

Poster Presentations

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Parenting styles: A critical predictor of youth offending

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Objective: To assess the relationship between parenting styles and youth offending.

Design and Methods: A cross-sectional design was used to collect data from youth in two secondary schools in east Trinidad, and from two penal institutions that housed male and female adolescents, respectively. Independent variables were parenting styles, age, gender, area of residence, the amount of children in the home and educational level of the parents. The dependent variable was offending status. Multiple logistic regression was conducted to determine predictors of offending.

Results: Of 182 participants, 120 (65.9%) were non-offenders and 62 (34.1%) were offenders.

Among non-offenders, there were more females (52.5%), whereas in the offenders group, there were more males (87.1%). Overall, offenders were older (16.7 ± 1.0 vs 15.2 ± 1.4 years) and for every year increase in age, the risk of offending increased by 126%. Every additional child in the household increased the risk of offending by 33%. Participants from the north/west part of the island were 4.47 times more likely to engage in offending. Participants from the south/central part of the island were 7.66 times more likely to be offenders. Non-offenders had more parents attaining tertiary level education.

Conclusion: The data gathered established an association between parenting styles and youth offending. There was also an association between age of the adolescent, gender, area of residence, number of children in the home and the educational level of the parents with offending.

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Gender-based violence: Do not ask, do not tell, do not care

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Objective: Our goal was to highlight the ongoing disparity, promote discussion, and advocate for further funding to examine the factors associated with sexual violence to target prevention rather than intervention.

Design and Methods: We compared prevalence and economic burden of sexual violence to other major public health issues in the United States of America (USA): cardiovascular disease, cancer and diabetes. We also compared the public funding allocated to an issue as a proxy of the social priority of addressing the issue. Finally, we calculated the ratio of public funding to economic disease burden.

Results: The lifelong prevalence of sexual violence (rape and attempted rape), cardiovascular disease, cancers and diabetes was 63.2%, 39.2%, 38.0% and 39.6%, respectively in females and 25.1%, 51.7%, 43.9% and 40.2%, respectively in males. The annual economic burden (billion \$) for these four conditions were 544.7, 503.2, 216.6 and 245.0, respectively, while their public research and programme funding (million \$) was 822, 1969, 5604 and 1013, respectively. Critically, the per cent of annual public spending to annual economic burden was 0.15, 0.39, 2.59 and 0.41%, respectively for the four conditions.

Conclusion: Public funds allocated to sexual violence were a fraction of those allocated to other major public health issues such as cardiovascular disease, cancer and diabetes despite similar prevalence and economic burden among them. While sexual violence was similarly prevalent and costly to these other major public health issues, it received a fraction of public funds.

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Physical injury as the face of violence against women in Grenada

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Objective: To determine the types and pattern of physical violence and relationship to prevailing gender culture characteristics in Grenadian society.

Design and Methods: Source data came from two classification table of types on the physical injury scale to measure the magnitude of behavioural and sexual abuse in intimate partner violence, and summary tables of domestic violence cases recorded by Grenada Criminal Record Office between 2006 and 2014. A contingency table was used to cross-tabulate variables across the physical injury scale and police record summary data on domestic violence. Bivariate quantitative data on the variables were calculated. A social demographic analytical scale was used to correlate the cultural characteristics of the perpetrators.

Results: Physical assault represented 54% of all categories of violent abuse against women overall in 2010. Women also accounted for 42% of all homicide victims in 2012 and 75% of all other types of physical assault from the two months of record of the same year. The pattern continued with women accounting for 55% of victims of physical assault in 2013 and 41% up to September 2014. Common assault was the most frequent. Weapon of choice, in top order of rank, was the hand, cutlass and wood.

Conclusions: Physical assault including wounding was the most common form of gender-based violence, accounting for more than 50% of all cases. The predominantly male perpetrators were more than 50% unemployed, low or semi-skilled young adults.

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Experiences of mental health professionals counselling young survivors of sexual abuse in the Cayman Islands

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Objective: To explore the experiences of mental health professionals counselling young survivors of sexual abuse in the Cayman Islands; how they navigated challenges in their experiences and sustained themselves through their work with young survivors of sexual abuse.

Design and Methods: The present study incorporated a qualitative approach using a phenomenological design to elicit a description of the experiences of mental health

professionals who counselled young survivors of sexual abuse in the Cayman Islands. Five mental health professionals were recruited using purposive sampling methods. Semi-structured interviews were facilitated to answer the research questions centred on describing their experiences in counselling young survivors of sexual abuse in the Cayman Islands. Data analysis resulted in four core themes that described their lived experiences as notably punctuated with both significant systemic challenges and significant posttraumatic growth.

Results: The findings indicated that mental health professionals compensated for the systemic influences such as patriarchal belief systems and oppressive and complicit attitudes objectifying children by diversifying and expanding their interventions.

Conclusion: The present study supported recent literature from the Caribbean region that described the embedded oppressive belief systems and traditional patriarchal attitudes that have perpetuated abusive treatment of children. Furthermore, the study provided a greater understanding of mental health professionals' experiences in the Cayman Islands that also supported expanding the scope of the mental health professions to include social justice and advocacy efforts.

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Trends in suicide mortality in Guyana from 2003 until 2013

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Objective: To describe trends in suicide mortality in Guyana between 2003 and 2013 by year, region and gender.

Design and Methods: A retrospective study of suicide in Guyana over a 10-year period from 2003–2013 was conducted by analysing data on cases of suicide published in health surveillance reports and statistical bulletins. The suicide rates per 100 000 were calculated by analysing the number of suicides in the 10-year period.

Results: There was a gradual but constant increase in the rate of suicide between 2003 and 2013 with a slight reduction in 2011. This was true for male suicide rates in all regions. A mean annual suicide rate of 28.5 per 100 000 was estimated with an average of 200 lives being lost yearly. Suicide was ranked the second leading cause of death. East Indians accounted for approximately 80% of total suicide deaths. The highest rate of suicide deaths was concentrated in Regions 6, 4, 3 and 2.

Conclusions: By 2013, Guyana had one of the highest suicide rates in the world. Suicide can be regarded as a major public health problem that requires urgent

intervention by the national authorities to ameliorate this situation affecting predominantly East Indians. Findings from this study can be used to guide interventions for suicide prevention and control.

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Managing and debunking suicides in Guyana

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Objective: To review the suicide data in Guyana for mitigation.

Design and Methods: Data were collected and analysed to establish gravity and trend of suicides in Guyana.

Results: In 2012, there were 277 suicides and 6925 attempted suicides in Guyana. There was a disproportionate increase in the age-specific suicide rates with age and gender. The most commonly used method for committing suicides was poisoning (pesticides and insecticides), accounting for more than 65% of cases, followed by hanging (> 20%). East Indians accounted for 83.3% of all the suicides, followed by Afro-Guyanese who accounted for 6.5% then by Amerindians who accounted for 5.4% (Guyana Ministry of Health Reports, 2014). Hindus accounted for 33.7% of all attempted suicides, while Pentecostals accounted for 34.3%, Muslims 7.3% and Adventists 7.0%. Catholics accounted for 3.8% while Jehovah's Witnesses accounted for 2.0%. It was hard to explain why "Orthodox Christians", namely Anglicans, Presbyterians and Methodists accounted for 0.9%, 1.2% and 0.9%, respectively while the rates were higher with Pentecostals.

Conclusions: Given that 65% of suicide mortality was due to poisoning (pesticides) and that high rates of suicide mortality were concentrated in certain regions, limiting access to these lethal products through a comprehensive community programme is a crucial intervention. Various (n = 12) known community myths about suicides in Guyana were discussed in full as tools for suicide prevention and management.

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Interpersonal trust, homicide and life expectancy: Global patterns between 2000 and 2012

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Objective: This study investigated whether 1) correlations

exist among homicide rates, life expectancy and interpersonal trust among 38 countries between 2000 and 2012; and 2) whether correlations exist between life expectancy and homicide rates in 14 Caribbean countries between 2000 and 2012.

Design and Methods: An ecological study using an aggregated data analysis design was constructed using publicly available data. Interpersonal trust data were gathered from wave six (2010–2014) of the world values survey. Life expectancy data (2000–2012) were gathered from the World Bank; homicide rates were provided by the global homicide report published by the United Nations Office on Drugs and Crime (UNODC) in 2013. Data were analysed in SPSS version 16.

Results: Spearman correlation testing indicated that interpersonal trust and homicide rates were significantly correlated ($p < 0.05$). Homicide rates and life expectancy were also significantly correlated between the years of 2005 and 2012 ($p < 0.05$). Trust and life expectancy were not significantly correlated. Spearman correlation analysis of homicide and life expectancy in selected Caribbean countries revealed no significant correlation.

Conclusions: The significant correlation between trust and homicide rates suggests that there may be a cultural connection between interpersonal trust and violence at a global level. The consistent correlation between homicide rates and life expectancy between the years of 2005 and 2012 also implies that population level longevity is detrimentally affected by this connection between interpersonal trust and country level homicide rates. Interpersonal trust presents a potential avenue of public health intervention that may affect rates of crime and increase years of population life expectancy over time.

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A ten-year retrospective analysis of motor vehicle accidents in Grenada

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Objective: To assess the burden of motor vehicular accidents in Grenada during the period 2000–2009.

Design and Methods: This was a cross-sectional study of secondary data in the form of vehicular accident records that were sourced from the Royal Grenada Police for the period 2000–2009. Detailed records of the number of motor vehicle accidents per month and per year were sourced including the type of vehicle, the number of passengers, time and location of the accident. The gender

and age of the drivers were not considered to be important. The adverse health outcomes of the accidents were also determined as either minor or major depending on fatalities and extent of injuries sustained.

Results: There has been an increase in the total number of fatalities occurring from motor vehicle accidents during the period of study, from 4.1 in 2000 to 11.9 in 2009 per 100 000. The average increase in the number of total road accidents also rose by 8.9% in the stated period. In addition, the number of major and minor road accidents had steadily increased together with an increase in the number of vehicles registered. The burden of injuries varied across different periods of time over the course of review.

Conclusion: From 2000–2009, there was a steady increase in the total number of motor vehicle accidents and fatal road accidents in Grenada.

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A pilot study of a trauma registry at the Georgetown Public Hospital, Georgetown, Guyana

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Objective: To complete a pilot study to initiate a trauma registry in Guyana.

Design and Methods: A trauma registry form was developed and customized locally, based on the Kampala trauma score. A convenience sample of trauma patients was collected over a 49-day period. The inclusion criteria were International Classification of Diseases (ICD)-9 codes 800 to 957. The form recorded triage vital signs, injury severity score (ISS), details of the event, alcohol and drug use. The forms were completed by the treating physician at the time of the encounter and the data were entered in a spreadsheet.

Results: Data from 34 patients were analysed. The most common causes of injuries were due to falls (26.5%) and road traffic accidents (14.8%), with 38% of injuries occurring on roadways. Bony pelvis and extremities (62%) were the most common sites of serious injuries, followed by the head/neck/face (15%). Only three persons admitted to alcohol use. No intimate partner violence cases were detected. There were four stab wounds and no gunshot wounds recorded.

Conclusion: A trauma registry can capture data that can lead to improved trauma care. However, there were numerous limitations, most notably the low number of forms completed compared to the study population. To implement a working trauma registry, we will need to capture all cases. Suggestions to increase the number of patients include converting the form into a mobile

telephone application or training data entry clerks. Successful implementation would require support from all stakeholders.

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Landscaping employment services for the mentally ill

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Objective: This project was intended to compare the quality of life of rehabilitees engaged in the landscaping employment services programme with an unemployed group of rehabilitees.

Design and Methods: A total of 26 rehabilitees with a diagnosis of schizophrenia, schizoaffective disorder and bipolar disorder were invited to participate in the study. An experimental group of 13 rehabilitees was assigned to the landscaping employment services for rehabilitees, and a control group of 13 rehabilitees were also evaluated. The landscaping programme consisted of seven days of activity. The effects were measured using a 'quality of life inventory' applied to rehabilitees. Patients' knowledge and performance of the specific materials taught in the landscaping employment services for rehabilitees programme was ascertained through assessments conducted before and after training.

