2013

# GENDER ANALYSIS OF SELECTED NON-COMMUNICABLE DISEASES IN GUYANA

Produced for the Ministry of Health in collaboration with PAHO/WHO

By: Social Solutions

Funded by: CIDA

Pan American Health Organization

Regional Office of the World Health Organization

ONE PEOPLE ONE NATION ONE DESTINY

Canadian International Development Agency

# Acknowledgements

This study, on the effects of gender and the gendered perspective on the risk of acquiring chronic diseases, has long been awaited and therefore, it gives me great pleasure to thank the Minister of Health, Hon. Dr. Bheri Ramsaran, Dr. Shamdeo Persaud, Chief Medical Officer and other officials from the Ministry of Health for their concurrence and support for the conduct of this study. Special thanks is also extended to our partners at the Pan American Health Organization/World Health Organization (PAHO/WHO) for their sterling support in making this goal a reality. Gratitude is extended to Ms. Karen Roberts, Consultant, Non-communicable Diseases, Ms. Marlene Alleyne-Yorke, Administrative Assistant, PAHO, Consultants Ms. Marieke Heemskerk and Ms. Celine Duijves of Social Solutions, Suriname and other ministries for their joint effort in the production, logistics planning and information gathering during the conduct of this study.

The Ministry of Health has placed Chronic Non-Communicable Disease at the top of its list of priority areas as chronic diseases account for more deaths than Tuberculosis and HIV combined. Understanding the social determinants of chronic diseases is of paramount importance to the development of plans that are responsive to needs. This study brings into perspective differences in risk for NCDs not only across genders but within genders and across regions and cultural sub-populations.

The Chronic Disease Unit along with other stakeholders in health will use the valuable insights from this study to guide policy decision making and resource allocation so as to mitigate the effects of inherent gender and access inequities.

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# Acronyms

| | |
|---|---|
| A1c test | Measurement of the percentage of glycated hemoglobin, or HbA1c, in the blood, as an indicator for average blood glucose control for the past 2 to 3 months. |
| BOS | Bureau of Statistics |
| CHW | Community Health Worker |
| CFNI | Caribbean Food and Nutrition Institute |
| CMO | Chief Medical Officer |
| COPD | Chronic Obstructive Pulmonary Disease |
| FBO | Faith-based Organization |
| GDHS | Guyana Demographic and Health Survey |
| GDP | Gross Domestic Product |
| GPHC | Georgetown Public Hospital Corporation |
| MCH | Maternal and Child Health |
| MEDEX | Medical Extender; non doctors/ non nurse primary health care worker in Guyana |
| MOH | Ministry of Health |
| NCD | Non Communicable Disease |
| OBGYN | Obstetric and Genetics |
| PAHO | Pan American Health Organization |
| HPV | Human Papilloma Virus |
| PHC | Primary Health Care |
| RBS | random blood sugar |
| RDC | Regional Democratic Council |
| RHA | Regional Health Authority |
| RHO | Regional Health Officer |
| VIA | Visual inspection with acetic acid |
| WHO | World Health Organization |

# 1. Introduction

## 1.1 Non-Communicable Diseases and Gender

The past decade has seen a phenomenal health transition with non- communicable diseases (NCDs) and lifestyle-related conditions claiming responsibility for increasing numbers of (premature) deaths and a higher burden of disease. The four main NCDs are cardiovascular diseases, cancers, diabetes and respiratory diseases, including asthma and chronic obstructive pulmonary disease. In 2008, 36 million of 57 million global deaths were due to NCDs. In that same year, nearly 80% of NCD deaths - 29 million - occurred in low- and middle-income countries (WHO 2013). Within Latin America and the Caribbean, approximately 70% of all deaths are NCD-related, with 48% of those deaths occurring before the age of 70 and are considered premature deaths (PAHO 2013, 2008 data). The phrasing "premature" indicates that these deaths happened before their time and, most likely, could have been avoided if appropriate measures had been taken.

Gender and gender inequities affect both the chances of falling ill with NCDs and treatment behavior. Indeed, in Latin America and the Caribbean, 76% of female deaths were NCD-related, in comparison to 66% of death among men. Of these high numbers, respectively 57% and 41% of deaths occurred before the age of 70. Although on average women live longer than men, they are in poor health for many of those years as a result of NCDs. Gender relations also shape the burden of living with an NCD and dictate who bear the main brunt of caring for ill family members.

In Guyana, the total proportion of NCD related deaths was 68% (63% for men, 75% for women) in 2008. In terms of premature deaths, 34% of all NCD deaths in Guyana in 2008 were before the age of 70; 29% for men and 39% for women. The highest numbers of NCD-related annual deaths, for both sexes, are due to cardiovascular diseases with diabetes and cancer showing different burdens on women and men.

The inception report on a Gender-Based Analysis of Non-communicable Diseases in Guyana concludes that "men and women have experiences and perspectives about risk factors, screening, treatments, care provided and giving care, and recommendations for self-management that vary between and among them". The statistical data presented in this report show differences in vulnerability to NCDs between men and women, but they do not reveal the underlying -culturally shaped- behaviours, attitudes, and beliefs. Neither do these numeric data provide insight in differences between ethnic (e.g. Creole, Indian/Hindustani, Indigenous, Chinese) and socioeconomic groups. The proposed gender analysis intends to identify gendered experiences and perceptions that elevate the risks of becoming ill with an NCD for Guyanese women and men from different ethnic and socioeconomic backgrounds. The analysis will focus on the four major NCDs (cardiovascular disease, diabetes, cancers, and chronic lung disease) and their main risk factors (tobacco use, harmful use of alcohol, unhealthy diet, physical inactivity and not going for screening/testing).

## 1.2 Goal and objectives

Taking into consideration the requirements set by the TOR and gaps in existing knowledge about gender and NCDs in Guyana, the gender analysis will serve to **improve understanding of the ways in which gender and gender inequality, mediated by other socioeconomic factors, affect vulnerability to NCD morbidity and mortality**. The more specific objectives are to:

1. Collect and analyze the experiences and perspectives of Guyanese health and gender experts, in order to unravel the gender, cultural, socioeconomic and geographic factors that place certain groups in Guyana at increased risk for contracting NCDs,

2. Identify practices and perceptions that affect lifestyles, health seeking behaviour, and attitudes towards treatment regimens; across genders, ethnicities, socioeconomic classes and regions.

3. Brainstorm with Guyanese stakeholders about desirable and feasible short and longer term interventions that are applicable to the most vulnerable social groups and might help reduce the burden of NCDs for patients, their families, and the country as a whole.

## 1.3 Explanation of the main concepts

A **Non Communicable Disease** or NCD is a type of medical condition or disease that is not transmissible from the infected host to another. Instead, NCDs may result from genetic or lifestyle factors. In low- and middle income countries such as Guyana, four groups of NCDs are responsible for the majority of morbidity and mortality incidences: diabetes, cardiovascular disease, cancers and chronic respiratory diseases (see Boxes below). It is globally acknowledged that their shared risk factors are, primarily: tobacco use, physical inactivity, unhealthy diets, and the harmful use of alcohol. In addition, the present study looks at not going sufficiently for testing and/or screening as a fifth significant risk factor.

**DIABETES**: There are three main types of diabetes: Type 1 diabetes is an autoimmune disease which destroys the insulin producing cells of the pancreas. It most commonly develops in children and young adults, and people with type 1 are always dependent on insulin injection for survival. Type 2 diabetes is due to a combination of insulin resistance and insulin deficiency. It accounts for 90 percent or more of all diabetes globally, and can be prevented. It most commonly occurs in middle-aged and older people but increasingly affects people in their most productive years. Gestational diabetes is any glucose intolerance with onset or first recognition during pregnancy.

**CARDIOVASCULAR DISEASE**: Cardiovascular diseases (CVDs) are a group of disorders of the heart and blood vessels and include – coronary heart disease (leading to a heart attack), rheumatic and congenital heart disease, cerebrovascular disease (leading to a stroke), hypertension, heart failure, and peripheral vascular disease.

**CHRONIC RESPIRATORY DISEASE**: Chronic respiratory diseases are chronic diseases of the airways and other structures of the lung. Some of the most common are asthma, chronic obstructive pulmonary disease (COPD), respiratory allergies, occupational lung diseases and pulmonary hypertension.

**CANCER**: Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death. Cancer is caused by both external factors (tobacco, chemicals, radiation, and infectious organisms) and internal factors (inherited mutations, hormones, immune conditions, and mutations that occur from metabolism). These causal factors may act together or in sequence to initiate or promote carcinogenesis. The development of most cancers requires multiple steps that occur over many years.

**Gender** refers to the socially constructed roles, behaviours, activities, and attributes that a given society considers appropriate for men and women (WHO 2013).

In our analysis of gender and NCDs, we acknowledge that health-related vulnerabilities differ not only for women and men, but also for people of different ages, income-levels, living areas, ethnicities, religions and so forth. That is, health risks and access to coping mechanisms are not equal for a wealthy Indo-Guyanese woman in Georgetown and a poor Indigenous woman in the hinterland of Guyana. Similarly, an elderly Afro-Guyanese construction worker from the coastal zone and a young Brazilian gold miner in region 9 will differ in their exposure to health risks, health treatment and health care. The present analysis aims to expose these differences in vulnerability to NCD morbidity and mortality.

## 1.3 Commissioning party and beneficiaries

This study was commissioned by the Pan American Health Organization (PAHO). PAHO promotes gender mainstreaming and strengthens gender and health data to respond to international commitments set out in the CEDAW Convention, Beijing and ICPD Platforms for Action, the Millennium Development Goals, the Belem do Para Convention and the PAHO Gender Equality Policy and Plan of Action.

The findings are of particular relevance to the Ministry of Health (MOH), PAHO/WHO and other key stakeholders in the field of health. The study results will provide policy makers, national health authorities, and other stakeholders with necessary information about data gaps and equality gaps that should be addressed in order to reduce the burden of NCDs.

In addition, the study may benefit people living with NCDs and those at risk of becoming ill with NCDs if the results are used to inform policy interventions that are adapted to the specific living conditions of different at-risk groups in Guyanese society. Finally, the results will be relevant for the wider analysis for the Caribbean Region.

# 2. Methods

The researchers took a four-step approach to reach the study objectives:

1. Study of secondary data
2. Consultations with Guyanese experts in the fields of NCDs and/or gender
3. Workshops with identified partners, with the dual aim of building sustainable capacity and conducting gender analysis of the 4 main NCDs and their risk factors.
4. Conduct a gender assessment of the Strategic Plan 2013-2020: Integrated Prevention and Control of Non-Communicable Diseases in Guyana

These steps are described in greater detail below.

## 2.1 Study of secondary data

In order to develop a better general understanding of NCDs, their risk factors, and gender, as well as of the relations between these elements, the consultant reviewed existing documents. These documents included reports by PAHO, WHO, and the Guyana Ministry of Health, and studies by independent researchers.

The most secondary information served to develop a basic understanding of NCDs and their risk factors, and of the social variables that may affect vulnerability to NCDs. This preliminary understanding of the problem provided guided the consultations and workshops. In addition, the information has been processed and, in combination with primary information, been used in the present analysis

## 2.2 Consultative meetings

The consultant undertook a three-day trip to Guyana to speak with a diverse set of stakeholders in the area of NCDs and/or gender in Guyana. These stakeholders included partners in academia, governmental and non-governmental organizations, and civil society.

Table 1 provides an overview of the various organizations and department that were consulted through personal interviews with one or more representatives. A complete list of consulted persons is attached as Annex 1.

The consultative meetings served a twofold purpose

1. Verify and complement secondary information about how existing gender relations and the position of women and men, mediated by other social factors, affect the development and manifestations of NCDs and their risk factors in Guyana.
2. Identify data gaps and needs, and obtain information about available recent (statistical) data about NCDs and gender

*Table 1. Consulted stakeholders and workshop participants*

| Participant | Consultation | Workshops |
|---|---|---|
| *In the area of health and NCDs* | | |
| NCD Team, Ministry of Health | ■ | |
| Regional Health Services, Ministry of Health | ■ | ■ |
| Regional health sector; doctors, hospital staff, nurses, medex | ■ | ■ |
| Surveillance officers, Ministry of Health | | ■ |
| Guyana Nurses Association and Midwives Association | ■ | |
| Cancer Registry | ■ | |
| Diabetic Foot Centre | ■ | |
| Public Health Specialist | ■ | ■ |
| Social worker | | ■ |
| *In the area of Gender* | | |
| Private Consultants in the area of gender and gender equality | ■ | ■ |
| Faculty of Social Sciences, University of Guyana | ■ | |
| Help and Shelter Organization | ■ | ■ |
| Society Against Sexual Orientation Discrimination (SASOD) | | ■ |
| *Other* | | |
| PAHO/WHO Representative | ■ | ■ |
| Bureau of Statistics | ■ | |
| Ministry of Amerindian Affairs | ■ | ■ |
| Ministry of Education, health promotion coordinator | | ■ |
| Help and Faith Coalition | | ■ |
| Global Fund | | ■ |
| Area inhabitants of Mahdia | | ■ |
| School teacher | | ■ |
| Toshao (indigenous traditional village leader) | | ■ |

## 2.3 Workshops

The consultant conducted two NCD and gender analysis workshops in Guyana. The first workshop was held in Georgetown, with health and gender experts from Georgetown and nearby regions. The second workshop was conducted in a Mahdia; a relatively larger community in the Guyana hinterland (region 8). Participants were mostly indigenous area inhabitants, as well as health workers from further away communities in that region. Inclusion of an interior community allowed the consultant to obtain a better understanding of differences in exposure to risk factors and differential access to health care for people who live in Georgetown and those who live in the more remote rural districts.

The workshops served a dual aim of building sustainable capacity and conducting gender analysis of the 4 main NCDs and their risk factors. Questions that were posed during the workshops included:

- What habits and attitudes place men and women of different ethnic groups and socioeconomic classes at an increased risk of contracting an NCD?

- What perceptions about women and men place them at increased risk of becoming ill with an NCD? How are these perceptions mediated by ethnicity, financial status, education, and other variables?
- How do relations between women and men affect vulnerability to NCDs, and how does this differ between different ethnic and socioeconomic groups?
- How can behaviours, attitudes and perceptions about women and men, and the relations between them, be altered in order to reduce vulnerability to NCDs?

During the workshop in the interior also wanted to assess:

- What do people in the interior know about NCD's
- Are they aware of the relation between specific habits and attitudes and the risk of contracting an NCD?

## 2.4 Challenges, limitations and assumptions

**Challenges**

- Ethnicity and its impact on lifestyles and behaviour are sensitive issues that many people do not want to speak about. Nevertheless, by creating an comfortable atmosphere where people could speak out freely, we believe that we have been able to obtain insights in these issues.

**Limitations**

- Recent and reliable data about NCDs and their risk factors, differentiated by gender and other relevant variables, are rare. Data are often not publicly available, out-dated, and/or limited (see chapter 12). By working closely with PAHO and the Ministry of Health, we are confident that we have been able to present the best available data at this moment available in Guyana.

- Data collected through consultations and in workshops are mostly anecdotal data rather than scientific proof. This data is invaluable in providing a qualitative understanding of the life styles of different sub groups of the Guyana population. However, they do not allow for providing of numeric evidence of the impact of gender relations and inequities on NCDs.

- With the limited time available, it was not possible to conduct workshops in more than two locations in Guyana, or to conduct interviews in a wider range of regions. Therefore the qualitative impressions are mostly reflections of the situation in Georgetown and in region 8.

**Assumptions**

- *Representativeness.* The researchers assumed that PAHO, with its long-term experience in the Guyana health sector, had selected people with the best possible knowledge in terms of NCDs and their risk factors to the workshops and consultations. We also assume that these people are representative of health and social organizations working on NCDs.

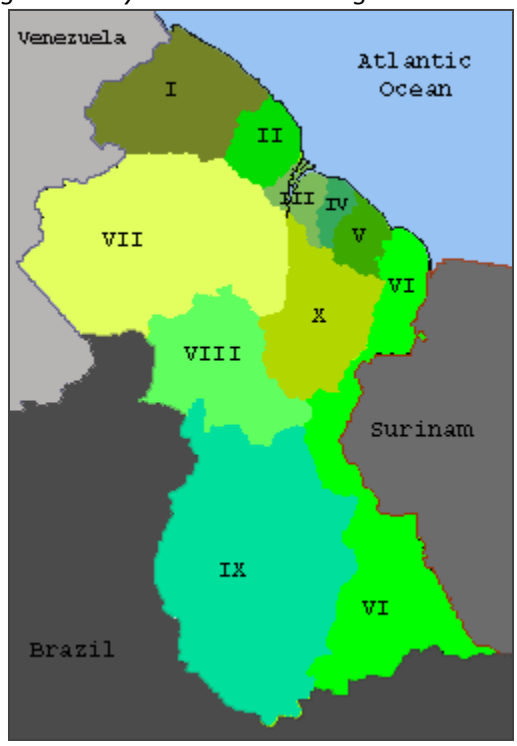
- *Reliability.* We assumed that interviewees and workshop participants answered to the questions to their best ability and in a truthful manner.

# 3. Geographic, cultural, socioeconomic and health management context

This section provides a general overview of Guyana, its population and geographic lay-out, economic development, gender relations, and the national health sector. The information provided in this chapter serves to place the study findings in a broader perspective, and to gain a better understanding of the context in which health risks develop. Table 2 contains relevant indicators that summarize the demographic, geographic, socio-economic and health situation of Guyana, thus allowing for a quick overview of basic facts about the country.

## 3.1 Guyana: geography and population

*Figure 1. Guyana with its ten regions*




The geography of Guyana affects people's exposure to NCD risk factors and their access to treatment regimens and general health care. Guyana is situated on the northern tip of South America, between Venezuela in the West, Suriname in the East, and Brazil in the Southwest (Figure 1). A large share of the country's small population (pop: 778,099) lives in the capital city of Georgetown and in the coastal plains. The census of 2002 reports that 41.3 percent of the population lived in region 4, where Georgetown is located, and more than three-quarters of the population lived in regions 3, 4, 5 and 6 combined[1] (Bureau of Statistics 2007). These are also the areas where most public services are provided and where health services -both private and public- are concentrated (Ministry of Health 2010). Also the local road network does not extend far into the hinterland, with the exception of the road to Lethem (Region 9), which connects Guyana to Brazil (Figure 2).

The Ministry of Amerindian Affairs revealed that there are more than 180 communities and satellites in the hinterland of Guyana. Most of these communities have long remained largely isolated from the

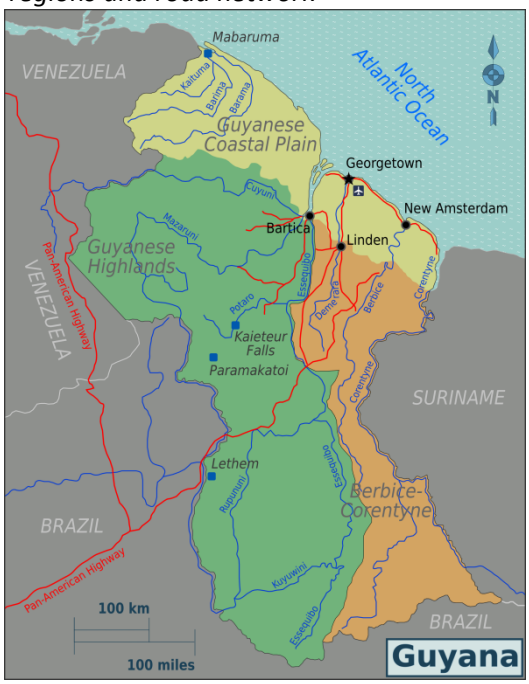
[1] The 2002 data are the most recent census data. Another census was held in 2012 but its results have not yet been analyzed.

coastal zone. This changed somewhat about three decades ago, when the first airstrips were built to hinterland communities. In the past 15 years, the road network has been improved, which has subsequently improved access to products and services in Georgetown. These changes have enhanced access to health services but also had negative health implications through the introduction of processed foods and soft drinks.

