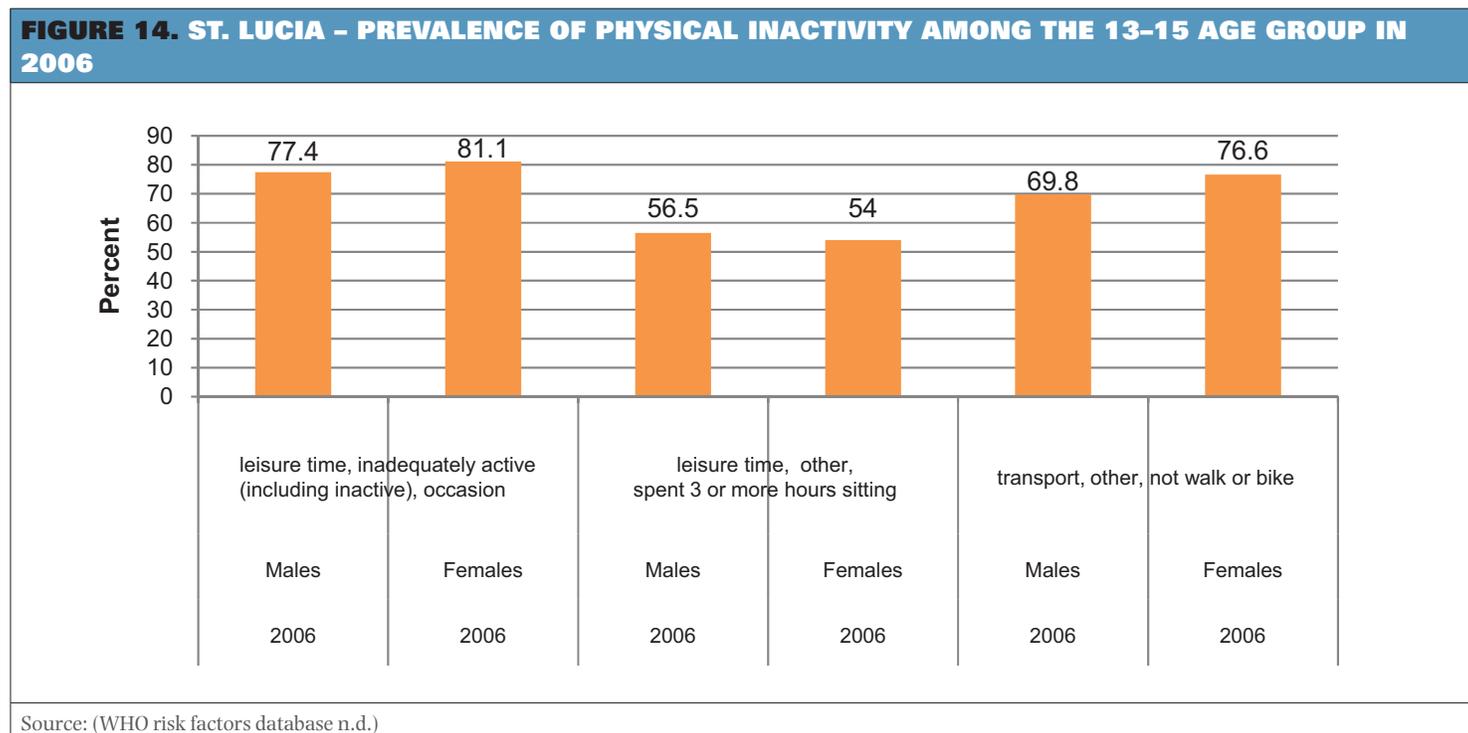
Obesity is one of the important risk factors for hypertension that together with diabetes are placing the increasing demand for services and financial burden on the health systems of the OECS countries. The majority of the studies considers the increasing trend of diabetes to be a direct result of the increasing prevalence of obesity and overweight following the population's unhealthy diets and lack of physical activity. Poor dietary habits also affect the healthy weight of children. Socio-economic factors are another contributor: surveys reveal that the risk factors in people of higher socio-economic status diminish with time but they remain high in those of lower socio-economic status. With modernization, the establishment of a cash economy, and the abandonment of traditional food sources, the least expensive foods are usually highly refined and high in calories; one should therefore remember that there is a correlation between the preference for unhealthy foods and affordability (Madrigal 2006).

## PHYSICAL INACTIVITY

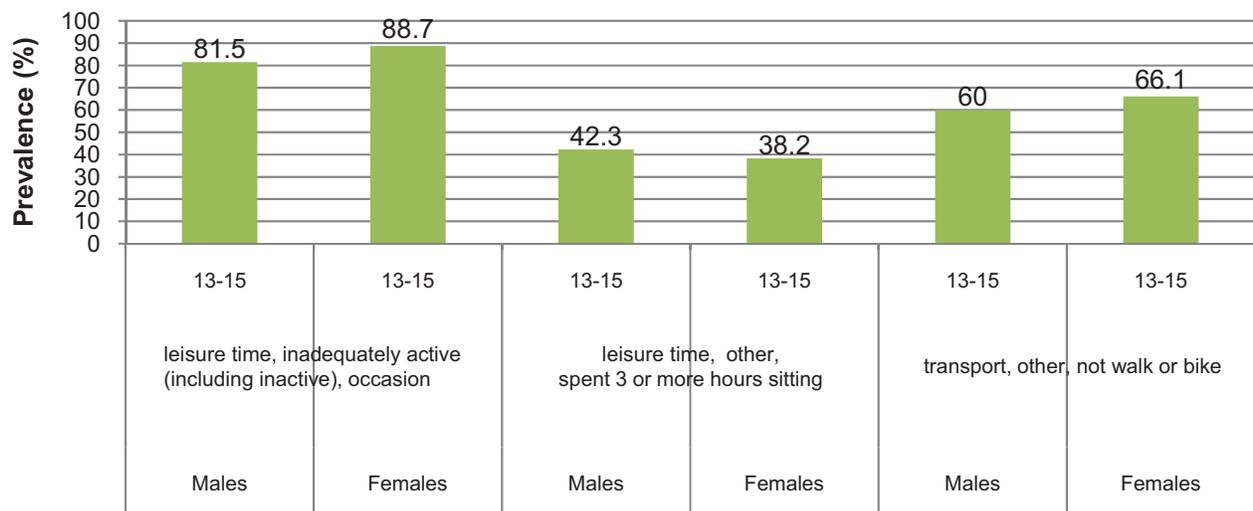
Physical inactivity levels are high across the region, particularly among females. Growing urbanization and sedentary lifestyles give rise to the problem of physical inactivity. Physical inactivity is the fourth leading risk factor of global mortality accounting for 6 percent of deaths. Other three leading risk factors are hypertension (13 percent), tobacco use (9 percent), and high blood glucose (also 6 percent). The number of people who are physically inactive, as well as the degrees of inactivity, are on the increase. WHO estimates that physical inactivity is the principal cause of approximately 21–25 percent of breast and colon cancers, 27 percent of diabetes, and approximately 30 percent of ischemic heart disease. It is proven that regular physical activity reduces the risk of coronary heart disease and stroke, diabetes, hypertension, colon cancer, breast cancer, and depression. Physical activity is also a key feature of weight control. Some key WHO recommendations on physical activity are provided in the Appendix 1 to the report (WHO, Global Recommendations on Physical Activity for Health 2010).

The populations of the OECS countries are insufficiently active physically across all age groups. In 2007, 25.5 percent of people in Dominica (14.9 percent of males and 36.2 percent of females) were identified as being insufficiently physically active<sup>5</sup>, whereas in St. Kitts and Nevis the rates were 40.6 percent (32.2 percent and 49 percent respectively (WHO 2010).

Figures 14 and 15 provide figures on the levels of physical activity in St. Lucia and St. Vincent and the Grenadines of adolescents between 13 and 15 years of age. The data for St. Lucia shows relatively high physical inactivity among students between 13 and 15 years of age in 2006. On average, adolescents spent 79.5 percent of their time insufficiently active, 55.1 percent spent 3 or more hours per day sitting and 73.6 percent used means of transport other than walking or biking (WHO risk factors database n.d.). In St. Kitts and Nevis, 32.2 percent of males and 49 percent of females were reported insufficiently active in 2008. The 2007 survey among 13-15 year old students in St. Vincent and the Grenadines identified that they had spent about 85.1 percent of their time being inadequately active (or inactive), 40.3 percent of their time sitting for 3 or more hours and 63.3 percent of time being inactive in transport (WHO, Global Status Report on Non-Communicable Diseases 2008).



5 WHO crude adjusted estimates

**FIGURE 15. ST. VINCENT AND THE GRENADINES – PREVALENCE OF PHYSICAL INACTIVITY AMONG THE 13-15 AGE GROUP IN 2007**

Source: (WHO risk factors database n.d.)

## SMOKING

Smoking is a risk factor across all six OECS countries with prevalence varying from 13.4 percent in Antigua and Barbuda to 19.9 percent in Dominica and Grenada (2001) and from 14.3 percent in St. Lucia to 23.6 percent in St. Vincent and the Grenadines (2002). The English-speaking Caribbean countries report relatively low prevalence of tobacco use compared to other countries in Latin or North America (PAHO/WHO 2001). Although considered low relative to the global average, the 2000 data from WHO indicate that at least one-fifth of the general population of the Caribbean had used tobacco at some point during their lifetime and that more than a tenth of the population of the English-speaking Caribbean were current users, having used tobacco during the month preceding the survey. Its use is becoming an increasing concern for global public health. All OECS countries (except St. Kitts and Nevis) have ratified the WHO Framework Convention on Tobacco Control and have gradually been implementing the policy of banning smoking in public places. Most efforts at tobacco prevention and control are focused on youth.

It is reported that smoking is responsible for at least 10 percent of all the deaths in Caribbean countries. Tobacco use is a serious risk factor for multiple diseases and causes high rates of disability and morbidity. The WHO/PAHO has observed a progressive increase in the demand for tobacco in the region since the early 2000s (PAHO, Epidemiological Bulletin 2001). In the Latin America and Caribbean region, tobacco use has been the cause of more than one-third of all deaths from cancer and heart diseases (WHO, Grenada – Global Youth Tobacco Survey 2001).

There has been a lack of information required for decision-making and the development of tobacco prevention and control policies in the region. In early 2000, the WHO reviewed information related to tobacco use in the English-speaking Caribbean and concluded that there was a substantial lack of information available. Since then, efforts have been made to collect data among youth and adolescents as part of the Global Youth Tobacco Surveys initiative, but much greater efforts are required to monitor epidemiological information among the general population and specific risk groups (PAHO, Epidemiological Bulletin 2001). WHO surveys were conducted among school children aged 13 to 15 in Antigua and Barbuda in 2000 and 2004, Dominica in 2000, Grenada in 2000, and St. Vincent and Grenadines in 1997. These excluded certain risk groups, such as out-of-school children, thus underestimating the real prevalence of adolescent smoking in the region (PAHO, Epidemiological Bulletin 2001). Some national, cross-section tobacco prevalence statistics are available but these fail to report sufficient information including date of implementation, sample age range, and sex disaggregation.

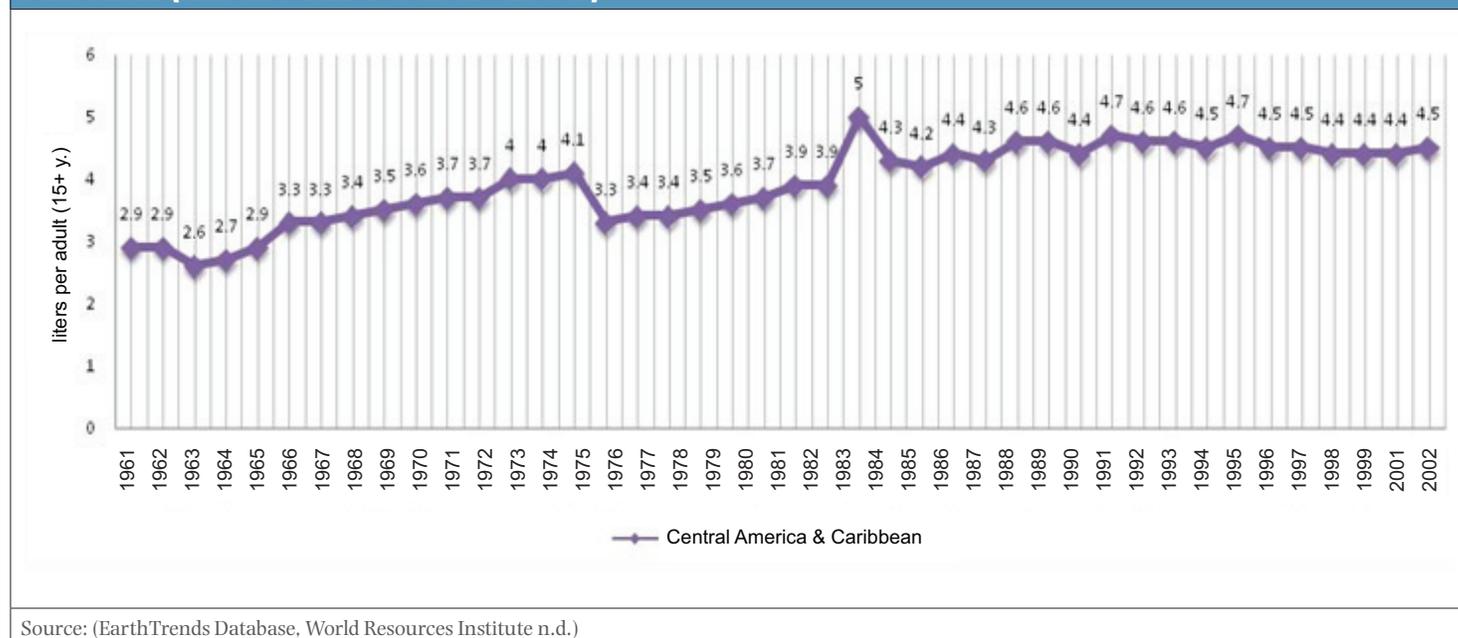
The age at which people start smoking is an important risk factor and anecdotal evidence suggests that smoking is common among youth in the OECS countries. The WHO targets youth in monitoring the prevalence of tobacco use (WHO risk factors database n.d.) because the younger a person starts smoking, the higher the risk of developing lung cancer, which increases in proportion to the duration of smoking and the amount of tar in cigarettes.

As in the Latin America and Caribbean region, tobacco use by males is substantially greater than by females. The proportion of tobacco use in males is almost double that of females in general, although there has recently been a noticeable increase in the prevalence of smoking among females. In St. Vincent and the Grenadines the prevalence of smoking was reported as around four times greater in males than in females (PAHO, Epidemiological Bulletin 2001).

## ALCOHOL CONSUMPTION

Adult alcohol consumption in the Central America and Caribbean region increased noticeably since 1961. Based on data from the World Resources Institute, adult (15+) per capita consumption of alcohol was on the increase until 1975, when it reached 4.1 liters per year<sup>6</sup> before dropping to an average of 3.5 liters over the next 9 years. In 1984, per capita consumption was the highest in the observed period (at 5 liters), but this dropped in the following year and remained down until 2002 (the last year reported) when it increased to 4.5 liters per capita, 0.1 units higher compared than in the preceding year (Figure 16). The 2009 WHO Global Health Risks report rated Latin America as the region with the second-highest proportion of deaths attributed to alcohol consumption (1 in every 12 deaths) after Eastern Europe (more than 1 in every 10 deaths).