Results: Results indicated that participants of the landscaping employment services for rehabilitees programme significantly improved their knowledge, performance of the skills and their quality of life.

Conclusions: Not only can patients learn relatively complex material, but they can also meaningfully improve the continuity of their employment capability by participating in a brief and highly structured employment training programme.

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Burden of caregivers of adult patients with schizophrenia attending public health clinics in Jamaica

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Objective: To determine the extent and sociodemographic determinants of burden of care of caregivers of adult schizophrenic patients.

Design and Methods: In this cross-sectional study, 115 dyads of schizophrenic patients-caregivers attending public mental health clinics, March 24–April 4, 2014, were consecutively recruited. Burden of care was evaluated using the 22-item Zarit Burden Scale (maximum score, 88). Multiple linear regression model explored factors associated with caregiver burden.

Results: Caregivers were predominantly females (75.7%) and were on average 50.8 ± 15.0 years old. Most schizophrenic patients were males (65.2%) and were on average 43.6 ± 17.2 years old. Caregivers showed, on average, mild to moderate burden (score, 30.0 ± 14.7 ; median, 28.0). There was a tendency for caregivers of patients who were parents or spouses to have higher levels of burden. In multivariable analyses, higher burden of caregiving was associated with inability to perform self-care, closer kinship and higher numbers of psychotic episodes in the previous year.

Conclusions: Functional and social factors were important determinants of caregiver burden. Further investigations are needed which consider factors such as health status and health expenditures as predictor variables of caregiver burden.

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Visual acuity screening of patients who are institutionalized and suffering from mental disorders

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Objective: Visual problems in persons who are institutionalized suffering from mental disorders are overwhelmingly under-recognized. The aim of this study was therefore to screen for visual acuity among 285 patients at the St Ann's Psychiatric Hospital (SAH) and 27 at the Arima Rehabilitation Centre (ARC).

Design and Methods: The projected number of patients to be screened was 427 persons. However, only 312 inpatients were included to participate in the study. The 312 inpatients admitted to the hospital and rehabilitation centre with mental disorders were evaluated using either the Snellen or Lea charts by trained technicians from the Lions Club of Trinidad and Tobago. The evaluations were conducted during the months of August to December 2011 on 25 wards and at the ARC. A stereo optical vision tester was used for the evaluation of patients using a Snellen chart and/or a Lea chart. Analysis was done using SPSS version 20.0.

Results: One hundred and twenty-five patients were found to have visual acuity problems and recommended for further evaluation by an ophthalmologist. This represents

40.1% of the sample tested.

Conclusions: Our findings coincided with the existing literature that visual impairment appears to be an area of physical health which is under-recognized, under-diagnosed and under-treated in people with severe mental health problems, even though certain psychiatric medications are known to cause visual problems as a side effect.

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A phenomenological inquiry into approaches to informal caregiving of persons living with dementia

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Objective: To explore approaches used by informal caregivers in Barbados in caring for persons with dementia (PLWD).

Design and Methods: This study used a qualitative phenomenological approach. Recruitment was carried out via purposive sampling of adult primary informal caregivers of PLWD in Barbados. Data collection was carried out through in-depth, one-on-one, semi-structured interviews. Eight transcripts were analysed according to Giorgi's four-step analytic framework within ATLAS.ti data analysis software.

Results: The data were analysed and organized according to the following themes:

Guiding principles of care, including maintaining patience and optimizing the physical, social and mental health of the PLWD, with a wide range of sources of personal guidance.

Facilitators to care, including intrinsic and extrinsic facilitators such as the assignment of meaning to the caregiving role, resignation from the caregiving role, having ample rest, support from the community and support from children.

Barriers to care, including family issues, lack of time and money, dissatisfaction with formal care services, misunderstanding of the complexities of dementia symptomology and recommendations for support.

Conclusions: Each caregiver used unique strategies to manage his/her caregiving role by tapping into available resources while also strategically accommodating for difficulties encountered. There needs to be additional research in this extremely vital area. Services should be created/adapted to improve support for informal caregivers and their unique needs.

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Prevalence of elevated levels of alanine aminotransferase and gamma-glutamyl transferase in patients with Type 2 diabetes mellitus at the Georgetown Public Hospital Cooperation Diabetic Clinic

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Objective: To determine the prevalence of alanine aminotransferase (ALT) and gamma-glutamyl transferase (GGT) abnormalities and contributing factors in adult patients with Type 2 diabetes mellitus (T2DM) who attend Georgetown Public Hospital Cooperation (GPHC) Diabetic Clinic.

Design and Methods: A prospective study was carried out on sixty randomly selected diabetic patients from the GPHC Diabetic Clinic. Patients were included in the study based on the selected tests (ALT and GGT) on their request form from the physician and their informed consent. Patients were further coded and data collected from the GPHC medical laboratory. Analysis was done using SPSS (version 20).

Results: Of the study population, 72% were females. The 51–60-year age range had the highest frequency. Indo-Guyanese accounted for 58% of the total sample population. Forty-two per cent of patients were on metformin while 57% were on drugs other than metformin, statin, fibrate and thiazolidinediones. Seventy-eight per cent of patients showed elevated ALT, with the highest frequencies in the 40–50-year and 51–60-year age range; for GGT, 83% of patients showed an elevated level, with the highest frequency in the 61–70-year age range. Metformin, ethnicity and those with a duration of 5–10 years T2DM had a positive correlation to elevated ALT and GGT.

Conclusion: The research showed a prevalence of elevated levels of ALT and GGT in Type 2 diabetic patients and strong association to metformin and ethnicity, in particular those of Indian decent. Therefore, further research within a controlled environment should be done in order to evaluate the efficacy of the action of metformin as compared to other diabetic drugs in concert with other contributing factors.

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Investigating the impact of the local healthcare system in controlling blood glucose levels and preventing complications in patients with Type 2 diabetes

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Objectives: To determine if the local healthcare system controls blood glucose levels and prevents complications in Trinidadian Type 2 diabetic subjects. This study also focussed on assessing the structures that are established to monitor blood glucose levels of Type 2 diabetics in the public health facilities.

Design and Methods: This study was a cross-sectional retrospective study of 388 adult Type 2 diabetic participants. Participants were taken from all four regional health authorities (RHAs) in Trinidad.

Results: The mean and standard deviation of fasting blood glucose of participants, over the three-year monitoring period, was 197 ± 61.67 and a standard error of ± 3.13 . The blood glucose levels of the participants did not change significantly ($p = 0.848$). Results showed that the higher the fasting blood sugar values, the more complications a patient presented. Fasting blood sugar values were the standard for monitoring blood glucose levels, however, glycated haemoglobin (HbA_{1c}) and other measures mandated under protocol were absent.

Conclusions: Across all RHAs in Trinidad, fasting blood sugar values were found to be out of control and remained high. It was noted that the higher a patient's fasting blood sugar values, the more complications they presented.

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Prevalence and profile of herbal medicine use in persons with diabetes and hypertension: Data from the Barbados Risk Factor Survey 2007

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Background: This paper seeks to determine the prevalence of herbal medicine use in persons with diabetes and hypertension; and to identify the demographic and socio-economic profile of persons using such therapies.

Design and Methods: Secondary data analysis was done using the Barbados Behaviour Risk Factor Survey 2007. The prevalence of herbal medicine use was determined. Crude and adjusted odds ratios were generated for the relationship between these outcomes and age, gender, employment status, marital status, educational level and ethnicity.

Results: Herbal use was found to be 7.4% (2.9% to 11.9%) among diabetics, 4.5% (2.3% to 6.7%) among hypertensive persons and 5.5% (3.2% to 7.8%) among all persons who were either diabetic and/or hypertensive. A statistically significant association was seen between herbal use and age only (age 60 years and over compared to age < 60 years; adjusted OR 4.0; 95% CI 1.3, 12.3)

Conclusions: Though older persons were more likely to use herbal medicines, this study suggests a rather low prevalence of such practices. A more comprehensive assessment of socio-economic status and of herbal medicine use is warranted.

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Adherence to chronic disease management among diabetic and hypertensive patients in Trinidad

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Objectives: Adherence to treatment strategies is critical for disease control and long-term clinical outcomes in patients with chronic diseases, such as diabetes and hypertension. Noncompliance is strongly correlated with lack of disease control and progression to life-threatening outcomes, including end-organ damage such as kidney failure. This study sought to determine the extent of adherence to disease management strategies, including drug compliance and lifestyle modification, among diabetic and hypertensive patients in Trinidad.

Design and Methods: A cross-sectional survey was conducted using an interviewer-administered pilot-tested *de novo* questionnaire during the period June to August 2013 at 22 randomly selected primary health centres throughout Trinidad. Data were analysed using χ^2 and binary logistic regression.

Results: Four hundred and thirty-nine patients were recruited; 179 were hypertensive only, 89 were diabetic only, and 171 had both conditions. Mean age and body mass index (BMI) were 61.2 ± 10.7 years and 29.2 ± 5.99 kg/m², respectively. One hundred and six (30.1%) out of 350 hypertensive patients were controlled, whilst 108

(41.5%) out of 260 diabetic patients were controlled. Age ($p = 0.015$) and BMI ($p = 0.028$) were the only significant predictors for blood pressure control. Factors such as forgetfulness, adverse drug reactions and symptoms negatively impacted adherence to drug therapy.

Conclusions: Most hypertensive and diabetic patients attending primary healthcare facilities in Trinidad were not well controlled, which has serious implications for their long-term clinical outcomes. An approach is urgently needed to ensure higher rates of disease control to prevent progression to irreversible end-organ damage.

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Level of adherence among diabetics in The Bahamas admitted to the Princess Margaret Hospital

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Objective: To determine the level of adherence, using a validated tool, among diabetics at the Princess Margaret Hospital.

Design and Methods: A cross-sectional observational study design was used. There were 150 participants who were admitted to the Princess Margaret Hospital with diabetes mellitus from May to July 2014. Patients were of either gender, 18 years or older and taking at least one hypoglycaemic medication. Random sampling was used to endeavour that the sample represented the population. The identified patients gave informed consent and then were given self-administered questionnaires on knowledge, compliance and depression. They were assessed through the Modified Morisky Scale and self-care habits form.

Results: The mean total number of drugs taken daily was $4.77 (\pm 2.7)$. The mean duration on current medications was $8.08 (\pm 8.12)$ years. The mean number of changes to medications was $0.87 (\pm 1.82)$. The mean number of days in a week participants spaced carbohydrates was 4.09 ± 2.365 days. Participants did 30 minutes of physical activity at a mean of 2.21 ± 2.6 days a week.

The mean previous Morisky score was $1.80 (\pm 1.35)$. The mean of current Modified Morisky Score was $1.88 (\pm 1.32)$. The mean current motivation score was $1.44 (\pm 1.05)$. The mean of current knowledge score was $2 (\pm 0.94)$. The mean score on the Patient Health Questionnaire (PHQ9) depression screening questionnaire was $3.91 (\pm 4.21)$.

Conclusions: The Modified Morisky Score showed a medium level of adherence amongst diabetics in The Bahamas.

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Each one teach one: Training students for diabetes and nutrition peer education in schools

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Objective: To provide a diabetes (DM) in-school support system; to enable peer education in a general setting without discrimination.

Design and Methods: Two hundred student leaders aged 10–14 years were chosen from 18 schools. We used the Novo Nordisk “Changing Diabetes in Children” presentations to teach about DM and nutrition. One hundred and sixty-two questionnaires were given to assess the students’ knowledge of Type 1 DM.