Guyana's population reflects the country's history of slavery and indentured labour; 43.5% of the population are of East Indian descent and 30.2% of African ancestry (BOS 2013; data from 2002). In addition, 9.2% are Indigenous Amerindian. The remainder of the population of mixed descent (16.7%), Caucasian (0.06%), Portuguese (0.2%), Chinese (0.2%) or of another ethnic background (0.01%) (ibid.). Existing research suggests that due to genetic and life-style differences, morbidity and mortality from NCDs differ among these various ethnic groups in Guyana (PAHO 2012a; Plummer et al. 2009). In subsequent sections we will specify these differences and reflect on possible explanatory factors.

The isolated hinterland of Guyana (primarily the green and orange sections in Figure 2) provides a home and sustenance to nine distinct Amerindian peoples and to Guyanese coast landers and migrants working in the extractive industries. These latter groups may have come to settle in the region with their families, while others have more transient lifestyles. Likewise, the customs and lifestyles of the various Amerindian groups vary, depending not only on their different cultures, but also on their access to larger cities (in Guyana or Brazil), and subsequent level of acculturation and integration into the national economy. Furthermore, particularly in region IX but also in other regions where Brazilian migrants are working in the gold sector, there is a considerable Brazilian influence.

*Figure 2. Guyana with its main geographic regions and road network*




In analyzing differences between the coastal zone and the hinterland, or between the urban centre (e.g. Georgetown) and the rural regions, the huge diversity between *and* within these areas must be acknowledged. Generalizations about the gender-dimensions of NCDs and their risk factors, without taking into consideration ethnicity, religion, region, socioeconomic status and so forth, are therefore inappropriate.

## 3.2 Gender relations in Guyana

The World Economic Forum *Global Gender Gap Report 2012*, which ranks countries according to their proximity to gender equality, places Guyana 42nd among 136 countries worldwide; well above

neighbouring Suriname (rank 106), Brazil (rank 62) and Venezuela (rank 48). Within Latin America and the Caribbean Guyana ranks 10th out of 26 countries. Guyana did not score high in the area of economic participation and opportunity (rank 94), but did well in terms of educational attainment (rank 28) and political empowerment (rank 32). Guyana's ranking was reasonable in the area of 'Health and Survival' (rank 49), as measured by the 'sex ratio at birth' and 'male and female healthy life expectancies'.

Other studies confirm that Guyana features a high level of gender equality in some areas (e.g. education) but performs poorly in other areas (e.g. gender-based violence). The 2009 Guyana Demographic and Health Survey reports that women do slightly better than men in terms of educational attainment, a trend that is apparent throughout the Caribbean region. The median number of years of schooling enjoyed by women was higher than that of men in both urban (resp. 8.9 and 8.2 years) and rural (resp. 6.7 and 6.2 years) regions. Regional differences in education were larger than gender differences though, with regions 1, 2, 8 and 9 doing worst and regions 3, 4 and 6 doing best. Educational level affects the propensity of being diagnosed with NCDs in complex ways. For example, among Guyanese women higher education is associated with a lower likelihood of being overweight and obese, but among men the reverse is the case (PAHO 2012a). We will return to this issue in Chapter 5.

In terms of economic empowerment, the 2009 GDHS finds that just over one-third (36 percent) of married women age 15-49 were employed within the 12 months preceding the survey, compared with 98 percent of men. Older married women were more likely to be employed than younger women but there were no differences by age for men. Six percent of married women and 1 percent of married men employed in the past 12 months were not paid. A majority (62%) of married, employed women in Guyana reported that they earned less than their husband. The 2006 poverty assessment found no gender differentials related to poverty (Government of Guyana 2011). On the other hand, at the national level it was found that being male, older, educated and employed reduced the chances of being poor, all other factors held constant (ibid.).

When asked about who decides how the wife's cash earnings are used, more than half of women in all age groups reported that they mainly decided over their incomes (56%). About four in ten (41%) women reported that they and their husbands decided jointly with about the woman's earnings and just 2 percent said that their husband mainly controlled their cash earnings. On the other hand, 12 percent of men and 20 percent of women said that the wife mainly decides about how the husband's earnings are used. The majority of men (74%) and women (61%) reported that the husband and wife decided jointly about how the man's cash earnings were used. As compared to urban women, women in rural areas self-reported relatively more say over the spending of their husband's cash income.

One-third of Guyanese households (34%) are single-parent households headed by women. Female-headed households are more common in the urban areas (44%), particularly in Georgetown (47%) (GDHS 2011). Guyanese women seem to have considerable decision-making autonomy within the household. The GDHS 2009 found that the grand majority of (married) Guyanese women participated in four specific different types of household decisions (91%). About nine in ten of married women age 15-49 (91%) said they made decisions about their own health care either by themselves or jointly with their husband. Higher educated women were significantly more likely than relatively lower educated women

to control over their own health decisions. In this regard there were no noticeable differences between women in rural versus urban areas. The data also showed that mothers who participate in one to four household decisions have better access to maternal health services than mothers who do not participate in any household decisions. These findings suggest a positive relation between women's decision making power in the household and their access to health services.

In terms of gender based violence, 16.3 percent of women believe a husband is justified in hitting or beating his wife for a specific reason, with neglect of the children being the main selected reason to justify such behaviour (GDHS 2011). Women in rural areas were more likely than women in urban areas to be of the opinion that a husband may hit or beat his wife (resp. 19.6% and 8.4%). The results showed that women who believed that there was no reason to justify wife beating were relatively more likely to use maternal health care services. In the next chapters we will see that, according to Guyanese informants, gender based violence is one of the 'drivers' behind the direct NCD risk factors.

*Table 2. Basic indicators for Guyana*

| Indicator | Value | Data Year | Source |
|---|---|---|---|
| **Geography** | | | |
| Land mass | 215,000 $km^2$ | | |
| **Demographics** | | | |
| National population | 761,442 | 2010 | PAHO 2012a |
| Ethnic composition of the population | | | |
| % male | 51.35% | 2010 | PAHO 2012a |
| Rural population, % of total | 71.6% | 2008 | Health Systems 20/20 & MOH 2011 |
| | | | |
| **Economy and development** | | | |
| GDP per capita | US$ 2,869 | 2011 | Guyana Bureau of Statistics 2013 |
| Ranking on the Human Development Index | 118 (out of 187 countries) | 2012 | UNDP 2013 |
| % of population living in extreme poverty | 18.6% | 2006 | MDG report 2011 |
| % of population living in multidimensional poverty | 7.7% | 2009 | UNDP 2013 |
| Unemployment | Male: 9.1%; Female: 14% | 2006 | BOS 2011 |
| Gender | | | |
| Ranking Global Gender Gap Report 2012 | 42 (out of 107 countries) | | World Economic Forum |
| Ranking on the UNDP Gender Inequality Index | 104 (out of 148 countries) | 2012 | UNDP 2013 |
| Labour force participation rate | Male: 81%; Female: 35% | 2006 | BOS 2011 |

## 3.3 Economy and Development

It is important to look at macro- and microeconomic indicators because economic development at a national level and economic status at a household or individual level affect the onset, diagnosis, and treatment of NCDs. There is no simple straightforward relationship between economic indicators and NCD risk factors. Data from the US suggest that in high-income countries, people from low-income families tend to have greater risks of developing overweight and obesity (Kim and Leigh 2010; Truong, and Sturm 2005). In Guyana, by contrast, *higher* incomes are associated with higher rates of overweight and obesity, among both women and men (PAHO 2012). Various informants suggested that Guyana's economic development is at least partly debit to the growing burden of NCDs in the country.

With a per capita GDP of 2,869, Guyana may be considered a low to middle income country (BOS 2013, 2011 data). In the past years, the country has witnessed moderate yet steady economic growth, as judged by the rise in per capita GDP (PPP) and the positive real GDP growth rates (BOS 2013; data 2006-2011). Guyana's estimated urbanization rate is relatively low; a projected 0.5 percent for the period 2010-2015 (CIA 2013). Both economic growth and urbanization, albeit modest, may lead to a change in dietary patterns and an increased intake of energy-dense foods, high in saturated fat, sugar and salt.

This dietary transition also is noticeable in the hinterland. Since the past 15 years or so, Amerindian communities have become integrated in national economy. In this period, new or improved roads and air strips have connected previously more isolated communities to the coastal area and Georgetown. Furthermore, logging activities and the rapidly expanding small-scale gold mining sector have brought new people and lifestyle, as well as money, to the region. These changes also have led to the consumption of more soft drinks and eat more processed foods, of the kinds listed above. This 'nutrition transition' is fuelling levels of overweight and obesity (NCD Alliance, undated) and is impacting significantly on the health of both urban and rural populations.

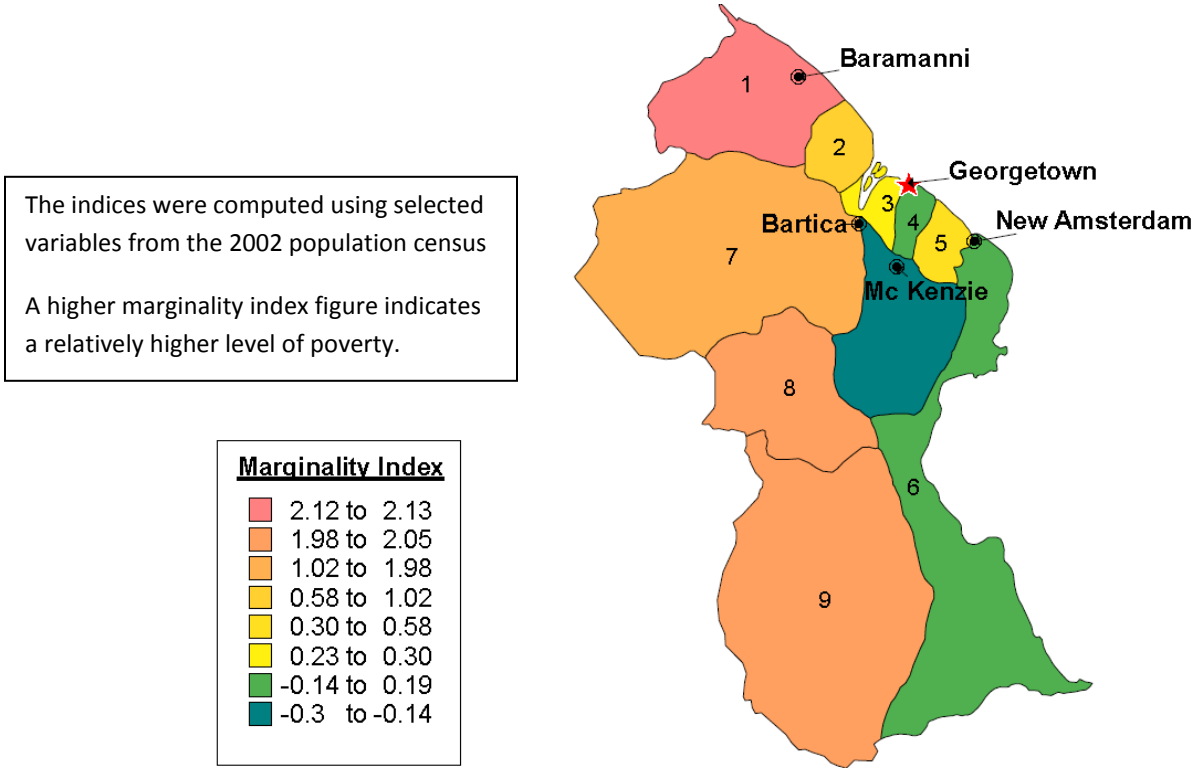
In 2006, it was estimated that 36.1 percent of the population lived below the moderate poverty line (Government of Guyana 2011). Extreme poverty declined from 28.7 percent in 1993 to 18.6 percent in 2006 (ibid.). These Government of Guyana measures are based on consumption and do not consider access to services such as education and health care. A 2013 UNDP report estimates that 7.7 percent of the population of Guyana is living in 'multidimensional poverty'[2] (based on 2009 data). The report proposes that 12.3 percent of Guyana's population is vulnerable to poverty and that 1 percent of the population is living in severe poverty.

Wealth is not distributed equitably across the country. The MDG report 2011 shows extreme disparities between the urban area regions, where 18.7 percent of the population is estimated to live in moderate or extreme poverty, the rural coastal region, with a poverty level of 37 percent, and the rural hinterland, where 73.5 percent of the population is classified as 'poor' by national standards (2006 data). In 2006, more than half (54%) of the population in the rural hinterland was living in extreme poverty.

[2]The Multidimensional Poverty Index identifies multiple deprivations at the individual level in health (nutrition; child mortality), education (years of schooling; children enrolled) and standard of living (cooking fuel, toilet, water, electricity, floor, assets). All the indicators needed to construct the measure must come from the same survey.

(Government of Guyana 2011). The marginality map composed by the Guyana Bureau of Statistics is telling (Figure 3). The map depicts the relative poverty in the regions of Guyana. The map shows that the Centre and North-Eastern parts of the country (regions 3, 4, 5, 6 and 10) are relatively well-off as compared to the more isolated Western and South-western regions (mainly regions 1, 7, 8 and 9). Not surprisingly, the regions that are poorly connected to the national road network tend to be the regions with least pubic services and poorest standard of living. This situation also has implications for lifestyles and access to health provisions in these regions.

*Figure 3. Marginality (poverty status) by region, 2002*




Source: Bureau of Statistics, Republic of Guyana

Guyana's unemployment rate is 10.7 percent, with women being more likely than men to be unemployed (resp. 14.0% versus 9.2%, BOS 2011; 2006 data). Eighty-one percent of men versus only 35 percent of women are economically active (BOS 2011; 2006 data). Generally, both formal and informal jobs performed by persons in the hinterland are physically active jobs as logging, farming, and mining. In Amerindian communities, women play a primary role in subsistence farming and the processing of food.

In the Georgetown metropolitan area, a relatively larger share of women and men -including many government workers, has office jobs. These differences in sedentary versus active jobs are likely at least partly debit to regional differences in the risks of developing NCDs.

## 3.4 Health care system in Guyana

In order to better understand access to health services, care seeking behaviours and treatment behaviours for different social groups in Guyanese society, it is necessary to explain more about the organization of health care in the country. Guyana's constitution guarantees health as a fundamental right. Public sector health services are free in Guyana[3]. Consulted stakeholders conveyed that also migrants and people who have no health insurance are treated for free at public health facilities. There is also a private health sector; it operates on a fee-for-service basis (Health Systems 20/20 and MOH 2011).

Guyana is divided into 10 administrative regions, with 10 local governments (Regional Democratic Councils). Every region has a Regional Health Authority (RHA) which is responsible for health activities in public hospitals, health centres and health posts within the region. The Regional Health Officer (RHO) manages health activities and compiles the region's health budget. The RHO also oversees all primary health care in the region and, depending on the district, hospital care as well[4] (Health Systems 20/20 and MOH 2011) ((Table 3). The Regional Health Officer reports to the Ministry of Health and the Ministry of Local Government at the Central level (Figure 4). We have not heard of or found indications of gender inequity in the RHAs.

On a lower governmental level, there are 65 Neighbourhood Democratic Councils (NDC), 6 municipalities and 76 Amerindian Village Councils. The Amerindian Village Councils are democratically elected and headed by a village leader, named *toshao*. The councils can have a (limited) own budget and resources they can manage. Consulted Guyanese stakeholders conveyed that both women and men may fulfill positions in these local fora. The Amerindian Village Councils, for example, have both female and male members and *toshao* may be women as well as men. A recent health system assessment for USAID found that local government organizations (e.g. NDCs) have very little influence on health management decisions (Table 3).

[3] It should be noted that there is a system of cost recovery at the Georgetown Public hospital for some of the services.

[4] In Regions 4 and 10, the national and regional hospitals are not managed by the RHO but instead directly administered by the MOH or are independent entities. In Region 4, four national hospitals, including GPHC, fall outside of the authority of the RDC. In Region 10, Linden and Kwakwani Hospitals are under the direct oversight of the MOH, not the RDC.

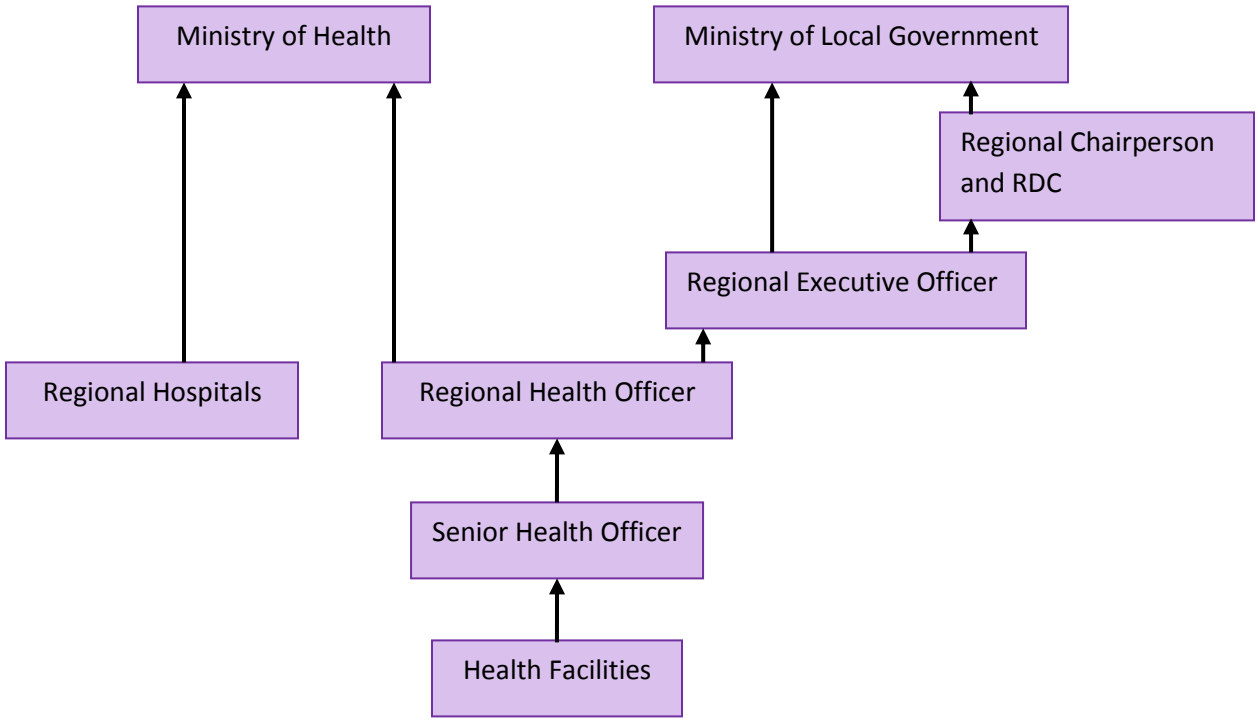
*Table 3. Government responsibility for health management, by level**

| Health System Function | Level of Government | | |
|---|---|---|---|
| | National | Regional (RDCs) | Local (Neighborhood councils) |
| Financing, incl. budgeting, expenditures, auditing | XXXX | XX | X |
| Human resources, incl. staffing, contracts, salaries and training | XXXX | XXX | X |
| Hospital and facility management | XXXX | XXXX | X |
| Targeting service delivery to specific populations | XXXX | XXXX | X |
| Setting norms, standards, regulation | XXXX | X | X |
| Monitoring and oversight of service providers | XXXX | XXXX | X |
| Operations maintenance, incl. medicines and supplies, equipment, facilities, infrastructure | XXXX | XXXX | X |
| Information management, incl. data collection, processing, analysis and dissemination | XXXX | XX | X |

