Cardiovascular Disease: Epidemiology and risk factors

Chairpersons: D Ramdath, A Hennis

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Evaluating policy responses to upstream determinants of chronic, non-communicable diseases: Supporting healthy diets and active living in seven Caribbean countries

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Objective: To identify and assess in seven Caribbean countries, existing policies towards the prevention and control of chronic, non-communicable diseases (NCDs), gaps in policy responses, and the factors influencing successful policy development and implementation regarding unhealthy diets and physical inactivity.
Design and Methods: Seventy-six semi-structured interviews were conducted with relevant stakeholders in Government, civil society and the private sector. All interviews were recorded and transcribed verbatim, and framework analysis was used. An analysis team undertook coding using the software Dedoose, after which two lead researchers synthesized the analyses.
Results: Most widely reported across the countries were policies and health promotion initiatives to support healthy eating in communities and schools, including the development of dietary guidelines. The promotion of physical activity also included: policies for schools, and in addition initiating and supporting public participation sports events. However, the impact of these initiatives was reported to be limited by adverse upstream determinants. These include, a reliance on food imports, which constrains more impactful fiscal and legislative action to support availability, quality and affordability of healthy foods. Similarly, there was little evidence of policy responses to create physical and social environments conducive to active living, such as those that support greater walking.
Conclusions: The least well developed policy responses concern the macro, upstream determinants of unhealthy diets and physical inactivity. More political support, particularly across Government ministries, including; finance, trade, agriculture, transport and urban planning is essential to accelerate action for conducive environments for healthy eating and active living.

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Non-communicable diseases in Guyana: Assessing progress in the implementation of The World Health Organization global priorities and identifying emerging strategies for prevention and control

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Objective: To assess progress in the implementation of The World Health Organization (WHO) global priorities for non-communicable diseases in Guyana and to identify emerging strategies for prevention and control.
Design and Method: This study was retrospective and qualitative using document reviews and existing information (literature review) on global priorities and frameworks, national non-communicable diseases and collaborating sector data and reports; and prospective, using focus group discussions and interviews with senior staff of select ministries (Health, Agriculture and Education). Participation in the study was voluntary.
Results: The prevalence of non-communicable diseases in Guyana has remained at a high-rate over the past decade. Despite improvements in national capacity, leadership and governance, there are still major deficiencies in the implementation of strategies to monitor and reduce these diseases, risk factors, improve research, surveillance, knowledge, policy and service delivery based on the WHO Global priorities. Finally, the study highlights the need for greater collaboration between various sectors including; health in addressing non-communicable diseases, and advocates for improved national capacity, and a robust primary healthcare system that focusses on health promotion and the social determinants of health.
Conclusion: Guyana has made fair progress in addressing non-communicable diseases which remain a national priority but there is need for sustained national commitment, stronger leadership and improved inter-sectoral mechanisms to reduce the diseases' burden if the WHO

global priorities are to be successfully implemented in Guyana.

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Stigma and Illness Uncertainty: Adding to the burden of Sickle Cell Disease

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Objective: To understand the stigma and illness uncertainty experiences of adult patients with sickle cell disease and to examine their association with sociodemographic factors such as: gender, educational status and economic status.
Design and Methods: In this cross-sectional study, we interviewed 101 adults with SCD (54.5% female; mean age 31.6 ± 10.4 years; 72.2% homozygous SCD) using the Stigma in sickle cell disease scale (Adult), Mishel Uncertainty in Illness Scale (Adult) and a sociodemographic questionnaire. Gender-specific estimates of means and proportions along with estimates of variability were determined and then compared for all sociodemographic and outcome variables. Age and gender controlled multiple linear regression analyses were conducted thereafter.
Results: The mean stigma score was 33.6 ± 21.6 (range: 2−91) with no significant gender difference (*p*-value = 0.58). Illness uncertainty was greater in females, though not statistically significant, (*p*-value: 0.07). Stigma and uncertainty had a significant positive correlation (r: 0.31; *p*-value: 0.01). In an age and gender controlled model, stigma scores were lower with higher numbers of household items (coef: -2.26; *p*-value: 0.001) and higher in those living in greater crowding (coef: 7.89; *p*-value: 0.002). Similarly, illness uncertainty was higher in females (coef: 6.94; *p*-value: 0.02), and lower with tertiary as compared to primary education (coef: -16.68; *p*-value: 0.03).
Conclusion: The study highlights socio-economic factors to be significant to the stigma and uncertainty experiences in SCD. Efforts to reduce uncertainty surrounding patients' illness may have further effects on reducing their stigma.

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Secular trends and disparities in cardiovascular disease mortality in Afro-Caribbean's and the United States of America Population (1996–2013)

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Objective: To described the secular trends and disparities in cardiovascular disease (CVD) mortality in Jamaica compared to the United States of America (USA).
Design and Methods: We compared mortality from ischaemic heart disease (IHD), stroke and hypertension between Jamaica (1996–2009), and the US African-American and White populations (1999–2013). Deaths were coded using the International Classification of Disease -10th revision and standardized mortality rates calculated using the US 2000 standard population. Trend comparisons were limited to 1999–2009 and analysis was performed for each ethnic group and annual per cent change (APC) and overall per cent change by population compared.
Results: Mortality from stroke and hypertension in Jamaicans was higher than that for African-Americans and US Whites, but Jamaicans had lower mortality from IHD. There was an overall decline in the age standardized mortality rate for strokes for the three populations, with the highest decline in African-American women (APC -4.32 (95% CI; -4.44, -4.19) per cent per year) and African American men (APC -4.18 (95% CI; -4.29, -4.07) per cent per year). Compared to Jamaican, temporal trends (1999−2009) in IHD and stroke had a much larger annualized decline in African-American men (APC Diff: IHD 3.7% per year; stroke; 2.8% per year) and women (APC Diff: IHD 4.2% per year; stroke; 2.2% per year). A similar annual decline was observed for the US White population when compared to Jamaicans.
Conclusions: Despite reduction in CVD mortality in the populations examined, disparities in CVD mortality persist, with the larger annual declines in stroke and IHD mortality in US African-Americans and US Whites compared to Jamaicans.