Results: Twenty-two (13.5%) students said that in Type 1 DM the body makes insulin but more insulin is needed, while 67 (41.4%) said the body does not make insulin and the treatment is pills and plenty water only. Thirty-three (20.4%) said diabetes affects only old people; 126 (77.8%) said all children can get DM. One hundred and fifty-seven (96.9%) said eating a variety of vegetables, legumes and some fruits are important in diabetes management. Eleven (6.8%) and nine (5.6%), respectively said if their friend had diabetes they should not play or talk with them anymore and 142 (87.7%) said they should show love and support. One hundred and forty-seven (90.7%) said if they learnt about diabetes, everyone should learn too, 15 (9.3%) said they should keep it to themselves, share with family or “their secret keepers” only. Ninety-six (59.3%) said children with diabetes can take part in all activities and 23 (14.2%) said if they have DM, they cannot go to school.

Conclusion: Diabetes and nutrition education is necessary for understanding the illness and to facilitate students with DM. Good teaching aids are needed and the “Changing Diabetes in Children” tools were beneficial.

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Prevalence of anxiety in an outpatient clinic sample of Type 2 diabetics in Trinidad

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Objective: To examine the prevalence of anxiety in an outpatient clinic sample of Type 2 diabetics in Trinidad.

Additionally, this study aims to examine gender differences in anxiety, whether anxiety levels differed among age groups and whether anxiety was related to hyperglycaemia and having a coexisting medical complication such as hypertension and heart disease.

Design and Methods: One hundred and twenty-eight Type 2 diabetics attending outpatient clinics on designated clinic days for their routine appointment were surveyed. Their demographics, levels of anxiety, blood glucose levels and coexisting medical complications were measured. Pearson’s correlations and *t*-tests were used to analyse the data.

Results: Of the sample population, 19.5% had mild to moderate levels of anxiety. The analyses indicated that diabetics with coexisting medical conditions had higher anxiety levels ($p = 0.038$); and women were more likely to have higher levels of anxiety than men ($p = 0.002$).

Conclusion: Anxiety may potentially exacerbate the complications associated with diabetes. Attention should be given to the psychological symptoms associated with Type 2 diabetes and the implementation of screening for anxiety at health clinics in an effort to effectively treat Type 2 diabetes in Trinidad.

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An evaluation of the burden of diabetes in Grenada

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Objective: To assess the burden of diabetes in Grenada in terms of changes in quality of life and trends in incidence, amputation and gender.

Design and Methods: A mixed methods approach was used in which statistical retrospective analysis determined trends of diabetic-related amputations based on secondary data for the period 2008–2012. A qualitative approach was also used to assess perceptions of quality of life of diabetic-related amputees using interviews.

Results: There were no statistically significant differences or trends (relationships) found between number of amputations and incidences of diabetes with respect to time. The quality of life of diabetics decreased after receiving an amputation surgery as a result of multifactorial issues such as feelings of loneliness and financial instability.

Conclusion: The decreasing trend of diabetes in Grenada was found to be statistically insignificant while quality of life of amputees was shown to be lowered. Decreasing the incidence of amputations should involve focus on the role of peripheral neuropathy. Policy development to increase

benefits to disabled citizens is recommended to improve quality of life of Grenadians.

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The association between indices of obesity and common clinical measures in adults with and without Type 2 diabetes

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Objective: To determine if there are any differences in anthropometric measurements, lipid profile, blood pressure and body shape between diabetics and non-diabetics.

Design and Methods: This cross-sectional study comprised 309 subjects with 91 males and 218 females; there were 217 diabetics and 92 non-diabetics. The sample was taken from three hospitals in Trinidad. Lipid profile and blood pressure were taken from each facility's physicians' notes while anthropometric measurements were taken from the patients themselves.

Results: The diabetic group had elevated body mass index (BMI) and waist-to-hip ratios were significantly higher ($p < 0.05$) when compared to non-diabetics. There was no significant difference in lipid profile and blood pressure between diabetics and non-diabetics. As age increased, the prevalence of Type 2 diabetes mellitus (DM) was higher. Of the 217 diabetics, 173 were of East Indian descent. With regards to gender, more males were found to be diabetics resulting from having an android body shape as compared to females (gynoid body shape). It was deduced that waist-to-hip ratio was the best indicator of Type 2 DM based on the area under the curve analysis.

Conclusion: Of all the anthropometric measurements used, waist-to-hip ratio was found to be the most effective indicator of Type 2 DM in Trinidadians, while BMI was found to be the least.

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The chronic disease passport: An assessment of its effectiveness in improving hypertension control in Jamaicans

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Objective: To assess whether the chronic disease passport (CDP) was effective in improving blood pressure control in patients in Montego Bay, Jamaica.

Design and Methods: A retrospective cohort study was conducted on a convenient sample of 264 patients aged 18–74 years with hypertension (HTN) who attended the Type 5 Health Centre in Montego Bay between May and July 2014. Blood pressure control was assessed at baseline and one year post exposure, using data from medical records. Knowledge, attitude and behaviour toward HTN and the CDP were gathered through an interviewer-administered questionnaire. In-depth semi-structured interviews were conducted with six persons who had received the CDP.

Results: Seventy-seven per cent of respondents ($n = 204$) were exposed to the CDP. At baseline, HTN control was significantly better in the exposed group (20.7%) *versus* the non-exposed group (5.0%) [$p < 0.01$]. At the one year follow-up endpoint, there was no significant association between exposure to the CDP and HTN control with the relative risk of having a controlled systolic blood pressure (SBP) being significantly lower in the exposed group (RR = 0.44, 95% CI: 0.24, 0.81). Control of HTN among the exposed group also worsened by 17.3% ($p < 0.001$), but remained unchanged for the non-exposed group. Participants cited medication supply as an issue of concern.

Conclusion: Exposure to the CDP was not associated with better control of HTN. More research is needed to explore other impacting factors, including issues surrounding medication supply.

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Non-communicable disease risk factor survey 2014 among staff at one workplace in Barbados

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Objective: To investigate the prevalence of non-communicable disease (NCD) risk factors at a specified workplace in Barbados.

Design and Methods: An interviewer-administered questionnaire comprising core and some “expanded” questions from the validated Pan American Health Organization/World Health Organization (PAHO/WHO) STEPS NCD Risk Factor Survey was conducted over a three-week period in June 2014 at a specified workplace. Standardized measurements were taken for height, weight, blood pressure and hip and waist circumference.

Results: There was a 57.8% (70/121) response rate; 37.1% male and 62.9% female, with a mean age of 31.7 years (SD 8.0), age range 19–54 years. It was found that 95.7% of respondent staff had at least one of the identified risk factors; 76.9% of males and 54.5% of females were either overweight or obese. Most of the staff (91.4%) ate less than five servings of fruit and/or vegetables on average per day (88.5% males, 93.2% females). Comparison of the study population with the Barbados population showed close correlations for most of the risk factors with some exceptions like binge drinking. Almost half of respondents (44.7%; 60.9% males, 29.2% females) engaged in binge drinking when compared to 25.3% and 5.4% in Barbadian males and females, respectively in 2013.

Conclusions: The study confirms a similar high prevalence of NCD risk factors among staff as observed among the Barbadian population. The study reveals opportunities to increase workplace health promotion and evidence-based national standards for the management of major NCDs through a primary care approach.

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Non-communicable disease risk factors survey 2014 among University of the West Indies staff, St Augustine campus, Trinidad and Tobago

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Objective: To determine the prevalence of non-communicable disease (NCD) risk factors among University of the West Indies (UWI) staff in Trinidad and Tobago. To compare these results with the country’s 2011 NCD risk factor survey.

Design and Methods: This was a cross-sectional prevalence survey utilizing a self-administered questionnaire conducted during April–May 2014. The target population was all staff. Standardized measurements of cardiovascular fitness, weight, height and blood pressure were taken. Data were analysed and results were compared to the national 2011 NCD survey.

Results: Participation was 24.9% (522/2100); 32.4% males (n = 169) and 67.6% females (n = 353). Among participants, 65.7% (95% CI 58.4, 72.9) of males and 64.7% (95% CI 59.6, 69.7) of females were either overweight or obese; 86.9% (95% CI 83.9, 90.0) ate < 5 fruits and vegetables/day. Smoking prevalence was 13.1% (95% CI 7.9, 18.2) and 2.8% (95% CI 1.1, 4.6) among males vs females, respectively while 39.1% and 7.6% were binge drinkers. One-fifth of the participants had blood pressures > 140/90 mmHg, while 6.4% had blood pressures > 160/100 mmHg. The results were similar to the 2011 national risk factor profile. Staff at UWI smoked less but drank alcohol more frequently; males were more obese and women had higher blood pressure and higher cholesterol compared to the general Trinidad and Tobago population.

Conclusion: The results confirmed a high prevalence of NCD risk factors among this staff as among the Trinidad and Tobago population. The study revealed opportunities to inform policy on strategies to positively impact the risk factors.

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Cardiovascular disease risk factors: A patient’s perspective

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Objectives: To identify cardiovascular disease (CVD) risk factors present in patients presenting with stroke; to assess knowledge of patients on risk factors for CVD and to identify management methods employed (prior to admission) by patients to deal with these risk factors.

Design and Methods: This study used a cross-sectional, incident case design. All patients admitted to the hospital, within a six-week period, and given an initial diagnosis of stroke by the attending physician were eligible for the study. Patients were recruited using consecutive sampling. Data on patient risk awareness and management methods were gathered using a survey. Data on risk factors present in patients were collected using patient records.

Results: A total of 102 patients were interviewed. The two major risk factors present in patients were hypertension (80.2%) and diabetes (57.8%). Hypertension was identified as a risk factor by 83.3% of patients and diabetes by 78.8%. However, 32.2% of hypertensive patients and 40.5% of diabetics reported not taking medication despite being aware of their risk. Similarly, 81.3% of patients knew lack of exercise was a risk factor, but only half were exercising frequently in the past two years.

Conclusion: In this study, hypertension and diabetes were found to be the two major risk factors present in stroke patients. While patient knowledge about risk factors was high, management of their risk factors as well as general knowledge about stroke prevention were lacking. This could be helpful in formulating public health strategy, if supported by larger population based studies.

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The management of acute stroke in Montserrat

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Objective: To assess the management of acute stroke in Montserrat over a 16-year period in order to highlight areas in which the quality of the service provided can be improved.

Design and Methods: Forty-five patients were studied from a sample frame of 117. Mean age was 70 (range 38–100) years, of whom 29 (64%) were male. A data collection sheet was designed. Information was collected on areas of patient management. Log-rank and Cox regression methods were used to test association between survival after stroke and other independent factors.

Results: Only 7% of patients ($n = 3$) had a computed tomography (CT) scan. All three had the scan within 24 hours. Forty-nine per cent of patients received aspirin without a CT diagnosis. Having Glasgow Coma Scale < 13 ($p < 0.001$), papilloedema or neck stiffness ($p = 0.003$), receiving oxygen for having an oxygen saturation $< 95\%$ ($p = 0.041$) and having a swallow assessment ($p < 0.001$) were negatively associated with survival. The estimated median survival time was 1.1 years.

Conclusion: Access to CT scanning was a problem for patients with acute stroke in Montserrat. Providing CT scanning locally would allow for long-term cost reductions and is likely to reduce morbidity and mortality from stroke. This, in combination with stroke-unit quality ward care, may improve the median survival time.

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Incidence and survival for oral and pharyngeal cancer in Grenada

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Objective: To study the epidemiology of oral and pharyngeal cancer (OPC) and assess the impact of age, stage at diagnosis, gender and treatment outside of Grenada on OPC survival.

Design and Methods: An OPC population-based series from the only ear, nose and throat (ENT) surgeon in the island was assembled. Age-adjusted incidence rates and stage distribution were analysed and compared with blacks in the United States of America (US blacks) and incidence rates from regional registries.

Results: Ninety-three cases of OPC diagnosed during 1991–2010 resulted in an annual age-adjusted incidence rate of 9.5 per 100 000 in Grenadian males and 1.7 among females. Jamaica's rates were 5.2 and 2.3; Martinique's 13.1 and 1.6; US blacks 15.1 and 5.0, respectively. The median age in Grenada was 58 years of age. In Grenada, 73% of the cases presented with stage III/IV compared to 72% among US blacks. Nearly 24% of patients had treatment outside of Grenada.