* xxxx denotes extensive, xxx=some, xx=limited and x=no responsibilities

Adapted from: Health Systems 20/20 and MOH 2011

*Figure 4. Reporting structures under Regional Democratic Councils*

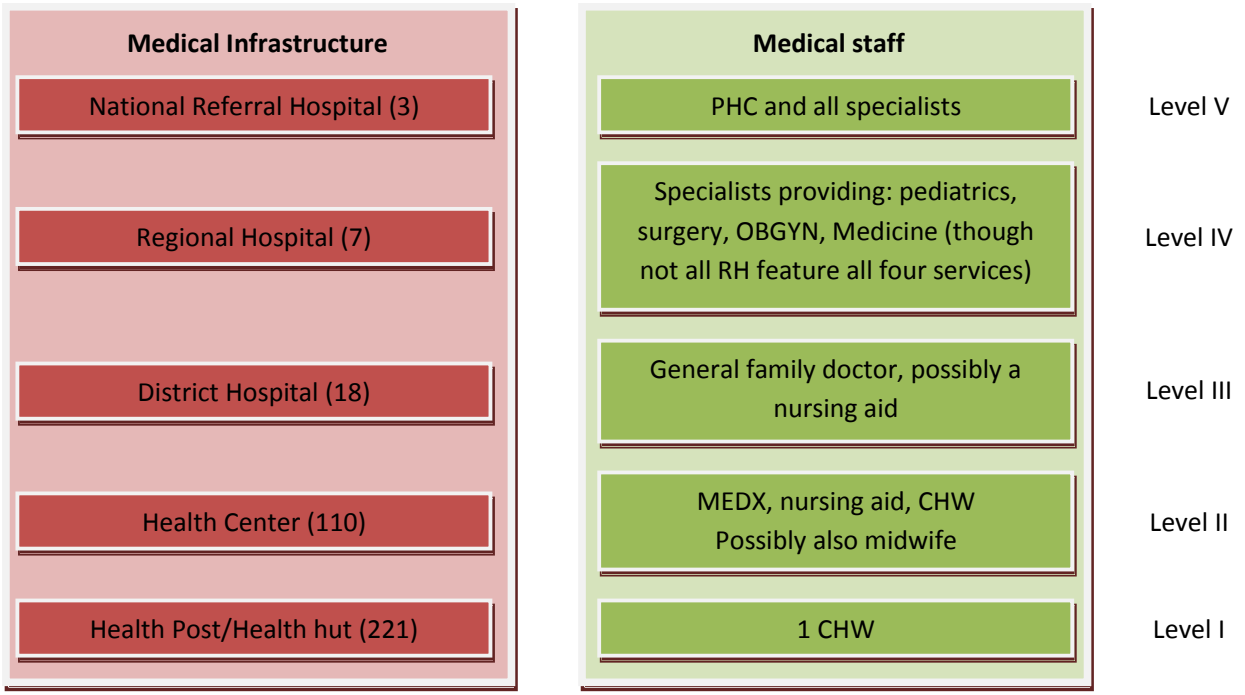



Source: Systems 20/20 and MOH 2011

There are five levels of public sector health care in Guyana: Levels 1 and 2 (health huts, posts, and centres) deliver primary health care services; Levels 3 and 4 (district, community and regional hospitals, diagnostic centres) deliver secondary care and diagnostic services; and Level 5 (national hospital) delivers tertiary care (Figure 5).

Most of the hospitals in the country are public hospitals which are Ministry of Health Institutions. Health centres and Health Posts are also Ministry of Health Institutions. There are some private hospitals, but most of them are concentrated in and around Georgetown. All of the hospitals follow the health regulations as set by the Ministry of Health but only the public hospitals reside under the Ministry of Health. Health personnel in the regions of Guyana working in the public hospitals, health centres and health posts are all employed by the Ministry of Health.

*Figure 5. Schematic portrayal of the 5-tier hierarchy of medical services in Guyana*




Source; Based on information obtained from Dr. Chan, Regional Health Services Director

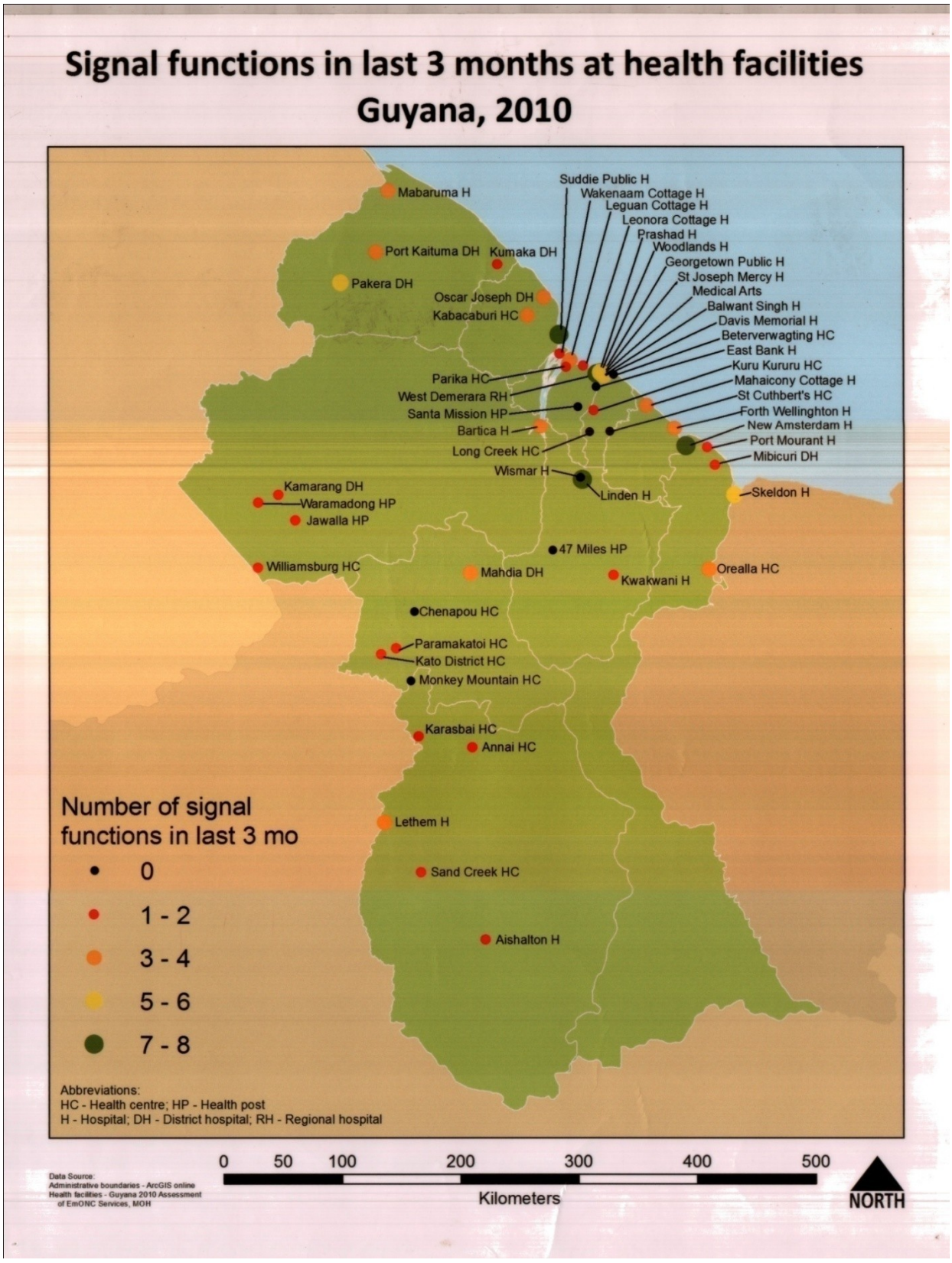
The various types of health service institutes are not equally divided across the country (Table 4, Figure 6). Both public national hospitals and private hospitals are concentrated in region 4, Georgetown. In addition, several regions (2, 3, 4, 6 and 10) have Regional Hospitals. In the remaining regions in the hinterland, health facilities are more basic and limited to Health Centres and Health Huts/Health Posts.

*Table 4. Total number of health institutions in Guyana by region for the period 2007-2008*

| **Items** | Region 1 | Region 2 | Region 3 | Region 4 | Region 5 | Region 6 | Region 7 | Region 8 | Region 8 | Region 10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Health Posts | 42 | 20 | 27 | 10 | 1 | 4 | 22 | 16 | 52 | 16 | 210 |
| Health Centres | 3 | 12 | 13 | 39 | 15 | 28 | 3 | 5 | 3 | 12 | 133 |
| District Hospitals | 4 | 1 | 3 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 20 |
| Regional Hospitals | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 6 |
| Specialist Hospitals | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Private Hospitals | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| National Hospitals | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Company Hospitals | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Rehabilitation Centres | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| Geriatric Hospitals | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Total | 49 | 34 | 44 | 60 | 18 | 37 | 27 | 23 | 57 | 31 | 380 |
| | | | | | | | | | | | |
| Total nr. Hospital beds | 61 | 123 | 224 | 638 | 38 | 272 | 65 | 31 | 38 | 130 | 1620 |

Source: Guyana Bureau of Statistics, Statistical Bulletin

*Figure 6. Distribution of health service providers across Guyana (Not showing all existing facilities)*



Health has always been a concern for the hinterland. In the 1970's, in an effort to provide health care in more isolated and poorly populated areas, the MOH started to train special health workers for the regional health centres, named Medex (Dr. Chan, pers. com. 27 February 2013). At that time there was no medical school in Guyana. In order to become a Medex, nurses (and some pharmacists) were trained an additional 2-3 years in hospitals and given the authority to treat patients. When they were placed on location, they were working under the supervision of a doctor at the regional hospital. Now there is a medical school in Guyana, which is delivering more doctors, this program is phasing out. The Medex are still in function but more to assist doctors, for example with the maternal clinic, malaria screening, and vaccination program. In addition, some Medex still work in local communities (ibid.). In 2010, 77 Medexes were active across Guyana (Health Systems 20/20 and MOH 2011).

In addition to the Medexes, health centres and health posts in the hinterland rely on the services of Community Health Workers (CHW). The CHW are inhabitants from the villages who get basic three-month training specifically for the hinterland. Apart from the most basic Primary Health Care (PHC) services such as minor illness, small injuries, vaccinations, and deliveries, they do not treat patients but do referrals. They do deliveries, vaccinations, etc. They work in the community health clinics in small villages.

As there are no hospitals that deliver specialist care in the hinterland, people from the hinterland who need such care are transferred to the capital city of Georgetown, sometimes via a half-way transfer to a regional hospital. When emergency treatment is needed patients are transferred with Medivac or regular transportation, the expenses of which are covered by the government.

In the 1960s, the Amerindian hostel was established as a transit house for Amerindians from the hinterland who need to get medical treatment in Georgetown. The Ministry of Amerindian Affairs (est. 1992) and the MOH collaborate in the operation of a "Medical Referral System" for such patients. The Ministry of Amerindian Affairs covers the expenses of transportation, lodging and meals of the patient and a companion in Georgetown, up to the moment that the person leaves. Also when people come for follow-up treatment, the Ministry covers these expenses. However, if an Amerindian person from the hinterland wants to go for a regular check-up or preventive screening (e.g. cervical or breast cancer) this is not considered a medical condition. Hence in such cases, travel, lodging and other expenses in town will have to be covered by the patient.

This brief description of the health care system of Guyana reveals the enormous discrepancies in access to health services in the Georgetown and the hinterland. These discrepancies affect vulnerability to NCD morbidity and mortality. In discussions with the MOH, it was emphasized that any action for Amerindian communities has to be different from that in the coastal zone, because of the differences in geographic conditions, terrain, accessibility and other factors.

# 4. NCDs among women and men in Guyana

This report looks at four groups of medical complications that make up the most common NCDs in Guyana: Cardiovascular diseases, Diabetes, Chronic Lung Diseases, and Cancers. Data from the Guyana Ministry of Health (MOH) demonstrate that in the years 2007 to 2009, these particular NCDs and related complications have been responsible for eight out of the ten most common causes of mortality (Table 5). Cardiovascular diseases -which by our definition include cerebrovascular diseases- have been the main cause of death for the years 2007-2009. They were the primary cause of death for men in seven out of ten regions, and form women in regions 2, 3, 5, 6 and 7.

Cancers have been the overall third most common cause of death in these years, and the number one cause of mortality for women in regions 1, 4 and 9. Diabetes has consistently ranked 4$^{th}$ among the most common causes of mortality in Guyana's population, but was the primary cause of death for women in region 10. The International Diabetes Federation estimates the diabetes prevalence in Guyana 2012 at 15.13 percent (IDF 2011). The IDF Diabetes Atlas (2011, 5th ed.) reports that an estimated 64.8 thousand adults in Guyana have diagnosed diabetes, while and even larger number may have undiagnosed diabetes (est. 89,180 pers. 2012).

Chronic lung diseases, which include acute respiratory infections and pulmonary heart disease, were number nine or ten on this list for 2009. Hypertensive diseases and heart failure are directly related to cardiovascular diseases, and have ranked respectively 5$^{th}$-6$^{th}$ and 7$^{th}$-8$^{th}$ among the most common causes of mortality in the years 2007 to 2009.

*Table 5. Ranking of the ten most common causes of mortality 2007-2009**

| | 2009 | 2008 | 2007 |
|---|---|---|---|
| Cerebrovascular Diseases | 1 | 2 | 2 |
| Ischemic Heart Diseases (Cardiovascular diseases) | 2 | 1 | 1 |
| Neoplasms (Cancers) | 3 | 3 | 3 |
| Diabetes Mellitus | 4 | 4 | 4 |
| Hypertensive Diseases | 5 | 5 | 6 |
| HIV Disease (AIDS) | 6 | 6 | 5 |
| Heart Failure | 7 | 8 | 7 |
| Intentional Self-harm (Suicide) | 8 | 7 | 9 |
| Acute Respiratory Infections | 9 | 9 | 10 |
| Pulmonary Heart Disease | 10 | -- | -- |

* 2009 is the most recent year for which the Ministry of Health has data publicly available

Ministry of Health data show NCDs accounted 66.4 percent of deaths amongst males and 79.4 percent of deaths amongst females in 2009 (Ministry of Health 2012a). Differentiated by gender and ethnicity, the data from that year show that cerebrovascular diseases were the number one cause of death among Afro and Indo-Guyanese women (Table 6). Amerindian women, on the other hand, were most likely to die from cancers. For Amerindian men, cancers and diabetes headed the top three of most common causes of death. Indo-Guyanese and Afro-Guyanese men were most likely to pass away as a result of

cardiovascular and cerebrovascular diseases, respectively (Table 7). Cancers were the second most common cause of death for Afro-Guyanese women and men.

*Table 6. Ranking of the three most common causes of mortality for the three largest ethnic groups, female (2009)**

| Rank | Amerindian | Indo-Guyanese | Afro-Guyanese | Other/ Unknown |
|---|---|---|---|---|
| **1** | Cancers (12; 13.5%) | Cerebrovascular diseases (160; 17.7%) | Cerebrovascular diseases (106; 15.3%) | Cancers (43) |
| **2** | Cerebrovascular diseases (10; 11.2%) | Cardiovascular diseases (156; 17.3%) | Cancers (88; 12.7%) | Cardiovascular diseases (28) |
| **3** | Acute respiratory infections (6; 6.7%) | Diabetes (94; 10.4%) | Cardiovascular diseases (71; 10.3%) | Diabetes (24) |

* Numbers indicate the number and percentage of cases of death for that particular ethnic group and sex

*Table 7. Ranking of the three most common causes of mortality for the three largest ethnic groups, male (2009)**

| Rank | Amerindian | Indo-Guyanese | Afro-Guyanese | Other/Unknown |
|---|---|---|---|---|
| **1** | Cancers & Diabetes (8; 7.8% each) | Cardiovascular diseases (215; 16.7%) | Cerebrovascular diseases (85; 10.2%) | Cardiovascular disease (43) |
| **2** | Cancers & Diabetes (8; 7.8% each) | Cerebrovascular diseases (174; 13.5%) | Cancers (84; 10.1%) | Cerebrovascular diseases (33) |
| **3** | Acute respiratory infections (7; 6.8%) | Diabetes 94 (7.3%) | Cardiovascular diseases (79; 9.5%) | Cancers (30) |

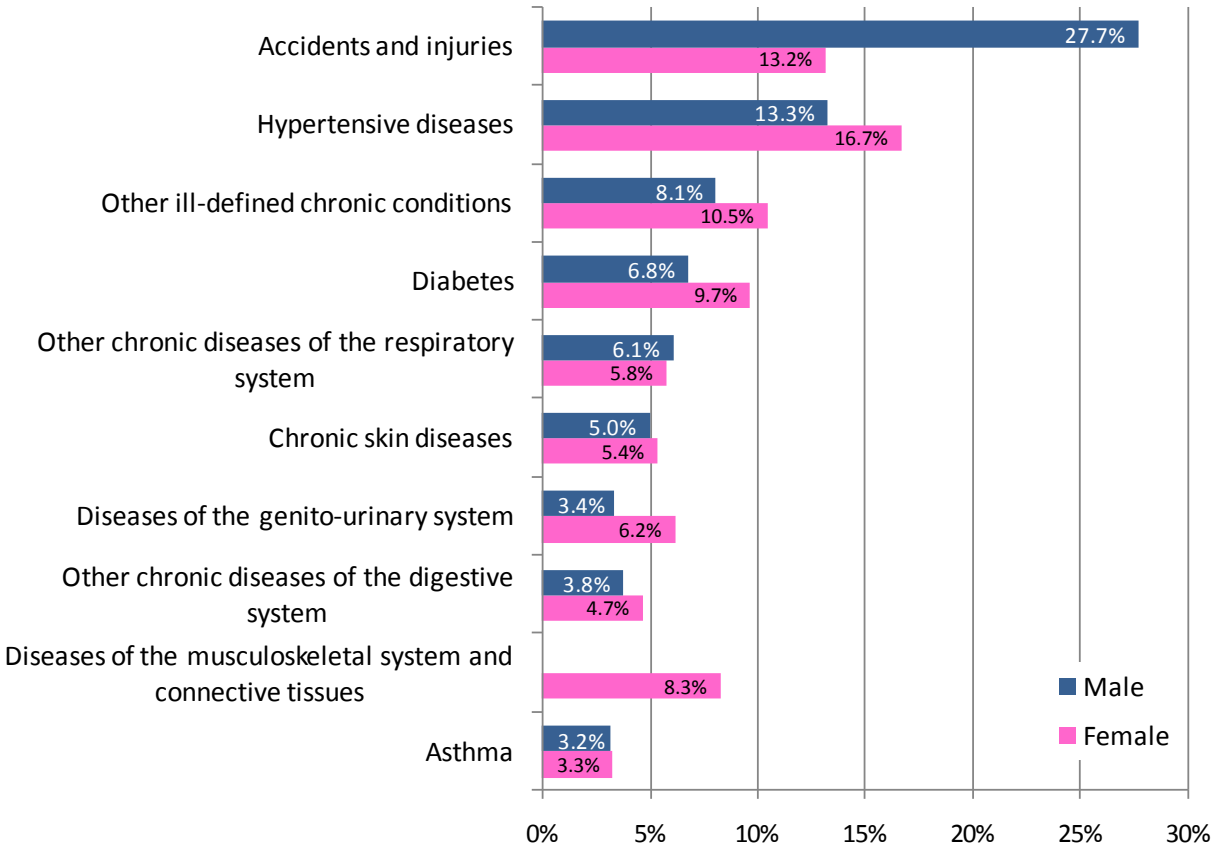
* Numbers indicate the number and percentage of cases of death for that particular ethnic group and sex

Looking at morbidity, we find that hypertensive diseases rank second (after accidents and injuries) among the most common causes of NCDs, with women being more likely than men to be hypertensive (Figure 7). Hypertensive diseases are strongly related to cardiovascular diseases and diabetes (Sowers et al. 2001). They are among the main contributors to cardiovascular diseases. Furthermore, hypertension is much more likely in persons with diabetes than in persons without this disease and vice versa, hypertensive persons are relatively more predisposed to the development of diabetes (ibid.) In addition, medical researchers have found that up to 75% of cases of cardiovascular disease in diabetes may be attributable to hypertension (ibid.).