**FIGURE 16. ALCOHOL CONSUMPTION IN CENTRAL AMERICA AND CARIBBEAN, IN LITERS PER ADULT PER YEAR (AMONG THE 15+ AGE GROUP)**

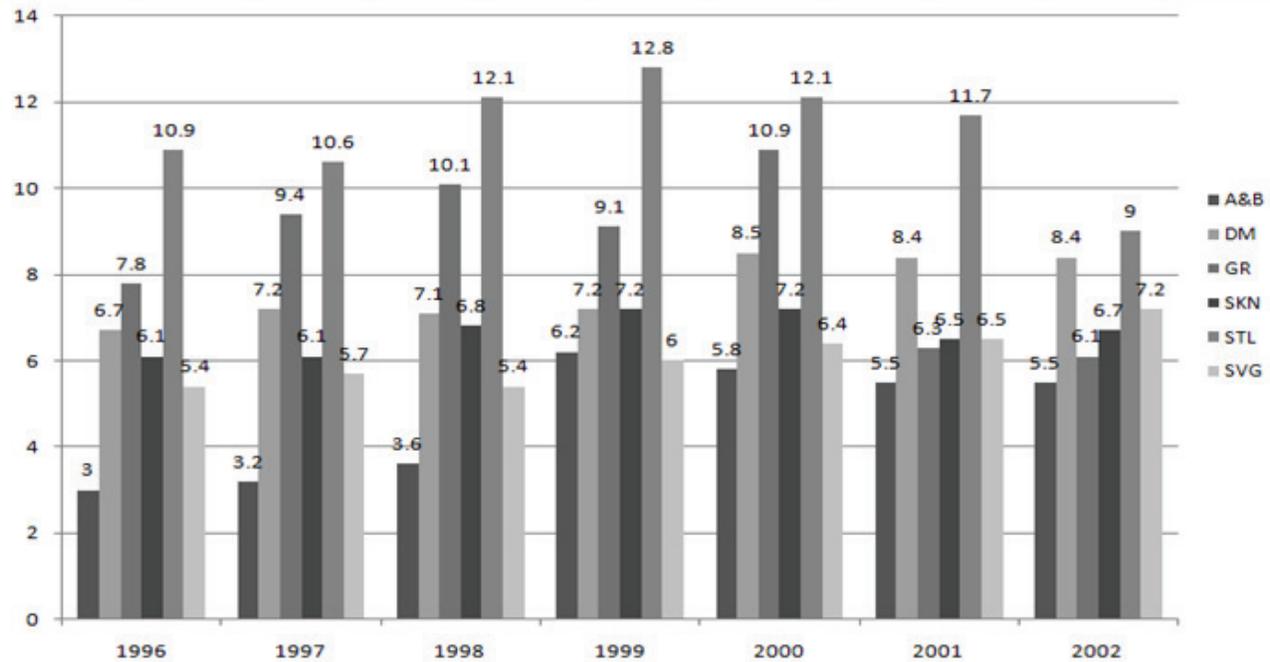


Source: (EarthTrends Database, World Resources Institute n.d.)

Alcohol consumption is common across OECS countries. There is little information available for the OECS countries on alcohol-related national policies and regulations, or on alcohol use. From available data it appears that consumption is highest in St. Lucia (11.7 liters per capita in 1996), followed by Grenada (GR) (7.8 liters per capita in 1996), and relatively lower in Antigua and Barbuda (A&B) (5.5. liters per capita from 1996 to 2002). Household-level data from St. Lucia confirmed that alcohol consumption is highest in poorer households. In 2001, consumption in Grenada went down (6.3 liters per capita), making Dominica (DM) (8.4 liters per capita) the second highest after St. Lucia (11.7 liters per capita). The highest figure for use of alcohol among the OECS countries was reported in St. Lucia in 1999, when the level reached 12.8 liters per capita (Figure 17).

<sup>6</sup> Alcohol consumption per capita is the estimated amount of pure ethanol, in liters, of total alcohol consumed per adult (15 years and older) in a country during a calendar year. Data include consumption of beer, wine, and spirits. Beer includes barley, maize, millet, and sorghum beer. Other beverage categories, such as palm wine, vermouths, cider, and fruit wines may also be included EarthTrends Database, World Resources Institute (n.d.). Retrieved 2011 from World Resources Institute: <http://earthtrends.wri.org>

**FIGURE 17. ALCOHOL CONSUMPTION IN OECS COUNTRIES, LITERS PER ADULT (AMONG THE 15+ AGE GROUP)**



Source: (EarthTrends Database, World Resources Institute n.d.)

*This chapter has shown that the most common NCDs are directly related to the high incidence of a few major risk factors in the OECS countries. Since these are highly preventable, it is imperative that countries undertake rigorous programs of prevention and healthcare promotion. The next chapter considers the steps these countries have already taken to that end.*

## IV. ASSESSING THE ECONOMIC IMPACT OF NCDs IN OECS COUNTRIES

*The impact of NCDs on the economic welfare of individuals and society is considerable and presents a challenge to their development. This chapter considers the costs and, in the absence of data, uses data that are available for St. Lucia to estimate the burden for all countries in the OECS.*

### Key Messages

1. NCDs pose heavy treatment costs for individuals, families, and society.
2. Health expenditure on a diabetic patient ranges from US\$322 to US\$769 per year, higher than per capita total health expenditure for the population in six OECS countries.
3. According to data for St. Lucia, NCD patients spend 36 percent of their total household expenditures in a year on out-of-pocket healthcare costs for NCD carer.
4. Poorer households carry the heavier economic burden of NCDs as they spend 48 percent of their per capita expenditure on healthcare while the richest spend less than 20 percent.

NCDs have serious economic consequences as they not only cause premature death and disability, and have adverse effects on the quality of life, but also create a large economic burden. This burden is being felt by patients, households, communities, and the society at large. This report estimates the economic burden of NCDs at the household level. The cost estimates reported in this section are derived from existing household survey data that contain information on the use of healthcare and health expenditure or from published reports and government documents that provide cost estimates for specific chronic diseases. The assessment used the expenditure data on diabetes mellitus in six OECS countries and individual expenditure on major chronic diseases in St. Lucia as an illustration of the economic burden incurred by (especially poor) households and society from NCDs.

### EXPENDITURE ON DIABETES MELLITUS IN THE SIX INDEPENDENT OECS COUNTRIES

Diabetes poses significant costs to patients and their families. The average annual spending per capita on diabetes ranges from US\$322 in St. Vincent and the Grenadines to US\$769 in Antigua and Barbuda (Table 7), exceeding the annual per-capita spending on health by a factor of 1.2 in most of the countries.

<b>TABLE 7. EXPENDITURE PER CAPITA ON DIABETES MELLITUS IN SIX INDEPENDENT OECS COUNTRIES (IN USD, 2005)</b>			
Countries	Average total health expenditure per capita US\$	Health expenditure per diabetic patient per year in US\$	Ratio cost per case/total health expenditure per capita
Antigua and Barbuda	627	769	1.2
Dominica	312	384	1.2
Grenada	416	592	1.4
St. Kitts and Nevis	623	659	1.1
Saint Lucia	361	488	1.4
St. Vincent and Grenadines	272	322	1.2

Source: (www.diabetesatlas.org n.d., WHO 2008)

Diabetes also poses significant cost to society. Table 8 provides estimated expenditure by the public sector on diabetes. Dominica has the highest prevalence of diabetes and spent relatively less per patient. The Government of Antigua and Barbuda spent more on each diabetic patient.

<b>TABLE 8. TOTAL PUBLIC ANNUAL EXPENDITURE ON DIABETES MELLITUS IN SIX INDEPENDENT OECS COUNTRIES (IN USD MILLIONS, 2005)</b>					
Country	Prevalence of diabetes mellitus in population 20-79 Years	Population 20-79 Years	Number of diabetes patients per year	Total annual expenditure on diabetes	Expenditure per diabetic patient
US\$					
Antigua and Barbuda	7.1	43,600	3096	2.4	775.19
Dominica	11.5	45,000	5175	2.0	386.47
Grenada	8.5	59,700	5074	3.0	591.25
St. Kitts and Nevis	9.0	24,800	2232	1.5	672.04
Saint Lucia	8.6	107,300	9228	4.5	487.65
St. Vincent and Grenadines	7.3	75,700	5526	1.8	325.73

Source: (www.diabetesatlas.org n.d., WHO 2008)

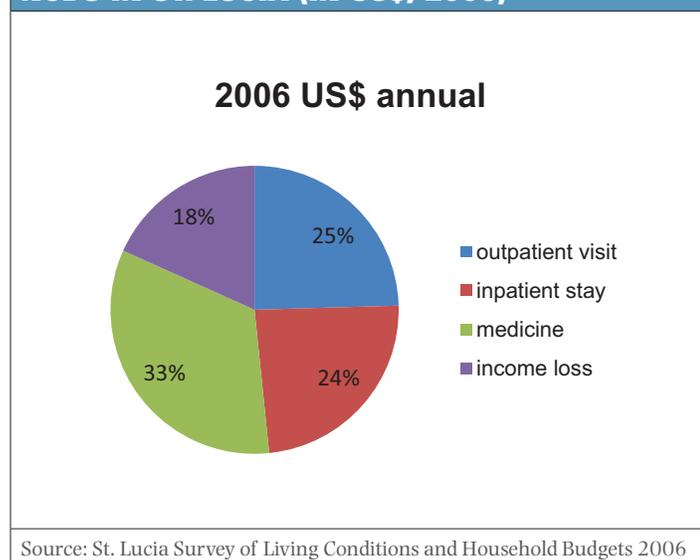
## A CASE STUDY: THE PRIVATE ECONOMIC BURDEN OF MAJOR NCDs IN ST. LUCIA

The economic burden of NCDs falls not only on governments, but also on patients and their families. Using the St. Lucia Survey of Living Conditions and Household Budgets 2006, this section estimates the private economic burden of NCDs on individuals and their families. The analysis includes an assessment of the economic burden resulting from the four most prevalent, costly and disabling chronic conditions in St. Lucia: diabetes, high blood pressure, heart diseases and cancer.

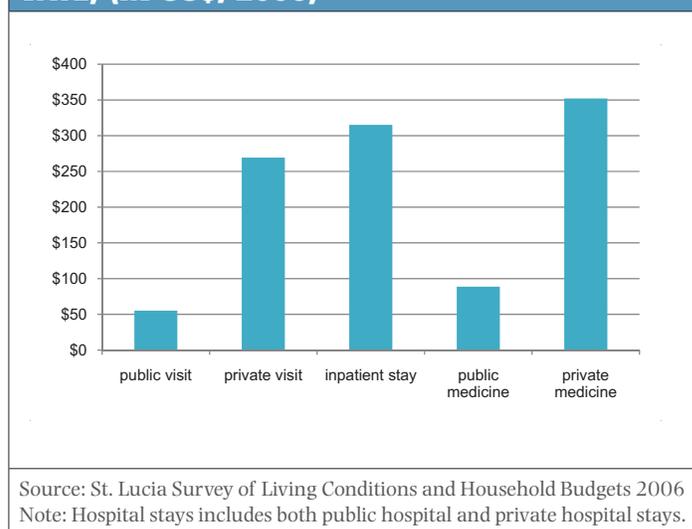
To better understand the economic impact, this analysis focuses on the economic burden at the individual level as well as at the household level. The direct economic burden at the individual level is the sum of NCD patients' out-of-pocket spending on (a) outpatient visits; (b) inpatient stays, and (c) medication. The indirect economic burden of NCDs comes from a reduction of productivity, therefore income due to illness. Indirect income loss<sup>7</sup> is defined as the number of days that an employed patient is unable to carry out normal activities and reduced pay, multiplied by the per-capita expenditure of the household, to give a proxy for individual annual earning. All monetary values are annualized to 2006 Eastern Caribbean Dollar (EC\$) then converted to the equivalent in 2006 US\$. The total average private economic burden per patient was estimated at roughly US\$1,320 in 2006. The direct individual out-of-pocket healthcare cost for patients in St. Lucia amounted to 82 percent of the total private economic burden, on average US\$1,080 per patient, which is roughly 36 percent of the average per-capita household annual expenditure (US\$3,009). This includes US\$324 for outpatient visits (25 percent of the private economic burden), US\$315 for inpatient stays (another 25 percent), and US\$440 for medicine purchases (35 percent) (Figure 18 and Figure 19). The remaining 15 percent of private economic burden comes from individual indirect income loss due to work absenteeism or sick leave, roughly US\$241 per year. Households with NCD patients incurred more expenditure than other households.

Patients with major NCDs are more likely to use private health facilities that are more costly. NCD patients spent fivefold more in private health facilities for outpatient care than in public facilities. Out-of-pocket expenditure on outpatient visits in public health facilities is roughly US\$55 per year while expenditure in private facilities is fourfold that. Patients also spent substantially more on medicines in private facilities (US\$352) than in public facilities (US\$88)<sup>8</sup>.

**FIGURE 18. DISTRIBUTION OF INDIVIDUAL ANNUAL ECONOMIC BURDEN FROM MAJOR NCDs IN ST. LUCIA (IN US\$, 2006)**



**FIGURE 19. INDIVIDUAL ANNUAL DIRECT HEALTHCARE COST FOR MAJOR NCDs DISAGGREGATED BY FACILITY TYPE (PUBLIC OR PRIVATE) (IN US\$, 2006)**



About 25 percent of NCD patients in St. Lucia are covered by some type of medical insurance. Interestingly, the presence of medical insurance is not associated with a reduction of individual healthcare costs that are attributable to NCDs; instead, expenditure for NCD patients with insurance coverage is on the rise as compared to that for non-insured (Figure 20). Insured individuals spent US\$1,345 on average to treat NCDs, with 40 percent on outpatient visits (US\$543), while non-insured individuals spent only 25 percent on outpatient visits (US\$247), making them spend less (US\$992) than insurers. Such a surprising result is also observed in some other developing countries. For example, a study in China (Wagstaff and Lindelow 2008) found that the payment schedule coupled with limited regulation in the country

<sup>7</sup> Income loss applies to working-age adults (age 18-59) only. Children and adolescents (0-17), and seniors (60 and older) are assumed not productive

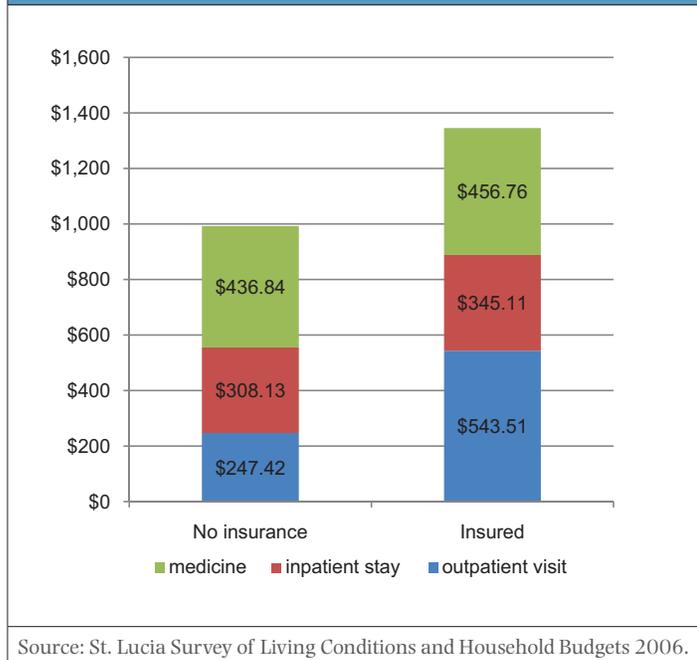
<sup>8</sup> Survey did not distinguish expenditure on hospital stays in public or private hospital

actually encourages overprovision of high-tech care and an individual with insurance is more likely to incur high annual health expenses than non-insured individuals

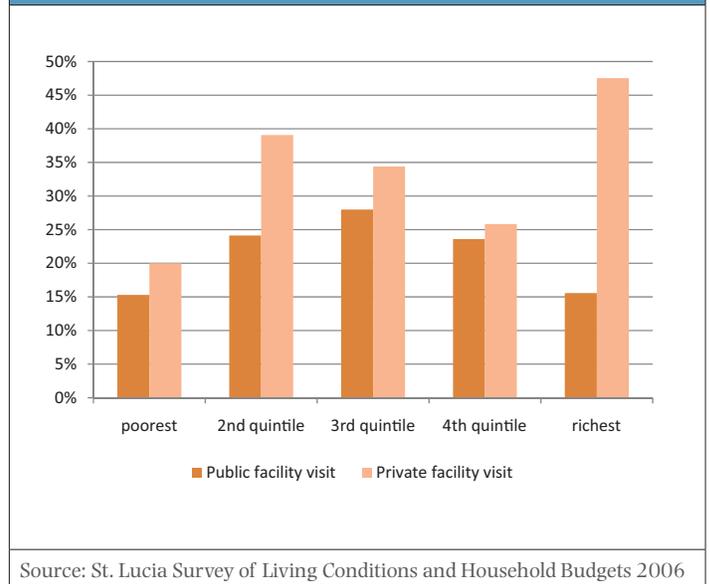
The NCD patients from better-off households had much more out-of-pocket expenditure on treatment and consultation visits. Disaggregated by household expenditure quintiles, the richest NCD patients incur more healthcare cost as well as work loss than poorer patients. The poor in general spent less on medical services, possibly due to lack of access to care or of medical insurance coverage and inability to pay. At the same time, the poor have a smaller income loss due to absenteeism or sick leave as their wages are lower.

NCD patients in the richest quintile had more expenditure than NCD patients in the poorest quintiles, driven by more visits to private facilities. A much larger fraction of NCD patients among the richest quintile made private facility visits (47 percent) compared to the poorest NCD patients (15 percent) (Figure 21). With respect to public facility visits, there is a clearly inverse-U shape pattern by household expenditure quintiles, with median income NCD patients making the most visits (28 percent); the poorest and richest made fewer public visits relative to middle-income patients, potentially because the poor lacked access or the ability to pay while the richest had the tendency to visit a private facility more frequently.