Conclusion: Oral and pharyngeal cancer rates in Grenada were comparable to others in the region, attesting to the population basis of this series. Grenadian males show medium risk for OPC while the risk is low among females. Surprisingly, the tumour, node, metastasis (TNM) stage distribution in Grenada does not differ significantly from that among US blacks for OPC, a cancer for which screening is rarely performed or possible.

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Survey of the knowledge, attitudes and practices of male staff members of the University of Guyana, Turkeyen campus, toward prostate cancer screening

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Objective: This study assessed the knowledge, attitudes and practices of prostate cancer screening among male staff of the University of Guyana, Turkeyen campus.

Design and Methods: A cross-sectional descriptive study using self-administered questionnaires was carried out among randomly selected male staff members of the University of Guyana, Turkeyen campus, aged 20 to > 70 years. Variables were grouped and given a weighting. Data were analysed using SPSS version 20 and Microsoft Excel.

Results: Of the 240 questionnaires distributed, a total of 164 were returned. The mean age of the respondents was 34.4 ± 6 years. Overall, 41% were aware of prostate cancer and 29% were screened for prostate cancer by various methods. The most common method of screening known by respondents was serum prostate specific antigen (PSA) testing. Male academic staff showed 65% good knowl-

edge as opposed to the non-teaching staff which showed 26%. All male academic staff as compared to 65% non-teaching staff indicated a willingness to undergo a digital rectal examination (DRE) if the physician requested it.

Conclusion: This study revealed that although the respondents were aware of prostate cancer screening, few had taken the test. Most were ignorant of the importance of prostate cancer screening, hence they felt no need to be tested. Many who were knowledgeable but not tested indicated a time constraint. More awareness is needed by means of sufficient health education and health promotion by various mediums so as to be inclusive of all educational levels.

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Focus group results of a community-based breast cancer train-the-trainer curriculum in Grenada

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Objective: To determine the effectiveness of a two-week breast cancer community-based train-the-trainer programme for lay community health workers (LCHWs) in Grenada. The curriculum was designed to teach laywomen about the LCHW role, how to conduct a community health assessment and knowledge about breast cancer.

Design and Methods: A qualitative research design was used. One focus group interview was performed on 10 LCHWs after the completion of the training. A structured interview guided the discussion. The focus group took place at the same location as the training. Data were analysed using framework analysis. All participants were female. The majority of the participants were over the age of 30 years. Half had less than a secondary school education, one had a bachelor's degree and three had some college education.

Result: Four themes emerged from the data: service, ethics, commitment to the programme and practical knowledge. The LCHWs reported being satisfied with the training and expressed being appropriately prepared after the two-week training. The focus group showed that the LCHWs understood the principles and methods underlying health assessments, understood the role of the LCHWs and their relationship to their community. The LCHWs discussed how they felt confident in teaching other women about breast health. They understood breast cancer, and felt that the hands-on element of the training was helpful. The LCHWs felt that the positive trainer-trainee relations during the training contributed to their confidence in assuming the LCHW role.

Conclusions: These findings suggest that train-the-trainer education programmes can be an effective methodology to train LCHWs.

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Analysis of cancer prevalence among women in Grenada

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Objective: To investigate the prevalence of cancers affecting women in Grenada.

Design and Methods: A study was conducted using de-identified patient records from the Grenada General Hospital Histopathology Laboratory of women who visited hospital and clinic facilities during 2000–2010. De-identified records of 12 012 entries, 9023 females (7172 individuals) between ages eight and 94 years, presumably to seek preventative care or medical treatment, were assessed during this cross-sectional study. Sampling without replacement resulted in approximately 3000 entries for analysis. Prevalence of each type of cancer reported amongst women was determined.

Results: Of the 3000 pathology diagnoses, 601 of the samples were classified as cancerous. The most prevalent cancer in Grenadian women from 2000–2010 was cervical cancer at 34%, followed by breast cancer at 31%. All other reported cancers were analysed and their prevalence determined.

Conclusion: Overall, the rate of cancer among Grenadian women for the ten-year period from 2000–2010 was determined to be 8.4%. There are implications for prevention and creation of health policies to address cancer burden in Grenada.

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Knowledge, awareness and attitudes of guardians in the community toward distribution of the human papillomavirus vaccine to primary and secondary school children in Trinidad

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Objective: To investigate the knowledge, awareness and attitudes of guardians toward the distribution of Gardasil to school children in the North Central Regional Health Authority jurisdiction of Trinidad.

Design and Methods: A cross-sectional study utilizing a questionnaire was employed to collect data from 368 participants who reside in the North Central division of Trinidad. The statistical analysis included Chi-squared tests and logistical regression.

Results: There was an increase in the approval rate of human papillomavirus (HPV) vaccine (32.4%) after the participants received further education. Guardians preferred the 12–14 years (24.2%) and 9–11 years (23.1%) age groups for vaccination. Religion did not influence the decision to vaccinate. About half (49.2%) of parents believed vaccination would not cause promiscuity. Women were more likely to approve of the vaccine ($p = 0.023$). Most participants did not talk to a doctor about the vaccine (70.7%). The general opinion (44.9%) was that insufficient information was imparted for an informed decision to be made.

Conclusion: There was approval of the HPV vaccine despite risks and lack of knowledge. A more effective vaccination programme requires prolonged sensitization of the public on the HPV vaccine.

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The prevalence of depression and the quality of life in haemodialysis patients and patients with chronic medical illnesses in The Bahamas

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Objective: To determine the prevalence of depression and the quality of life in haemodialysis patients and patients with chronic medical illnesses (CMI) in The Bahamas.

Design and Methods: This study used a cross-sectional design with consecutive sampling. Data about sociodemographic characteristics, depression and quality of life were collected using a sociodemographic questionnaire, the Beck Depression Inventory (BDI-II) and the Short Form-36 (SF-36), respectively. Data were analysed using the Statistical Package for Social Sciences (SPSS).

Result: Three hundred and five individuals (CMI: 106; haemodialysis: 199) participated and 22 refused. Males comprised 50.2% and females 49.8%; mean age was 53.44 (± 14.44) years; 45.9% were married and 32.8% were unemployed for more than two years. The prevalence of depression was 43.7% for dialysis patients and 36.8% for

CMI patients. Age of patients was associated with marital status, occupational status, ethnicity and educational level. Haemodialysis patients were shown to have a lower quality of life than CMI patients. Linear regression analysis found that eight quality of life items were statistically significant predictor factors of the Beck score for the CMI and dialysis groups, and accounted for 45.5% of the variance.

Conclusion: Although these results did not necessarily demonstrate causality, patients receiving haemodialysis were as likely to be depressed as patients with chronic medical illness. Having to be on haemodialysis detracts significantly from patients' quality of life.

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An assessment of the renal patient's level of nutritional knowledge at the Haemodialysis Unit at the Cornwall Regional Hospital

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Objective: Little is known about haemodialysis patients' nutrition knowledge level concerning the management of their disease. The aim of the research was to determine the level of nutrition knowledge related to renal disease, nutritional status and usual dietary patterns of haemodialysis patient at Cornwall Regional Hospital (CRH).

Design and Methods: A twenty six-item structured questionnaire consisting of closed ended questions was used to record anthropometry, biochemical markers and usual dietary patterns. The sample size was 106 patients and data were collected quantitatively. Data were analysed using Microsoft Excel.

Results: One-half (49%) of respondents had a misconception of high potassium foods, while 38.5% had a lack of knowledge of high or low sodium food sources. The usual dietary intake revealed 46% ate foods from animals two times daily, 36% once daily and 16% three times daily. Only 34% of the participants were knowledgeable about the correct amount of foods from animals that should be consumed daily according to their weight. Albumin level below 35 g/L was found in 34% of the sample; 12% of the sample population had a body mass index below 18.5 kg/m² (underweight); 70% had a high phosphorus level and 17% had a high potassium level.

Conclusion: Nutrition knowledge level deficit was observed which affected the patients' nutritional status. Multidisciplinary approaches including educational interventions are needed to improve patient care outcome.

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Barriers and facilitators to physical activity amongst overweight and obese women in the Caribbean: A qualitative study

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Objective: To identify modifiable barriers to physical activity and to explore factors that facilitate physical activity among overweight and obese women in Barbados.

Design and Methods: Seventeen women aged 25 to 35 years with a body mass index (BMI) ≥ 25 , purposefully sampled from a population-based cross-sectional study, were recruited to participate in in-depth semi-structured interviews. Twelve women participated in one or more additional ethnographic sessions in which the researcher joined and observed a routine activity chosen by the participant. More than 50 hours of ethnographic data collection were accumulated and documented in field notes. Thematic content analysis was performed on transcribed interviews and field notes.

Results: Social, health-related and structural barriers to physical activity were identified. Social factors related to gender norms and expectations. Women tended to be active with their female friends rather than partners or male peers, and reported peer support but also alienation. Being active also competed with family responsibilities and expectations. Health-related barriers included perceptions about chronic disease and competing strategies for weight loss. Structural barriers included few opportunities for active commuting, limited indoor space for exercise in the home, and low perceived access to convenient and affordable exercise classes. Several successful strategies associated with sustained activity were observed, including walking and highly social, low-cost exercise groups.

Conclusions: This study highlights the role that gender norms and health beliefs play in shaping experiences of physical activity. Affordable and accessible group exercise classes are feasible within a Caribbean context and successful models have the potential to be replicated.

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Turn off the TV? Attitudes toward TV viewing and childhood obesity in Jamaican mothers

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Objective: TV viewing has been associated with childhood obesity and reducing screen time might help address this epidemic in Caribbean children. We explored the attitudes and beliefs of Jamaican mothers on the impact of television viewing on childhood obesity.

Design and Methods: Community health aides recruited mothers, 18 years and older with children aged six to 24 months, from four primary care clinics in Jamaica. Four focus group discussions (two rural and two urban) were conducted using a semi-structured interview guide. Audio recordings and field notes from discussions were collected by field investigators. Transcripts were reviewed by study investigators and immersion/crystallization techniques were used to identify emerging themes.

Results: The mothers had a mean age of 28.26 ± 6.25 years and 63% were unemployed. Parenting decisions were made based on instinct developed through experience, example and external input (friends, family, community and media) and information not consistent with this instinct was not readily accepted. Among the risk factors for obesity identified by mothers, TV viewing was not perceived as important. The causal link between TV viewing and obesity in young children was unclear to mothers. The perceived benefits from TV viewing on their child's development outweighed any potential harm and strong evidence would be required to convince them otherwise.

Conclusion: Jamaican mothers may not easily accept obesity interventions that discourage TV viewing. Incorporating evidence from credible sources and interventions focussed on healthy growth and development using examples of children developing optimally without the aid of TV, may overcome this perception.

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Mamas' voices, mamas' choices: Understanding maternal beliefs that drive decision-making around feeding practices which influence childhood obesity

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Objective: To explore the beliefs shaping maternal decision-making around feeding practices in early childhood in a subset of Jamaican mothers from rural and urban communities

Design and Methods: Focus group discussions guided by semi-qualitative questionnaires were conducted with thirty mothers of infants six to 24 months recruited from health clinics in two urban and two rural Jamaican communities. Data from discussions transcribed from audio recordings and field notes were categorized and interpreted using pre-set themes through an iterative process to identify emergent themes. Analysis was guided by the theory of reasoned action embedded in the socio-ecological perspective.

Results: Rural and urban mothers' beliefs, and by extension their actions, were influenced by (a) their instincts, (b) their accepted knowledge (from personal and observed experience, credible professional input and personal experimentation), (c) cultural norms (*ie* views of body weight/health relationship and visual perceptions of 'healthy'), (d) input of experienced family members and (e) their accepted concept of infants' innate ability to express needs. Additionally, rural mothers' beliefs were influenced by non-family social networks. For all mothers, the use of growth charts in portable health records and reliance on specific local television programmes with health segments for health information was salient. The latter presented a unique tool for potentially building maternal confidence for healthy feeding practices.