Diabetes is the fourth most common cause of NCDs among both women and men in Guyana, with relatively more women than men developing this complication. Asthma, a chronic lung disease, accounts for just over 3 percent of the conditions causing NCDs in women and men. Other chronic

diseases of the respiratory system, including cancers of the respiratory system and COPD, are responsible for about 6 percent of the causes of NCDs in women and men. Other ill-defined chronic conditions rank high among both women and men, suggesting that more careful data recording and verification is necessary in order to assess the impact of specific medical conditions on public health (MOH 2009).

*Figure 7. The ten most common causes of chronic NCDs among males and females in Guyana*




Source: Ministry of Health Statistical Bulletin 2009

The Ministry of Health *Strategic Plan 2013-2020: Integrated Prevention and Control of Non Communicable Disease in Guyana* (2012) reports that the incidence of cancer in Guyana has increased over the period 2000-2011. For this entire period, principal cancers were breast (15.4 %), prostate (14.6%) and cervical (12.9 %) cancer. In 2009, the most common forms of diagnosed cancer were prostate (38%, male), breast (23%, female), cervical (21%, female), intestinal (9%), lung (2%) and all other forms of cancer (4%).

The MOH data display regional and age differences in the most common complications leading to NCDs. In regions 3, 4, 8 and 9, other chronic diseases of the respiratory system are the primary cause of NCDs for boys and girls under the age of five (MOH 2009). In region 9, this complication also was the main

cause of NCDs in boys and girls in the ages 5 to 14 and in women between 15 and 44 years of age. Hypertensive diseases become more prominent in the older age groups. They were the most recorded cause of NCDs among women and men over the age of 44 countrywide, and among women and men over the age of 65 in six of the ten regions. In the most populated region of Guyana (Region 4), hypertensive diseases were ranked number one among the most recorded conditions leading to NCDs, whereas other chronic diseases of the respiratory system were the most common cause of NCDs in region 9.

Cervical cancer is somewhat exceptional among NCDs in that is strongly related to sexual behaviour and sexually transmitted infections: more than 90 % of cervical cancers exhibit human papilloma virus infections (Cancer Registry, undated). Another factor that singles cervical cancer out among the NCDs is that is primarily affects relatively younger women. The Guyana Cancer Registry found that all 288 registered cases of cervical cancer in the years 2000-2004 were less than 45 years old and 88 women belonged to the age group of 15-24 years. Four out of every five women who were diagnosed with cervical cancer were less than 35 years old. The highest rates were registered in Region 1 (152.7 /$10^5$ women above 15 years) and Region 4 (137.0) (ibid.).

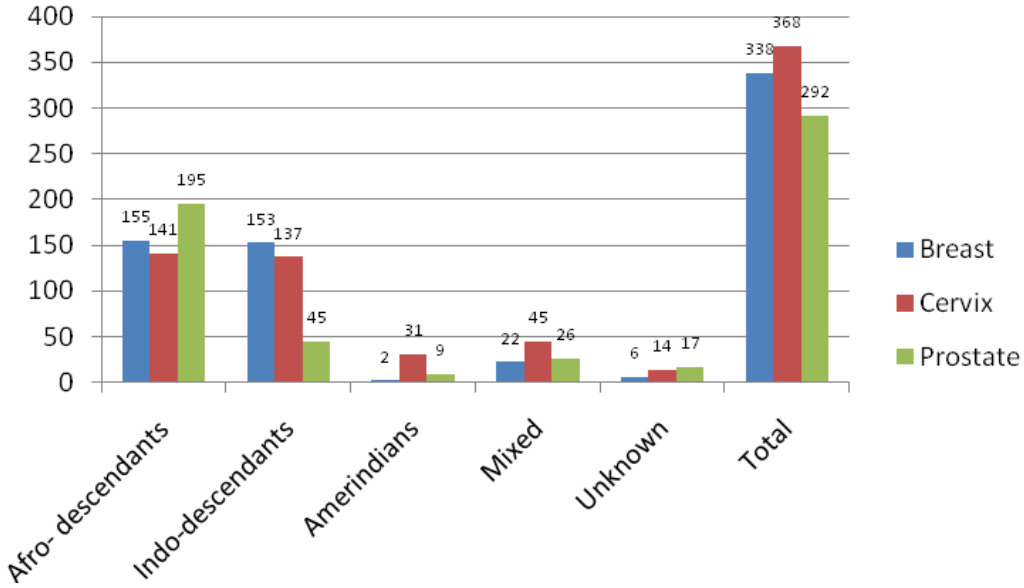
The PAHO inception report Towards a Gender-Based Analysis of Non-Communicable Diseases in Guyana presents statistical data on NCD –related morbidity and mortality among women and men (PAHO 2012a). We will not repeat these figures here, but we summarize the most striking gender differences that were reported for diabetes and cancers.

With regard to **diabetes**, it is reported that in 2006, more women than men died of diabetes types I, while the reverse was the case for diabetes type II. The chances of dying from diabetes increase with age, with the greatest mortality rates among the very elderly in both sexes. The inception report presents that 8.3 percent of first NCD-related visits to a physician were for diabetes. Generally, female patients were more likely than male patients to be diagnosed with diabetes during their first NCD-related medical consult. The researchers suggested that this difference between the sexes may represent women's greater contact with health care. A Guyanese health expert indicated that diabetes tends to be more prevalent in the Indo-Guyanese population but she could not tell why (Singh, pers. Com. 27 Feb. 2013).

In its section on **cancers**, the inception report reveals higher rates of mortality from cancers among women than men in all years from 2001-2008, except 2003. Overall, women's mortality rates rose slightly more over those eight years. In 2008, most deaths resulted from cancers of the reproductive organs, breast cancers (in women), cancers of the digestive systems and lung cancers. Breast cancer is the leading cause of cancer deaths for Guyanese women and risk of breast cancer mortality escalate with advancing age. Furthermore, while cervical cancer rates have been declining in high-income nations in the past decade, Guyanese women still have high and increasing rates of cervical and other genital organ cancers. In fact, Guyana may have one of the highest burdens of cervical cancer worldwide. Consistently more men died from lung cancer than women in 2001-2008, with mortality rates for males more than double the rates for females in some years.

Data from the Cancer Registry suggest that the risk of becoming ill with cancer is not distributed equally among ethnic groups (Figure 8; PAHO/WHO 2009). As compared to men from other ethnic groups, Afro-Guyanese men have a greater likelihood of developing prostate cancer. Among Amerindian and –to a lesser extent- mixed populations, cervical cancer is more prominent than other forms of cancer. In line with these data, the inception report mentions that cervical cancer is the number one cause of mortality among Amerindian women (PAHO 2012a).

*Figure 8. Reported cases of cancer, January 2004 – December 2007*




Source: Guyana Cancer Registry, September 2008, cited in: PAHO/WHO 2009

# 5. Unhealthy diets

| Prevalence (%) of: | Total | Male | Female |
|---|---|---|---|
| Overweight for children under 5 years (%) | 3.3% | | |
| Underweight for children under 5 years - Moderate - Mild | 5.8% | | |
| Underweight for children under 5 years – Severe | 0.3% | | |
| Fruit and vegetable intake in adolescents[b] | 31.7% | 34.3% | 29.4% |
| Overweight among adults (BMI 25-29.9) | 29.0% | 26.0% | 30.7% |
| Obesity among adults (BMI ≧ 30) | 22.4% | 14.3% | 26.9% |
| Overweight among adolescents (BMI > +1SD) | 15.3% | 14.6% | 15.9% |
| Obesity among adolescents (BMI > +2SD) | 4.1% | 4.6% | 3.6% |

Sources: Bureau of Statistics 2011; PAHO 2012b

Notes: (a) physically active for <600 MET-minutes[5]; (b) % who eat ≤5 servings of fruit and vegetables per day

An unhealthy diet is one of the main risk factors for high blood pressure, raised blood glucose, abnormal blood lipids, and overweight or obesity. These health conditions, in turn, are associated with the major NCDs such as cardiovascular disease, cancer, and diabetes. In addition to NCDs, participants in the workshops listed a number of additional health effects of an unhealthy diet such as vitamin and mineral deficiency, high cholesterol level and high blood pressure.

NCDs and nutrition are closely linked; underweight, overweight and obesity directly affect the global rise in NCDs. While undernourishment kills in early life, it can also lead to increased risk of NCDs and death later in life. Being born to a malnourished mother increases the chances of the infant suffering under-nutrition, late physical and cognitive development, and NCDs in adulthood (UICC et al.). Low birth weight also has been found to lead to increased risk for hypertension in adulthood (Ministry of Health 2012a). The proportion of the Guyanese population who are undernourished has steadily declined from averages of 18 percent in 1990-1992 to 5 percent in 2000-2002 with a slight increase to 6 percent in 2004-2006 (Ministry of Finance/UNDP 2011).

Achieving and maintaining food security have been recognised as priorities in Guyana (Ministry of Finance/UNDP 2011). At risk groups for food insecurity include small-scale independent artisans (small fishermen, small-scale miners); marginal populations in urban areas (labourers, single parents, pensioners- including elderly persons living alone on fixed incomes or without support); and the Amerindians in the hinterland regions. These socioeconomic groups typically have to survive and support a family on a very limited income. In the rural and hinterland communities, this problem is exacerbated by the generally higher prices for food. In many of these communities, the largest share of foods consumed is not produced in the communities. As a result, an estimated 50-60 percent of disposable income is expended on foodstuff such as flour, rice, sugar, milk powder, canned meat and

[5] METs are defined as multiples of the resting metabolic rate and a MET-minute is computed by multiplying the MET score of an activity by the minutes it is performed for. MET-minute scores are equivalent to kilocalories for a 60 kilogram person

fish, and beverages. The situation of low incomes coupled with high food prices has a significant impact on the ability of people in the rural and hinterland communities to access wholesome and nutritious foods (Min. of Agriculture 2011).

Recent surveys in Guyana have found that that undernourishment is especially prevalent among the Amerindian population in the hinterland. In this region, a lack of economic opportunities and a poor transportation network constrain access to adequate food and health care (Cajanas 2008).

*Figure 9. Problem Tree Analysis made during the workshop in Georgetown*

During the workshops in Mahdia participants confirmed;

> *Everything is cheaper in Georgetown and not all food is equally accessible and available across all regions. For example, one egg may cost $25 in Georgetown but $100 in Region 7.*

Workshop participants in both Georgetown and Mahdia stated that one of the underlying causes of an unhealthy diet is the fact that there is low accessibility to, and availability of, healthy food in the regions what leads to differences in price. Besides, the soil and climate are not appropriate for some community food.

> *People should find out what's growing where that people can use instead. Create appropriate foods for the soil (Workshop Georgetown).*

A 2006 Multi Indicator Cluster Survey (MICS) indicated that the education level of mothers might be a critical determinant in all areas as it was observed that children whose mothers have upper secondary or post-secondary education are the least likely to be underweight or stunted compared to children of mothers with lower levels of education (UNICEF 2006). Other related potential determinants include nutrition knowledge, food preparation and allocation practices, provision of childcare, and the time and resource constraints of care providers, which may influence household food and feeding patterns, more particularly infant and young child feeding behaviors (UNICEF, 2000).

While undernutrition is related to risks of developing NCDs at some point in life, a relatively larger direct risk for the development of NCDs is the opposite: overweight and obesity. According to consulted health and social experts in Guyana, the development of these conditions is strongly related to a general transition in the food consumption patterns. They pointed at a shift away from traditional diets based on home produce, often boiled and steamed, to more varied energy-dense diets based on purchased processed foods and beverages. As in other countries, the traditional food consumption patterns in Guyana reflected the ethnic diversity of the Guyanese populations. The diet of Guyanese consisted of rice and ground provisions, supplemented with wheaten flour. In the hinterland this died was supplemented by locally produced fruits and vegetables. Meat came from self- hunted animals, fish was caught in the nearby creeks and rivers and poultry came from backyard rearing. In the urban areas these fruits, vegetables, fish and meat were mostly distributed at markets because the possibility for growing fresh produce was always relatively limited. The traditional diet has also been largely replaced by one more like that of developed countries. Under-nutrition has declined and obesity has become common (FAO, 2004). Both in Georgetown and in many rural and hinterland communities, there has been an increase in the consumption of fast foods, processed foods, food consumed outside of the home, and imported foods. These foods tend to be more often of animal origin, and contain more added sugar and fats. People changed their traditional and cultural based food consumption patterns to one that more reflects the lifestyle and habits of high-income societies. Sometimes people believe that food from cans sold in the shop is better for one's health than vegetables or other goods that are locally produced. A participant states:

> *Over the years it was taught that the supermarket stuff valued more. The value in our minds of local food went down.*

A participant at the workshop in Mahdia confirms this by stating that;

*Older people eat fresh vegetables and younger people buy tin stuff. Older people got other diet advises and valued their local food; younger people eat more junk food.*

An interviewed physician stated that;

*People want to live an American lifestyle* (Dr. C. Harry, pers. com. 27 February 2012).

Obesity, which appears at the other end of the undernutrition scale, leads to escalation of chronic diseases which are symptomatic of obesity. Over the past two and a half decades there has been an increase in the prevalence of obesity, principally in adults, but also to some extent in adolescents. Associated with obesity is the concomitant increase in nutrition-related chronic diseases (Table X).

The 2009 Guyana Demographic and Health Survey presents data on the nutritional status of women and men age 15-49. The mean BMI for all women 15–49 years old in the sample was 25.6, just above the cut-off point of 25.0 for overweight and obesity. Forty-eight percent of all women are overweight or obese and 22.0 percent are obese (BMI ≥30.0). The proportion of women who are overweight or obese is especially high among women older than 30. In the age group 30-39, more than two third of women was overweight or obese (66.2%) and more than one third was obese (34.0%). In the age group 40-49 this was comparable; 66.3 percent was overweight or obese and 32.8 percent obese. The Interior area (55.7%) and Region 7 (56.6%) have the highest percentages of women who are overweight or obese.

Overweight and obesity is also common among men, although less common than among women (32.0 and 48.0 percent, respectively). One in eleven men (8.5 percent) was classified as obese (BMI ≥30.0). The proportion of men who are overweight or obese is highest among men age 30-39 and age 40-49 (38.5 and 45.1 percent respectively), men in Region 9 (43.5 percent), those with more than secondary education (42.9 percent) and men in the highest wealth quintile (44.3 percent)(MOH 2009). Relatively higher educated women are relatively less likely to be overweight or obese but among men the opposite is the case: the chance of being obese increases with higher education. Among both women and men, wealth is a stimulating factor to develop obese. Quotes during the workshop confirm these statements;

*Higher educated women tend to take better care of themselves.*

And, respondents claim that having enough money influences the diet as well;

*Wealthy men like to show off their wealth; go to restaurants with friends, and order lots of food and alcoholic drinks. This occurs across ethnic groups.*

This was confirmed by a public health specialist who related wealth to obesity and explained;

*Men want to show that they have money and live the good life.*

Obesity already develops at a young age; girls are more likely to be overweight compared to boys. During the workshops, various people expressed concern about the diet of kids and youngsters. They explicitly named the enormous bins of ‘sweet drink’ that children and young adults bring to school. The

2010 MoH-PAHO/WHO Global School-based Student Health Survey found that school children have poor nutritional habits and a lack of physical exercise (Bassier-Paltoo 2011). A representative of the Ministry of Health stated that there is a school canteen policy. Besides, there is a health promotion program and a curriculum on four themes (under which food & nutrition) for grades 7 through 9. Feeding programs were implemented in primary schools in some communities in regions 1, 7, 8 and 9.

*Figure 10. Local participants in Mahdia starting to work on their Problem Tree Analysis*


Scientific research in Canada suggest that Amerindians may genetically be more susceptible to overweight and obesity, and subsequently developing diabetes type II. In the past, Amerindians lived mostly hunter-gatherer lifestyles:

> *They moved with the seasons and stayed very active while searching for food. Consequently, they developed a certain genotype that allowed them to effectively store energy during feasts, which helped them survive during times when food was scarce.* (Hsu 2010)

When this lifestyle changes into a more sedentary lifestyle where people expand less energy when collecting food, they are prone to becoming overweight. In addition, there is evidence that obese

Amerindians are more likely to develop diabetes as compared to Caucasian populations with the same level of obesity. These findings suggest that Amerindian people have "genetic susceptibility for Type 2 diabetes", caused by the rapid change in their nutritional environment (Hsu 2010). There are no similar studies conducted in Guyana and we do not know if the same is truth for Guyana Amerindians.

Related to gender we found that our respondents indicate that in general, males receive larger portions of food than females. Besides, men eat more high carbonates and high protein food. Men eat less fruit and vegetables compared to women, who tend to eat more sweet and fatty foods. Women play integral roles in the nutritional status of their families, as they are often primarily responsible for selecting, preparing and distributing food and are the ones who look after the sick and care for the children and the elderly. At the Diabetic Foot Centre they usually invite, besides the patient, the female or wife who prepares the meals at home to inform them about diet and cooking because she is the one that can make a change.

Workshop participants stated that a lack of correct information for adults and inadequate education programs for children and adults are one of the underlying causes for an unhealthy diet. A workshop participant noted that;

> *Because of a lack of education and information, younger people make bad health choices.*

The Food Policy division of the Ministry of Health undertakes various programs to promote healthier diets. In the area of health promotion, they have developed awareness materials, including a TV- special broadcast on diabetes. They also produced flip charts that can be used by health workers. Since 2004, diabetes peer educators are trained in various communities. A representative of the Diabetes Foot Centre stated that;

> *Although people are informed and educated, those who are informed about a healthy diet and the importance of doing exercises do not follow the advice of the specialist (Dr. Singh, pers. com. 27 February 2012).*

How women perform their role as caretaker is determined by their socio-economic status and the traditions and norms that govern women's participation in decision-making. Respondents argue that poorer people shop more at markets and cook at home. Whereas richer people buy more prepared and preserved food and eat out. They are of the opinion that poor people eat healthier.

> *We associate the things we see on television with healthy. For a long time we have not valued the value of a local diet (Georgetown).*

> *If you have less money you are more self- sufficient (Mahdia).*

Available information indicates that households living in poverty lack the capacity to meet their basic needs, including their nutritional needs (FAO, 2003). Workshop respondents indicate that there is a perception that healthy food is more expensive, but in reality it is just easier to eat unhealthy food.
An interview respondent explained;

*Unhealthy food is not cheaper, it is only easier to get.*

Workshop participants pointed out that food consumption patterns differ between ethnic groups. They indicated that Afro-Guyanese eat more rice, ground provision (e.g. yams, cassava) and coconut. Indo-Guyanese eat more flour, peas and spices and Amerindians in the hinterland of Guyana were said to eat more cassava, beef and beans. However, there is no evidence based research executed that gives insight in the salt, sugar and fat content of these various diets.