**FIGURE 20. INDIVIDUAL ANNUAL DIRECT HEALTHCARE COST FOR MAJOR NCDs BY INSURANCE COVER (IN US\$, 2006)**

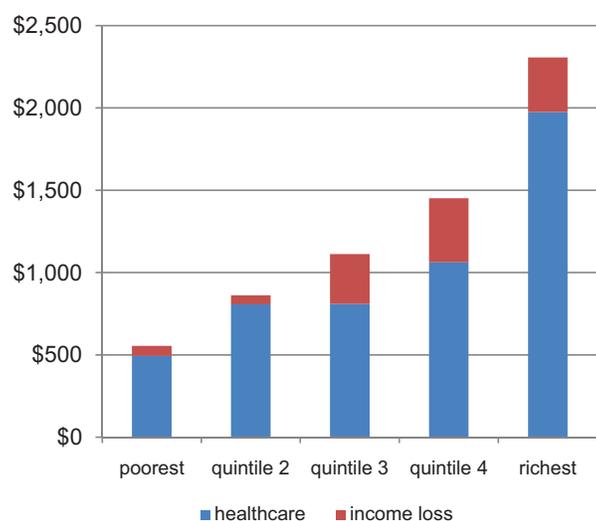


**FIGURE 21. PERCENT OF NCD PATIENTS MAKING HEALTHCARE VISITS BY HOUSEHOLD EXPENDITURE QUINTILES**



The economic burden falls more on poorer people. The average economic burden for the richest 20 percent of patients was \$2,306, including the costs of both healthcare and work loss, while for the poorest 20 percent of NCD patients this was only \$554, or 24 percent of what the rich spent (Figure 22). Even though the poor spent less, their spending represents a higher proportion of their annual income. The poorest NCD population spent 48 percent of their per-capita expenditure on healthcare while the richest NCD population spent less than 20 percent. The economic impact of NCDs is certainly felt more by poorer people. There is a vicious circle in that poverty can increase exposure to NCD risk factors and NCDs in turn drive the poor into deeper poverty, unless strong interventions take place.

More women and the better-off population are more likely to suffer from the four major NCDs in St. Lucia (Table 9).

**FIGURE 22. INDIVIDUAL ANNUAL DIRECT HEALTHCARE COST BY POPULATION QUINTILES FOR THE FOUR MAJOR NCDs (IN US\$, 2006)**

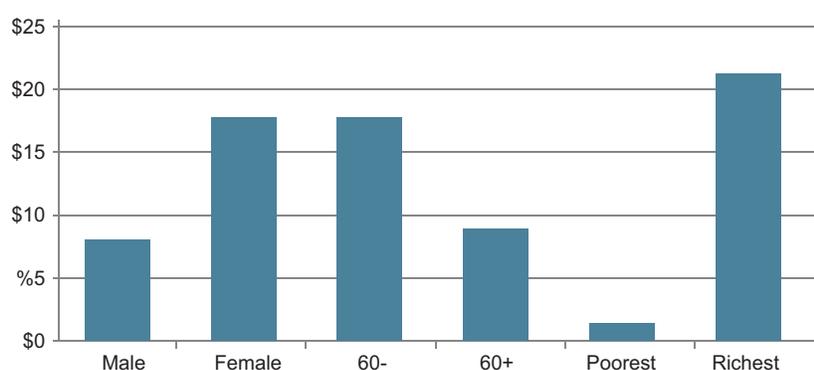
Source: St. Lucia Survey of Living Conditions and Household Budgets 2006  
 Note: Major NCD include diabetes, high blood pressure, heart conditions and cancer

**TABLE 9. ESTIMATE OF THE NCD POPULATION IN ST. LUCIA**

	Prevalence (%)	Estimated population with major condition
By Gender:		
Male	7.77	6,343
Women	15.44	13,673
By Age Group:		
60-	5.58	7,332
60+	53.89	11,740
By Population Quintile:		
Poorest	7.28	3,097
Richest	22.22	9,454

Source: World Bank Indicators and St. Lucia Survey of Living Conditions and Household Budgets 2006  
 Note: The estimated total population of 170,205 in 2010 (World Bank Indicators) is used to project population with major condition.

The aggregate economic burden of NCDs in the OECS countries is comparable to other Caribbean countries but the total economic burden is being substantially underestimated. The economic burden of the four major NCDs in St. Lucia was estimated at \$27 million, 2.8 percent of the 2009 estimated GDP of \$945.83 million (Figure 23), which is comparable to the estimate from other countries such as Jamaica with 3.3 percent of GDP. This number only includes four major NCDs, however, substantially underestimating the total economic burden for all NCDs. In addition, this estimate only represents the cost from households and did not include the public expenditure from the government and society. The actual burden of NCDs is much higher than 2.8 percent of GDP.

**FIGURE 23. ESTIMATED NATIONAL AGGREGATE PRIVATE ECONOMIC BURDEN OF MAJOR NCDs BY SOCIO-ECONOMIC SUBGROUPS IN ST. LUCIA (IN US\$ MILLIONS, 2006)**

Source: WBI and St. Lucia Survey of Living Conditions and Household Budgets 2006

The aggregate economic burden on female NCD patients in the OECS countries is roughly double that of their male counterparts (US\$18 million for women and US\$9 million for men). This huge gender disparity is due to substantial differences in NCD prevalence rates between the genders: about 15 percent of the female population has one of the four major chronic conditions compared with only 7.7 percent of the male population. In Jamaica, by contrast, the aggregate economic burden for women is at the same level as for men even though women in Jamaica have higher prevalence rates of NCDs; their out-of-pocket spending on NCDs is lower than that of men as women have fewer hospitalizations. In St. Lucia, women spent roughly the same amount on healthcare (US\$290) as men (US\$312).

The richest population with major NCDs has an almost tenfold higher economic burden, on aggregate, than the poorest population because they have high self-reported prevalence rates of NCDs (22 percent compared with 7 percent for the poorest population), have high healthcare expenditure, and considerable work loss. As discussed earlier, the poorer population faces a heavier economic burden from NCDs because of its poverty status. The St. Lucia case study further illustrates that NCDs impose a substantial economic burden on individuals, households, and society.

*It is anticipated that the results of the St. Lucia Case Study are generally applicable in all the OECS countries. These point to the high economic burden which NCDs place on individuals and households and especially on those in poor families. The economic burden is also generally heavier on females. These indications create a compelling case for strong responses in countries and the region to implement policies, regulations, and programs that can address NCDs. The next chapter looks at the lessons from other countries which could be applied to help address the NCD epidemic in the OECS countries.*

## **V. COUNTRY RESPONSES TO CONTROL AND PREVENT NCDs**

*The OECS countries have already begun implementing prevention and control interventions on NCDs. Efforts primarily include corresponding policy and regulatory provisions (e.g. banning of smoking in public places) and the implementation of programs to promote physical activity, healthy diets, etc. Primary-level prevention has been under way in all countries since the late 1990s, often with a regional approach, for example the Caribbean Wellness Day. Given the advanced stage of the NCDs epidemic in the region, it is worthwhile considering the implementation of secondary and tertiary prevention approaches that focus on disease management and treatment*

## **PRIMARY PREVENTION INITIATIVES: HEALTHY LIFESTYLE AND REDUCING RISK FACTORS**

A new approach to address the challenge of NCDs began in the 1990s. The potential impact of NCDs was felt by the Caribbean community in the early 1990s. In 1993, the CARICOM Ministers of Health decided to develop a new approach to address the challenges of NCDs; the region had attained significant success in the control of communicable diseases but the current health system was not yet fully capable of responding to the growing epidemic of NCDs, which are founded on more complex social, economic, and behavioral factors. As a result, building upon the Ottawa Charter for Health Promotion, the Caribbean Charter was drafted. The approach outlined six strategies to be utilized: (1) formulating healthy public policy, (2) reorienting health services, (3) empowering communities to achieve wellbeing, (4) creating supportive environments, (5) developing and increasing personal health skills, and (6) building alliances with special emphasis on the media. The Caribbean Cooperation in Health is now in its third iteration (CCH3) and aims to unite the CARICOM countries in a common goal and strategy to improve health and wellbeing. The first project goal for CCH3 is to create a healthy Caribbean environment conducive to promoting the health of its people and visitors (Samuels 2010).

In line with the new approach, the OECS governments have been implementing prevention and control interventions at the national and regional levels in cooperation with CARICOM, the University of the West Indies (UWI), and WHO/PAHO. A number of events related to the promotion of healthy lifestyles and raising awareness on the risk factors (obesity, tobacco use, alcohol consumption, and lack of physical exercise) were conducted across the region. On November 5, 2004, at the 18th annual OECS Pharmaceutical Procurement Service Tenders and Technical Advisory Committee (OECS/PPS TAC) meeting in Castries, St. Lucia, a lecture was devoted to Healthy Lifestyles for Preventing Chronic Disease and attended by the countries' leading healthcare practitioners (Government of St. Lucia 2004). In September 2008, Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines, along with other members of the Caribbean Community (CARICOM), issued the Port-of-Spain Declaration "Uniting to Stop the Epidemic of Chronic NCDs in the Caribbean." As part of the intersectoral and population-based approach to address the epidemic, the second Saturday of September was declared "Caribbean Wellness Day" (CWD). The CWD was designed to strengthen public, private, and civil society partnerships and to promote multi-country and multisectoral activities in support of population wellness.

Member states are implementing disease prevention and healthy lifestyle promotion programs in close cooperation with the PAHO/WHO, CARICOM and CWD committees. In the second year of its foundation (2009), 18 of the 20 CARICOM countries celebrated the CWD using it as a catalyst for sustained physical activities, healthy food choices, and health screening in a smoke-free environment. PAHO provided organizational support and branding of products, and supported the foundation of a portal ([www.paho.org/cwd09](http://www.paho.org/cwd09)) with NCD information, promotional materials, and recommendations for activities in schools, workplaces, faith organizations, and in the health sector. An average budget of US\$22,000 was assigned by the government in each country, which was supplemented with support from the private sector. It was planned that the outcomes of the CWD program would be measured by indicators that include the reductions in risk factors of unhealthy diet, physical inactivity, tobacco use, alcohol abuse, and subsequent reductions in incidence and prevalence of NCDs, and that countries will measure outcomes with the WHO STEPwise approach to Surveillance of NCD Risk Factors (STEPS) surveys and reports of the minimum data set (Samuels 2010).

Countries have shown a commitment to addressing NCDs at the country-level. This commitment is reflected in how countries across the Caribbean have taken ownership of CWD. The First Caribbean International Bank in Saint Vincent and the Grenadines partnered with the Ministry of Health to offer a day of screening for NCDs for its customers and staff. In other countries, comprehensive screening activities for chronic diseases, including measuring blood pressure, height and weight, cholesterol, and glucose level have taken place. Grenada has implemented a 4-month workplace competition, "Biggest Loser Title", aiming to reduce collective body weights through health and exercise. St. Lucia, Antigua and Barbuda, and St. Vincent and the Grenadines have introduced and sustained ongoing physical activity interventions in primary health centers. Since 2009, there has been enhanced involvement and participation of the faith community, private sector, and civil society (especially health NGOs) in promoting the healthy lifestyle programs (Samuels 2010).

OECS countries have actively sought to formally prioritize NCDs as part of their government agendas and develop partnerships to strengthen their NCD programs. Antigua and Barbuda developed a national business plan for health for the period 2008-2010 through which the government aimed to promote and improve the prevention and management of NCDs (diabetes, hypertension, diseases of circulatory system, cancers, and mental health). The program aimed to implement NCD strategic programming to noticeably reduce mortality, morbidity and complications from NCDs by 2010. Information on the results of the programs is not yet available. In the area of diabetes and diseases of the circulatory system, the business plan envisioned the establishment of an integrated NCD management program with the school of nursing to introduce the programs for risk factors screening and strengthening of healthy life styles (MOH 2007). Dominica aims to raise awareness of NCDs by working with partners. In December 2010, its MOH, in partnership with the UWI chapter of Dominica, the Optical Services Limited, the Dominica Medical Association, and the UWI Alumni Association, held a lecture on solutions for conquering NCDs. The knowledge-sharing event aimed to rally the Dominican citizens, young and old, to engage in activities to promote and sustain healthy lifestyles.

The region has now taken its commitment to address NCDs to a global level. On April 28, 2010, at the 64th session of the UN General Assembly's follow-up on the outcome of the Millennium Summit, the six OECS countries, among other 39 countries of Europe, Caribbean and Middle East, reaffirmed their commitment to undertake multisectoral efforts at the highest political level to address the prevalence of NCDs, and their morbidity and mortality. As a result of the session, it was decided to convene a high-level meeting of the General Assembly in September 2011, with the participation of Heads of State and Government, on the prevention and control of NCDs. The UN Secretary-General in collaboration with Member States, WHO, and the relevant UN system funds, programs, and specialized agencies was requested to submit a report on the global status of NCDs with a particular focus on the developmental challenges faced by countries (UN General Assembly 2010). The Caribbean region organized a regional consultation in early September 2011 to prepare for the UN High Level Meeting on NCDs and discussed challenges imposed by NCDs and how to address them. With the preparation, OECS countries along with other Caribbean countries actively participated in the UN High Level Meeting on NCDs.

## **TOBACCO CONTROL AND PREVENTION PROGRAMS**

Since early 2000, the OECS countries have been actively implementing tobacco-use-prevention interventions and developing corresponding policies and regulations. As of October 29, 2010, Antigua and Barbuda, Grenada, St. Lucia, and St. Vincent and the Grenadines have been parties to the WHO Framework Convention on Tobacco Control, binding themselves to international tobacco control regulations (WHO, Updated Status of the WHO FCTC: Ratification and Accession by Country 2010). The countries have been implementing the tobacco-prevention programs and interventions at a varying pace and success, with a focus on youth.

## **ALCOHOL-CONTROL POLICIES**

Alcohol-control policies are mixed across the OECS countries. By 2010, no information on alcohol control policies had been reported by Antigua and Barbuda, Grenada, St. Kitts and Nevis, or St. Lucia to the WHO/PAHO. Dominica and St. Vincent and the Grenadines reported on the imposition of an excise tax on alcoholic beverages<sup>9</sup> that the countries have had in place since the early 2000s. The legal minimum age for off-premise sales of alcohol in the countries is 18. There are restrictions for sales of alcoholic beverages as to time (hours and days) and location (places and density) but there are no legally binding regulations on advertising, product placement, sponsorship, and sales promotion of alcohol in Dominica and St. Vincent and the Grenadines (WHO/AMRO 2010). Although sales, possession, and use of alcohol among minors (<18) are considered illegal in Saint Kitts and Nevis, there is no national collaborative effort to enforce alcohol consumption laws in the country. Thus, alcohol remains the most widely used drug in the country (UNODC n.d.).

*This chapter has considered the steps already taken by countries in the OECS to prevent the risk factors that cause NCDs, to promote health, and for treatment. The next chapter considers the high economic costs faced by individuals and families as a result of NCDs, indicating that although already under way the level of action remains inadequate to meet the harsh burden resulting from NCDs.*

9 Beer / wine / spirits - PAHO/AMRO categorization



## VI. LESSONS FROM OTHER COUNTRIES APPLICABLE TO ADDRESS NCDs IN OECS COUNTRIES

*As has been seen in previous chapters, the need for more forceful action by countries in the OECS is urgent. This chapter considers the experiences in other countries which provide useful lessons from which the countries in the OECS may learn.*

### Key Messages

1. OECS countries are in the process of developing their national strategies to control and address the impact of NCDs and could benefit from lessons learned in other countries. One of the cost-effective ways to address NCDs is through population-based primary prevention and early detection.
2. To manage NCDs may require redistributing responsibilities across health professionals. In light of the NCD demands on the health system and the nursing shortage throughout the Caribbean, the region could assess whether nurses can take on different responsibilities to play a key role in addressing NCDs. Using primary-care teams can provide a practical solution for strengthening capacity to address NCDs.
3. In the past decade disease management programs (DMPs) have developed to manage individual NCDs, changing traditional approaches. DMPs focus on controlling multiple risk factors at a time.
4. Moving away from focusing on a single disease to more comprehensive integrated care models is necessary to treat NCDs effectively. NCDs can rarely be treated in isolation. Patients often have several chronic diseases or conditions at a time and need care from different providers. The treatment and prevention of these conditions are better integrated across the whole range of care and services.

OECS countries are in the process of developing their national strategies to control and address the impact of NCDs and could benefit from lessons learned in other countries. The national responses in the OECS countries are still in an early stage of development and lessons can be learned from the experience and strategies of other countries and applied to address NCDs in OECS countries.

A review of the literature and the experience from developed countries for tackling NCDs identifies four intervention strategies (Reinhard Busse 2010) that will be reviewed below:

1. Emphasize prevention and early detection of chronic diseases;
2. Adjust the qualifications and tasks of providers of care and redefine their functions;
3. Coordinate disease management to replace episodic care; and
4. Recognize that patients may have multiple conditions that require integrated care in managing them rather than manage single diseases.