Conclusion: Early childhood food choices are predominantly dictated by parental belief-driven actions. Effective interventions targeting the impact of maternal feeding practices on childhood obesity should incorporate supportive, credible professional input, address how and what knowledge influences individual beliefs, increase community-wide knowledge and target cultural norms.

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Anthropometric parameters and metabolic risks among amateur adolescent swimmers

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Objective: To estimate selected anthropometric variables and metabolic risks among amateur adolescent swimmers.

Design and Methods: In this cross-sectional study, standard anthropometric measurements were done on 220 swimmers aged 11–21 years. Data were used to estimate anthropometric parameters and to assess metabolic risk by comparing participants' measurements to standard cut-off points.

Results: Mean body mass index (BMI) was 21.23 ± 3.85 kg/m³ and fell within the 3rd and 85th percentile for children. Mean waist circumference (WC) was 69.83 ± 8.08 cm, and based on WC for age, 97.7% of swimmers were at "low risk" and 2.3% were at "high-risk" for becoming obese. Mean body fat percentage (BFP) was 21.20 ± 9.27 , with 55.1% swimmers classified as "normal fat" or optimal. The mean for visceral fat (VF) was 4.77 ± 2.90 . Mean skeletal muscle mass was $38.33 \pm 6.36\%$. Statistically significant differences were observed between mean values for height ($p < 0.001$), weight ($p = 0.011$), mid upper-arm circumference (MUAC) [$p = 0.035$] and VF ($p = 0.033$) for males and females. Body mass index measurements identified four swimmers as underweight, 39 and 19 as overweight and obese, respectively. Waist circumference measurement placed 35 swimmers in the "under fat" category, 32 in the "over fat" category and 22 were considered "obese". For VF, one swimmer recorded a high measurement, while for per cent skeletal muscle mass (SMM), five swimmers were classed as "very high", 15 "high", nine "normal" and one low.

Conclusion: Based on BMI, WC, body fat percentages and VF, the majority of swimmers had a healthy body composition and a low metabolic risk.

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Intakes of high-iron and high-vitamin C foods by students at high risk for the development of iron deficiency anaemia

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Objective: To assess intakes of high-iron and high-vitamin C foods among year one students at the University of the West Indies (UWI), St Augustine campus, who are at high-risk for the development of iron deficiency anaemia stratified by gender, ethnicity and vegetarian status.

Design and Methods: The sample included 170 year one UWI students. Participants were divided equally based on gender using quota sampling. Frequency of consumption of high- and low-iron foods, as well as vitamin C consumption was assessed based on a food frequency questionnaire (FFQ).

Results: About one-half (48%) of the participants consumed vitamin C supplements every day. Through dietary assessment, 57% of the students were found to be at risk for the development of iron deficiency anaemia. Only 10% of the participants never consumed any of the foods decreasing iron bioavailability listed in the FFQ. Overall, 30% of the participants never consumed high-iron containing foods. Only 36% of the participants consumed foods that increase iron absorption every day, whereas 4% never consumed them. No significant difference was found between the risk for the development of iron deficiency anaemia and the intakes of vitamin C, by ethnicity, vegetarian status and gender.

Conclusion: Males were found to consume more high-iron containing foods. Females were more at risk for the development of iron deficiency anaemia. Participants of African descents consumed more high-iron containing foods. Participants of African and mixed raced consumed less foods that decrease iron absorption.

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Infertility knowledge, attitudes and beliefs of college students in Grenada

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Objective: To assess the attitudes and extent of knowledge college students in Grenada have toward infertility.

Design and Methods: Hand-administered survey using a convenient sample was carried out at the sole college located on the island of Grenada: TA Marryshow Community College. Five hundred and eight college students over the age of 16 years participated in this study with females comprising 65.7% (n = 334). The main outcome measure was the level of knowledge on the causes and treatment options of infertility.

Results: There was a moderate level of knowledge among males and females with regards to the risk factors that may

cause infertility. The majority of participants believed that God's will and the power of prayer can cause and treat infertility. Overall, a greater proportion of female students answered more questions correctly in comparison to the male students.

Conclusions: There is a notable lack of basic knowledge among Grenadian college students about the causes of infertility. Additionally, among these students, there is the perception that women are more susceptible to infertility than men. Education programmes and community support groups are recommended to increase knowledge on the causes of infertility as well as decrease the stigma of this condition.

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Grenadian doctors' perceptions on abortion

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Objective: To assess perceptions of Grenadian physicians on abortion.

Design and Methods: An online survey was created and e-mailed to all doctors registered to practise in Grenada. Data were collected and analysed using SPSS.

Results: There was a response rate of 58% (45 out of 78 physicians). Almost all physicians (93%) indicated that they were personally aware of unsafe abortions being performed in Grenada. The three main complications physicians reported as arising out of unregulated abortion procedures were bleeding (18%), infection (17%) and uterine perforation (17%). Health education was identified by 93% of physicians as the best solution to preventing unsafe abortions.

Conclusions: Almost all local physicians reported that unsafe abortions are taking place in Grenada and that the best solutions to this problem would be to provide health education along with use of modern contraception and the use of legalized and regulated abortion services. Specifically, the implementation of school-based health education programme could prove effective in minimizing the conditions that lead to women being placed in a position where they feel that they have to resort to unsafe abortion procedures.

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Major congenital malformations of the gastrointestinal tract among the newborns in one of the English Caribbean countries, 1993–2012

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Objectives: To study the prevalence and pattern of major congenital malformations of the gastrointestinal tract among the newborns in Barbados.

Design and Methods: This study includes all newborns with major congenital malformations of the gastrointestinal tract in Barbados from 1993 to 2012. The birth register and the neonatal admission register at the Queen Elizabeth Hospital, where over 90% of all deliveries in this country take place, were the main source of data.

Results: The overall prevalence of major congenital malformations of the digestive system in newborns was 7.28 per 10 000 live births. There were 15 (32.6%) cases of congenital absence, atresia, and stenosis of the small intestine, giving a prevalence rate of 2.37/10 000 live births and 13 cases (28.3%) of oesophageal atresia, giving a prevalence rate of 2.06/10 000 live births. The overall prevalence of major congenital malformations of the gastrointestinal tract increased from 4.46/10 000 live births during 1993–1997 to 10.50/10 000 live births during 2008–2012. The prevalence of the absence, atresia or stenosis of the small intestine increased from 0.64/10 000 live births during 1993–1997 to 5.25/10 000 live births during 2008–2012. Overall, 1.1% of all neonatal deaths was attributed to major malformations of the digestive system.

Conclusions: Congenital absence, atresia and stenosis of the small intestine were the most common malformations, with increasing prevalence over the study period. Tracheo-oesophageal fistula was the second most prevalent malformation and it had a high case fatality rate.

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No one learns in a quiet classroom

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Objective: To assess the value of an introductory sailing programme, Buoyed Up, as an intervention strategy to improve the well-being of children at risk of isolation due to economic, cultural and social factors.

Design and Methods: Data were collected using a mixed method approach and involved primary school children (n = 89) drawing and writing about their school and sailing experiences, and a focus group and interviews with primary school teachers (n = 6).

Results: Most children appeared to be happy attending school (78.2%); however, most were passive in content (67.3%) and even those who included their friends (21.8%) drew them sitting or standing. All children drew a picture of themselves actively sailing (100%) and most were happy to be involved in the programme (83% of boys and 72% of girls). Most children included a sentence expressing their like for sailing (83% of boys and 72% of girls), which was particularly evident in pictures that reflected the technicalities of sailing. Teachers found children who participated in the programme developed a sense of identity and belonging with a group, developed confidence and resilience to cope with challenges and were more engaged in the classroom.

Conclusion: Children at risk of social exclusion due to economic, social and cultural adversity can be supported to stay in school through unique and targeted programmes which can be linked to the curriculum.

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Caffeine use and its associated side effects among adolescents of Trinidad

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Objectives: To determine the prevalence of the use of products containing caffeine, the side effects associated with this use and whether there was a relationship between the development of side effects and the dose of caffeine consumed among an adolescent population in Trinidad. A threshold level of daily caffeine consumption was being sought in this population to establish when there is likely to be an increase in side effects being experienced.

Design and Methods: A cross-sectional study was done using a convenience sampling strategy. A *de novo* questionnaire was self-administered to adolescents 18–20 years old. Questions included a one week caffeine recall for the participants, side effects and the timing of these side effects related to the use of the caffeinated products.

Results: The response rate was 391/412 (94.9%). The most common source of caffeine for this population was from beverages (67.5%). Significant dose dependent relationships between the dose of weekly caffeine consumed and the frequency of occurrence of palpitations ($p = 0.001$) and the frequency of sleep disturbances ($p = 0.001$)

were observed. Doses of weekly caffeine consumption of > 428.5 mg were significant predictors for headaches, restlessness and anxiety in this population, OR (95% CI) 1.7 (1.03, 2.74), 2.3 (1.3, 4.0), 1.8 (1.1, 2.9), respectively. **Conclusion:** Caffeinated products mainly from beverages were commonly consumed by adolescents. Side effects like palpitations, sleep disturbances, restlessness and headaches were significantly more often reported above a threshold of 428.5 mg/week. Daily caffeine intake in this adolescent population should be recommended to be less than this threshold in an attempt to reduce the occurrence of these side effects.

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The timing of side effects associated with caffeine use in adolescents: Acute effects or withdrawal symptoms?

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Objectives: To determine the timing of side effects related to caffeine use in adolescents and to determine adolescents' perception as to what food product or medication they believed caused the side effects.

Design and Methods: A cross-sectional study was done using a convenience sampling strategy. A *de novo* questionnaire was self-administered to adolescents 18–20 years old. Questions included a one week caffeine recall for the participants, side effects, the timing of these side effects related to the use of the caffeinated products and which product the participants associated with the development of the side effects.

Results: The survey response rate was 391/405 (95.6%). The response rate varied from 19.5% to 45.3% for the various adverse events experienced. Headaches (68.9%), palpitations (81.4%), restlessness (67.5%), nausea/vomiting (66.7%), polyuria (84.6%), tremors (75%) and anxiety (62.5%) were reported to occur more commonly within four hours of consumption of caffeinated products and these symptoms were attributed to coffee, tea and chocolate beverages. Depression (66.7%) occurred more commonly between four and 24 hours after consumption and was attributed to colas and energy drinks. Sleep disturbances (55.7%) occurred within four hours of caffeine consumption.

Conclusion: Side effects reported by adolescent participants – palpitations, polyuria, nausea, tremors, anxiety and restlessness – were mainly due to the acute effect of

caffeine. Participants attributed most of these symptoms to coffee, teas and chocolate drinks. Depression was a withdrawal symptom attributed more to colas and energy drinks by the adolescents. Sleep disturbances could have been related to both the acute and withdrawal effects of caffeine.

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Local public knowledge of blood donation systems in Trinidad and Tobago and in other places

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Objective: To investigate the knowledge of the public in Trinidad and Tobago (T&T) of donation procedures locally and in the United States of America (USA) and United Kingdom (UK) and its effect on willingness to donate blood locally.

Design and Methods: A cross-sectional study was conducted on a convenience sample from adults in T&T concerning knowledge and attitudes toward blood donation. Data were collected using an interviewer-administered questionnaire. Five hundred and twenty-nine responses were received. Chi-squared testing was done to determine statistical significance.

Results: Of 529 respondents, 141 (26.7%) had donated previously, 34 (6.4%) had been excluded and 354 (66.9%) had never donated. Three-fourths (76.8%) of those who had donated did so for a friend or family member. Approximately half (53.6%) of the respondents rated their knowledge of T&T's system as 'poor' or 'very poor', while 86.2% rated that of the USA and UK as 'poor' or 'very poor'. Knowledge of the local system was directly correlated to willingness to donate blood in T&T ($p < 0.001$). No relation was found concerning knowledge of the foreign systems and local willingness to donate ($p = 0.423$). Factors deemed most 'likely' or 'very likely' to influence people to donate included if donation was for an ill family member (87.7%) or friend (77.9%); if the blood donation system in place was a replacement system (70.9%) and if more information was given to the public about blood donation (67.3%).