Population specific dietary information is crucial to make a link between food consumption and risk factors for NCDs, and to inform and evaluate community-based interventions aimed at reducing NCDs and risk factors among the Guyanese population.

# 6. Physical inactivity

| Prevalence (%) of | Total | Male | Female |
|---|---|---|---|
| Low physical activity in adolescents[6] | 78.7% | 76.2% | 80.9% |

> *Physical inactivity has been globally estimated as being the principal cause for approximately 21–25 percent of breast and colon cancer burden, 27 percent of diabetes and approximately 30 percent of ischemic heart disease burden. It has been identified as the fourth leading risk factor for global mortality causing an estimated 3.2 million deaths* (WHO 2012).
>
> *People who are insufficiently physically active have a 20 percent to 30 percent increased risk of all-cause mortality compared to those who engage in at least 30 minutes of moderate intensity physical activity most days of the week. Additionally, regular physical activity lowers the risk of stroke, hypertension, and depression and it is a key factor in, and fundamental to, energy balance and weight control* (WHO 2013).

Besides NCDs, workshop participants named stress, arthritis, high cholesterol, hypertension, physical disability, shortness of breath, a low self-esteem and a lack of energy as health effects of physical inactivity. Statistical data on overweight and obesity in different socio-demographic groups were already presented in Chapter 5.

In the workshops and during interviews with stakeholders, it was commented that men are more physically active because they have more time to do so and because they are more often outside the house. The upbringing of men and women could play a role in their physical activity. Participants explained that young girls are typically more kept inside, where they play with dolls, cooking, and working on a sewing machine, whereas boys are used to play outside. Women who are the caretakers of the family, sometimes combined with a job, are said to spend more time inside the house. They have relatively little time to go to a gym or to exercise outdoors.

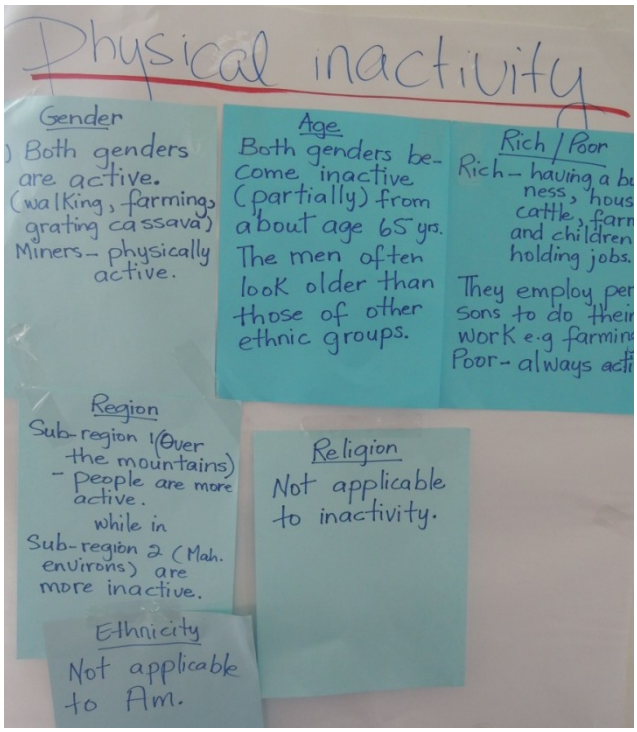
Workshop participants refuted the idea that Guyanese men (and women) perceive a Rubenesque figure as the ideal body type. Yet women who try to lose weight, they commented, are more into green teas and other ways of losing weight rather than doing exercise.

Physical inactivity is partly due to an increase in sedentary behaviour during occupational and domestic activities as well as insufficient participation in physical activity during leisure time. An increase in the use of cars for short journeys has also been associated with declining physical activity levels. A workshop participant stated that;

*Modernity has brought a sedentary lifestyle; for example TV, taxi, and fast food.*

[6] Notes: (a) physically active for <600 MET-minutes. METs are defined as multiples of the resting metabolic rate and a MET-minute is computed by multiplying the MET score of an activity by the minutes it is performed for. MET-minute scores are equivalent to kilocalories for a 60 kilogram person

*Figure 11. Workshop result of physical inactivity related to various variables.*




This is truth for all ethnic groups and genders but varies for the different areas of the country. In the interior, males and females are similarly physically active. When speaking of physical activity, these participants looked at their normal daily life, which is filled with physical activity. A participant in Mahdia conveyed:

> *In this part of the country people walk, farm, and grate cassava. Especially the miners in the different regions are physically active.*

Because of the absence of cars or even roads, people are forced to walk. The absence of (reliable) electricity and a lack of money for electrical equipment and machines make it necessary to cultivate the land by hand. The different circumstances in the hinterland lead to differences in activity. People living in sub region 1, more isolated over the mountains, are more active than people living in sub region 2 (Madhia and surroundings). Participants argued that ethnicity plays no role in physical activity.

Greater wealth was linked to a relatively larger chance of being physically inactive. It was explained that people who have money can hire others to do their work, such as cleaning the house. As a result, wealthier people are more inactive than others who have to perform the job their selves. Poor people, it was said, are always active. On the other hand, workshop participants in Georgetown said that wealthier people had more possibilities to be active because they could, for example, afford a babysitter if they would want to go to a gym.

Participants at the workshop in Madhia complained that there is no physical education in school and that there is a lack of sport facilities in the area. The Global School Health Survey reports that 21.3 percent of students in the ages 13 to 15 (23.8 % boys and 19.1% girls) were physically active for a total

of 60 minutes per day on five or more days during the past seven days was. Furthermore, only 18.9 percent of students went to physical education classes three or more days each week during this school year (20.1% boys and 17.6% girls)(PAHO/WHO 2010). A teacher indicated:

> *In sub region 1 there is a physical education teacher at school. Not every school has one, maybe because of a shortage of teachers. It is in the curriculum. Twenty teachers were trained in physic education but the project was not carried out.*

Another participant underlines this by proclaiming;

> *We should start with exercise at school!*

More than three in ten students spent three or more hours on a typical or usual day doing sitting activities (36% girls and 35% boys)(PAHO/WHO 2010). Sitting too much in front of the television and having a job that requires a lot of sitting were mentioned during the workshop as a cause for physical inactivity. Workshop participants in Mahdia stated that the availability of a gym would motivate people to be more active. There used to be an aerobics class that attracted around twenty women. Because there is no instructor at this moment, these classes have stopped.

Health workers complained that patients often do not adhere to the advice of the doctor. A Medex from region 6 explains:

> *In region 6 they keep on coming back to the health service because of the same problems... they do not follow up the advice to be more active. There are so many issues in a village that are 'more important'.*

Another participant said that;

> *It is about the way that we sell it. Learn of HIV intervention, find the leaders in the community, and give them responsibility to organize things collectively. You have to show people something that fits with their way of life and what they like.*

It was observed that older people only begin to make an effort to exercise when complications start.

# 7. Smoking

| Prevalence (%) of | Total | Male | Female |
|---|---|---|---|
| Currently smoking cigarettes (GHDS) | | 29.4% | 3.2% |
| Currently smoking (Min. of Health 2012a) | 15% | 35% | 4% |
| Adolescent tobacco smokers | 12.0% | 17.4% | 6.8% |
| Students (ages 13-15) who tried cigarettes before the age of 14 (GSHS) | 89.5% | 88.6% | 90.8% |
| Under-age smokers (ages 13-15) (GYTS) | | 13.3% | 5.6% |

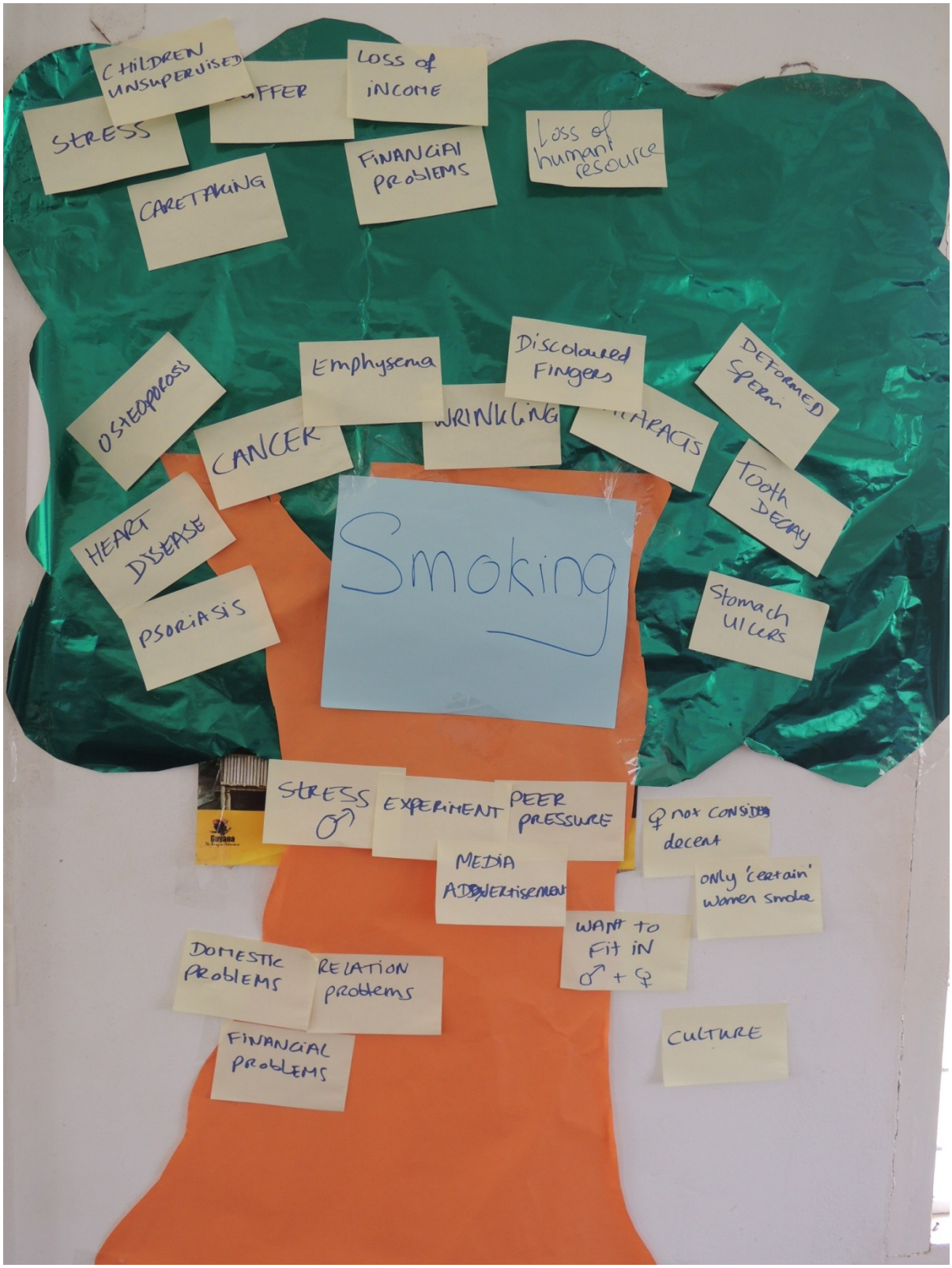
Smoking is a major risk factor for NCDs. Tobacco smoke contains poisonous chemicals such as nicotine, carbon monoxide, hydrogen cyanide, free radicals, metals (arsenic, cadmium and lead), radioactive compounds and tar. Inhalation of tobacco smoke damages the respiratory system and causes chronic lung diseases such as pneumonia, emphysema and bronchitis. Smoking also adversely affects the circulatory system, leading to raised blood pressure and heart rate, reduction of oxygen carried by the blood, blood clothing, damage to the lining of the arteries and blockages of the blood supply. As such, smoking is a risk factor in cardiovascular disease. Furthermore, tobacco smoke attacks the immune system and holds over 60 known cancer-causing chemicals.

In addition to these NCDs, participants in the workshops listed a number of additional health effects of smoking. In Mahdia, the mostly Amerindian participants had received a leaflet with 'the smoker's body', which helped them visualize the health effects of smoking. Additional health concerns they listed in their problem tree included: wrinkling, discoloured fingers, deformed sperm, tooth decay, psoriasis, osteoporosis, cataracts and stomach ulcers (figure 12).

Both consulted informants and existing statistics convey that men smoke more than women in Guyana. The Guyana Demographic and Health Survey (GDHS) 2009 found that 3.2 percent of women age 15-49 smoked cigarettes and hardly any woman (0.2%) reported the use of other tobacco products. By contrast, almost one-third of men age 15-49 used tobacco products: 29.4 percent smoked cigarettes, 0.1 percent smoked a pipe, and 3.0 percent used other tobacco products. Male smokers also smoked a considerable number of cigarettes. Thirty-eight percent of male smokers had used more than ten cigarettes in the 24 hours preceding the survey. Another 12.9 percent had used six to nine cigarettes and 20.9 percent had smoked three to five cigarettes in that time frame. For women, these figures were less meaningful because of the low number of smokers. Nevertheless, the GDHS data suggest that female smokers smoke, on average, less than male smokers (GDHS 2009).

Interviewees and workshop participants suggested various reasons for why women would be less likely than men to smoke. Particularly in the hinterland community, it was commented that 'only certain women' smoked, and that it was generally considered not decent for women (Figure 12). In Georgetown this was not an issue, probably reflecting the more open and cosmopolitan culture of urban areas.

*Figure 12. Problem tree depicting the immediate and distant causes, as well as the effects, of tobacco use. Created by workshop participants in Mahdia, Region 8, Guyana*



The relatively greater tendency for men and boys to use tobacco starts at school age. The 2010 Global Youth Tobacco Survey (GYTS) country report for Guyana, which focuses on school youth in the ages 13 to 15, found that boys were two times more likely to smoke than girls from that age cohort, with 33.5% of boys and 17.1% of girls who ever smoked cigarettes (Bassier-Paltoo 2011). Only considering those ever-smokers, the survey found that relatively more girls than boys had smoked their first cigarette before the age of 10 (43.2% versus 36%). At the moment of the survey, 13.3 percent of boys and 5.6 percent of girls were smokers. More youth used other tobacco products: 16.7 percent of boys and 12.3 percent of girls. Other tobacco products were described as cigars, water pipes, cigarillos, little cigars, pipes or bidis, but did not include marijuana products and chewing (tobacco, snuff, dip). The use of these products has increased considerably among both girls and boys in the past decade.

Among boys and girls who had never smoked before, 14.3 percent and 9.5 percent, respectively, reported that they were likely to initiate smoking in the next year (Bassier-Paltoo 2011). Peer pressure and 'wanting to fit in' named as factors leading children to try cigarettes and start smoking. Workshop participants in Georgetown considered the absence of a (national) school tobacco policy as an obstacle in effectively discouraging smoking at a young age.

Within the gender-segregated groups the GDHS records differences because of age, location, wealth, and education. Urban women are more likely to smoke than women from the rural areas (resp. 5.4% versus 2.3%), which was confirmed in the workshops. Among men, however, the reverse is the case. As compared to rural men, relatively fewer urban men smoke (resp. 32.0% versus 22.6%). Among women, neither education nor wealth seems to affect tobacco use. Among men, by contrast, the likelihood to be smoking is negatively correlated with education. Men without any education (49.1% tobacco users) and men with no more than primary education (43.7% tobacco users) are much more likely to smoke than men who have completed secondary education (28.5% tobacco users) or gone beyond (13.9% tobacco users). Wealth also differentiates male smoking behaviour. Among the poorest men (lowest income quintile), 51.0 percent were smokers, versus 16.9 percent among men from the wealthiest quintile (GDHS 2009).

In the workshops, tobacco use was related to stress reduction, particularly for men (Figure 12). Financial problems, interrelated with domestic and relationship problems, were named as the main stress factors for men. This may explain why poor men are more likely to smoke than relatively wealthier men. Both in interviews and in the workshops, awareness and general education were named as elements that may reduce the tendency to smoke. A parliament member noted:

> *Nowadays fewer women are smoking, they are more aware now. Men are aware as well but in advertisements smoking men are still portrayed as cool. Men also have a general attitude that they can do as they please.* (Chandarpal, pers. com. 26 February 2013)

Consulted experts in Guyana disagreed about the existence and efficiency of anti-smoking awareness campaigns. In the Georgetown workshop, education and a lack of knowledge were said to be debit to the high rate of particularly male smokers. Limited education programmes and health promotion were believed to be debit to smoking behaviour, as well as continued media advertisement about tobacco. A

public health physician noted, however, that there has been a plethora of campaigns but that this has not resulted in increased awareness (C. Harry, pers. com. 28 February 2012).

Second hand smoking, or breathing in other people's tobacco smoke, poses a serious health risk for both those who smoke and those who do not. Children are particularly at risk of serious health effects from second-hand smoke, including a range of respiratory illnesses. In 2010 in Guyana, 31.6 percent of all students aged 13-15 had one or both parents smoking and more than half reported to be exposed to second hand smoke in public spaces. Boys were more likely than girls to have a circle of best friends among who most or all smoked.

# 8. Harmful use of alcohol

| Prevalence (%) of | Total | Male | Female |
|---|---|---|---|
| Current adult drinkers (GENACIS 2010) | | 62.0% | 19.2% |
| Adult former drinkers (GENACIS 2010) | | 26.6% | 44.4% |
| Share of binge drinkers among current drinkers; as defined by five or more glasses of alcohol at one sitting, at least once in the past 12 months (GENACIS 2010) | | 68.9% | 46.9% |
| Students (ages 13-15) who had their first drink of alcohol before the age of 14 (GSHS) | 79% | 80.5% | 77.1% |
| Students (ages 13-15) who had at least one drink in the past 30 days (GSHS) | 39.2% | 44.1% | 34.3% |

Harmful use of alcohol increases risks of developing NCDs. A recent meta-analysis emphasizes that:

> *Alcohol is causally linked (to varying degrees) to eight different cancers, with the risk increasing with the volume consumed. Similarly, alcohol use is related detrimentally to many cardiovascular outcomes, including hypertension, haemorrhagic stroke and atrial fibrillation. For other cardiovascular outcomes the relationship is more complex.*
> *(Parry et al. 2011)*

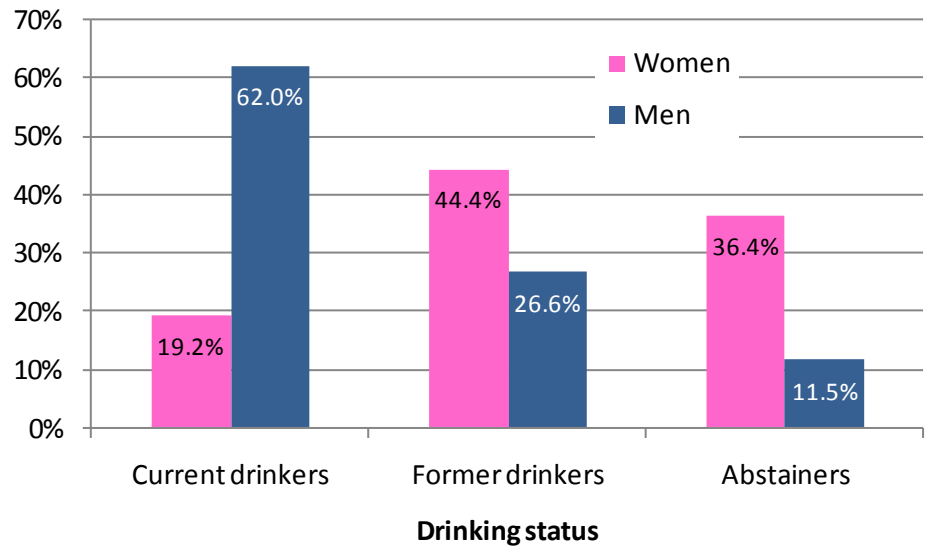
The use and effects of alcohol are differentiated by gender. Indeed, "[t]here are known differences between men and women in how much and how they drink, and the type and extent of resulting negative health and social consequences" (Saywack 2012).