#### *Strategy 1: Disease prevention and early detection*

Primary prevention is directed at the prevention of illnesses by removing the causes. The target group for primary prevention is those who are healthy with respect to the targeted disease. Population-based interventions cover the whole population and intend to prevent the adverse health event from occurring. Such programs would promote lifestyle changes to reduce obesity, smoking, and excessive alcohol consumption, promote physical activity, and reduce other related risk factors that contribute to NCDs. Here are a couple of examples:

a. The National Health Service (NHS) in the United Kingdom (UK) launched the Change4Life program in January 2009 under the slogan “Eat Well, Move More, Live Longer” (UK Department of Health n.d.). The campaign targets families and adults through television, internet, posters, and buses for strategic placement of advertisement. Change4Life features tools and ideas to motivate people to manage their weight such as “5 A Day”, “60 active minutes”, “me-size meals”, “cut back on fat”, and “sugar swaps” (NHS Choices n.d.).

b. Mexico presented the “Children Obesity Law” before its Congress in 2010 as its first countrywide primary prevention program for obesity that encourages exercise, drinking more water, and consuming fruits and vegetables (Tuckman 2010). The campaign bans junk food such as soft drinks, sweetened juices, tamarind candy, and pork rinds in school stores and cafeterias. OECD estimates that primary prevention programs such as this one could prevent up to 47,000 deaths from chronic diseases each year in Mexico. Mexico also has a very comprehensive “National Agreement for Food Health: Strategy to fight overweight and obesity”.

#### *Strategy 2: New provider qualifications*

As countries begin to redistribute responsibilities across health professionals, nurses are taking on greater responsibilities and could play a key role in addressing NCDs.

a. *Nurse practitioners.* This new profession has been established in the United Kingdom, the Netherlands, the United States, Canada, Australia and New Zealand (Busse R 2007)(CHSRP 2006). These university-trained professionals carry out traditional nursing duties, but also assume responsibility for tasks that would traditionally be viewed as part of a doctor’s remit, such as limited prescribing of pharmaceuticals and the administration of the less complex treatments. Germany has recently created community nurses, similar to nurse practitioners in other countries; they make house visits and are responsible for basic primary care, supported by e-Health equipment. This gives chronically ill people in rural regions better access to basic medical care and relieves family doctors for other work (Busse R 2007). Another new professional group comprises liaison nurses, introduced in several European countries. They carry out follow-ups after hospital discharge, pulmonary rehabilitation for people with COPD, supervision of medication and compliance, patient education, and service navigation. The redistribution of responsibilities across the nursing profession (nurse practitioners, nurse liaisons, specialized nurses) would need to be assessed within the current reality in the Caribbean where the shortage of highly trained nurses reduces the capacity of countries to meet their key health care service needs, especially in the areas of disease prevention and care.

b. *Case managers.* They can complement the work of physicians and nurses to provide care related to NCDs. Case managers coordinate services for people with long-term conditions as well as those with complex social and medical needs. Their functions include assessing people’s needs, developing care plans, helping people access appropriate care, monitoring the quality of this care, and maintaining contact with the person and her/his family (Wilkins VM 2009). Last, but not least, the central role of family caregivers in monitoring, treating, and managing chronic diseases and conditions is increasingly acknowledged (Wilkins VM 2009).

c. *Primary care teams and other innovative approaches.* These teams can provide a practical solution for addressing NCDs. Experiments with primary care teams for NCD patients have reorganized practices into patient-centered “care teams” capable of anticipating patients’ needs and facilitating communication about their care. In a pilot practice with patients with hypertension in the state of Maine in the US, the percentage of patients with controlled hypertension went from 55 percent in July 2007 to more than 82 percent in July 2010 (Feder 2011).

### *Strategy 3: Disease Management Programs for Individual NCDs*

Disease management programs (DMPs) have emerged over the past decade that are changing traditional approaches to manage NCDs. Medical practitioners have come to realize that the underlying causes of presenting symptoms are multiple and that effective treatment requires attention to the entire clinical course and the root causes of a specific disease, rather than simple treatment of the symptoms. DMPs focus on controlling multiple risk factors rather than a single one. Patients often have several risk factors present and need medical attention, treatment, and follow-up to prevent an existing condition from deteriorating into an incapacitating or fatal result. Diabetes is the leading NCD in the OECS countries. The daily injection of insulin for diabetic patients must be complemented by other disease management efforts such as physical activity and appropriate diet. This comprehensive and multidisciplinary approach to care for an entire disease cycle also includes active client–patient management tools such as health education, empowerment, and self-care (Velasco-Garrido M 2003).

The DMPs include a knowledge base, a delivery system with coordinated care components, and a continuous improvement process. Key elements include the following:

- Comprehensive care: multi-professional, multi-disciplinary, acute care, prevention and health promotion
- Integrated care, care continuum, coordination of the different components
- Population orientation that is defined by a specific condition
- Active client-patient management tools – e.g. health education, empowerment, self-care
- Evidence-based guidelines, protocols, care pathways
- Information technology, system solutions
- Continuous quality improvement.

Experiences from developing countries are limited but a number of developed countries are experimenting with DMPs. As examples:

a. The Centers for Medicare and Medicaid Services in the US have conducted seven DMPs involving 300,000 beneficiaries in 35 programs (Bott, et al. 2009). Patients with chronic conditions such as heart failure, diabetes, and COPD appeared to be motivated and able to engage in improved self-management and therefore chronic conditions could be avoided by better day-to-day self-management. High costs associated with chronic conditions stem from emergency department visits and from inpatient hospital admissions that could be reduced with coordinated and comprehensive disease management.

b. Germany has implemented a nationwide disease management program for patients with diabetes mellitus that is currently accessible to around 90 percent of the population (Stock, et al. 2010). This program is based in primary care practices and carried out by physicians, drawing on personal relationships with patients to promote self-management and adherence to treatment goals. After four years of follow-up, overall mortality for patients and drug and hospital costs were all significantly lower for patients who participated in the program than for other insured patients with similar health profiles who were not in the program. These results suggest that the German disease management program is a successful strategy for improving chronic illness care.

### *Strategy 4: Case Management - Comprehensive Integrated Care Models*

OECS countries need to move from episodic care based on prescribing medications to managing NCDs comprehensively using more effective approaches to improve health outcomes of NCD patients. Comprehensive care programs would control the early stages of a disease condition and prevent its progression through: primary prevention before problems arise, such as the Change4Life program in the UK; and secondary prevention early detection, for example in potential cases of overweight people and obesity such as the National Child Measurement Program in the UK, which measures children's height and weight and in which 91 percent of English school children participate. The continuum of care would cover prevention and treatment at home, in work places, in schools, in ambulatory settings, and at the inpatient level.

Moving away from focusing on a single disease to more comprehensive integrated care models is necessary to treat NCDs effectively. Doctors and researchers admit that they have focused on a straightforward disease management approach because it was relatively simple, but chronic conditions do not present alone and NCDs can rarely be treated in isolation. Patients thus often need care from different providers. More integrated care models organize treatment (and prevention) so that services are better integrated across the whole range of care. Examples include the introduction of case management by the National Health Service (NHS) in the United Kingdom, and pilot projects in Spain in which the whole care process is provided from only one source. Many developed countries have set up various forms of provider networks and interventions to close the gap between primary care and hospital services. Finally, some countries are experimenting with new models of healthcare delivery – comprehensive integrated care models or provider networks that can achieve more integrated and more comprehensive services.

Recent experience across the globe shows that many countries are moving towards integrated care models:

- Integrated care models developed in the United States have been influential in Europe. The redesign of healthcare services has been guided by approaches taken by the health maintenance organization Kaiser Permanente in the United States. These have been used as the basis for NHS programs since 2003 in the UK.
- The 2004 NHS Improvement Plan stipulated the introduction of case management in all Primary Care Trusts through the appointment of senior nurses by 2007.
- In Germany, DMPs promote integrated care models based on the family physician as gatekeeper, integrated care contracts, and medical polyclinics.
- France introduced mechanisms aimed at stimulating local provider networks for ambulatory patients and at improving the interface between ambulatory and hospital care under the heading of health networks (réseaux de santé). These arrangements now include mobile dialysis units, specialized mental healthcare facilities, new cancer centers (combining research, treatment, and prevention), and new centers for managing HIV/AIDS.
- The Canadian province of Ontario promotes networks of family doctors (family health groups and family health networks) and local health integration networks. The mission of these local care networks is to improve the planning, coordination, and integration of healthcare. Being local organizations, they are expected to be more responsive to local needs.
- A Russian Federation project in Tula province involves primary healthcare in NCD prevention and management through involvement of multidisciplinary health teams. The project supported five healthcare facilities with multidisciplinary teams of staff who were involved in the decision-making and planning of the project, initially aimed at promoting healthy population behavior to prevent the complications of high blood pressure (HBP); changing the delivery of care for HBP according to the new guidelines; developing evidence-based guidelines for HBP care at the primary health-care level; and reallocation of financial and human resources to facilitate implementation of these services. The project produced positive results, including a 70 percent success rate in controlling HBP, 85 percent reduction in admissions for HBP and net savings for overall HBP care costs by 23 percent (WHO n.d.).

Some developing countries have developed some successful approaches to addressing NCDs. Here are some examples:

- Use of patient information systems to improve diabetes care in Mexico. “Crusade for the quality of health services” is a project launched by the Secretariat of Health of Mexico in the state of Veracruz with the aim of providing better healthcare to people with chronic diseases. A one-year pilot project conducted in-service training of PHC personnel to adopt a quality improvement methodology and also implemented a structured diabetes education program. Among innovations introduced at the PHC level were the organization of diabetes clinics, group medical visits for self-support groups of people with diabetes, and training people with diabetes to be community health workers. The pilot evaluation identified an 11 percent increase in the cases of diabetes in the intervention group that were under good control (28 to 39 percent), compared with those receiving the usual care where the increase was only 7 percent (21 to 28 percent). In the treatment group, the proportion of patients using insulin increased from 3.5 to 7.1 percent, while it remained at 0.9 percent among those receiving the usual care (WHO n.d.).
- Working successfully in a resource-constrained environment: chronic diseases self-management in China. A chronic disease self-management program was developed in Shanghai in 1999-2001 and implemented in 13 communities and 6 districts. The program was conducted by trained volunteer leaders. The disease-management methods included exercise, the use of cognitive symptom-management techniques, proper nutrition, fatigue and sleep management, use of medications, management of fear, anger, and depression, communication with health professionals, problem-solving, and decision-making techniques. In six months, the disease self-management program significantly improved participants’ health behavior, confidence, and health status, reducing the number of hospitalizations.
- Effective community-based rehabilitation programs in resource-poor settings, Pakistan and India. Stroke, chronic pain, and impaired functioning after myocardial infarction are the major causes of disability, including blindness, lower limb amputation, and motor and sensory dysfunction. Immediate and effective rehabilitation is aimed at supporting patients in leading full lives in society. Multidisciplinary and intensive rehabilitation programs that are common and affordable in high-income countries are not always feasible in low- and middle-income settings. In such circumstances, community-based rehabilitation programs can provide an effective solution. For example, the community-based rehabilitation program in the rural south of India gave permanently blind people mobility-training and training to perform normal daily activities. The program improved the quality of life of some 95 percent of participants. In Pakistan, a program trained volunteer local supervisors from targeted communities (villages and slum areas) to identify and train people with disabilities to perform routine daily activities. One to two years after training, 80 percent of participants showed improvement in function (WHO n.d.).

*The lessons learnt that have been considered in this chapter provide useful didactic examples that can be followed in the OECS countries. The next chapter will consider the policy options that are available to implement prevention and treatment outcomes.*

## VII. POLICY OPTIONS FOR OECS COUNTRIES TO ADDRESS NCDs EFFECTIVELY

*Previous chapters have considered the growth of the NCD epidemic, its causes, and costs. Experiences and lessons learned from other countries, especially developed ones, in addressing NCDs have also been considered, as these could be useful for OECS countries in developing their national strategies to control the impact of NCDs. To effectively address the epidemic, however, government action is essential. This chapter suggests the policy actions to be applied that will help to reduce risk behavior to reduce the burden of NCDs.*

### Key Messages

1. There is a need to strengthen surveillance and monitoring of NCDs to target interventions appropriately.
2. Tackling risk factors needs to be prioritized to address the common underlying behavioral risk factors across the region.
3. There is a need to further develop regulatory acts on tobacco and alcohol such as pricing policies, taxation on tobacco products, smoke-free worksites and public places, and restrictions on alcohol sales outlets and their operating hours.
4. A regional approach should be embarked upon to harmonize legislative and policy actions to include health promotion policies.
5. It is critical to continue to raise awareness to secure commitment at the decision-making level and to effectively mobilize resources.

*Strengthen surveillance and monitoring.* More comprehensive and reliable data are needed on the prevalence of risk factors and NCDs and on the health behavior of high risk groups to set priorities and design and evaluate interventions. More accurate information is also needed on the costs and the effectiveness of interventions of priority health promotion and of prevention strategies, as well as of investments in technologies for secondary and tertiary prevention. The key trends and common patterns observed across the OECS countries can be countered through strengthening surveillance systems, identifying the key indicators/data available, and ensuring that they are captured in health management information systems.

*Tackle risk factors.* The World Health Organization recommends collecting relevant data on risk factors in each country to design targeted interventions. At the April 2011 First Global Ministerial Conference on Healthy Lifestyles and NCDs Control, consensus was reached on the need to prioritize the implementation of cost-effective policies to reduce common risk factors. Across the OECS, women tend to be more obese and less physically active than males. Smoking prevalence is low but is responsible for ten percent of all deaths that occur in the Caribbean. The limited available information on alcohol consumption indicates that it has been increasing since 1961. Of particular concern is the growing trend for risk factors to affect adolescent populations, including an increase in physical inactivity and the early onset of smoking and alcohol consumption. These factors, together with the traditional diet of starchy and high-sugar foods, fuel an NCD crisis in the region. A first step is to educate the population on alternative healthy food choices while ensuring the accessibility and affordability of these options. Specific policy options would then need to be further developed to address the greater tendencies towards women's obesity and physical inactivity, and for prevention programs to reach the adolescent population.

*Develop and enforce legislative and policy actions.* Regulate tobacco and alcohol through pricing policies, tax tobacco products, create smoke-free areas at work and in public, and restrict alcohol sales outlets and their operating hours. Develop standards and enforcement controls to follow up on the implementation of tobacco and alcohol legislation, as well as for policies on sales restrictions, advertising, and drunk driving.

*Develop health promotion policies.* The private sector should be involved in disease prevention and health promotion, starting at the workplace and in schools. Workplace Health Promotion can go beyond occupational safety to target smoking, alcohol, stress, and healthy eating and can help reach middle-aged, employed males who often neglect their health and are a difficult target group to reach. School programs have the largest return on investment in promoting a healthy lifestyle and decreasing the future disease burden. Ministries of Health should work with education authorities to integrate health promotion and prevention into curricula and teach about the risk factors that lead to NCDs, and the importance of diet and physical activity. Strategies and incentives could encourage the food industry to manufacture, distribute, and market healthier products, and to include health messages in marketing campaigns.

*Develop primary prevention through population-based programs that target the whole population to prevent adverse health risks from occurring in the first place.* Successful programs require an integrated approach with: (a) mass media activities to promote healthy lifestyles; (b) feasible public awareness and health education campaigns; (c) supportive structures that engage non-governmental organizations and private sectors; and (d) health promotion messages based on reliable, evidence-based information with wide distribution of material through different channels.

*Develop secondary prevention through individual clinical intervention programs to identify high-risk individuals at the point of service delivery.* Interventions and follow-up are needed for individuals with risk factors to prevent deterioration, incapacity, and fatality. Clinical interventions require a focus on primary healthcare with an emphasis on continuity, integrated management of key chronic conditions, checking adherence, periodic retesting and adjusting of regimens. An effective primary healthcare system with close links to secondary and social care can improve prevention and management of NCDs.

*Train health professionals in delivering preventive services.* The capacity and motivation of physicians and nurses is often key to promoting health and preventive care. The OECS countries have a history of using regional institutions for training health workers, especially physicians, so regional cooperation can develop new qualifications to prevent and treat NCDs and share faculty, didactic materials, educational strategies, learning methods and lessons learnt. They should increase involvement of health professionals in health promotion, organize continuing education on prevention, especially intervention strategies and methods, involve nurses in screening and management of risk factors, organize risk-factor management services for health professionals (e.g. smoking cessation), and enhance collaboration between health professionals in primary healthcare and other public and civil society entities involved in prevention and health promotion.

*Apply a multisectoral approach.* Experience with implementing HIV/AIDS projects has given the OECS countries tools and methods to change behavior and to advocate changes in lifestyles through awareness-raising, sensitization campaigns, working with mass media and NGOs, prevention activities, and treatment programs. These could be applied to reduce the impact of NCD risk factors. Reducing this burden in the OECS countries will require coordinated regional and national, intersectoral strategies that involve the public and private sectors, government and non-governmental organizations, and communities and families. The OECS Secretariat could coordinate technical

assistance to member countries. The experience of high-income countries could be examined for insights into tried and tested approaches to yield results in addressing NCDs.