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Prevalence and phenotype of diabetes and pre-diabetes using fasting glucose *versus* HbA_{1c} in Barbados: Implications for policy on diagnosis and prevention

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Both fasting plasma glucose (FPG) and HbA_{1c} are recommended for the diagnosis of diabetes and pre-diabetes by the American Diabetes Association (ADA), and for diabetes by the World Health Organization. The objective was to compare the prevalence and characteristics of adults identified as having diabetes and pre-diabetes by FPG and HbA_{1c}.

A representative population-based sample of 1234 Barbadian adults (> 25 years) was recruited. Fasting plasma glucose and HbA_{1c} was measured on all. Those with previously diagnosed diabetes (n = 192) were excluded from the analyses. Diabetes was defined as: FPG > 7.0 mmoL/L or HbA_{1c} > 6.5%; pre-diabetes as: FPG > 5.6 – < 7 mmoL/L or HbA_{1c} > 5.7 – < 6.5%. Multiple linear regression was used to identify predict.

The prevalence of undiagnosed diabetes by HbA_{1c} was 4.9% (95% CI 3.5 – 6.8–7.3) compared to FPG 3.5% (2.4–5.1). Overall, 79 individuals had diabetes, but of these only 21 had diabetes on both HbA_{1c} and FPG. Pre-diabetes prevalence was higher by HbA_{1c} *vs* FPG: 41.7% (37.9–45.6) *vs* 15.0% (12.8–17.5). Overall, 558 individuals had pre-diabetes, but of these only 107 on both HbA_{1c} and FPG.

The agreement between FPG and HbA_{1c} defined hyperglycaemia is poor, and HbA_{1c} gives a much higher prevalence of pre-diabetes. The routine use of HbA_{1c} for screening and diagnosis would have major implications for clinical and public health policies and resources.

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Evaluation of the efficacy of ST2 and NT-proBNP in the diagnosis and prediction of short-term prognosis in heart failure with reduced ejection fraction

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Objectives: To determine the relationship between the cardiac biomarkers ST2 and NT-proBNP with ejection fraction (EF) in heart failure (HF) patients, ii) assess whether a superiority existed between the aforementioned cardiac markers in diagnosing the HF with reduced EF, iii) determine the efficacy of both biomarkers in predicting a 30-day cardiovascular event and re-hospitalization in patients with HF with reduced EF iv) to assess the influence of age, gender, body mass index, anaemia and renal failure on the ST2 and NT-proBNP levels.
Design and Methods: A prospective double-blind study was conducted to obtain data from a sample of 64 cardiology patients. A blood sample was collected to test for ST2 and NT-proBNP. An echocardiogram (to obtain EF value), electrocardiogram and questionnaire were also obtained.
Results: Of the 64 patients enrolled, 59.4% of the population had an EF less than 40%. At the end of the 30-day period, seven patients were awarded, 37 were not warded, one died and 17 were non-respondent. Both biomarkers were efficacious at diagnosing HF with a reduced EF. However, neither of them was efficacious in predicting 30-day re-hospitalization. The mean NT-*proBNP values being*: not re-hospitalized (2114.7486) and 30-day re-hospitalization (1008.42860) and the mean ST2 values being: not re-hospitalized (336.1975), and 30-day re-hospitalization (281.9657).
Conclusion: Neither ST2 or NT-proBNP was efficacious in predicting the short-term prognosis in HF with reduced EF. Both however, were successful at confirming the diagnosis of HF in HF patients with reduced EF.

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Does peak expiratory flow rate measured sitting differ from that measured standing?

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Objective: In adults aged 18 to 60 years is the peak expiratory flow rate (PEFR) measured sitting different from that measured standing?
Design and Methods: A crossover (within-subjects) design was used. Adults 18 to 60 years of age attending four polyclinics in Barbados were recruited. Quota sampling by age, gender and clinic was done. An interviewer administered questionnaire collected demographic data. Peak expiratory flow rate sitting and standing was measured with a EU scale Mini-Wright meter. The highest of three readings done in each position was used and differences in means tested for significance by the paired sample *t*-test.

Results: There were 199 participants with the following characteristics: 44% male, 96.5% African descent, mean age 37 years, 22% with a diagnosis of asthma, 23% current tobacco users and 22% current marijuana users.

Mean PEFR standing was 438 *vs* 430 L/min sitting, mean difference 8.7 (95% CI 3.6, 13.8, $p = 0.01$). For men mean PEFR standing was 519 *vs* 506 L/min sitting, mean difference 12.4 (95% CI 3.3, 21.5, $p = 0.008$). For women it was 375 standing *vs* 369 L/min sitting, mean difference 5.8 (95% CI 0.11, 11.5).

Conclusions: The peak expiratory flow rate was significantly higher for both men and women in the standing compared to the sitting position. While several guidelines recommend that PEFR be measured standing, the basis of the recommendation is not clear and published research is limited and inconclusive.