The 2010 Gender, Alcohol and Culture International Study (GENACIS) provides recent data on male and female drinking behaviour. This survey was conducted in regions 4 and 6 only, and hence does not provide information about alcohol consumption in the hinterland and most coastal regions. In this 2010 study, 62 percent of men versus 19.2 percent of women are reported as current drinkers, while more women (44.4%) than men (26.6%) self-reported as former drinkers. Also more women than men had never used alcohol (resp. 36.4% and 11.5%) (Figure 13; Saywack 2012).

As compared to adults in other countries in the Americas, Guyanese adults -particularly women- are less likely to be current drinkers. Hence in regional comparison, Guyana displays a relatively wider gender gap with regard to alcohol consumption (Saywack 2012).

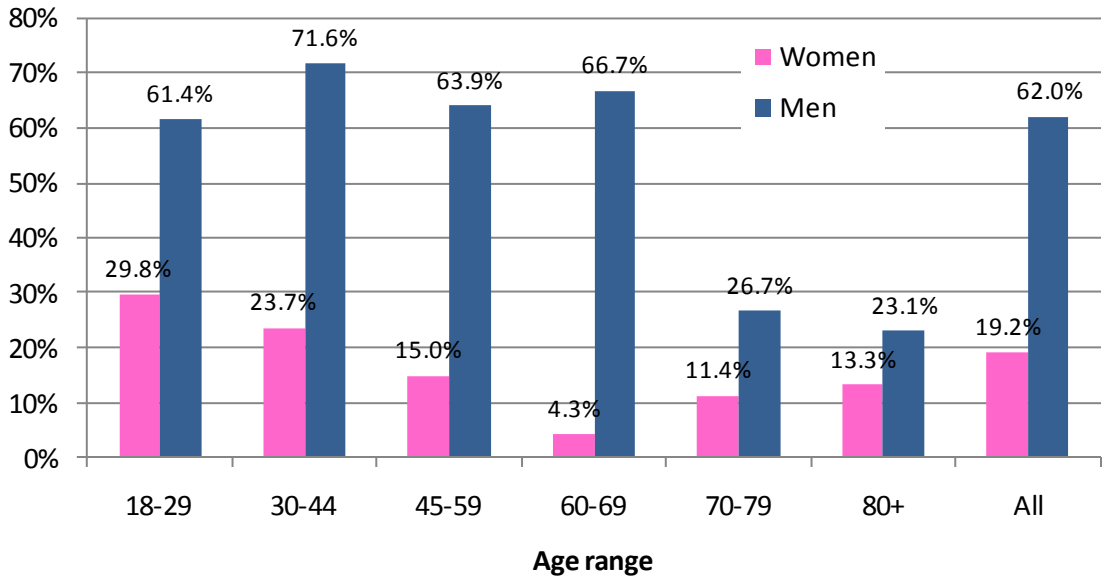
Alcohol consumption changes as people get older, but these changes are different for women and men. The 2010 GENACIS finds that men are most likely to be current drinkers when they are 30 to 44 years of age, but women are relatively more often drinkers when they are younger, in the ages 18 to 29 (Figure 14). After the age of 29 the share of women who drink regresses until they reach the age of 70. The data for the oldest age cohorts have to be viewed with precaution because of the low sample sizes for these groups.

*Figure 13. Adult women and men (>18 yr) with their drinking status, 2010*




Source: GENACIS 2010

*Figure 14. Adult female and male current drinkers, by age group*




Source: GENACIS 2010

Not only are more men than women current drinkers, men also drink larger quantities of alcohol when they drink. Men reported a higher mean daily volume of alcohol consumption and as compared to females. Male current drinkers consumed, on average, 28.8 grams of pure alcohol per day, versus 8.1 grams for female current drinkers. Among men, the mean daily volume of alcohol showed an increase with age until the 60-69 age group but for women the amount of alcohol consumed remains relatively stable in these years. Along the same lines, relatively more male than female current drinkers were classified as binge drinkers[7] (Saywack 2012). Binging becomes less likely as women and men get older. According to workshop participants in Mahdia, the gender difference in the quantity of alcohol consumed may partly be explained by the fact that it is accepted for both sexes to drink, but it is more acceptable for men to drink in excess. We do not know whether this also is the case in the urban areas.

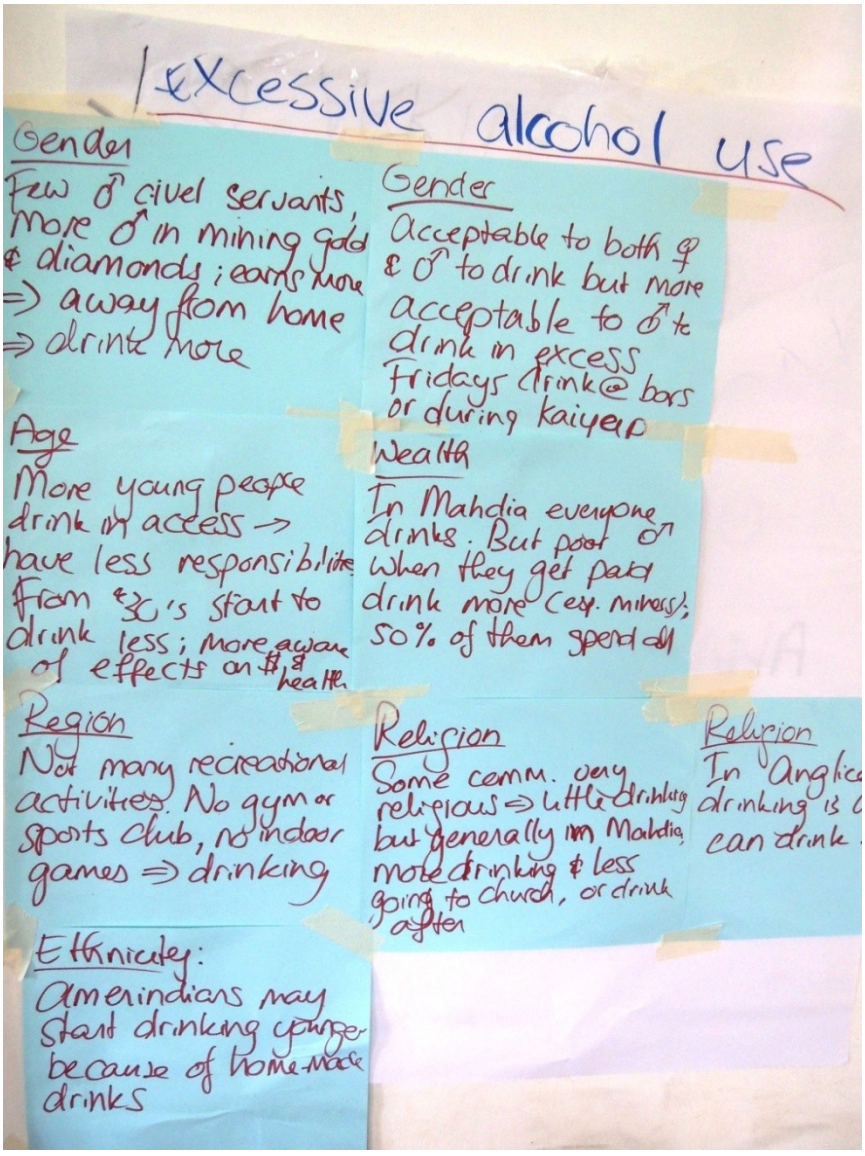
Like smoking, drinking starts at a young age. Existing data show less prominent gender differences in drinking behavior among school-aged youth than among adults. The 2010 Global School Health Survey (GSHS) reveals that 80.5 percent of boys versus 77.1 percent of girls had their first alcoholic drink (other than a few sips) before the age of 14. Workshop participants blamed peer pressure/influence of friends, limited parental guidance and advertisement for the high numbers of young drinkers (Figures 15 and 16). Slightly more boys (44.1%) than girls (34.3%) in the ages 13-15 had had at least one alcoholic drink in the 30 days preceding the GSHS, and boys also were more likely than girls to have had two or more drinks on the days they drank alcohol (resp. 39.4% vs. 26.2%).

Interviewees and workshop participants generally agreed that as compared to some decades ago, nowadays women of all ethnic groups can be seen drinking. In the past, they noted, you would not see Amerindian or Indo-Guyanese women drinking, but now everyone drinks. Men, on the other hand, have been drinking always. It was suggested that this observed difference is partly due to the fact that women in the early days were more likely to drink inside their homes. In fact, data from earlier studies suggest that drinking may have decreased among both women and men. The 1999 physical activity survey by the Caribbean Food and Nutrition Institute (CFNI) reported that 73 percent of men versus 28 percent of women were current drinkers in that year (Guyana Cancer Registry, undated). One has to be precautious in comparing these figures with those from the 2010 GENACIS, however, because the latter study was conducted in only two out of the ten regions.

Workshop participants noted that gender not only defines how much people drink but also why they drink. It was brought forward that while men are more likely to drink to forget financial or domestic problems, women tend to be social drinkers (Figure 15). These driving forces are mediated by socioeconomic status: drinking as a stress reliever and/or coping mechanism was believed to be relatively more likely in poor households. In Mahdia, for example, workshop participants noted that on pay-day, many poor men spend a significant share of their salary on drinks. In middle-class and wealthier households, by contrast, drinking tends to be a social or even status event. Georgetown workshop participants noted, for example, that particularly wealthy men like to show off their well-being by inviting friends to lavish meals with lots of alcohol in expensive restaurants.

[7] Bing drinking was defined by having had five or more alcoholic drinks at one sitting at least once in the previous 12 months

*Figure 15.Factors contributing to alcohol consumption differentiated by gender, age, ethnicity, socioeconomic status, region, and religion. Workshop Georgetown March 14, 2013*

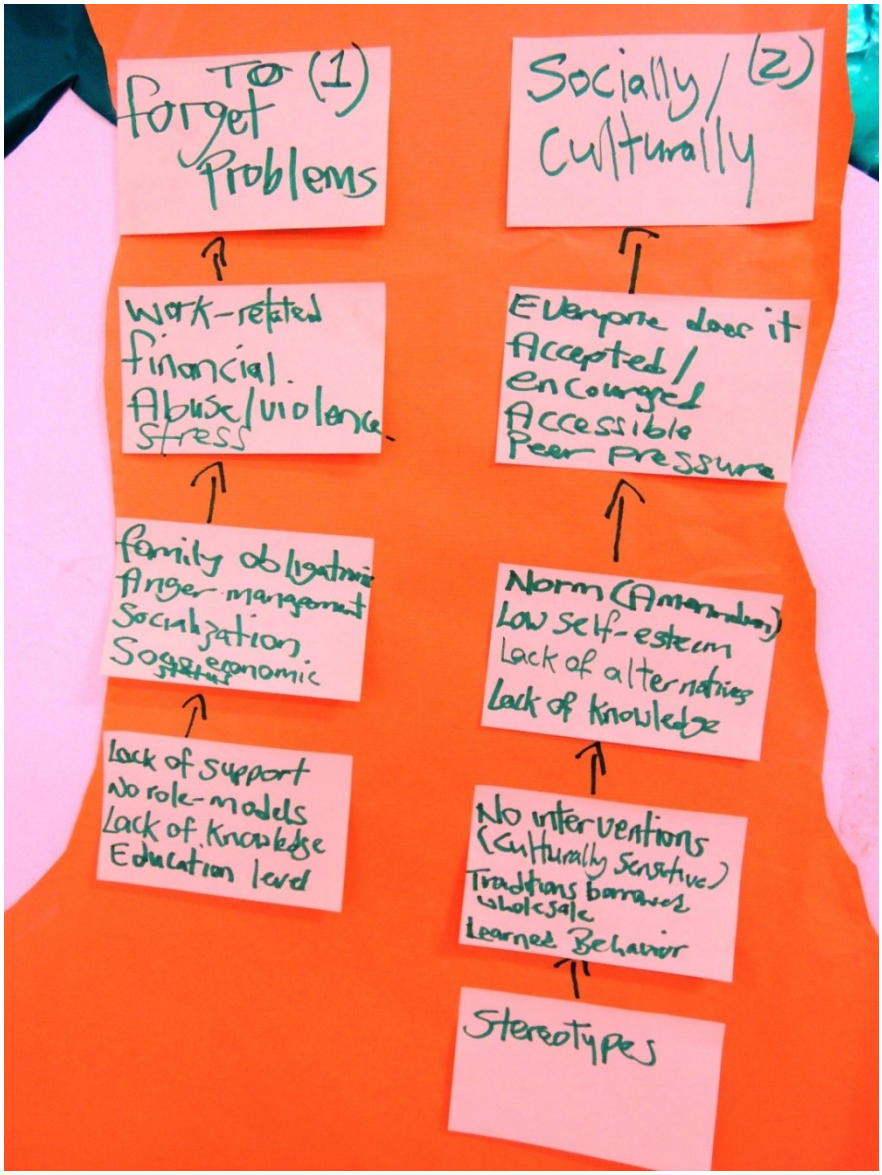



The participants of the Mahdia workshops emphasized regional differences in drinking behaviour. Amerindians in the hinterland tend to start the intake of alcohol from a relatively young age because of the home-made cassava drinks which are part of the daily diet. When they are freshly brewed, traditional drinks such as *cassiri*, *paracari*, *paiwari*, and *paiwa* contain no or very little alcohol. When these drinks are left to ferment for some days, however, the alcohol content rises. The Amerindian workshop participants asserted that *cassiri* and related drinks are not perceived as alcohol but as food. Everyone -including pregnant women, small children and elderly- drinks it "from morning to night", and children take it to school in their water bottles. To our knowledge there is no study that has measured the alcohol content of these drinks and the related daily intake of alcohol by Guyanese children and adults. Without such measurements, it is difficult to say much about the true alcohol consumption in Amerindian villages as a risk factor for developing NCDs.

Workshop participants in the hinterland also mentioned gold and diamond miners as an occupational group with a relatively high alcohol consumption. The mostly male miners often work a long way from home and have little diversion in or near their working locations. They may earn quite a bit of money to Guyanese standards, and it is not uncommon for miners to consume alcohol in excess when they get their share of the gold or diamond proceeds. Also for other people in the hinterland regions, the general lack of recreational activities such as a gym or sports club, was believed to be one of the reasons to turned to drinking.

Finally, the facts that drinking is generally accepted and a lack of consciousness about the adverse effects were believed to be motivating alcohol consumption. Culturally sensitive interventions were believed to be necessary in order to alter drinking behavior.

*Figure 16. Trunk of the problem tree of factors leading to alcohol consumption.*



# 9. Disease management as a risk factor: screening, testing and treatment

| Prevalence (%) of | Total | Male | Female |
|---|---|---|---|
| Adults with raised blood pressure and/or taking medication | | 42.6% | 38.1% |
| | | | |
| | | | |

Going for (cancer) screening and medical check-ups, and loyalty to prescribed treatment regimes, substantially affect NCD morbidity and mortality. Timely screening for cervical and breast cancer, the two most common kinds of cancers among Guyanese women, enhance the chances that malign tumours are detected in an early stage. Likewise, managing diabetes wisely by going for regular blood sugar (RBS) and sticking to a prescribed diet and exercise regime will significantly reduce the chances of developing diabetes related complications, such as skin disorders, neuropathy, glaucoma and other eye problems, and hypertension. In this section we discuss how women and men in Guyana deal with screening, testing and treatment.

## 9.1. Health services seeking behaviour

Interviewees and workshop participants generally shared the opinion that women were more prone than men to go see a doctor. According to informants, this is the case across ethnic groups. Men, they asserted, wait till the last moment to seek treatment. Sometimes they get more severe complications because they have gone for medical treatment too late.

One reason that was offered to explain the gender divergence in general health seeking behaviour was that when health centres were established, they were centred on women and maternal health. Still many men do not feel comfortable visiting a health centre. Indeed, when children are ill it is mostly the mother or other female caretaker who takes the children to the doctor. On these instances, women may also inquire about their own health. Furthermore, the grand majority of nurses and other health service providers are female, and men prefer to confide their share their health concerns with another man, rather than with a woman. Workshop participants also believed that men had less patience and wee less willing to take time off work to sit and wait to be attended by a health worker. It was emphasized that it is important to develop strategies to encourage men to visit health centres. The message needs to get across that the earlier one gets treated, the higher the chances of remaining healthy.

Another factor that differentiates health seeking behaviour is location. As was explained in section 3.4, people in isolated communities in the hinterland typically have access to health posts, but these do not provide the same level of medical care and treatment possibilities. The travel times and/or associated expenses may deter patients from seeking medical assistance and going for follow-up controls. In the

case of a critical medical condition, the government covers the expenses for transportation to Georgetown, lodging, and food for the patient and a companion. Even though this arrangement lowers the barrier to seek advanced medical care, the time involved in travelling to Georgetown may still deter people from going. Particularly for women, leaving the household and the children for several days may be difficult.

In the case a patients seeks preventive care, such as a VIA or diabetes testing, they themselves have to cover the expenses. These expenses are considerable, particularly for families in the hinterland where the level of poverty is higher and people earn less cash income. Representatives from the Cancer Registry noted that with regard to cancers, people in the hinterland come out to Georgetown and are diagnosed, but after that the cancer registry looses them. They cannot follow up and as a result treatment is suboptimal[8].

An additional factor that affects health seeking behaviour is the use of traditional or forest medicine. Even though people of all ethnic groups and in all regions may use home-made medicine, this practice is relative more common among Amerindians and in places that are relatively further removed from higher level health establishments.

A sensitive yet relevant issue when discussing health seeking behaviour concerns ethnic relations. Participants in the Georgetown workshop admitted that Guyanese people, and particularly government officials, typically do not want to bring this issue up. However, they were convinced that ethnicity plays an important role in relations between a patient and his or her health provider. People may postpone seeing a doctor or doubt the diagnosis because the doctor is from another ethnic group. Furthermore, an Indo-Guyanese person may feel inhibited to speak freely about his or her health complaints with, for example, an Afro-Guyanese nurse.

Additional issues that were brought up as factors that prevent people from seeking health services were the attitude of the health providers and limited trust in confidentiality. It was commented that some health providers have a disrespectful attitude towards patients. An example was provided of health workers refusing to attend sex workers because of their -in their eyes- inappropriate dress. The head of the social work unit of the Department of Sociology confirmed that public health must be made more user-friendly. She provided the example of young women who ask for contraceptives, and are frowned upon by the nurse. Confidentially was repetitively named as a major concern. It occurs that people from one region go to another region for medical services, particularly for sensitive issues such as HIV testing. We do not know whether this factor also plays a role in testing for and treatment of NCDs.