*Develop a regional approach.* Harmonized legislation and policies, especially in the areas of tobacco, alcohol, food, essential medicines, and information technologies, are necessary for successful prevention. A regional strategy would be cost-effective for reasons of economies of scale and the presence of positive or negative externalities. This will be gradual, however, as countries would move at different speeds according to capability and the varying degrees of difficulty in implementing regional policies and actions. Harmonization could be achieved by assigning overall coordination to an already existing regional authority. The Mesoamerican Initiative and other diagonal approaches offer learning on elements of regional approaches. Another argument for a regional approach is that it can lead to reduced smuggling of unhealthful products such as alcohol or tobacco by creating a common tax and pricing policy.

#### **BOX 2: POTENTIAL REGIONAL ACTIONS AND POLICIES**

- Expand and harmonize tobacco and alcohol advertising bans to reduce demand
- Increase and harmonize tobacco and alcohol taxation to reduce consumption
- Standardize and mandate food labeling policy to improve knowledge and awareness of food composition
- Collaborate on group purchasing of essential medications to increase their access and affordability
- Establish regional capability for health technology assessment to improve the comparative effectiveness of interventions for NCDs and other conditions
- Use regional education and training capacity to complement the national needs for human resources in order to improve both staffing and skill levels
- Establish a regional network of surveillance and disease burden assessment to improve national capacity through knowledge-sharing and experience-exchange

*Mobilize resources for implementing strategies and programs.* Lessons from other countries can help identify approaches for mobilizing resources. For example, Jamaica's experience may provide insight on how NCD treatment can be financed as well as ensure that incentives are designed to focus on prevention programs. Jamaica's National Health Fund (NHF) provides free or subsidized medicines to patients with NCDs and finances prevention programs. It generates a sustained revenue stream through tobacco tax and special consumption taxes on petrol, alcohol, and motor vehicles. The OECS can also tap into the private sector as Jamaica did in involving the pharmaceutical companies in meeting claims of NCD patients under the NHF program. The Pharmaceutical Procurement Service (PPS) agency already invites tenders and awards Regional Price Contracts for procuring pharmaceuticals for OECS states. After 15 years of successful centralized tendering and pooled procurement of pharmaceuticals and medical products, it has demonstrated that regional cooperation can reduce costs and enhance the efficiency of health service delivery.

*Raise Political Awareness.* The UN High-Level Meeting on NCDs prevention and control taking place in September 2011 is an opportunity to create a sustained global movement against premature death and preventable morbidity from NCDs, mainly heart disease, stroke, cancer, diabetes, and chronic respiratory disease. The Caribbean region has played an instrumental role in raising the profile of the issue and has been featured at the UN High-Level Meeting. OECS should build on this momentum to ensure that prioritization of NCDs on a global stage is mirrored at the country and regional level.

*This Report is a direct response to the needs expressed by OECS countries for help in addressing the increasing burden imposed on them and their populations by NCDs. The World Bank remains a committed partner in these efforts and is able to provide ongoing support in the interests of their economic and social wellbeing. The Annex provides additional and country-specific information as far as this is available in the belief that the more information that is available to countries, the stronger will be their ability to address the issues that such information reveals.*



# **ANNEX 1. OECS NCD COUNTRY OVERVIEWS**

Publicly available data on NCDs for OECS countries are very limited, which has constrained a more comprehensive assessment on the burden of disease due to NCDs. The following is the limited information available on NCDs for six OECS countries, which provides a snapshot on NCDs in those countries.

### *Antigua and Barbuda*

Antigua and Barbuda has experienced a fast transition from undernourishment to overweight. The prevalence of overweight is on a steady rise, especially among females. In 2002, the prevalence of overweight among the adult population was 59.2 percent for males vs. 64.9 percent for females. The corresponding rates were 62.5 percent and 68.3 percent in 2010 and they are estimated to reach 64.5 and 70.3 percent respectively by 2015 (WHO, Global Database on BMI n.d.).

More females than males in Antigua and Barbuda tend to be obese and the prevalence of obesity is increasing: 14.4 percent males vs. 27.4 percent females in 2002, and the rates increased to 17 percent for males and 31.8 percent for females in 2010. WHO estimates that the rates will increase to 18.8 percent and 34.5 percent for males and females respectively in 2015 (WHO, Global Database on BMI n.d.). The obesity levels are also rising across all age groups. The government is aware of the risks of obesity that are associated with diabetes and hypertension, which are the leading causes of mortality in the country. According to the leading nutrition specialist of the MoH, over 60 percent of people attending health centers are either overweight or obese and many of them already have chronic diseases (Observer 2011).

**TABLE 10. ANTIGUA AND BARBUDA, OVERWEIGHT AND OBESITY PREVALENCE (%)**

Year	Overweight (BMI $\geq$ 25 kg/m <sup>2</sup> )		Obese (BMI $\geq$ 30kg/m <sup>2</sup> )	
	Male	Female	Male	Female
2015	64.5	70.3	18.8	34.5
2010	62.5	68.3	17	31.8
2005	60.5	66.2	15.4	29
2002	59.2	64.9	14.4	27.4

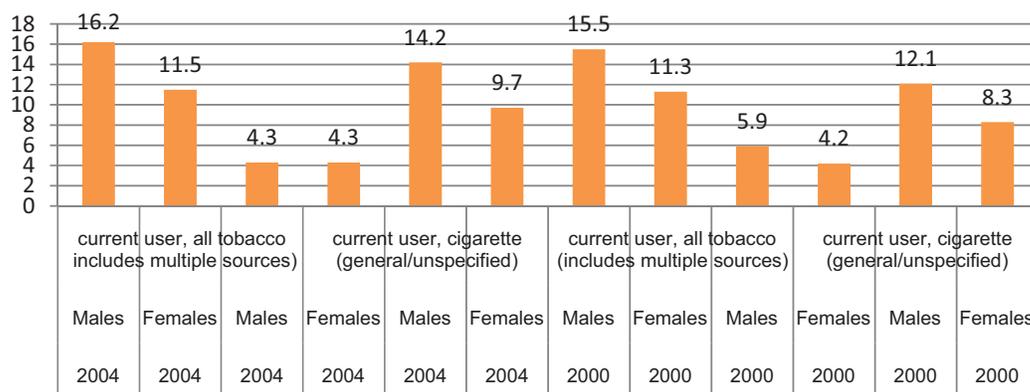
Source: (WHO, Global Database on BMI n.d.).

Of particular concern to the government is the increasing obesity among children in recent years. Surveys conducted by Antigua and Barbuda MoH/PAHO among secondary school students found that 19 percent of participants were either overweight or obese. Evaluation of the children's eating habits revealed that most consumed high-calorie foods, sugar, soda, french fries and hot dogs. The surveyed children's diet was found inadequate - students did not consume enough fruits or vegetables, lacked physical exercise, did not drink enough water and had poor knowledge of healthy diets. MOH implements pilot healthy-nutrition-awareness-raising interventions in schools, but the efforts are not effective enough to change behavior and lifestyles. The Ministry therefore appeals to the parents, teachers and students themselves for support in facilitating the behavior change programs (Francis 2009).

The impact of the favorable economic situation has not been studied thoroughly enough in Antigua and Barbuda to argue that high per-capita GNP that results in increased per-capita spending on food is contributing to obesity (FAO, Antigua and Barbuda: Nutrition Country Profile 2003). The level of cholesterol is reported to have increased from 5.3 mmol (mean) in 2002 to 5.5 in 2010. Rising trends are also observed for mean blood pressure – from 123 mmHg, SBP (mean) in 2002 to 124.6 in 2010 (WHO risk factors database n.d.).

The adolescent surveys identified increasing tobacco prevalence in Antigua and Barbuda with a clear dominance of the male group. While the use of cigarettes has not increased among females and went down among males by 1.6 percent in 2000-2004, the indicator of current tobacco use that accounts for the multiple sources is on increase (Figure 24).

**FIGURE 24. ANTIGUA AND BARBUDA: TOBACCO SMOKE PREVALENCE AMONG THE 13-15 AGE GROUP**

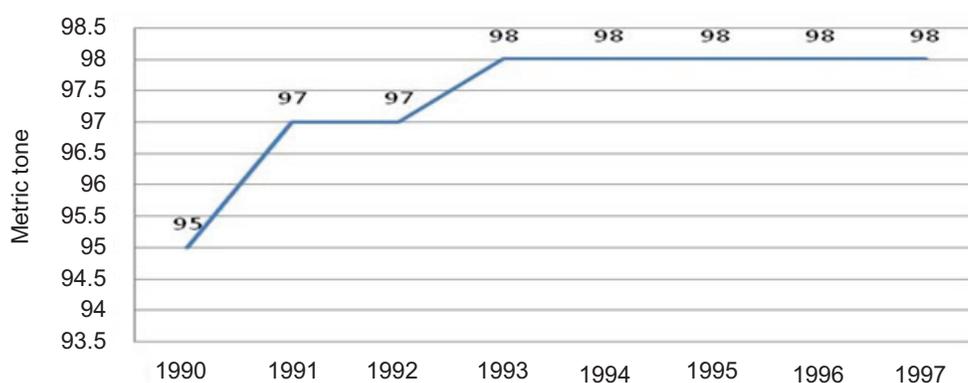


Source: (WHO risk factors database n.d.)

In Antigua and Barbuda, the Health Information Division on Friars Hill Road launched a special activity on the occasion of the observation of World No Tobacco Day on May 31, 2008. Students between the ages of 7 and 15 years were encouraged to participate in the Anti-Tobacco Jingle Contest that ran through the end of May 2008. The theme of the 2008 World No-Tobacco Day was “Tobacco-Free Youth”. In March 2008, for the first time in the history of the country, an Antigua and Barbuda government entity - Her Majesty’s Prison - was declared a no-smoking zone to promote healthier lifestyles (Tobacco News and Information 2008).

Alcohol-use-related disorders were observed in 5.8 percent of adult (age 15+) males and 1.1 percent of females in Antigua and Barbuda (WHO, Alcohol Consumption Country Profile 2006). The recorded alcohol consumption in Antigua and Barbuda is 53 percent for spirits, 18 percent for wine and 28 percent for beer<sup>10</sup>. The country produces and exports spirits and wine, and imports beer. The gross inland availability of alcohol has been increasing since 1990, when it initially was reported at 95,000 metric tons. By 1993, the rate had reached 98,000 metric tons and it remained at the same level until 1997 (Figure 25).

**FIGURE 25. ANTIGUA AND BARBUDA: ALCOHOL - GROSS INLAND AVAILABILITY**



Source: (WHO, estimates)

<sup>10</sup> Beer includes malt beers. Wine includes wine made from grapes. Spirits include all distilled beverages. Other includes one or several other alcoholic beverages, such as fermented beverages made from sorghum, maize, millet, rice, or cider, fruit wine, fortified wine, etc. Source: WHO. (2006). Global Alcohol Consumption Report

### Dominica

During the 2000–2004 period, 474 deaths in Dominica were attributed to cardiovascular disease, 51 percent of which were women. The gender difference for cerebrovascular disease is even larger, with women accounting for 61 percent of total deaths. Hypertension patients made 27,676 clinic visits in 2004.

Malignant neoplasms caused 583 deaths in the same period (2000–04). Men accounted for the larger proportion of deaths (60.9 percent). The organ sites most frequently reported were stomach, (75 or 13 percent, 36 men and 39 women), prostate 163 (28 percent), breast 39 (7 percent), digestive system (16 percent with 46 men and 45 women), and cervix, 70 (12 percent). The number of deaths attributed to prostate cancer increased from 29 to 41 during 2000–04 (Pan American Health Organization 2007).

Dominica is the country with the highest overweight prevalence among all OECS members - 75.6 percent (males) and 84.5 percent (females) in 2010. The adult obesity has been on the increase from 21.4 percent (males) and 50 percent (females) in 2002 to 31.5 percent and 60 percent respectively in 2010. It is estimated that the obesity rates will be 38.4 percent (males) and 65.3 percent (females) by 2015.

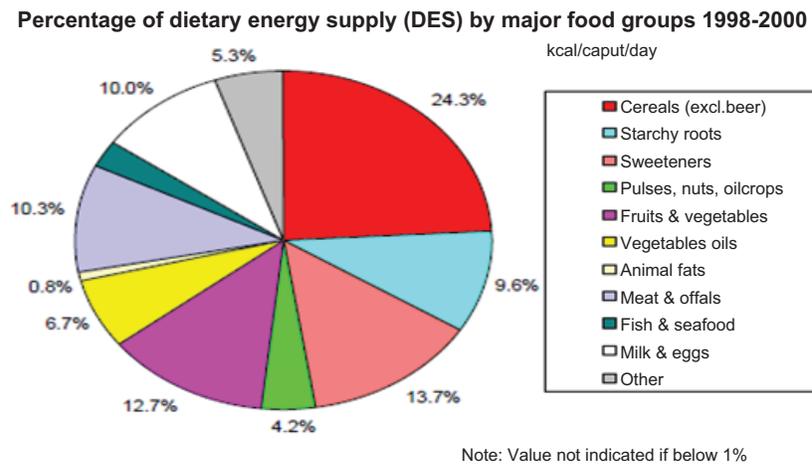
<b>TABLE 11. DOMINICA, OVERWEIGHT AND OBESITY PREVALENCE (%)</b>				
Year	Overweight (BMI $\geq$ 25 kg/m <sup>2</sup> )		Obese (BMI $\geq$ 30kg/m <sup>2</sup> )	
	Male	Female	Male	Female
2015	79.9	86.6	38.4	65.3
2010	75.6	84.5	31.5	60
2005	70.5	81.6	25	54
2002	67.2	79.5	21.4	50

Source: (WHO, Global Database on BMI n.d.)

The increasing proportion of overweight preschool children is a major concern for Dominica's health officials in contrast with child malnutrition a couple of decades ago. The clinical data reported in the 1990–2000 study on "Obesity Prevention and Control Strategies in the Caribbean" showed an overall decrease in the level of malnutrition among children in the 0-5 age group during this period. The prevalence of malnutrition has decreased from 1.9 percent in 1990 to 0.9 percent in 1999. In contrast, during the same period, the prevalence of overweight increased from 6.0 percent to 9.7 percent in the same age group. While no single study of anthropometric measurements of adolescents is available for the past decade, the data from the food consumption study (1996) showed a 17.9 percent prevalence of obesity among the population aged 15 years and older, and 30.0 percent overweight, implying that the prevalence of obesity and overweight is high among adults as well as adolescents in Dominica (FAO, Dominica: Nutrition Country Profile 2003).

The consumption of foods from animals and fat/oils (especially as part of condiments) was found high among Dominicans. The 1996 national survey on food consumption and other sub-national surveys found that the average calorie intake per person was 1,749, but that also appeared to be an underestimate. The Dominican diet is generally high in starchy foods and low in vegetables. The main staples are the ground provisions, bread, rice, pasta and cornmeal, and there is a high population preference for the animal products (fish, chicken, beef and pork). The contribution of fat to the Dietary Energy Supply (DES) increased between 1964–65 (19.5 percent) and 1998–2000 (24.2 percent), with the highest at 24.9 percent in 1989–91. Malnutrition is not as great a problem as is overweight, even though a significant number of Dominican households still live below the poverty line. According to the FAO 2003 country nutrition survey, Dominica's population obtains 24.2 percent of total energy from fat and 11.6 percent from protein; vegetable products make up 40.4 percent of the diet and animal products 59.6 percent.