Conclusion: Public knowledge of the blood donation system of T&T affected willingness to donate while knowledge of the USA and UK systems had no effect.

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Predictors of thalassaemia carriers in Trinidad and Tobago

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Objective: To determine possible predictors of thalassaemia carriers among prospective blood donors in Trinidad and Tobago.

Design and Methods: Four hundred and sixty prospective blood donors were screened for microcytosis (MCV < 83 fL) by performing a complete blood count (CBC) using a Sysmex XE-2100. The 86 samples with microcytosis further had a blood film analysis, iron studies, haemoglobin electrophoresis, haemoglobin F and A₂ quantification and DNA analysis for thalassaemia mutations. Statistical analysis was done using SPSS to determine predictors of thalassaemia trait. The variables tested were ethnicity, haemoglobin, mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH), mean corpuscular haemoglobin concentration (MCHC), red blood cell (RBC), RBC distribution width (RDW-SD and RDW-CV). We looked at different mathematical formulae to predict thalassaemia trait *ie* the Mentzer Index, Shine and Lal Index, Green and King Index, Ricerca Index, Srivastava Index, RDW Index, and the red cell indices tested were RDW-CV, RDW-SD and red cell count (RCC).

Results: Eighty-six (18.7%) subjects had microcytosis. Forty-four (51.2%) of these had DNA results. Thirty-one (70.5%) had the thalassaemia trait: 25 (80.6%) with genotype $-\alpha/\alpha$, four (12.9%) $\alpha/-\alpha$ - (all $\alpha^{3.7}$), one IVS I-5 G/C and one IVSII-666 T/C. The MCV, RDW-SD and RDW-CV were useful in predicting thalassaemia trait. Using RDW-SD identified 30 (96.8%) of the 31 carriers, the Green and King formula identified 27 (87.1%) and Ricerca Index identified all 31 (100%).

Conclusion: Mean corpuscular volume, RDW-SD, Green and King formula and Ricerca Index may be useful predictors of the thalassaemia trait in Trinidad and Tobago.

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Impact of dropping out of the Sports for Health Programme in Grenada

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Objective: To determine if there were any significant differences in body mass index (BMI) and waist-to-hip ratio (WHR) between active participants in the Sports for Health Programme in Grenada and participants who were lost to drop out.

Design and Methods: Persons who were originally part of the programme and data collection in 2011, but who were no longer active participants were evaluated. The evaluation utilized the data from the participants at their last BMI and WHR measurements as programme participants and follow-up measurements as non-participants in 2014.

Results: Data analysis showed that BMI was significantly higher in persons who no longer participated in the Sports for Health Programme when compared to active programme participants. In addition, non-participation of persons in the programme was found to increase individual risk factors for chronic diseases, which were originally mitigated by participation in the programme. Barriers to participation by many women in the programme included lack of partner support and negative community perceptions, which influenced several women to discontinue their participation in the programme. Recommendations were made in order to address the barriers to participation and to decrease the drop-out rate.

Conclusion: Non-participation in the Sports for Health Programme adversely affects BMI and WHR, therefore, increasing risk factors for several chronic non-communicable diseases.

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The quality of life of Hansen's disease clients with disabilities compared to clients without disabilities in Trinidad and Tobago

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Objective: This study aims to assess the quality of life of persons who have Hansen's disease-related disabilities in Trinidad and Tobago, compared to persons with the disease who do not have a disability.

Design and Methods: The study was quantitative, cross-sectional and comparative in design, conducted in the Hansen's disease dermatology clinics of Trinidad and Tobago, between February 2014 and April 2014. It was a convenience sample of 122 respondents: 26 were Hansen's disease clients with disabilities, 51 had the disease but without disabilities, while 45 were clients with other dermatological conditions. The World Health Organization Quality of Life (WHOQOL-BREF) questionnaire was interviewer-administered after consent.

Results: The largest group of persons who rated their quality of life as good or very good was the persons with Hansen's disease that had no disability (30%); only 12% of persons with Hansen's disease-related disability rated their quality of life as good or very good. The mean quality of life scores (and standard deviations) for Hansen's disease clients without disability was 78.61 (9.6), non-Hansen's clients was 72.23 (11.8) and Hansen's disease clients with disability was 67.40 (13.9).

Conclusions: The quality of life of the Hansen's disease clients with disabilities was found to be lower than the other two groups of clients.

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Prevalence of self-reported urinary incontinence in the community dwelling elderly population of Westmoreland, Jamaica

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Objective: To determine the prevalence of urinary incontinence in the elderly population of Westmoreland, Jamaica.

Design and Methods: A cross-sectional study was conducted in twelve community clusters in Westmoreland, Jamaica. Data were gathered using an interviewer-administered questionnaire. Analysis of data was done using the Statistical Package for the Social Sciences (SPSS) version 17.

Results: The majority (53.1%; n = 241) of respondents were males and the age of the sample ranged from 60 to 95 years (median age = 69.0; interquartile range [IQR] = 15 years). There was a prevalence of urinary incontinence (UI) of 10.6%; approximately 30% of affected respondents had not reported this to their doctor. Reasons given for not reporting condition to doctors were: symptoms not bothersome (70%); thought that UI was normal in older age (81.8%); belief that no treatment is available (12.5%) and did not know which doctor to attend (25.0%). The two main barriers for reporting UI to the doctor were being ashamed (44.4%) and being unable to afford treatment for UI (66.7%). The majority (76.9%; n = 10) indicated a preference for physician initiated discussion of UI.

Conclusion: Urinary incontinence was reported in 10% of the study population and of these, 30% had not reported this to their doctor. This underscores the need for doctors, especially at the primary care level, to establish a systematic screening regime for older persons, designed to detect symptoms of urinary incontinence in the early period.

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Oral mucosal lesions in patients with pemphigus and pemphigoid skin diseases: A cross-sectional study from southern India

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Objective: To assess the prevalence of oral mucosal lesions in patients with pemphigus and pemphigoid diseases from Southern India.

Design and Methods: A cross-sectional hospital based study was conducted from August 2011 to July 2012. Patients with confirmed pemphigus and pemphigoid skin disease were selected and invited to participate in the study. Diagnostic procedures such as histopathological and immunofluorescence methods were performed to confirm the diagnosis. The results of the study were analysed by SPSS software version 19.0 and presented as descriptive statistics.

Results: A total of 30 patients (male 4, female 26) with autoimmune blistering disease were selected for the present study. Sixty per cent (18 out of 30) patients showed oral mucosal manifestations; 46.66% (14 out of 30) presented with pemphigus and 53.33% (16 out of 30) patients presented with pemphigoid. The most common subtypes of pemphigus were pemphigus vulgaris, 71% (10 out of 14) among pemphigus, and bullous pemphigoid, 87.5% (14 out of 16) among pemphigoid. In pemphigus, buccal mucosa (92.85%) was the most frequent site, and hard palate (12.5%) in pemphigoid. Most (78.57%) pemphigus patients and 12.5% of pemphigoid patients revealed oral mucosa as the initial site of disease process.

Conclusion: The significance of diagnosing the oral lesions in an earlier stage in dental practice may help in early intervention of disease and help to reduce morbidity and mortality. The study also reinforced the multi-disciplinary approach in diagnosis.

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Predicting HIV testing decisions

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Objective: To evaluate previous HIV testing history among residents of a community in Trinidad so as to identify predictors of HIV testing decisions.

Design and Methods: A sample of 186 respondents aged 18–85 years was surveyed using stratified random

sampling. Through interviewer-administered questionnaire, information was acquired on HIV testing history, awareness of HIV testing and treatment information, fear of HIV testing, stigma toward persons living with HIV and perception of risk. A simultaneous logistic regression was used to model respondents' decision to have an HIV test.

Results: There were 185 respondents (M 92, F 93). Respondents with higher levels of awareness were 1.109 times more likely to have had an HIV test; younger respondents were 0.945 times more likely to have had an HIV test than older respondents. Respondents who reported higher levels of perception of risk were 0.924 times less likely to have had an HIV test.

Conclusion: Younger persons and persons with higher levels of awareness of HIV testing and treatment information were more likely to decide to be HIV tested, while persons reporting higher levels of perception of risk were less likely to be tested. Interventions to build awareness of HIV testing and treatment should be designed to encourage HIV testing among older persons. A routinized approach to HIV testing has potential to shift the focus from HIV prevention to health and well-being and dismantle barriers which prevent people from realizing the real risks of HIV infection.

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HIV/AIDS surveillance in the British Virgin Islands: A critical assessment

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Objective: To conduct an assessment of HIV/AIDS surveillance data in the British Virgin Islands.

Design and Methods: Existing HIV/AIDS surveillance data were examined and a literature review on HIV/AIDS in the British Virgin Islands was conducted.

Results: Since 1985, there have been 117 cases reported to the Ministry of Health and Social Development. However, there is a paucity of knowledge about the socio-cultural, demographic, ideological and behavioural factors driving the epidemic in this dependent micro-state.

Conclusion: HIV/AIDS surveillance was not consistent with best international and regional practices.

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Attitude toward older people taking the HIV test among a sample of middle-aged and older people in the British Virgin Islands

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Objective: This study focusses on middle-aged and older people's attitude toward older people taking the HIV test by examining the effect of sociodemographic and HIV-related factors on their agreement with the statement, "There is no reason for older people to take the HIV test because younger ones are more likely to be infected than older ones".

Design and Methods: Descriptive, bivariate and multivariate statistics were used to analyse the data. Binary logistic regression analysis was used to examine the effect of sociodemographic and HIV/AIDS-related factors on attitude toward older people taking the HIV test.

Results: Approximately two-thirds (64.4%) of the participants were born in the British Virgin Islands. The average age was 65.3 years; 49.7% had at least a secondary level education; 62.5% were married or in a cohabiting relationship; 63.8% lived in male-headed households. More than half (54.8%) strongly disagreed with the notion that older people do not have to be tested because younger ones are more at risk for infection. Bivariate examination showed a significant association between attitude toward older people taking the HIV test and place of birth, age, education, age of head of the household, religious participation, type of relationship, employment status and number of children, as well as HIV/AIDS-related factors. In binary logistic regression analysis, the two most important influences in attitude toward older people taking the HIV test were education and agreement with the idea that HIV can be prevented by always using condoms with a person who is not your spouse.

Conclusion: There may be a need to scale-up HIV services for the older adult.

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Acceptability of neonatal male circumcision for HIV prevention among adults in The Bahamas

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Objectives: To assess parents' knowledge of HIV and sexually transmitted infection (STI) reduction through

male circumcision, determine their desire to have their newborn son circumcised and quantify impacts of circumcision procedural awareness.

Design and Methods: This was a cross-sectional survey of parents attending public healthcare facilities in Nassau, Bahamas, including a subsection completed after reading a circumcision information pamphlet.

Results: Three hundred and fourteen mothers and 39 fathers were included; 87.8% were Bahamian and 7.4% Haitian. The majority (97.1%) followed Christianity. Only 7.4% had at least one other circumcised son and 25.7% of parents reported a circumcised father. Fifteen per cent (15.7%) were aware that male circumcision reduces a man's chance of getting HIV and 29.8% knew the procedure reduces STI. Among Haitians, 88.5% and 88.4% were unaware of male circumcision reducing HIV and STI acquisition, while awareness was greater amongst all those with higher levels of formal education. More than half (55.6%) of parents initially opted for neonatal male circumcision – especially circumcised fathers, Bahamian and Jamaican nationals, those who completed at least high school and those believing male circumcision reduces HIV and STI rates. Improved health, appearance, and hygiene motivated participants more than cultural and religious affiliation. Both parents felt that the decision on neonatal male circumcision should be made in unison. Acceptance rose to 68.0% after reading the information pamphlet on male circumcision.