## 9.2. Diabetes diagnosis, treatment and management

Gender differences in health seeking behaviour have implications for the development of diabetes in women and men. A representative of the Diabetes and Hypertension Association commented that,

[8] P. Layne, cancer registry. MOH NCD workshop Georgetown, Guyana. 26 February 2013

judging from the severity of complications seen in diabetic men, it is likely that relatively more men are living with diabetes without knowing it. A recent study among non-critical patients ages 30 years and older who were admitted to the emergency department of Georgetown Public Hospital Corporation (GPHC) reveals that 8 percent had a random blood sugar (RBS) and/or A1c levels indicating the likely presence of diabetes (Korman et al. 2012). In addition, 48 percent had values indicating an increased risk for diabetes. Just over half of the tested persons were women, but the study results are not differentiated by sex (ibid.).

In the experience of a doctor at the diabetic foot centre, people in Georgetown are better in sticking to treatment regimens than people in other parts of the coastal zone or in the hinterland. People in more isolated regions often do not stick to the treatment, largely because of the limited access to health services in some locations. RBS and/or HBA1c tests cannot be performed at all health posts in the interior and the Diabetes Association does not work in the interior. As a result, in some hinterland and coastal areas it is difficult to get blood sugar tested and to get medication and hence people stop taking treatment once they feel fine.

In fact, premature quitting of treatment is not a problem of the hinterland regions only, but similar behaviour was also observed in urban areas where testing and treatment facilities are readily available. Health experts also explained that typically, diabetic patients are scheduled only once a month for a check-up and that is when they go see the doctor. However, they should come in more often for testing/measurements. Having their own diabetic test machines and test strips might motivate diabetics in all regions to more regularly check their blood sugars. This would also allow for more flexibility with regard to the times that people check their blood sugar levels; they do not depend on the clinic opening hours.

One factor that prevents people from testing their blood sugar levels is a lack of awareness. Health workers often experience that patients feel that “the nurse is giving them a hard time”. They are not sufficiently aware that the treatment regime is necessary to keep them healthy. People who understand the disease better, especially the higher educated, tend to stick more loyally to the treatment regime. In this regard we did not hear about differences between women and men.

Another reason to divert from the formal treatment regime is the use of traditional medicine or ‘bush tea’. This happens mostly in the rural areas but is also encountered in Georgetown. According to health workers, age is not a factor in willingness to stick to treatment; though older people often claim they ‘forget’. It also occurs that diabetic patients have developed foot complications, which subsequently prevents them from doing exercise. This way they get stuck in a vicious cycle, because their diabetic complications only get worse without proper exercise.

The Government of Guyana has initiated several initiatives to improve diabetes diagnosis and treatment, in an effort to prevent the more severe complications. For children with Type 1 diabetes, there are annual camps where they and their parents learn how to manage and live with their disease, use medication and so forth. The International Diabetes Federation is the external partner of the Ministry of Health in this project.

A much broader project targeting the entire diabetic population is the Guyana Diabetic Foot Project, which commenced in 2008. This is a collaborative project by the Canadian International Development Agency, the Guyana Ministry of Health and the Canadian Association of General Surgeons. The aim is to enhance the existing Primary Health Care programme for Diabetes by providing training of health care workers and establishing or complimenting Diabetic Foot Centres as part of a comprehensive Chronic Disease Programme in 6 Regions (2,3,4,5,6 and 10). The main objective is the education, treatment and prevention of complications of Diabetes, specifically of the feet and hence the prevention of amputation. The major achievement of phase one (1) of the project resulted in the reduction of 42% in diabetes related major amputations. The ultimate goal is to treat 15,000 diabetics by 2013 with the provision of diabetes supplies, such as offloading sandals for patients with diabetic ulcers. The Project concludes in June 2013.

## 9.3. Screening for cancers

Guyana uses the Visual Inspection with Acetic acid (VIA) and "screen and treat" approach as part of the cervical cancer program at the national level. Screening is recommended every five years for women between 25 to 49 years, with priority given those aged 35 to 39. One of the major benefits of the "screen and treat" approach is that it can be performed by a wide range of health workers, including gynaecologists, general practitioners, family doctors, nursing personnel, midwives and Medex. Another benefit is that VIA can be done with the naked eye (also called cervicoscopy or direct visual inspection [DVI]), or with low magnification (also called gynoscopy, aided VI, or VIAM). This is very cheap and easy to do. When something suspicious is observed, a biopsy is performed.

Guyana has included cervical cancer screening in the essential package of health services guaranteed to the public by all second- and third-level health establishments (see Chapter 3.4). The establishments currently authorized to use VIA and the "screen and treat" strategy include all the regional hospitals, several district hospitals, and some health centres (PAHO VIA inspection report 2012). In the health posts and many of the health centres, however, VIA is not possible. Hence for patients from hinterland communities the costs to go for a VIA can be quite high in terms of travel time and expenses. Medical teams have been visiting some of these communities for VIA screening but this practice is not institutionalized and hence patients cannot count on it. The relatively limited access to VIA may be a factor contributing to the relatively high incidence of cervical cancer among Amerindian women.

Another intervention that has been implemented to reduce risks of cervical cancer is the delivery of HPV vaccinations to preteen girls and boys (ideally ages 11 or 12) at selected schools in certain regions. Experiences suggest that the benefits and aims of these vaccinations must be well explained in order to be accepted. A consulted public health expert commented that in region 3, people thought that the vaccine would cause cancer and hence many refused it. Some Afro-Guyanese were afraid that it was an effort by the ruling -mostly Indo-Guyanese- party to kill them. This example once more demonstrates the complexity of ethnic relations in Guyana. It must be commented that the HPV vaccinations were a donation. Once this supply has been used it is uncertain whether and how the program will continue.

According to interviewees and workshop participants, there are no taboos that prevent women from going for breast cancer or cervical cancer screening. On the other hand, it was also noted that women do not easily go to a gynaecologist and do not easily go for VIA or screening; they often wait until they feel something. Some consulted experts said that women of all ethnic groups prefer to go to a female gynaecologist but generally the sex of the doctor was not believed to be an issue that would deter a woman from going for screening. Only for Muslim women inspection by a male health practitioner would not be acceptable.

For men, particularly when they grow older, prostate cancer one of the most common forms of cancer. In Guyana, prostate cancer is relatively more common among Afro-Guyanese males as compared to males in other ethnic groups. This phenomenon is not limited to Guyana. Research in the UK and the US has indicated that African descent men have significantly higher incident rates of prostate cancer than white men of the same age (Prostate Cancer UK 2013). The causes of this phenomenon are largely unknown. A spokesperson from the Periwinkle cancer support group commented that it is extremely difficult to get men, particularly Afro-Guyanese men, to come in for prostate cancer screening. Among the main reasons for refraining from screening is the fact that the prostate has to be checked digitally through the anus, which is considered a social taboo.

# 10. Other NCD risk factors

During one-on-one interviews and the workshops, with health and social exerts in Guyana discussed various risk factors that were not part of the 'major five' (unhealthy diet, smoking, excessive use of alcohol, physical inactivity, not going for screening/testing) but still were believed to be of particular relevance in the context of NCDs in Guyana. We discuss these risk factors below

## 10.1. Sexual behaviour

Sexual transmission of the human papilloma virus (HPV) is the leading risk factor for cervical cancer in women in low- and middle-income countries (Guyana Cancer Registry, undated). In this context, various studies suggest that early commencement of sex, the life-number of sex partners and the numbers of live births are predictors for both carcinoma in situ and invasive cervical cancer (Cooper et al. 2007; International Collaboration of Epidemiological Studies of Cervical Cancer 2009).

Both during interviews and in the workshops informants suggested that Amerindians engage in sexual activities earlier than other groups, and that this might explain the relatively higher rates of cervical cancer among Amerindian women. Representatives from the Ministry of Amerindian Affairs contested this view, and found it debatable that Amerindians are more likely than people from other ethnic group to start with sexual intercourse at an early age. They proclaimed that there are no reliable cross-cultural studies on this issue. Also in terms of awareness of STDs and availability of condoms, the Ministry staffwas of the opinion that Amerindian groups are comparable to other ethnic groups. If cervical cancer is indeed higher among Amerindian women, they argued, it is not necessarily because of early sexual activity. More likely explanations are limited awareness of screening and the poor access to services.

## 10.2. Environmental pollutants

Several environmental pollutants may increase exposure to NCDs. Among environmental pollutants, exposure to mercury is of particular concerns in the hinterland, particularly in the small-scale gold mining areas. It is widely believed that exposure to mercury leads to cardiovascular disease, though there is no conclusive evidence -largely because of the lack of scientific studies with large enough sample sizes on the subject. Mercury is believed behave like lead and copper in causing cardiomyopathy (CMP), which will eventually develop into cardiovascular disease.

Small-scale gold miners in the hinterland commented that they sprayed their huts with DDT against mosquitoes, about three times a week. Malaria is a major concern in these regions, and regular spraying with DDT was believed to be an effective way to reduce the presence of mosquitoes. Scientific studies have found strong evidence for an association between DDT exposure and liver cancer among relatively highly exposed populations (Rogan and Chen 2009; WHO 2009) and of cancer of the pancreas (Rogan and Chen 2009). Studies on a possible association between DDT exposures and certain other forms of cancer do not provide convincing evidence of associations between DDT and cancer incidence or mortality, largely due to insufficient or inadequate data (ibid.). Cross sectional studies, using different

populations have demonstrated statistical associations between Type 2 diabetes mellitus and DDT, but the association is complex and results with regard to causality are inconclusive (WHO 2009).

Exposure to asbestos is known to increase the risk of lung cancer, mesothelioma, and other cancers. There have been incidental cases of exposure to asbestos during demolition activities, but the consultant did not hear about cases of long-term exposure. In 2008, asbestos was removed from the fifteen buildings on the Turkeyen campus. Advanced health and safety measures were taken to remove and dispose of the material.

## 10.3. Smoke from wood fires

During the interviews and workshops in Guyana, it was suggested that cooking on a wood fire might expose mostly indigenous women to health risks related to the presence of toxins in the smoke. A recent study on the human health effects of exposure to smoke from open fires and dirty cook stoves in the high lands of Guatemala, found that using chimneys to vent cooking smoke outside homes led to a striking decrease in cases of severe pneumonia. Existing studies mostly look at indoor cooking though, and it is not known how the results compare to the situation among Guyana Amerindians, who often cook in open kitchens.

## 10.4. Traditional fish and meat preservation techniques

Amerindians and other hinterland populations obtain he largest share of their daily protein intake from fishing and hunting. In communities without (reliable) access to electricity, they tend to use traditional techniques to preserve fresh animal products: salting, smoking, or a combination of both.

During the workshop in Mahdia, the concern was voiced that the consumption of cured meat and fish could have adverse health effects. Because of the high sodium content, the consumption of substantial quantities of salted fish and meat contributes to hypertension and increases risks of stroke and cardiovascular disease. Excess salt also may cause complications in diabetics, particularly when they are also hypertensive.

The health implications of consuming smoked fish and meat are not well understood and there is little conclusive evidence on the subject. The smoking process contaminates food with polycyclic aromatic hydrocarbons (PAHs), many of which are known or suspected carcinogens. We did not find convincing studies proving a link between the consumption of smoked fish and meat on the one hand, and the development of gastrointestinal or other cancers on the other hand. The US National Cancer Institute comments that “population studies have not established a definitive link between … PAH exposure from cooked meats and cancer in humans,” in part because it is difficult to establish the exact amount of PAHs a person has been exposed to. Nevertheless, “Researchers found that high consumption of well-done, fried, or barbecued meats was associated with increased risks of colorectal, pancreatic, and prostate cancer” (National Cancer Institute 2013).

# 11. Carrying the burden of NCDs

Non-Communicable diseases present a social and economic burden to societies, families and communities. During the workshops participants named an extensive list of effects of NCDs. Besides health related effects, a list of socioeconomic effects were identified.

NCDs typically affect people in their productive years. A recent assessment of the economic burden of NCDs in Guyana shows that chronic diseases in Guyana, as worldwide, are burdening the economically active ages of society (Rudge 2011). NCD related absenteeism, early retirement, and mortality may bring produce significant economic and social costs to individuals, families and the society as a whole. The above mentioned report provides a detailed assessment of the costs of NCDs at a national level, and in this section we limit ourselves to the expenses at the individual and community level, with a particular focus on gender differences in experienced financial and social costs.

Primary health care is free of charge in Guyana. However, when certain types of specialist treatment are needed or when treatment requires the acquisition of certain medical aids (e.g. special shoes, specific foods), households may face increased out-of-pocket expenditures. Consulted Guyanese experts mentioned that because women, on average and as compared to men, have less money, they may be less able to afford these expenses and if they do buy them, such expenses have a relatively larger impact on their budget.

More substantial, however, may be indirect NCD-induced costs. The time spent at health centers and the time and costs of transport to these locations can severely affect a family. This is particularly the case in the hinterland, where a visit to the GPHC can take a couple of days. Especially when the head of the household becomes sick, becomes disabled or dies because of an NCD this can cause a drastic (temporary) loss of income and can be the route to (more) poverty.

Women and girls bear the brunt of taking care of sick or disabled family members. Caring may result in women investing a substantial share of their time and effort in their needy family member. When the mother becomes ill or needs to take care of a sick family member, the older children - mostly the oldest girls- typically take over her tasks. This may lead to children dropping out of school.

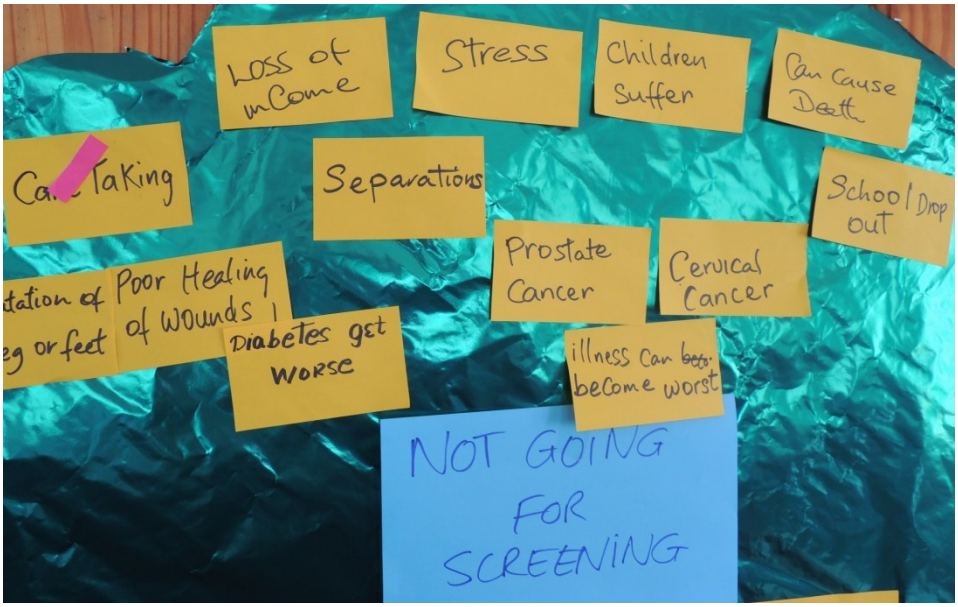
The interrelated socioeconomic impacts of NCDs, such as illness, loss of income and time expenditure can lead to stress and a loss of self - esteem. A spokesperson of the Periwinkle cancer support group commented that relatively young women (in their 30s and 40s) who have lost a breast as a result of cancer treatment often have psychological problems. Older women (60-80 years age group) tend to be less affected psychologically.

Workshop participants in both Georgetown and Mahdia concluded that on a family level, NCDs destabilize families as stress and related emotions may result in depression, discrimination and stigma, separations, broken homes and domestic violence (Figure 17). As an example, the Periwinkle spokeswoman explained that men often have a difficult time dealing with the illness of their wives,

particularly when it concerns cancer of the cervix or breasts. She provided the example of a woman whose breast was removed for cancer treatment. The wound had become infected, and the husband reacted by neglecting and rejecting the wife. She also said that it was often difficult for men to understand that a woman may not be able to enjoy sexual intercourse for about two years after radiation treatment for cervical cancer.

Some of the listed socioeconomic effects of NCDs are also drivers or root causes for the risk factors of NCDs. For example, being obese and hypertensive may lead to stress. Stress, in turn, may cause people to be less conscious of their diet. Moreover, stress biologically can lead to hypertension and may affect the body's propensity to store fat. These factors, again, increase the risk of cardiovascular disease. Through these mechanisms patients may become trapped in a dangerous cycle where the socioeconomic and health effects of NCDs continually reinforce one another.

*Figure 17. An impression of the effects of not going for screening, one of the risk factors for becoming ill with an NCD. Workshop Mahdia.*



# 12. Data quality and needs

A plethora of data concerning NCDs and risk factors -though not necessarily in relation to one another- has been collected. Reports have been published by health organisations, the ministry of health and development organisations and discuss various topics among others: demography and health; school health; gender, alcohol and culture; and youth and smoking. In addition, a lot of data is unpublished.

One major challenge, which was mentioned in the various workshops, is that data are often not shared and not publicly available. Particularly Ministry of Health data were said to be poorly accessible. It was also requested that organizations such as PAHO do not only send their reports to the Ministry of Health, but also share them with other stakeholders. It also appeared to be difficult to obtain data from specialized organizations. For example the Cancer Registry has extensive data and of a good quality but this is not easily available and is not disseminated to the public. A general problem of NGOs and FBOs is that they have a lack of staff and funds to disseminate their data. It was proposed that such organizations send proposals to PAHO and the Ministry of Health to make their data available and hence contribute to health policy.

Other issues that were raised with regard to **existing data** were;

- A lot of data is out-dated. The latest census for which data are available online was in 2002. In 2012 the most recent census was held but these data are still being analyzed.
- Numeric data provide no insight in differences between ethnic and socioeconomic groups.
- Many reports do not explicitly explain how the data were collected and what they mean. For example, it often remains unclear if statistics are based on individual patients or on doctor visits; this gives a distorted perception of the number of people suffering from a specific disease.
- The Guyana Bureau of Statistics gets its health statistics from the Ministry of Health bulletins, which are also posted on the Ministry of Health website. The Bureau of Statistics does not have any input in how data are collected.

Based on stakeholder consultations the consulted identified several limitations with regard to **data collection** in Guyana's health sector;

- Data on morbidity are registered per clinic visit rather than per person and for this reason there is no information about patients but only about specific visits. Patients do not have a unique identifier, and hence they cannot be traced in the system.
- Mortalities are registered based on where the person dies rather than where he/she lived. People who travel to another city or region to find care and die at this location are registered as a case of death of this city or region. This way of registration leads to a distorted image of the cases of death among the inhabitants from a certain region, as well as of the relation between illness and mortality in the different regions.
- Forms used at health establishments to collect data are not well designed and do not couple NCDs to their risk factors. For example, patients diagnosed with COPDs are not asked about

their smoking behaviour and other possible risk behaviours. It was suggested that more detailed forms would give more insights in the health situation.

- Forms used for interviews and surveys are sometimes extensive (Guyana Demographic and Health Survey). However, some of the variables that are of importance are not used in the analyses. For this reason it not becomes clear how health and socioeconomic factors are related.
- Persons working at health establishments are not trained to fill in in-take and other registration forms. Respondents stated that it is important that employees are trained in how to fill in forms in a right way.
- In some occasions forms are not collected. A representative of the Diabetes Foot Centre claimed that forms can be filled in, but it is unfortunate that the forms are often not collected (Dr. Singh Feb. 27 2013).