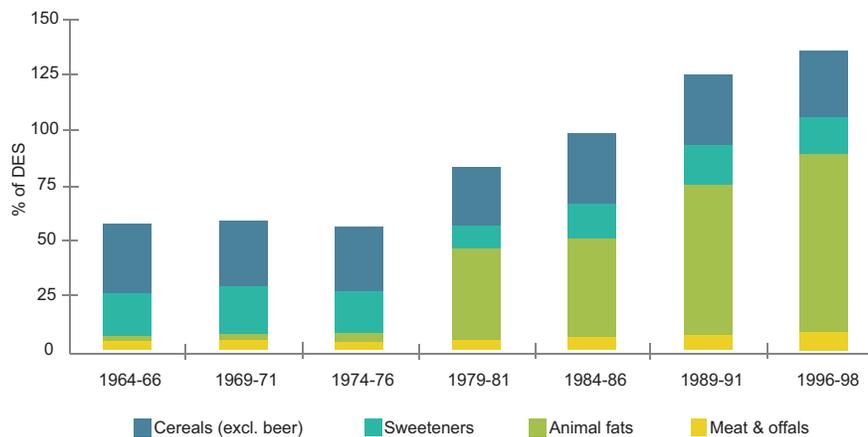
**FIGURE 26. DOMINICA, DIETARY ENERGY SUPPLY (DES), 1998-2000**



Source: (FAO, Dominica: Nutrition Country Profile 2003)

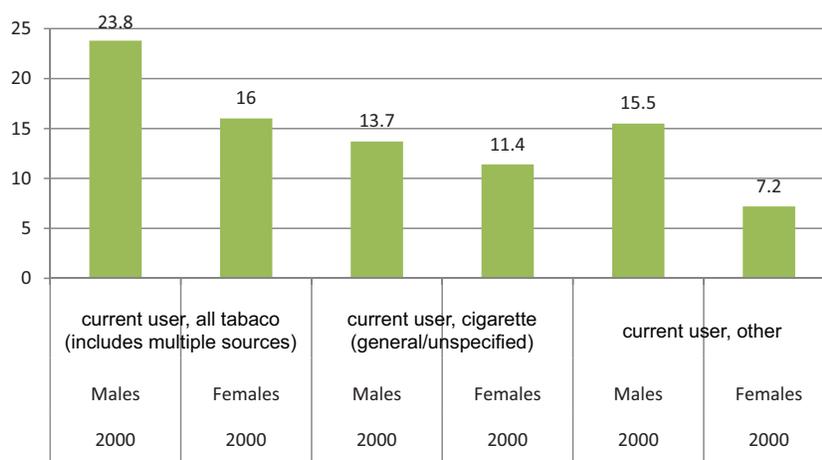
A significant share of animal fat as a contributor to the Dietary Energy Supply (DES) was observed in the food imports to Dominica in the beginning of 1979 (Figure 27). Over the period 1964–1998, Dominica had been heavily dependent on participation in the international trade to earn foreign exchange and supply its population with most of its foods, and particularly during the 1984–1986 period.

**FIGURE 27. DOMINICA, MAJOR FOOD IMPORTS AS PERCENTAGE OF DIETARY ENERGY SUPPLY**



Source: (FAO, Dominica: Nutrition Country Profile 2003)

The 2000 survey identified the tobacco-smoking prevalence (all tobacco, multiple sources) at 23.8 percent among males and 16 percent among female with high usage among youth. Of them, 13.7 percent and 11.4 percent respectively were cigarette users. Overall, 20.5 percent of youth aged 13-15 years were tobacco users in 2000 (Figure 28). Exports and imports of cigarettes in Dominica declined by 2000 compared to their 1995 value. In 1995, the import of cigarettes was the highest in the 1970–2000 period - 19 million sticks, of which imports made up 8 million sticks. By 2000, the values decreased to 4 and 6 million sticks respectively. Tobacco leaf imports went down from 43 metric tons in 1970 to 34 tons in 1995 and to none in 2000. 58.4 percent of males > 35 years (5 per 100,000 population) suffered tranches, lung or bronchitis cancer attributable to tobacco use in 1994. 24.3 percent of males and 29.4 of females had respiratory diseases and 51.9 percent of male and 58.5 percent of females had ischemic heart disease (FAO, Dominica Country Summary Profile on Smoking Prevalence 2001).

**FIGURE 28. DOMINICA, TOBACCO SMOKING PREVALENCE AMONG THE 13-15 AGE GROUP**

Source: (WHO risk factors database n.d.)

A survey conducted in 1996 in Dominica's rural community identified a total prevalence of 28 percent of alcoholism among respondents. There were more males (75 percent) over the age of 65 (25 percent) who had used alcohol for more than 20 years (62 percent), with rum being the drink of preference (used by 72 percent). A significantly greater percentage of alcohol-addictive patients (65 percent) was admitted to the hospital where the survey was conducted in the preceding year and presented more often with trauma (29 percent). According to the 1995 Mental Health Report, 8.7 percent of the total 652 admissions to the Princess Margaret Hospital Psychiatric Unit in 1995 presented with a diagnosis of alcoholism (WHO, Alcohol Consumption Country Profile 2004). According to the latest data on alcohol consumption from the WRI, the country population was second highest on per-capita consumption - 8.4 liters - in the region in 2002 (EarthTrends Database, World Resources Institute n.d.).

### Grenada

Between 1.8 and 6.6 percent of infants were reported to suffer from undernutrition in Grenada during 2002–05, while overweight infants ranged between 5.3 and 9.0 percent in the same period. Iron deficiency is common among infants. Among one-year-olds, about 60 percent were anemic with hemoglobin levels under 11g, and more than 60 percent of them required iron supplementation during 2003–2005.

There were 1,726 new cases of diabetes reported in 2003–05. Hypertensive diseases represented 17 percent of NCDs in 2003–05. Cerebrovascular diseases accounted for 20 percent of total deaths. During 2003–05, 634 new cases of malignant neoplasms were reported (Pan American Health Organization 2007).

The prevalence of overweight and obesity is on a steady rise across all age and sex groups in Grenada. It is estimated that by 2015, 62.4 percent of males and 69 percent of females in the country will be overweight, and 17 percent and 32.7 percent respectively will be obese (WHO, Global Database on BMI n.d.).

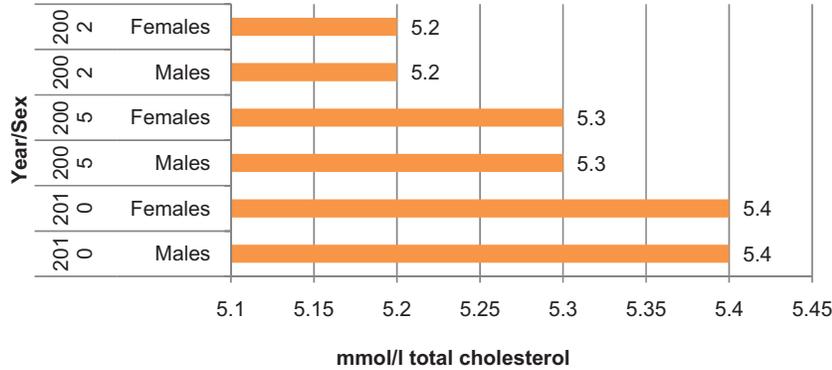
**TABLE 12. PREVALENCE OF OBESITY AND OVERWEIGHT IN GRENADA (%)**

Year	Overweight (BMI ≥ 25 kg/m <sup>2</sup> )		Obese (BMI ≥ 30kg/m <sup>2</sup> )	
	Male	Female	Male	Female
2015	62.4	69	17	32.7
2010	60.3	66.9	15.2	29.9
2005	58.1	64.7	13.6	27.1
2002	56.8	63.3	12.7	25.5

Source: (WHO, Global Database on BMI n.d.)

The data for undernutrition (weight for age) among children 0-5 years in Grenada indicate a decrease over the 1997-98 period. Given the increase in the contribution of fat to DES between 1964–65 (22.6 percent) and 1996–98 (30.7 percent), a high prevalence of overweight and obesity is found in the general population (Grenada Nutrition Country Profile 2003). The 2005 Grenada Food and Nutrition Council’s nutritional assessment of government-run and government-assisted day-care centers found prevalence of overweight infants ranging from 5.3 percent in 2002 to 9.0 percent in 2005 (PAHO, Health in the Americas: Grenada country profile 2007). The mean population blood pressure was reported as 123 mmHg, SBP for females and 124.6 for males (WHO risk factors database n.d.).

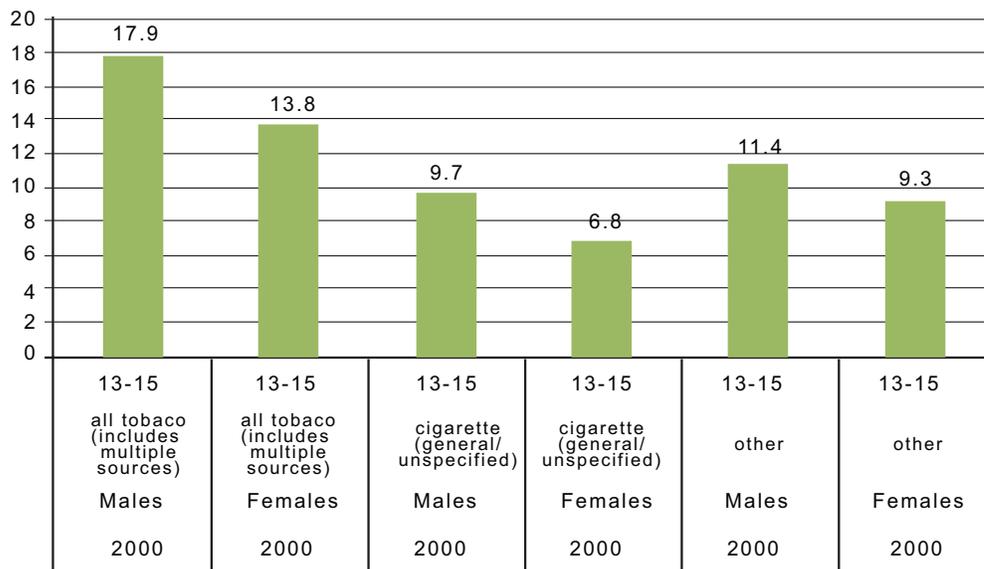
**FIGURE 29. GRENADA, MEAN CHOLESTEROL LEVEL AMONG THE POPULATION AGED 15-100**



Source: (WHO Global Comparable Estimates) (WHO risk factors database n.d.)

There was an increase in the import of cigarettes to Grenada since the 1980s, when the value was 5 million sticks per year. By 2000, the value had increased more than seventeen-fold and reached 85 million sticks (FAO, Dominica Country Summary Profile on Smoking Prevalence 2001). 17.9 percent of Grenadian males 13–15 years old and 13.8 percent of females were users of tobacco products in 2000 (Figure 30).

**FIGURE 30. GRENADA, TOBACCO SMOKING PREVALENCE AMONG THE 13-15 AGE GROUP**



Source: (WHO risk factors database n.d.)

Due to the limited trend data on the use of tobacco among adults, it is difficult to identify the impact of tobacco use on morbidity and mortality in Grenada, where NCDs (cancers and cardiovascular diseases, in particular) are the leading causes of death. The information from 1984–88 reported the annual consumption level at 450–495 cigarettes per capita. In 2000, 28 percent of students (34 percent males and 20.9 percent females) in Grenada reported having experimented with cigarette smoking. Two-thirds of surveyed students reported being current users of tobacco, i.e. having smoked in the last 30 days. Consistent with the trend in the rest of the region, males tend to smoke more than females. The youth reported mostly smoking at home and most likely doing it when drinking alcohol or using another drug. Cigarettes are easily available everywhere and 58 percent of respondents said that they were not asked for an ID certifying their age. The youth perception of smoking is that it facilitates social skills - 28 percent of both smokers and non-smokers believe that smokers have more friends (WHO, Grenada – Global Youth Tobacco Survey 2001).

On December 9, 2008, in Grenada, after citizens' vote in favor of the law, the government banned smoking in all public places. This however, has raised concern among business owners (bars, restaurants) due to an average 10 percent loss of their income (Baswell 2009). On December 15, 2008, the Spice Island Beach Resort announced a completely non-smoking resort (Tobacco News and Information 2008).

A study conducted in Grenada in 1995–96 among 409 subjects aged 15 to 24 years old found that 70.7 percent of the respondents had consumed alcohol. A 1998 survey based on the WHO Alcohol Use Disorders Identification Test (AUDIT) of 824 working adults (aged 17 years and over) identified 22 percent of working adults as abstainers (did not consume alcohol), whereas 55 percent were heavy episodic drinkers, i.e. had six or more drinks on at least one occasion. Among drinkers, 18 percent stated that they drank five or more drinks on a typical day. A survey of youth (11–20 years old) in the same year found that 3 percent of male and 1 percent of female students drank four or more times per week. 0.8 percent of all students had six or more drinks daily or almost daily, 3 percent of students had seven or more drinks on any one day when drinking, and 2.1 percent drank four or more times a week. A 2000–01 study among adolescents (14–20 years old) in secondary schools in Grenada found that alcohol proved to be the drug of first choice for young people. The prevalence of alcohol ever use was found with 87.7 percent of male and 70 percent of female students (WHO, Alcohol Consumption Country Profile 2004).

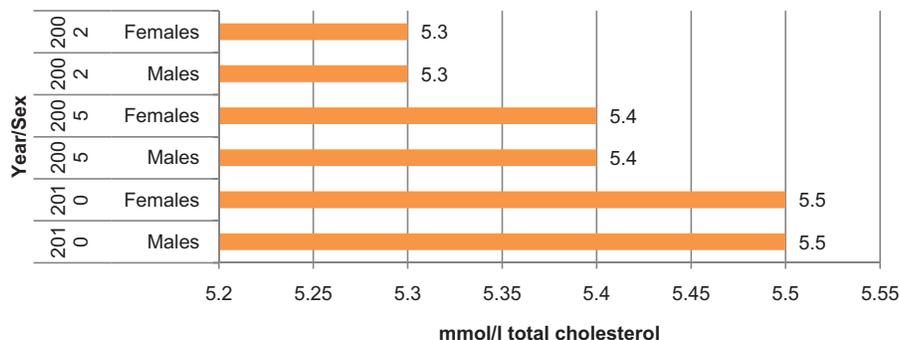
#### *St. Kitts and Nevis*

Circulatory system diseases were the leading cause of death in St. Kitts and Nevis (315.5 per 100,000 population). Diabetes, hypertension, cerebrovascular disease and heart disease accounted for most of the hospital admissions.

The death rate attributed to malignant neoplasms in St. Kitts and Nevis is 111.4 per 100,000 population. Prostate cancer among men and breast cancer among women were the leading cancer causes of death during 2001–2005 (Pan American Health Organization 2007).

The prevalence of overweight in St. Kitts and Nevis is the second highest in the region for the male group, with women's overweight prevalence higher than that of males. Male overweight was reported as 59.9 percent in 2002 and 63.1 percent in 2010, and is expected to reach 65.1 percent by 2015. Female overweight prevalence is higher in general and is expected to reach 70.7 percent by 2015. In 2010, 68.7 percent of women were overweight. According the WHO estimates, the number of obese women will increase by 7.9 percent and of men by 4.4 percent during 2002–2015. The population mean blood pressure is reported as 123 mmHg, SBO for females and 124.6 for males (WHO risk factors database n.d.).

**FIGURE 31. ST. KITTS AND NEVIS, MEAN CHOLESTEROL LEVEL AMONG THE POPULATION AGED 15-100**



Source: (WHO Global Comparable Estimates) (WHO risk factors database n.d.)

The 2000 St. Kitts Chronic Disease Survey found that over 60 percent of men and 70 percent of women were overweight. The changing health profile of St. Kitts and Nevis has caused its government to revise the MDG targets and include indicators related to addressing overweight and obesity among children and women. Malnutrition among children is negligible and the government is switching its priorities to prevent obesity. In 1990–2001, there was a 4-percent increase in its prevalence among children under 5 years as reported by the Nutrition and Surveillance Unit of the Ministry of Health. The MoH also reports an increase in the consumption of fatty food and lowered physical activity among children. Improvement in the quality of life and economic status of families has not resulted in improved diet habits.

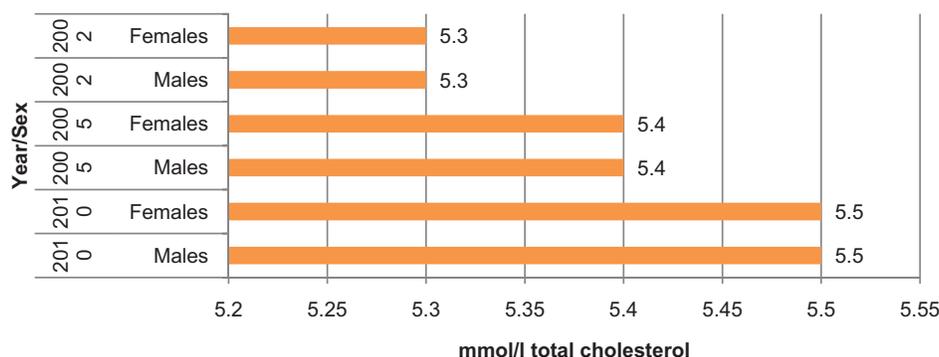
**TABLE 13. PREVALENCE OF OBESITY AND OVERWEIGHT IN ST. KITTS AND NEVIS, (%)**

Year	Overweight (BMI $\geq$ 25 kg/m <sup>2</sup> )		Obese (BMI $\geq$ 30kg/m <sup>2</sup> )	
	Male	Female	Male	Female
2015	65.1	70.7	19.3	35
2010	63.1	68.7	17.5	32.3
2005	61.1	66.7	15.9	29.6
2002	59.9	65.3	14.9	27.9

Source: (WHO, Global Database on BMI n.d.)