Conclusion: Newborn male circumcision is decided on by both parents in most cases with little influence of culture and religion. Information on neonatal male circumcision risks and benefits, including reduction of HIV and STI, led to an increase in its acceptance.

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Online delivery of The University of the West Indies Diploma in the Management of HIV Infection programme

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Objective: To examine the impact of the expansion of access to The University of the West Indies (UWI) Diploma in the Management of HIV Infection by converting it from fully in-person to a blended model.

Design and Methods: A proposal to convert the Diploma at the St Augustine campus to a blended model was

developed for the class of 2014/15. Collaborative approaches were used to design and develop interactive materials in The UWI's Learning Management System (LMS) *myeLearning* and two courses were delivered online to the 2013–2014 cohort. Post-delivery, an assessment was conducted using online surveys and virtual debrief discussions with students and faculty to assess effectiveness of the content design.

Results: Students felt that course content was clear, appropriate, interesting and applicable to their work. They reported a preference for recorded lectures and relevant videos, anytime/anywhere access and interactions with instructors and peers. Faculty enjoyed building new skills and teaching online. Areas for improvement included reducing workload, better time estimations for activities and grading guidelines.

Conclusions: The online development and delivery of the two courses were implemented. This will increase access to the programme by healthcare professionals anytime and anywhere.

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Lessons learnt from the intense 2014 chikungunya epidemic in Grenada

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Objective: To present an overview of the lessons learnt from the fall 2014 outbreak of chikungunya in Grenada.

Design and Methods: A review of newspaper articles, news reports and opinions of clinicians and policy-makers on the impact and evolution of the chikungunya outbreak in Grenada was conducted.

Results: Chikungunya outbreaks on small island developing nations are characterized by high attack rates. The speed of the spread of the virus is facilitated by the efficient domesticated diurnal vector species *Aedes aegypti*. Efforts to educate the public and to control this vector stretched resources. Clinical attack rates in the Grenada outbreak impacted manpower resources in every sector including clinical services.

Conclusion: Chikungunya infected an estimated 60% of the population in just three months of intense transmission. The resulting morbidity meant that essential lessons were learnt. These included the need for a rapid response in educating the population on the mode of transmission of the virus and its prevention, the implementation of vector control and the demand for diagnostic tests. Essential services were short staffed. The need for an unprecedented

rapid response and the impact of the chikungunya outbreak in Grenada will be presented.

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Establishment of laboratory testing capability for chikungunya virus in Grenada, West Indies

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Objective: Rapid diagnosis of chikungunya (CHIKV) is important early in an epidemic. The study objective was to describe the process of implementing CHIKV testing capability in Grenada and to confirm the arrival of CHIKV on the main island of Grenada.

Design and Methods: In April 2014, a collaborative study between the US Naval Infectious Diseases Diagnostic Laboratory (NIDDL) and the clinical microbiology laboratory of St George's University (SGU) was started. St George's University acquired essential instrumentation and patient samples, and NIDDL provided supplies and reagents, plus technical training experts.

Results: Personnel, supplies and equipment arrived in Grenada in August 2014. Set up of instruments and test validation were completed quickly. Initial CHIKV polymerase chain reaction (PCR) and immunoglobulin M (IgM) tests found three PCR positive samples. The IgM assay found several presumptive positives that were unable to be confirmed due to enzyme-linked immunosorbent assay (ELISA) instrument malfunction. Polymerase chain reaction data indicated that CHIKV had arrived on the main island of Grenada no later than August 2014. Based on arbovirus test demand, symptomatic patients began to increase in August, peaked in September, and tailed off during November.

Conclusion: Both CHIKV tests were implemented and produced the first on-island reference test confirmation of CHIKV patients in Grenada. The most difficult part of this effort was training technologists in time to help with testing. Laboratory testing for CHIKV infection can be a challenge in developing states at a distance from support services. Collaborative links with established laboratories remain essential.

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The prevalence of dengue in Grenada: A five-year retrospective study

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Objective: To determine the prevalence of dengue and its serotypes (DENV 1–4) in symptomatic persons who sought care at the St George's University (SGU), University Health Services (UHS) during the five-year period of 2009–2013; to compare the dengue serology data with the dengue quantitative reverse transcription polymerase chain reaction (qRT-PCR) data in the target population.

Design and Methods: The target population consisted of 298 samples from dengue suspected patients who sought care at the SGU, UHS between 2009 and 2013 and completed the investigation form for suspected dengue infection. Dengue seropositivity of these samples was determined by the dengue diagnostic laboratory with the use of enzyme-linked immunosorbent assay (ELISA) and/or non-structural protein (NS1) antigen detection. The serology data collected from the dengue diagnostic laboratory were used to create an electronic database.

Results: Of the 298 dengue suspected cases over the five-year period of 2009–2013, 89 were confirmed to be positive for dengue. The annual prevalence of dengue from 2009 to 2013 was found to be 34.38%, 36.96%, 26.79%, 16.21% and 29.27%, respectively. The prevalence of dengue over the five-year period was found to be 30.2%.

Conclusions: From the data gathered, it appears that dengue cases peak between August and November. This is due to increased levels of rainfall which increases the number of breeding sites for the mosquito vector. The highest prevalence was seen in 2010 and the lowest prevalence was seen in 2012.

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Investigation of dengue-related knowledge, attitudes and practices among form three secondary school students in the seven counties of Trinidad

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Objective: To investigate dengue-related knowledge, attitudes and practices among secondary school students in Trinidad.

Design and Methods: A cross-sectional study was undertaken. All counties were included; one school from each county was randomly selected. Form three students of the seven schools were invited to participate. Data collection was conducted using a questionnaire.

Results: Almost three-quarters of respondents (73.1%) demonstrated sufficient knowledge about dengue. There appeared to be a link with preventative practices among households and adequate knowledge. Moreover, students associated with persons who had been previously diagnosed with dengue demonstrated a greater level of knowledge than those without. In fact, the school with highest knowledge levels also had the greatest proportion who reported a relative with a past diagnosis of dengue. Furthermore, 53.3% agreed that dengue was a community concern, while 59.6% believed that control and eradication of the dengue vector was primarily the responsibility of health authorities.

Conclusion: It appears that students with greater knowledge engaged in preventative measures and *vice versa*. Knowledge, attitudes and practices may be influenced by several rather than a single factor. With a greater proportion stating that vector control was the responsibility of the health authorities, the findings, though encouraging in parts, highlighted a need for further targeted health education measures.

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Trends in the patterns of IgM and IgG antibodies in febrile persons with suspected dengue in Barbados 2006–2013

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Objectives: To describe the seroprevalence of dengue antibodies in febrile suspected persons investigated for dengue in this country.

Design and Methods: This was a retrospective population based study of all febrile children and adults with probable dengue from 2006 to 2013. Persons with probable dengue were investigated for dengue immunoglobulin M (IgM) and IgG antibodies in the blood sample drawn between days three and five of their illness.

Results: Among the 8296 cases that were tested for IgM antibodies, 2605 (36.6%) cases tested positive. Of the 7227 suspected cases who were tested for IgG, 5473

(75.7%) were positive. During the study years, between 80% and 90% of persons older than 20 years had a positive IgG antibody. Among the persons younger than five years (excluding the first year), between 10% and 20% had a positive IgM titre and a negative IgG titre, between 5% and 10% had a positive IgM and IgG titre, 5% had a positive IgG titre and a negative IgM titre and between 45% and 65% had a negative IgM and a negative IgG titre. Between 37% and 59% had a serological evidence of past dengue in the absence of any current dengue.

Conclusions: The pattern of IgG antibodies seen in this study was comparable to those seen in the countries known to be hyperendemic for dengue. Based on the pattern of antibodies, the age of infection was likely to shift down to younger age groups with the likelihood of more severe forms of dengue in the future.

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Leprosy – Knowledge, attitudes and practices among clinic attenders

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Objective: To investigate the knowledge, attitudes and practices among leprosy clinic attendees and to review the epidemiology of leprosy in Trinidad.

Design and Methods: A cross-sectional study was undertaken utilizing an interviewer administered structured questionnaire. All leprosy clinic attendees over the age of 18 years who attend three of the five leprosy clinics in Trinidad were included. Data were collected from April to July 2014.

Results: All 21 responders who were invited to participate agreed, giving a response rate of 100%. Fifty-two per cent were unaware of how the disease is contracted. Most patients (81%) believed that educating the public would help eradicate leprosy-related stigma. Ninety per cent reported that they were compliant with taking their medication and 86% reported that they attended all clinic appointments. The majority (76%) felt self-conscious about their disease and 50% have experienced negative feelings after diagnosis.

Conclusion: Patients appear to be aware of signs and symptoms of leprosy but less so about transmission. There appears to be a need for educating patients about their illness as well as the public to reduce stigma associated with the illness. There was also a need for counselling of patients to minimize the reported distress, sadness and worry they experience after being diagnosed.

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Tuberculosis – Patients’ knowledge, attitudes and practices regarding their illness

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Objective: To determine tuberculosis (TB) patients’ knowledge, attitudes and practices with respect to their illness.

Design and Methods: A cross-sectional study was conducted. Two hundred and eight tuberculosis patients > 18 years of age who were currently receiving treatment were included. The study sample was selected from two major regional chest clinics in Trinidad. A pilot tested questionnaire was interviewer administered to each patient.

Results: Out of the 208 patients interviewed (response rate 65.0%), 129 were male and 79 were female. The majority of patients had either secondary or tertiary level of education (54.8%), whereas only 43.8% had either primary level of education or none at all. Analysis revealed that TB knowledge was affected by a patient’s level of education, as persons with secondary/tertiary levels of education had a greater knowledge about TB ($p < 0.005$). The majority (78.4%) of patients believed that they were not stigmatized; however, 191 (91.8%) patients urged for increased public awareness about TB in order to change perceptions toward the disease. The majority of patients were compliant toward their management advice, as well as taking their prescribed medications, however, non-compliance was noted to be more likely in the under 50 years age group (9.8%), rather than the over 50 years age group (1.1%).

Conclusion: Patients with at least secondary level education had better knowledge about tuberculosis than those with primary level education. Patients indicated the need for more public awareness about TB. Compliance with management (medication and attendance at clinics) was good among the majority of the patients.

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A retrospective case series study of the seroprevalence of human T lymphotropic virus 1 and 2 from the General Hospital Laboratory in Grenada

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Objective: Human T lymphotropic virus type 1 (HTLV-1) is a human retrovirus that causes adult T-cell leukaemia/lymphoma (ATL) and some other conditions – HTLV-associated myelopathy (tropical spastic paraparesis, a multiple sclerosis-like disease), uveitis, infective dermatitis and some “autoimmune” diseases. While the Caribbean has been identified as an HTLV-1 endemic area, there are no published studies on HTLV-1 from Grenada. The objective of this study was to anonymously review the General Hospital Laboratory records to investigate the seroprevalence of HTLV-1 and 2 in Grenada.

Design and Methods: This was a retrospective study of the records from the General Hospital Laboratory in Grenada, where enzyme-linked immunosorbent assay (ELISA) serologically positive results for HTLV-1 and 2 were recorded as a percentage of the total number of tests performed between the years 1998 and 2013. The Diasoren rapid ELISA serological test was used.

Results: During the 16-year review period (1998–2013), a total of 2346 (4.7%; 95% CI: 4.5%, 4.9%) out of 49 782 patients were identified as HTLV-1 and 2 positive. Females with a median age of 34 years comprised 70% of positive cases whilst the median age for males was 43 years. The rate in Grenada has been steadily declining since 1998 and appears to be levelling off at about 3.7%.

Conclusion: The current seroprevalence of HTLV-1 and 2 in Grenada is lower than that reported in 1991 in Jamaica (5%). The rate found is still unacceptably high and additional studies are required to determine the health consequences of HTLV-1 infection. Additionally, appropriate public health programmes should be applied to help reduce transmission.