The following data needs were identified:

- Data should be based on individual patients, not on doctors' visits. A unique patient identifier should be developed.
- Registrations of mortalities should include both the actual place of death and the last living location of the patient.
- Forms used at health establishments should be designed in a way that they provide sufficient information about behavioural and other risk factors.
- When data are collected on NCDs and their risk factors, the different relevant variables should be part of the analysis in order to provide insight in relations between variables.
- Train the administrative assistance and other persons at health establishments who are filling in the forms, and make them aware of the importance of qualitative correct data collection.
- When patient forms have been filled in, make sure they are collected and use the date to gain insight in the current health situation.
- Provide insight in differences between ethnic and socioeconomic groups based on data, not on assumptions.
- Carry out a national NCD survey to collect reliable and current data on health status, knowledge, attitude and behaviour.
- Make sure data published in reports are presented clearly and that it is clear what the data actually represent.
- Ministry of Health Department of Statistics should collaborate with the Guyana Bureau of Statistics to share data and work more efficient.
- Make available data and reports public. Share them actively with stakeholders and put them on a public website.

# 13. Gender Assessment of the Strategic Plan 2013-2020

## 13.1. Data presentation and collection

The Ministry of Health Strategic Plan 2013-2020: Integrated Prevention and Control of Non Communicable Disease in Guyana, hereafter called Strategic Plan 2013-2020, presents a basic overview of NCDs in Guyana. For the various disease groups, mortality and morbidity data are differentiated by age and sex. Also in discussing the risk factors, data are provided for the entire population, as well as for males and females separately -though some of the data is outdated.

One shortcoming in the data is that the data on morbidity is primarily based on so-called “four-weekly reports”, thus possibly introducing bias. It is not clear whether these data are based on the number of physician visits or the number of patients. Hence, if the MOH data suggest that there are 37.2 percent more cases of females with asthma than cases males with asthma, it is unclear whether there are truly more female asthma patients or whether females with asthmatic complications simply visit the physician more often. This form of data presentation, and the lack of explanation of what the data mean, makes it difficult to pinpoint the true gender differences in morbidity from NCDs.

From a gender analysis perspective, the Situation Analysis of the Strategic Plan 2013-2020 looks at sex but not at gender. Data are differentiated by male and female, but not coupled to the positions, behaviour and roles of men and women in households and society at large. Furthermore, the sex-segregated data are presented with minimal consideration of mediating factors such as wealth, location and ethnicity, thus suggesting that “men” and “women” are homogeneous groups. Also in its description of the burden of NCDs, attention is paid to the economic burden for Guyana. However, no mention is made of the fact that women and girls are the primary caretakers when people in the family are ill and that this may have an enormous impact on women’s physical and mental health, income earning opportunities and other livelihood aspects.

Related to the previous point, one item missing in the presented data is NCD data pertaining to specific vulnerable groups, based on their sex, ethnicity, location or other factors. For example, it has long been known that Amerindian women have an increased risk of developing cervical cancer and that Afro-Guyanese males are more likely than males from other ethnic groups to be diagnosed with prostate cancer. Men in rural areas smoke more than men in urban areas, but for women the reverse is the case. Identification of particular vulnerable groups seems pivotal to developing effective policy strategies.

In the plan of action for prevention and control of chronic diseases and their risk factors (Annex 1), the various indicators should be segregated to sex, age, location, ethnicity and other relevant factors. For example, for the indicator “number of persons who report being exposed to NCD risk reduction messages via mass media, community based interventions or health provider” it is relevant to know

whether woman and men are equally reached by outreach activities, and whether such activities also reach people in the hinterland.

## 13.2. National strategy and action plan

The National Strategy and Action Plan focus on the country and population in general. Suggested interventions and measures remain rather generic and generally do not aim at specific groups in society that are more vulnerable because of their gender, ethnicity, age, location or other factors. In the various action plans, “clients” and patients” are considered as uniform groups with uniform health service needs and access. However, the health service needs and access of an old wealthy Indo-Guyanese man in Georgetown will differ substantially from those of a young Amerindian woman in an isolated hinterland community without electricity.

In the Priority Actions and Plan of Action (Annex 1) no mention is made of gender differences. However, the data presented in the same Strategic Plan 2013-2020 reveal that there are considerable differences between women and men in, for example, smoking, alcohol and chances of being obese, to name just a few risk factors. These factors are not incorporated in the various outlined actions, which remain very generic and do not reflect the challenges in providing services that reach different sections of Guyana’s heterogeneous population. We provide a few examples:

One of the Ministry of Health principles is that to guarantee “equity in access to quality health services regardless of origin, ethnicity, gender, geographic location or socio-economic status” (Strategic Plan 2013-2020, p.7). However, our data show that women from the hinterland are disadvantaged in their access to VIA, in order to detect cervical cancer in an early stage. Priority Acton 1 mentions “screening for cervical cancer using Visual Inspection using Acetic Acid (VIA) or Pap tests and referral as needed” (p. 46). However, the Action Plan does not acknowledge that such inspections are presently not possible at the health posts, and that going for VIA screening will incur high costs in time and money for Amerindian and other women in the hinterland.

Also, “National media campaigns” (47) using TV, Facebook and Twitter may not reach all women and men. No mention is made of particular strategies that can be used to reach isolated hinterland communities. Reaching these communities not only requires different media, but perhaps also different communication means such as the use of more visuals rather than text. It should also be considered that women and men in different occupational groups may need to be addressed at different times of the day. For example, a housewife in Georgetown may watch TV at a different hour than a gold miner in Mahdia. Information and awareness campaigns aimed at these groups should incorporate such differences. Furthermore, media campaigns aimed at particular vulnerable groups must be developed in such a way that they are appealing and convincing to these groups. For example, given that Afro-Guyanese men are more vulnerable to prostate cancer, it would be useful to use Afro-Guyanese role models in campaigns aimed at motivating men to come in for cancer screening. These types of specific actions aimed at reaching vulnerable patient groups are notably lacking in the report.

Finally, lessons learned from the Family Planning and HIV/AIDS programs are not mentioned in the report. However, these programs had successful health outcomes and should be used for guidance.

# 14. Conclusions

This report reveals substantial gender differences between women and men in terms of their risks of developing NCDs and their exposure to the various NCD risk factors. The data also show that these differences are typically not straightforward but complex, and mediated by location, ethnicity, wealth, age and other variables. We combined existing statistical and qualitative data with expert opinions and anecdotal information to tease out the links between NCDs and their risk factors on the one hand, and socioeconomic, demographic and cultural factors on the other hand. While the focus was on linkages that are specific to the context of Guyana, the findings are exemplary for the health transition that is presently noticeable throughout the Caribbean

Existing statistical data show that cardiovascular diseases, diabetes, chronic lung diseases, and cancers account for the grand share of mortality in Guyana, with women being 13 percent more likely than men to die from NCDs. The different NCDs do not affect women and men from the different ethnic groups to the same extent. In 2009, for example, Afro-Guyanese and Indo-Guyanese women and men died most often from cardiovascular diseases (incl. cerebrovascular. disease.), while Amerindian women and men were most likely to die from cancers - for women particularly cervical cancer. As compared to males from other ethnic groups, Afro-Guyanese males are more likely to develop prostate cancer.

Differences in the propensity to develop certain NCDs are partly caused by biological determinants but mostly due to differences in life styles and location of the different population subgroups. We looked at five important risk factors: an unhealthy diet, a lack of physical activity, smoking, the harmful use of alcohol and refrain from screening/testing.

Unhealthy diets can lead to both under-nutrition and overweight/obesity. We did not find studies indicating that gender plays a role in under-nutrition in Guyana, and there is no evidence of boys receiving preferential treatment when food is distributed. At risk groups for under-nutrition include single parents –which are typically women- as well as small-scale gold miners –which are typically men. Under-nutrition is most prevalent among Amerindians in the hinterland, where it affects both women and men. While under-nutrition is related to risks of developing NCDs later in life, a relatively larger direct risk for the development of NCDs is the opposite: overweight and obesity. Women are more likely than men to be overweight or obese, but these risks are mediated by age, wealth and education.

In addition to diet, physical inactivity contributes to the chances of developing overweight and obesity. Physical inactivity is related to increased sedentary behaviour during occupational and domestic activities as well as insufficient participation in physical activity during leisure time. It was suggested that men are, on average and as compared to women, more physically active because they have more time to do so and because they are more often outside the house.

Statistical data show substantial gender differences in the likelihood to be smoking and/or drinking. Men are much more likely than women to drink alcohol and/or smoke. Not only do relatively more men drink, men who drink also consume larger quantities of alcohol than women who drink. Male smokers

also smoked a considerable number of cigarettes but it was difficult to compare their smoking behaviour with that of female smokers because of the small proportion of women who smoked.

In terms of health-service seeking behaviour, anecdotal evidence suggests that women are more likely than men to go see a doctor in general, and to go for cancer screening or diabetes check-ups specifically. The more feminine health care environment was mentioned as one of the reasons that men may not feel comfortable in health establishments. The long waiting times, the sometimes rude attitudes of clinic personnel, and a lack of belief in confidentiality in the health sector are reasons for all persons, but particularly for men, to refrain from seeing a doctor. Geographic location also plays a role. For example, for women in more isolated communities in the hinterland getting a VIA is costly in both time and money. It is not taboo for women to go for cervical or breast cancer screening, though Muslim women may insist on being attended by a female health worker. Men, on the other hand, are extremely difficult to motivate to come in for prostate cancer screening because of social taboos.

The present report briefly looks at additional risk factors. Sexual behaviour is a determinant for cervical cancer screening but there is no conclusive evidence that certain groups in Guyanese society initiate sexual intercourse at a younger age or have more sexual partners than other groups. With regard to chemicals, DDT used to spray against mosquitoes in gold and diamond miners' camps was identified as a risk, as well as the use of mercury by gold and diamond miners. The risks of exposure to smoke from wood fires or the consumption of smoked fish and meat are not fully understood, and in the Guyanese context there is no evidence about a possible relation between these factors and the likelihood of developing certain cancers.

The data suggest that most of the behaviours leading to NCDs among adults are learned at school age. A generally poor diet, the popularity of fast food, and the large quantities of sweetened drinks consumed by school-aged youth have contributed growing numbers of young teenagers who are overweight or obese. Moreover, youth lack physical activity. It was suggested that upbringing shapes observed gender differences in physical activities later in life, as girls are kept inside to play with dolls while boys roam around outside. As a result of these differences, gender differences in the development of an unhealthy weight are already visible among young teenagers, with girls being more likely than boys to be overweight or obese.

Some children have their first drink of alcohol and/or their first cigarette before the age of ten, but mostly children start to experiment with these substances when they are young teenagers. Among school youth in the ages 13 to 15, boys are two times more likely than girls to smoke than girls. The data suggest that gender differences in drinking behavior are less pronounced among school-aged youth, but grow later in life. When girls and boys reach adolescence and adulthood, women are relatively more likely to stop drinking and when they drink, they drink less than men. Because (un)healthy life styles are adopted as children are young teenagers -or even before- policy interventions aimed at the promotion of healthy lifestyles should target school children, starting at elementary school age.

The data suggest that in addition to gender, and in interaction with gender, several other socioeconomic and demographic variables shape vulnerability to NCDs and their risk factors, namely: age,

wealth/poverty, ethnicity, geographic location and education. For example, the proportion of women who are overweight or obese is especially high among women age 30-49 years and increases with wealth. Relatively higher educated women are relatively less likely to be overweight or obese but among men the opposite is the case: the chance of being obese increases with increased education. It was suggested that these trends may be the result of higher educated women taking better care of themselves. Having a lower income and living in a rural area increase physical activity levels for both women and men.

With regard to smoking and drinking, urban women are more likely to smoke than women from the rural areas but for men the opposite was the case. Among women, neither education nor wealth seems to affect tobacco use. Among men, by contrast, the likelihood to be smoking is negatively correlated with education and wealth. As men grow older (until they reach their 60s) they tend to drink more alcohol but for women the amount of alcohol consumed is not clearly related to age. Binging becomes less likely as women and men get older.

Good data are indispensible to understanding the relation between gender, exposure to NCD risk factors, and the development of NCDs. Our research shows, however, that critical data to make informed policy decisions are lacking. Most severely needed at this moment is a nation-wide population survey in which demographic and socioeconomic data are coupled to information about life style (risk factors) and anthropometric measurements indicative of NCDs. A similar survey is currently undertaken in neighbouring Suriname and it would be valuable to take over (parts of) this questionnaire for comparative purposes. In addition, small changes in data recording in health establishments would allow for analyzing the relation between the mentioned factors in patient populations.

While both statistical data and inputs from consulted experts demonstrate that gender, mediated by other variables, is of crucial importance for understanding and combating the NCD epidemic in Guyana, the Strategic Plan 2013-2020 hardly mentions these factors in its Priority Actions. This is unfortunate because scarce resources will go further if they are at least partially allocated to interventions that target specific at-risk groups in society. In the recommendations we suggest interventions that may complement the Strategic Plan 2013-2020 in order to improve the access of vulnerable groups in Guyanese society to program interventions that suit their specific conditions and needs.

# 15. Recommendatons

We provide recommendations for strengthening the health sector and the inter-sectoral response, for review by the Ministry of Health, PAHO/WHO and other key stakeholders. We organized our recommendations in four sections; quick wins, collaboration, policy and communication. “Quick wins” are a list of specific activities that are viewed as something that can be done with little effort and can normally be done in a short period of time. “Collaboration” focuses on ways in which various stakeholders can build capacity within the development and implementation of policy and interventions. "Policy" refers to recommendations based on experiences and on advices on policy level, "communication" describes among others what should be kept in mind concerning the approach of target groups, the way of making people aware of risk factors and NCDs.

## 15.1. Quick wins

1. Review the way data is collected at health establishments and takes action, for example (re)design registration and intake forms, include BMI on chronic disease form, health charts, and patient intake forms. And reconsider the way certain variables (e.g. mortality) are registered.

2. Train employees at health establishments who are filling in the forms, and make them aware of the importance of qualitative correct data collection.

3. Train health care workers’ in awareness of gender and cultural biases in health care delivery.

4. Health workers and care providers should be trained in work ethics. This training should include issues of confidentiality, stigma and discrimination.

5. Train Medex and midwives to do the screening in the hinterland.

6. Train teachers in NCD awareness. For example when a student needs to go to the restroom frequently, the teacher must understand that this may be a medical condition rather than an attempt to disturb the lessons.

7. Empowering women with easy and equitable access to knowledge and resources will strengthen their capacity to prevent NCDs in their families and better safeguard their own health. Organise participatory activities among women. Cooking lessons, sports and exercise activities, interactive workshops, agricultural trainings, support and training for home health caregivers.

8. Structure mobile testing. Announce testing moments in time, work with somebody from outside the area to ensure confidentiality and take care of a good follow up in case of positive test result.

9. Establish health workers closer to mining camps. Now miners do not stick to treatment because of the cost in time and money to reach a health establishment.

10. Just like there are annual holiday camps for children with diabetes I, there also could be similar camps for children who are severely overweight or obese, where they learn about diet, exercise, and other behaviours to reduce the chances of developing diabetes II later in life.

## 15.2. Collaboration

1. Use best practice experiences from countries with similar issues, such as Suriname, French Guiana, and Brazil. The Suriname Ministry of Health is working on a national NCD survey and may have useful experiences to share.

2. Work with maternal health centres; start at the basis. Focus on pre-natal care (maternal nutrition) and on infant and child nutrition incl. breast feeding in order to detect problems in an early stage. These services are opportunities to provide NCD screening, management, treatment and education, and for detecting vulnerability to NCD risk factors.

3. Understand the importance of intersectional coordination. NCD policy and interventions will not be effective if only the Ministry of Health sector is involved. Collaborate with the Ministries of Education, Agriculture and Amerindian Affairs, among others. Although the Ministry of Amerindian affairs are not involved in outreach in the Hinterland area, they are willing to assist with logistics.

4. To prevent future NCDs integrate the awareness of risk factors by for example teaching about healthy nutrition and the avoidance of alcohol and tobacco in school curriculum. Schools should involve girls and boys equally in physical education and sports, which empowers boys and girls and reduces their risk of being overweight. Do not only focus on primary education, but on secondary education as well.

## 15.3. Policy

1. WHO has identified “best buys” (WHO 2011: 7); interventions that can be implemented at low costs. Look at what interventions are suitable to Guyana.

2. Evaluate existing or completed health interventions to learn from experiences such as positive experiences with the HIV program. This program made use of role models and their interventions were executed in the different regions. Besides, it was a layered intervention in which the Ministry of Health collaborated with NGO's and volunteers.

3. Recognize that NCD affect men and women differently. Data collection should look at the population as a heterogenic group of people through a 'gender lens'. Recommendations based on this data should address the different NCD prevention and treatment needs of men and women, of different age, socioeconomic group, location and ethnic group with the aim of early diagnosis of, and response to, NCDs.

4. Use the WHO STEPS survey, a surveillance study on risk factors for NCDs, adapted to the Guyanese context. The approach encourages the collection of small amounts of useful information on a regular and continuing basis adopting a standard methodology to detect trends over time by age and sex (http://www.who.int/chp/steps/manual/en/).

## 15.4 Communication

1. Focus on specific groups, name priority groups based on reliable data and approach these groups in a suitable way and suitable location. For example, people from the interior who need to get medical treatment in Georgetown often stay in the Amerindian hostel. Visual posters concerning risk factors or even a short documentary film (15 min.) specifically developed for the Amerindians, addressing the NCDs and Amerindian specific risk factors, could help raise knowledge and awareness.

2. Focus not only on women but on men as well when designing awareness material. Use ethnically diverse male role models in visuals.

3. Design a handbook for staff at the health post and health centres on NCDs and their risk factors to detect NCDs in an early stage and to properly advice patients about care and treatment.

4. Work with opinion leaders, faith leaders and popular people. These people have a considerable potential to affect behavior. In doing so, it must be kept in mind that Guyana is a political divided country and people look at political figureheads and colors.

5. Look at language barriers and cultural settings. Facilitators need to adapt to the situation in other areas. For example working with Amerindians one should collaborate with the Amerindian counsels and visual materials should be used.

6. Share available data and reports actively with stakeholders and put them on a public website.

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# ANNEX 1. Consulted Persons

| Name | Affiliation |
|---|---|
| Various experts | NCD Team & Regional Health Services |
| Dr. D. Beverley Barnett | Representative, PAHO/WHO |
| Ms. Karen Roberts | PAHO/WHO |
| Ms. Winifred Goodridge | Ministry of Health, Dept. of Statistics |
| Dr. Karen Gordon Boyle | Ministry of Health |
| Dr. Karen. Yaw | Ministry of Health Planning Unit |
| Mrs. Indra Chandarpal | Member of Parliament, Commissioner on Women & Gender Equity |
| Mr. Renato Gonzalez | Amerindian Affairs |
| Ms. Sharon. Hicks | Amerindian Affairs |
| Dr. Nigel Dharamlall | Amerindian Affairs |
| Ms. Kalima Ali | Amerindian Affairs |
| Dr. Irv Chan | Ministry of Health, Director Regional Health Services |
| Ms. J. Tull | Bureau of Statistics |
| Ms. Dionne Frank | University of Guyana Dept of Social Sciences |
| Ms. Margaret. Kertzious | Help and Shelter Organization |
| Ms. Claudette Harry | Guyana Kidney Foundation |
| Dr. S. Singh | Diabetic Foot Centre, Georgetown Public Hospital Corporation |
| Ms. Penelope Layne | Cancer Registry |
| Ms. Roxanne Myers | Private Consultant |
| Ms. Grace Bond | Guyana Nurses Association and Midwives Association |
| Ms. Joan Stewart | Guyana Nurses Association and Midwives Association |
| Mr. Emmanuel Cummings | University of Guyana Dept of Health Sciences |