Tobacco use is reported the second largest illicit substance used in St. Kitts and Nevis (UNODC 2003). Data on tobacco use among adults are very limited. In 2002, the Ministry of Health conducted national youth tobacco survey (NYTS) among the secondary school students, which found that both boys and girls started experimenting at the age of 10-11. Most smoking took place at home and the students mostly bought their own cigarettes. 20.4 percent of boys and 15.7 percent of girls who participated in the surveys smoked; 8 and 2.5 percent respectively were cigarette users (Figure 32). While peer pressure was not considered the strongest factor, parental smoking was found to have some influence - 2 percent of students reported having both parents smoking. Relatively more students had fathers who smoked (13 percent) compared to their mothers (7 percent). The media was also a possible source of influence for students' smoking (St. Kitts and Nevis Drug Information Network Annual Report 2003).

**FIGURE 32. ST. KITTS AND NEVIS, TOBACCO SMOKING PREVALENCE AMONG THE 13-15 AGE GROUP**



Source: (WHO risk factors database n.d.)

Of all visits made to mental health services in St. Kitts and Nevis in 1995, 25 percent (67 patients) were due to alcohol addiction and drug-induced psychosis (WHO, Alcohol Consumption Country Profile 2004).

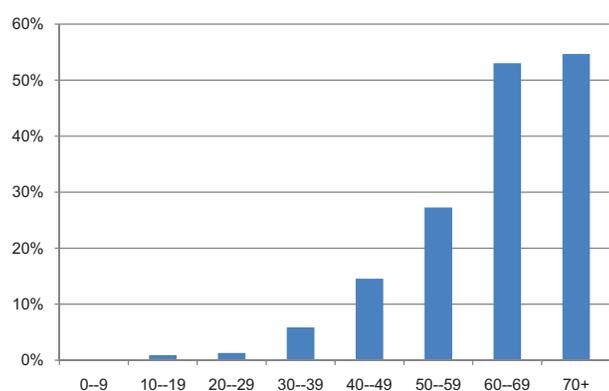
#### *St. Lucia*

St. Lucia's latest Survey of Living Conditions and Household Budgets 2006 provides a unique dataset to explore disease prevalence by socio-economic characteristics. The survey collected information from all respondents on the current condition of four major NCDs: diabetes, blood pressure, heart conditions and cancer. Defining chronic diseases as these four major diseases, 11.8 percent of the population in St. Lucia is now suffering from NCDs. However, the prevalence rate of NCDs is underestimated, as the 2006 Survey of Living Conditions and Household Budgets only collected the current status of these four major NCDs.

Not surprisingly, the prevalence of these four major NCDs increases with age as shown in Figure 33. More than 50 percent of the senior population (60 years of age and over) has one of the four major NCD conditions in St. Lucia.

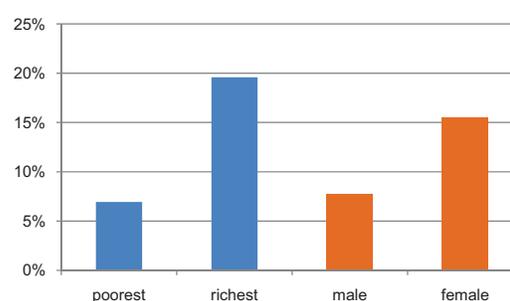
More affluent people reported suffering from NCD conditions in St. Lucia. Among the richest population quintile, about 19.6 percent have diabetes, blood pressure, heart conditions or a cancer condition and this fraction in the poorest quintiles is only 6.9 percent. The prevalence rate in women for these four conditions is higher than for males at about 15.4 percent or almost double the rate for males (7.8 percent). The gender disparity and economic status disparity in terms of NCDs prevalence have also been observed in other Caribbean countries. NCDs are more frequently reported for women than for men, and more frequently reported by high-income population groups than by low-income population groups in Jamaica, according to the 2008 Jamaica Survey of Living Conditions.

**FIGURE 33. PERCENTAGE OF POPULATION SUFFERING FROM FOUR MAJOR NCDs IN ST. LUCIA BY AGE GROUP**



Data Source: St. Lucia latest Survey of Living Conditions and Household Budgets 2006  
Note: the four major diseases are diabetes, blood pressure, heart conditions and cancer

**FIGURE 34. PERCENTAGE OF POPULATION SUFFERING FROM FOUR MAJOR NCDs IN ST. LUCIA BY GENDER AND POPULATION QUINTILE**



Data Source: St. Lucia latest Survey of Living Conditions and Household Budgets 2006  
Note: the four major diseases are diabetes, blood pressure, heart conditions and cancer

Among the OECS countries, St. Lucia demonstrates the widest gender gap in terms of overweight prevalence, but the gap is closing. This is due to the faster increase in the male group that was once (2002) the lowest in the region (44.7 percent). In 1994, an average adult in St. Lucia was classified as overweight (BMI $\geq$ 25) and 19.5 percent of adults were obese (BMI $\geq$ 30). The more recent data show that overweight and obesity are continuing to rise and there is an expected increase of more than 5 percent in both gender groups for each category in 2010–15 (Table 14). Given the fact that parental overweight and obesity are among the significant risk factors for childhood overweight or obesity, it might be expected that the trends will influence all age groups

**TABLE 14. PREVALENCE OF OBESITY AND OVERWEIGHT IN ST. LUCIA (%)**

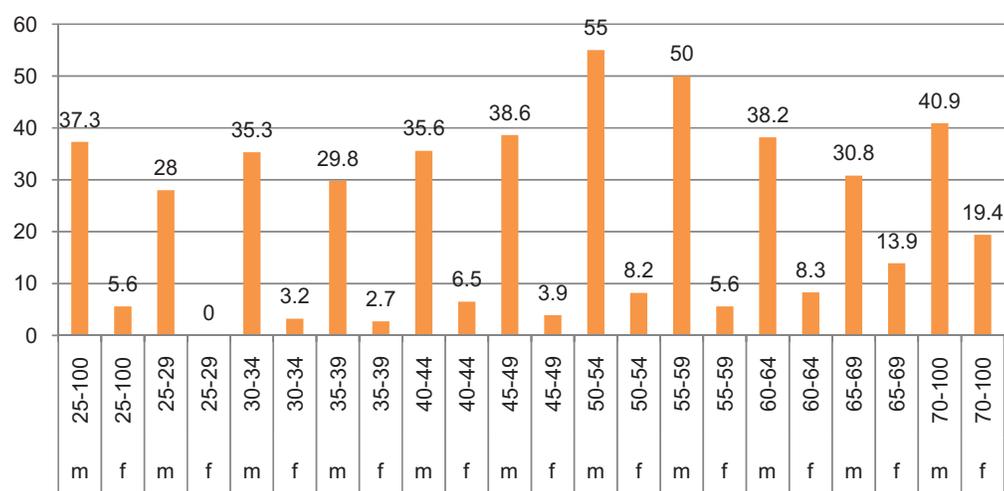
Year	Overweight (BMI $\geq$ 25 kg/m <sup>2</sup> )		Obese (BMI $\geq$ 30kg/m <sup>2</sup> )	
	Male	Female	Male	Female
2015	62.2	83.1	16.6	56.9
2010	55.7	79.9	11.9	50.4
2005	48.9	75.9	8.1	43.2
2002	44.7	73.1	6.3	38.7

Source: (WHO, Global Database on BMI n.d.)

As in the other OECS countries, the rates of overweight and obesity among preschool children in St. Lucia have also been increasing. Overweight is now the priority child health problem, replacing the previous issue of underweight. The 2006 national study (based on the data collected through community child health clinics as part of the routine growth monitoring) found 14.9 percent of overweight and 9.2 percent of obesity among preschool children –rates that have nearly quadrupled in the past 30 years. The study results revealed that the majority of St. Lucian children are entering school already overweight or obese – almost one in four among children of 5 years old. It is recommended that even younger age groups are monitored to identify when the overweight problem starts, and that urgent measures are taken to address the major national health concern (Gardner 2009).

The import of cigarettes to St. Lucia has significantly increased since 1970. In quantity, the cigarette imports have increased from 29 million sticks in 1970 to 86 million sticks in 2000. On the other hand, the imports of tobacco leaves went down from 51 metric tons to 8 in the same period (WHO, Saint Lucia: Smoking Prevalence Tobacco Economy 2002).

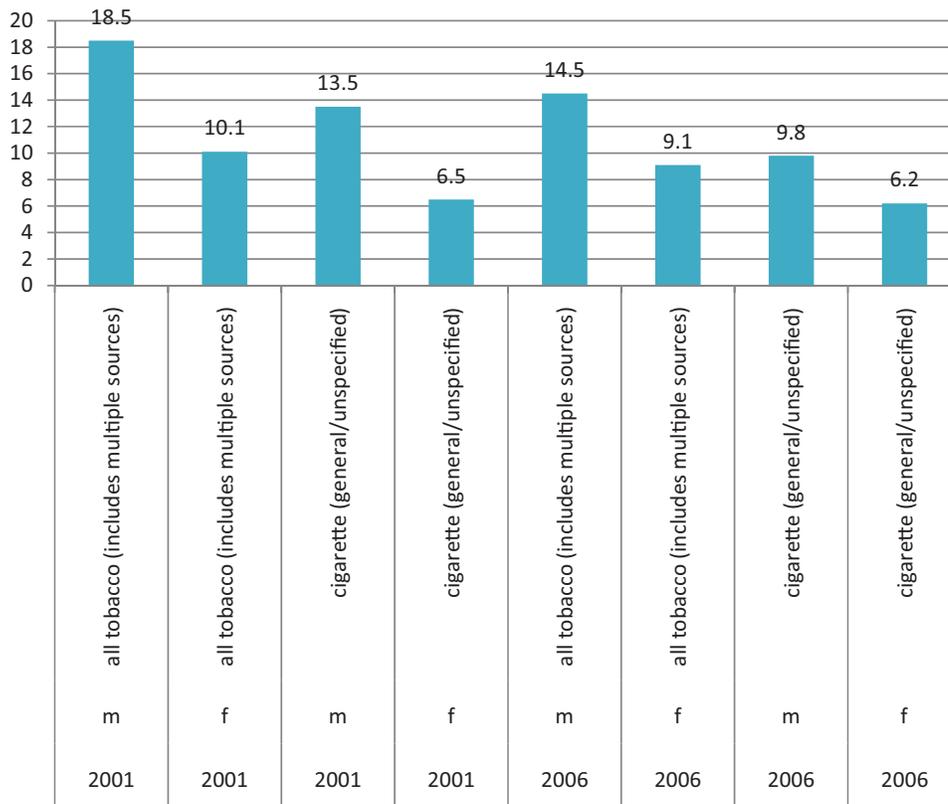
**FIGURE 35. ST. LUCIA, SMOKING PREVALENCE AMONG THE 25+ AGE GROUP. CURRENT USER, CIGARETTE (GENERAL/UNSPECIFIED), 1994**



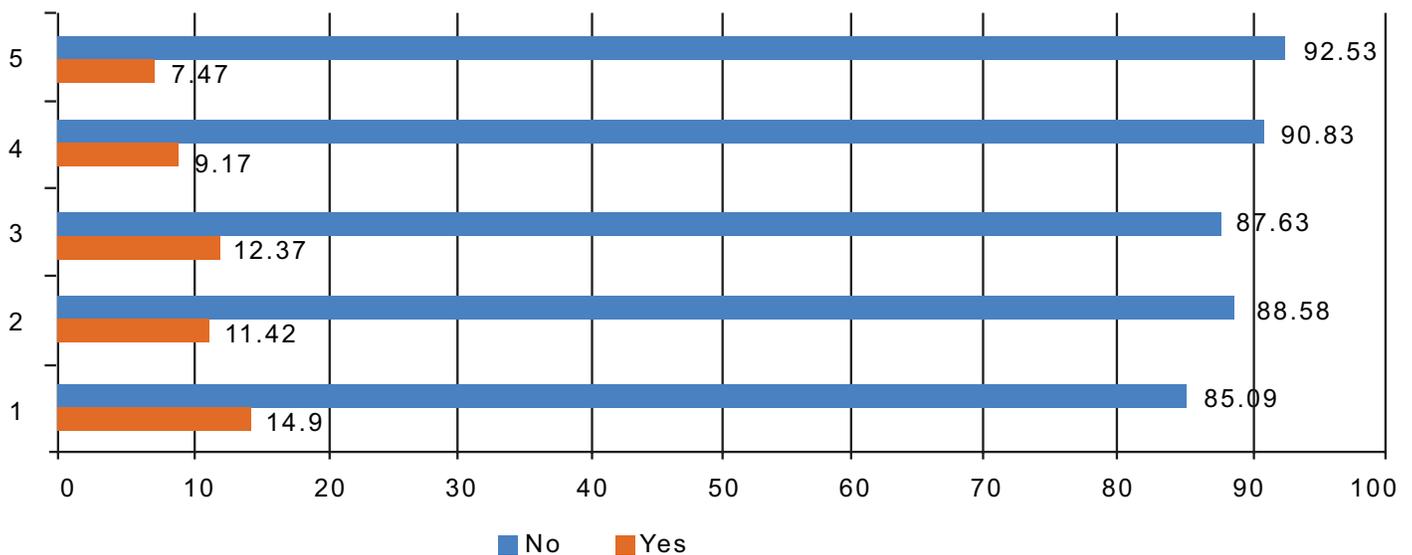
Source: (WHO, Adult tobacco surveys in WHO Member States (The Americas) 2004)

Smoking is more common among adult males than females in St. Lucia. The 1991–94 sub-national survey of the prevalence of hypertension of seven populations of West African origin provided the data on current cigarette use among adults over age 25. The prevalence of smoking was 37.3 percent for males and 5.6 percent for females. (WHO, Adult tobacco surveys in WHO Member States (The Americas) 2004). Further age disaggregation revealed that the highest proportion of cigarette users was in the 50–54 age group of males (55 percent of the total) followed by 55–59 year old males (50 percent). Among females, the prevalence was the highest for 70–100 age group (19.4 percent) followed by the 65–69 age group (13.9 percent), (Figure 35).

The 2001 survey in St. Lucia found that 10 percent smoked cigarettes and 8 percent used other sorts of tobacco. About 33.1 percent of the youth usually smoked at home and 14.1 percent of them bought cigarettes in a store. 34.4 percent of surveyed students thought that boys and 19.1 percent thought that girls who smoked have more friends. 9.7 percent of respondents thought that boys and 8.1 percent thought that girls who smoked looked more attractive (CDC 2008). The comparison of the tobacco use among adolescents in 2001 and 2006 found a relative decrease in the smoking prevalence among males by 4 percent (from 18.5 to 14.5 percent) and among females by 1 percent (from 10.1 to 9.1 percent). The 2006 household data showed that smoking prevalence was higher in households with lower income levels, suggesting a negative relationship between the variables. The higher smoking prevalence, 14.9 percent of respondents, was found in the lowest income quintile, and the lowest prevalence (7.47 percent) in the highest income quintile in St. Lucia (Figure 37).

**FIGURE 36. ST. LUCIA, SMOKING PREVALENCE AMONG THE 13-15 AGE GROUP**

Source: (WHO risk factors database n.d.)

**FIGURE 37. ST. LUCIA, SMOKING PREVALENCE PER HOUSEHOLD QUINTILES CATEGORY (MOH 2006)**

Source: (WHO risk factors database n.d.)

St. Lucia began youth tobacco prevention programs in 2001. In May 2001 in observance of the World No Tobacco Day, the Ministry of Health organized a youth symposium at the Castries City Council. Focusing on secondary school students, the initiative was aimed at educating them about tobacco and also warning about the health risks involved with cigarette smoking. The national health educators expressed a concern for the significant rise in tobacco use among children in St. Lucia (Tobacco News and Information 2008).

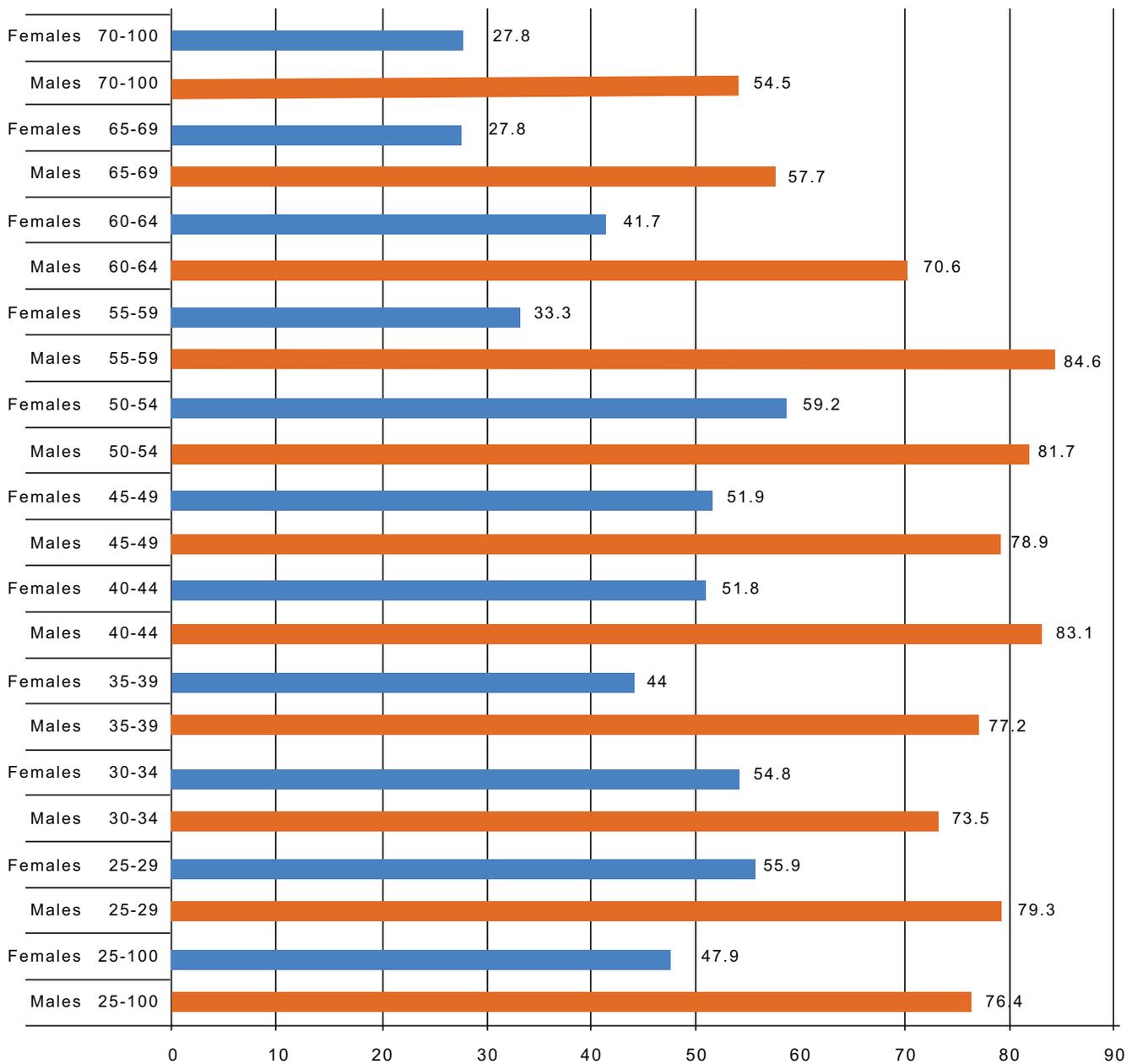
Later in 2001, the Ministry of Health launched an extensive national campaign to control tobacco use and reduce the effects of second-hand smoke. One major element of the campaign was the implementation of the principles of the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC). In an address to the nation, the acting Minister of Health, Michael Gaspard, gave information about the establishment of a multisectoral committee to develop a comprehensive program to protect non-smokers from second-hand smoke. The Government of St. Lucia spearheaded initiatives to control the exposure to second-hand smoke by declaring all health institutions smoke-free zones. The government commended the private-sector enterprises which had prohibited smoking in their workplaces, and also taxi and minibus drivers who had banned smoking in their vehicles (Tobacco News and Information 2008).

In November 2005, the St. Lucia House of Assembly approved the WHO Framework Convention on Tobacco Control Bill, which created the necessary social environment for the implementation of the convention signed in 2004. The decision meant that the Government of St. Lucia had given its official legal backing to the WHO Convention, which controls tobacco use prevalence and the effects resulting from its use. The Minister of Health, Human Services, Family Affairs and Gender Relations, Damian Greaves, stressed in his speech that cigarette smoking and second-hand smoke were becoming important public health issues (GoSL 2005). A very important role in influencing people's behavior in general and in relation to tobacco use in particular is played by media and advertising. Although a large proportion of students in St. Lucia are exposed to anti-tobacco messages, the exposure to pro-tobacco information is still relatively high.

In 1994 in St. Lucia, the highest proportion of alcohol consumers<sup>11</sup> (general, unspecified) was reported in the 50–59 age group. The second largest consumers were the 25–29 age group (66.9 percent) followed by the 30–34 age group. Disaggregated by gender, the data reveals that men aged 55–59 (84.6 percent) and women aged 50–54 (59.2 percent) made up the largest group of consumers of alcohol. The second-largest consumer group was men aged 40–44 (83.1 percent) and women aged 25–29 (55.9 percent) (Figure 38). A high proportion of adolescents was reported to consume alcohol (general/unspecified) – 59.2 percent male and 52.2 percent female (WHO risk factors database n.d.).

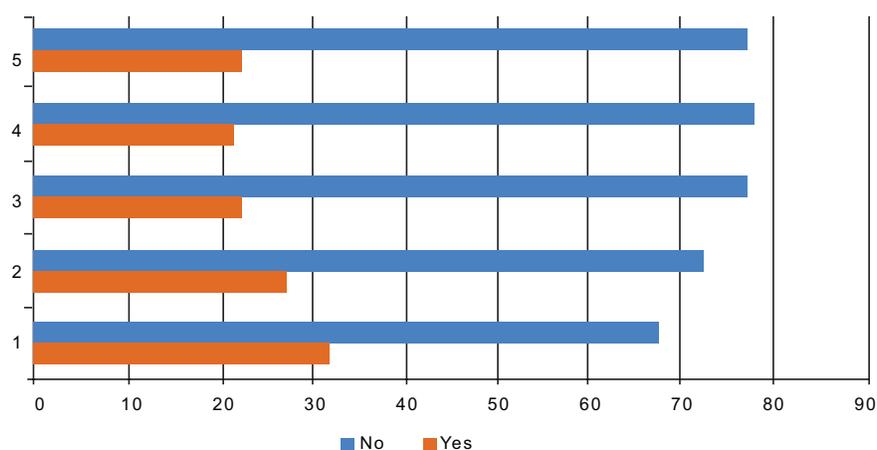
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11 Alcohol consumers defined as having at least 12 drinks of any alcoholic beverage in the past 12 months WHO. (2006). Global Alcohol Consumption Report.

**FIGURE 38. ST. LUCIA, PERCENTAGE OF ALCOHOL CONSUMER BY GENDER AMONG THE 25+ AGE GROUPS**

Source: (WHO risk factors database n.d.)

Household-level data from the 2006 St. Lucia Living Standards Survey confirm that drinking prevalence is highest in poorer households: 32.13 percent of household members of the lowest income quintile consumed alcohol. The lowest alcohol consumption was reported by the fourth income quintile at 21.81 percent. In the highest income quintile, 22.59 percent of members reported consuming alcohol (Figure 39).

**FIGURE 39. ST. LUCIA, DRINKING ALCOHOL PER HOUSEHOLD QUINTILE CATEGORY (MOH 2006)**

Source: (WHO risk factors database n.d.)

#### *St. Vincent and the Grenadines*

Diabetes accounted for 11 percent of total NCD clinic visits in 2002 in St. Vincent and the Grenadines. Among 4,070 clinic visits due to diabetes, 77 percent were women. Persons 65 years and older are most affected by metabolic and nutritional diseases. Hypertension was the leading cause of clinic visits in 2000 (29 percent of total visits). Women represented 74 percent of the hypertension visits, and people 65 years and older accounted for over 50 percent of the total visits. Cardiovascular disease is the fourth-leading cause of clinic visits in 2004, representing 4.6 percent of total visits. 74 percent of visits were by people 65 years and older. During 2000–03, 554 deaths were caused by malignant neoplasms (Pan American Health Organization 2007).

Prevalence of overweight and obesity has been relatively stable in St. Vincent and the Grenadines in both genders. The number of undernourished people in St. Vincent and the Grenadines has decreased by 11 percent between 1990–92 and 2002, whereas the consumption of animal protein and fats has increased by 2 and 0.9 percent respectively (FAO, St. Vincent and Grenadines: Country Profile. Food security indicators 2002). The WHO estimates that, by 2015, the prevalence of overweight and obesity in the male group will go up by 5.1 percent and in the female group by 6.2 percent, which is a conservative rate compared to other countries in the region. The greater gender gap will be observed in the obesity prevalence, with the male-to-female ratio reaching 1:2 by 2015 (Table 15).

**TABLE 15. PREVALENCE OF OBESITY AND OVERWEIGHT IN ST. VINCENT AND THE GRENADINES (PERCENT)**

Year	Overweight (BMI $\geq 25$ kg/m <sup>2</sup> )		Obese (BMI $\geq 30$ kg/m <sup>2</sup> )	
	Male	Female	Male	Female
2015	59.9	67.4	14.9	30.6
2010	57.5	65.1	13.2	27.7
2005	55.2	62.7	11.7	24.9
2002	53.8	61.2	10.8	23.2

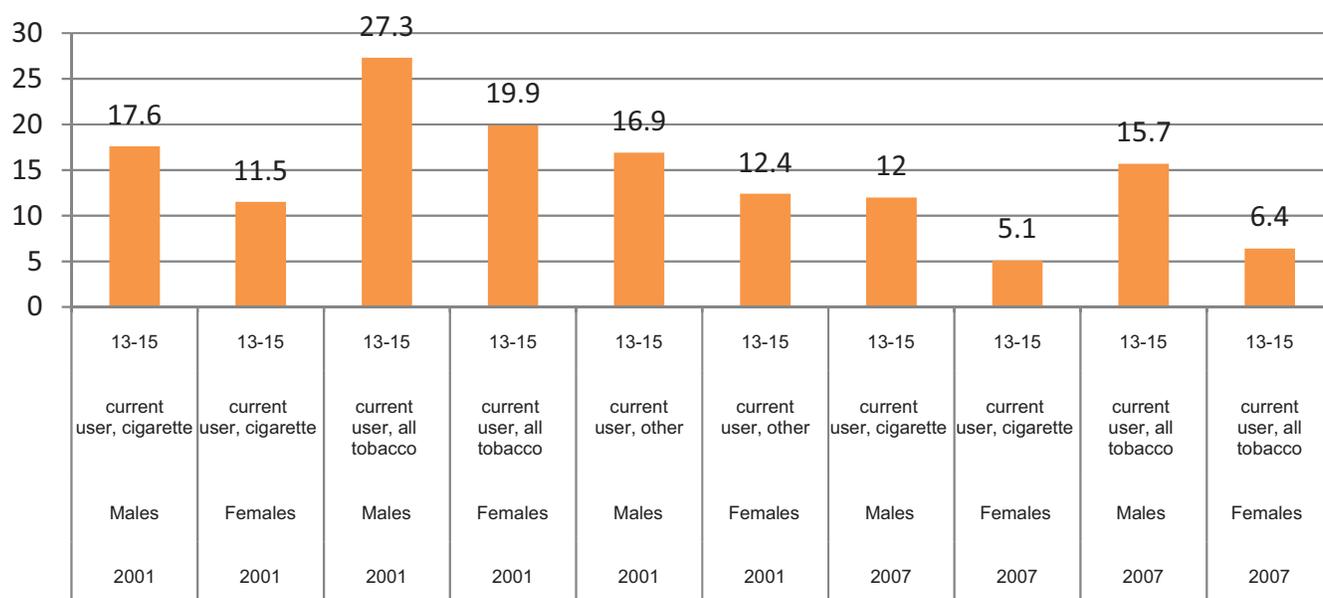
Source: (WHO, Global Database on BMI n.d.)

The rising overweight and obesity among children is also typical for St. Vincent and the Grenadines. In 2001–02, the nutritional status of children under 6 years old indicated a negligible prevalence of energy protein malnutrition (EPM), both moderate and severe, whereas the prevalence of overweight and obesity was significant. The data trend from 1998 showed a steady rise in overweight in children over 24 months of age. Addressing the nutrition and lifestyle-borne issues through promotion, improvement and prevention of chronic diseases is the government's priority goal, as stipulated in the Health Strategic Plan 2007–2012, which aims to reduce the prevalence of obesity among women by 2 percent over the 2005 figure by 2012 (MOHE 2007).

The 1997 survey in St. Vincent and the Grenadines identified that 52.9 percent (males) and 14.3 percent (females) among general population smoked tobacco in their lifetime and 16.4 percent and 6.5 percent respectively were current tobacco users at the time of survey (PAHO, Epidemiological Bulletin 2001). The 2001 survey among youth found that smoking prevalence is 27.3 percent for male and 19.9 percent for female. Most of the population had consumed tobacco at least a few times in their life before 11 years of age (WHO, Saint Vincent and Grenadines: Global Youth Tobacco Use Survey 2001). 3.5 percent of adult females (19–100 years old) and 26.4 percent of adult males were current users of cigarettes in 2001 (WHO risk factors database n.d.).

Due to the government's efforts to promote healthy life styles among its population, and especially among the youth, the prevalence of smoking among adolescents is declining, as evident from the Global Youth Tobacco Survey (GYTS) conducted in St. Vincent and the Grenadines in 2007. According to the survey results, the proportion of current users of all forms of tobacco (both genders) went down from 24.2 percent in 2001 to 10.9 percent in 2007, and of cigarette users (both genders) from 15.2 to 8.5 percent in the same period (WHO risk factors database n.d.). The gender-disaggregated data on tobacco-use prevalence among the 13-15 age group provided an 11.6 percent decline in the use of tobacco (all forms) among males and 13.4 percent decline among females. The number of cigarette users went down by 5.6 percent among males and 6.4 percent among females within 6 years (Figure 40).

**FIGURE 40. ST. VINCENT AND THE GRENADINES, TOBACCO SMOKING PREVALENCE AMONG THE 13-15 AGE GROUP**



Source: (WHO risk factors database n.d.)

In St. Vincent and the Grenadines, the Health Education Unit of the Ministry of Health and the Environment is continuing its drive to control and prevent the use of tobacco among the young population. In collaboration with the PAHO, the unit has organized an anti-tobacco knowledge and poster competition among secondary school students (Tobacco News and Information 2008). The St. Vincent and the Grenadines National Health Strategic Plan 2007–2012 aimed at improving the population's healthy lifestyle practices and prohibiting the smoking in government buildings and facilities. Indoor smoking was prohibited by national legislation in 2004.

St. Vincent and the Grenadines National Health Strategic Plan 2007-2012 provides that, while noteworthy achievements in the health status of its population have taken place over the last two decades (increased life expectancy and immunization rates, decreased infant mortality), the challenges are now posed by the lifestyle diseases that make a considerable financial burden on individuals, families, communities and the state. The promotion and improvement of prevention and management of chronic diseases is among the priority goals of the national strategic policy.

In contrast to the common sex ratio related to alcohol consumption, a relatively higher percentage of alcohol consumers was reported in the female 13-15 age group (53.5 percent) than in the males (52.6 percent) in St. Vincent and the Grenadines in 2007 (WHO risk factors database n.d.). Mental Health Centre admission records for the 1992–1995 period indicated that, of the 587 admissions due to substance abuse, 24.8 percent were due to alcohol consumption (WHO, Alcohol Consumption Country Profile 2004).



# **APPENDIX 1: KEY WHO GLOBAL RECOMMENDATIONS ON PHYSICAL ACTIVITY FOR HEALTH**

WHO has developed “Global Recommendations on Physical Activity for Health” with the overall aim of providing national and regional level policy makers with guidance on the relationship between the frequency, duration, intensity, type, and total amount of physical activity needed for the prevention of NCDs among different age groups:

*Children:*

1. Those aged 5–17 should accumulate at least 60 minutes of physical activity daily of moderate to vigorous intensity.
2. Amounts of physical activity greater than 60 minutes provide additional health benefits.
3. Most of the daily physical activity should be aerobic. Activities of vigorous intensity should be incorporated at least 3 times per week, including those that strengthen muscle and bone.

*Adults:*

1. Adults aged 18–64 should do at least 150 minutes of aerobic physical activity of moderate intensity throughout the week, or at least 75 minutes of aerobic physical activity of vigorous intensity throughout the week, or an equivalent combination of moderate and vigorous activity.
2. For additional health benefits, adults should double these levels.
3. Aerobic activity should be performed in bouts of at least 10 minutes’ duration.
4. Muscle-strengthening activities should involve major muscle groups on 2 or more days a week.

*Seniors:*

1. Adults aged 65 years and above should do at least 150 minutes of aerobic physical activity of moderate intensity throughout the week, or at least 75 minutes of aerobic physical activity of vigorous intensity throughout the week, or an equivalent combination of moderate and vigorous activity.
2. For additional health benefits, adults should double these levels.
3. Aerobic activity should be performed in bouts of at least 10 minutes’ duration.
4. Those with poor mobility should perform physical activity to enhance balance and prevent falls on 3 or more days per week.
5. Muscle-strengthening activities should involve major muscle groups on 2 or more days a week.
6. Those that cannot do the recommended levels of activity should be as physically active as their abilities and conditions allow.

Source: (WHO 2010)

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