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Short- and long-term knowledge of the transmission and prevention of soil transmitted helminths in primary school children assessed using turning point technologies

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Objective: This study formed part of a soil transmitted helminth (STH) elimination programme in Grenada. This study assessed the short- and long-term knowledge of primary school children on the transmission and prevention of STH using turning point technologies.

Design and Methods: A longitudinal study was carried out on school children attending 39 (72.2%) out of all 54 primary schools from Grenada, Carriacou and Petite Martinique between March and November 2014. The schools were randomly selected for inclusion in the study.

Turning point technology was used to assess the knowledge and administer the subsequent intervention to all students. The pre-, immediate post and long-term post intervention (seven months later) data were analysed using Chi-squared.

Results: A total of 962 students participated in March 2014 and 805 students participated in October 2014. There was no significant ($p < 0.05$) inter-school difference in the answering of questions. This displayed a ubiquitous knowledge transfer across the primary schools. There was a significant improvement in knowledge post turning point intervention, which was maintained at seven months post-intervention.

Conclusion: The advantages of using turning point technologies to impart this knowledge where class responses appear instantly, anonymously and can be used for immediate discussion were numerous. These include *inter alia*, active engaged participation.

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Attitude, behaviour and practice of primary school students with regard to soil transmitted helminths in Grenada

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Objective: To identify the attitude, behaviour and practice of parents, guardians and adolescents associated with soil transmitted helminths (STHs).

Design and Methods: A questionnaire was completed by 811 parents/guardians. The questionnaire posed questions on the socio-economic status, attitudes, behaviour and practices of primary school students with regard to factors that could contribute to the transmission of STHs in Grenada.

Results: Five hundred and thirty-four (66%) parents/guardians reported that their children regularly washed their hands before eating, 690 (85%) had an inside water supply and 465 (57%) had indoor toilets. Also, 579 (71%) said that their children never played around outdoor latrines and 326 (40%) said their children always wore shoes outdoors. Seven hundred and thirty-two (90%) of the parents/guardians reported that vegetables and fruits were always washed before cooking and 662 (82%) said that their children had previously received de-worming medication.

Conclusion: Practical recommendations such as in-house sanitation facilities and hand washing programmes can be made. This will enable limited resources to be used more efficiently to combat the problem of transmission of STHs.

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Genetic diversity and relatedness of uropathogenic *Escherichia coli* with non-clinical isolates in Grenada

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Objective: To compare genetic profiles of uropathogenic *E coli* (UPEC) to strains isolated from freshwater, seawater and iguanas in Grenada.

Design and Methods: Eighty-five *E coli* strains were isolated using double streak-plating on eosin methylene blue (EMB) and MacConkey agar from human urine, iguanas, fresh and marine water. Species identification was confirmed using API20E. Genomic DNA was extracted from individual pure cultures of *E coli* and amplified using the oligonucleotide (GTG₅) and BOX primers. The DNA fingerprints were separated by electrophoresis, normalized using reference American Test Culture Collection (ATCC) *E coli* and compared using DendroUPGMA, the FigTree™, dominance and co-clustering analyses.

Results: Both DNA fingerprinting methods targeted extragenic DNA and demonstrated enormous intra-species diversity within the population of studied 85 *E coli* isolated from four major eco-habitats. DNA fingerprinting based on BOX-PCR was less discriminating than the (GTG₅)-polymerase chain reaction (PCR). The BOX analysis correlated better with the ecotype distribution. The combination of dominance and co-clustering analyses allowed us to trace the relatedness of strains among and between the four different ecotypes.

Conclusions: The GTG₅-PCR based co-clustering analysis indicated that the clinical isolates had a closer relationship to iguana *E coli* isolates than to fresh and marine water isolates. However, in accordance with the BOX analysis, clinical isolates were most similar to marine, followed by freshwater and iguanas.

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The evidence base for healthcare related decision-making in regional health authorities

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Objectives: To evaluate the evidence base used in policy and healthcare decision-making by the Regional Health Authorities in Trinidad.

Design and Methods: The study focussed on the five regional health authorities (RHAs) in Trinidad; senior administrative employees at each RHA were purposively sampled and interviewed using a structured questionnaire. Responses were initially reviewed individually to determine types of evidence used within each RHA. All responses were secondly compared between the various RHAs.

Results: All RHAs participated; each had an observatory type unit which was responsible for data collection, collation and production of reports on an annual basis. Reports focussed on the number of patients accessing services (eg specialist clinics and surgical procedures), patient demographics and patient access to health services. All RHAs had annual service agreements with the Ministry of Health which acted as a guide with targets and as a check on accountability of money spent. Decision making in each RHA was tiered by financial cap; most decisions were made by the Chief Executive Officer and/or Board of Directors within their caps; decisions requiring monetary investment over the RHA limit had to be approved by the Ministry of Health.

Conclusion: This study revealed that RHAs had systems in place whereby they engaged in evidence-based practice utilizing the authority's observatory data plus other information sources, ran trial periods and economic analyses for healthcare related decision-making.

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Preparedness of healthcare facilities for a public health emergency in a Caribbean country

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Objective: To review basic, critical elements of emergency preparedness and response capacity in the healthcare system of Trinidad and Tobago.

Design and Methods: This was a descriptive study involving one major hospital and one randomly selected health centre in each regional health authority (RHA). Responders were chosen by purposive sampling and structured face-to-face interviews were carried out. Data collection was undertaken using modified versions of two previously validated data collection tools.

Results: All five hospitals in each RHA and four of five health centres participated. Emergency response plans existed in all healthcare facilities reviewed; however, plans were not regularly tested. An investigation team can be assembled in 24 hours and a patient referral system was in

place in all hospitals. There appeared to be access to stockpiles in all facilities. There was a gap in ongoing infection control measures including the absence of regular personal protective equipment (PPE) training for staff.

Conclusions: There was an urgent need for systematic rather than *ad hoc* measures for testing existing plans and staff training in their roles and responsibilities during an acute public health event should one occur. For infectious diseases with high case fatality rates such as avian influenza and Ebola, it is critical for front-line staff to be aware of infection control measures including how to properly use personal protective equipment (PPE). Governments should take the opportunity of the Ebola outbreak in West Africa to utilize public health capacity to catalyse the systematic strengthening of core capacities for alert and response to meet their International Health Regulations 2005 obligations.

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An assessment of work environment factors correlating with burnout status of physicians employed with the Public Hospital Authority in The Bahamas

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Objectives: To identify factors associated with the burnout syndrome in light of the prevalence of that syndrome in physicians working in the Public Hospital Authority (PHA), Nassau, The Bahamas.

Design and Methods: A cross-sectional study was done utilizing a self-administered survey comprising demographics, general health, work environment, and Maslach Burnout Inventory items to assess burnout among salaried physicians working in nine departments of the PHA. The Statistical Package for Social Sciences was used for data analysis.

Results: One hundred and fifty-three physicians participated. Their mean age was 35.84 (\pm 7.09) years; median 34.00 (IQR: 31.00, 40.00) years. Most (n = 99; 64.7%) were females. No association was found between these, other sociodemographic variables measured and burnout status. Physicians in the Department of Internal Medicine represented 22.2% (n = 34), Family Medicine 20.3% (n = 31), Emergency Medicine 19.6% (n = 30), Paediatrics 13.7% (n = 21) and physicians in other departments 22.3% (n = 34) of the sample. About half (55.7%) of physicians employed under the PHA collectively exhibited a moderate level of burnout; 9.9% of these physicians had severe burnout. Separately, poor balance of family, 15 work environment potential stressors and four potential stress

relievers were found to be each weakly or very weakly related to burnout status. Postgraduate programme year, irregular sleep pattern and lack of appreciation were moderately positively related. Logistic regression analysis showed the key predictors of burnout status to be lack of appreciation (OR = 1.69, $p = 0.002$) and number of years worked post-internship (OR = 0.94, $p = 0.039$).

Conclusion: Physicians sensing of appreciation and sleep hygiene were clear predictors of burnout.

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An assessment of Trinidad and Tobago's health information system readiness

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Objectives: (i) The establishment of a baseline of Trinidad and Tobago's health information system (HIS) status; (ii) The promotion of a common and comprehensive understanding of the HIS among all stakeholders; (iii) The identification of existing strengths and weaknesses of the HIS and (iv) The identification of priority areas for improvement.

Design and Methods: Using version 4.0 of the World Health Organization's (WHO) Health Metrics Network Assessment Tool, three regional health authorities (RHAs) were evaluated. The scoring scheme was based on a system of "0" to "3"; "0" meaning "not prepared at all" and "3" meaning "fully prepared". Interviews were conducted with county medical officers of health, medical chiefs of staff, executive medical directors, information and communications technology (ICT) managers and public health observatory heads.

Results: The results indicated that the lowest scores were assigned to data management (48%) and resources (49%), both classified as present but not adequate. Dissemination and use (53%), information products (58%) and data sources (61%) were found to be adequate. Health information system indicators were found to be highly adequate (76%).

Conclusion: The main areas of weakness in Trinidad and Tobago's current HIS readiness were data management and resources, while indicator status was its greatest attribute.

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Improving timeliness in reporting, data sharing and utilization: A pilot roll-out of the district health management information system at health centre IVs in Luwero district

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Objective: To pilot scale-up of district health management software (DHIS2) to health centre fours (HCIVs) in Luwero district to improve timeliness in reporting, data sharing and utilization.

Design and Methods: This was a pre- and post-implementation study conducted between April and September 2014 at three HCIVs in Luwero district. Qualitative and quantitative methods were used to collect the data. During pre-implementation, we assessed health workers' knowledge, attitudes and practices toward data sharing and utilization. A total of 112 health workers (HWs) responded to the questionnaire while six key informant interviews were conducted to provide data on potential gaps that would hinder roll-out of DHIS2. After roll-out of the intervention, an evaluation was conducted after four months using a questionnaire with the same respondents. Qualitative data were analysed manually following a thematic framework approach, while quantitative data were analysed using Stata statistical software. Timeliness reporting rates were extracted from the DHIS2 system for both before and after the implementation.

Results: Knowledge on data sharing and utilization increased from 68% to 96% and 45% to 95%, respectively. Similarly, proportion of HWs with poor attitude on data sharing and utilization decreased from 20% to 3% and 18% to 4%, respectively within the same period, while 90% adhered to the set procedures in governing data access and 100% to the use of the electronic tool. Almost all HWs appreciated the fact that use of DHIS2 had lessened the burden for data sharing and utilization. Timeliness in reporting increased from 58% to 84%, while inadequate equipment, limited internet and insufficient computing skills were reported.

Conclusion: Scale-up of DHIS2 to HCIVs was possible and roll-out will contribute to improved timeliness in reporting, data sharing and utilization at HCIVs.

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The Caribbean Regional Field Epidemiology and Laboratory Training Programme: A new resource for building public health capacity

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Objective: To describe the process of developing and implementing the Caribbean Regional Field Epidemiology and Laboratory Training Programme (CR-FELTP).

Design and Methods: Caribbean countries have articulated a longstanding need for comprehensive training in applied and integrated epidemiology. Implementation of the International Health Regulations (2005) illustrated public health capacity gaps in the region. The design of a regional FELTP was based on global FETP/FELTP curriculum standards, and the model of a three-tiered regional FETP in Central America. Level I of CR-FELTP reflects the “Tier 1” competencies for applied epidemiologists in governmental agencies, and includes training and field projects in nine subject areas.

Results: A Level I curriculum including mentor orientation, training materials, programme guide and evaluation framework was developed and disseminated to countries, along with basic computer equipment for training. In 2014, the CR-FELTP was successfully launched in six Caribbean countries: Barbados, Suriname, Grenada, St Vincent and the Grenadines, The Bahamas and St Lucia. Along with a coordinator in each implementing country, 48 mentors were recruited. A total of 71 trainees have participated in Level I, yielding a 1.5 trainee:mentor ratio.

Conclusions: Field epidemiology training programmes/FELTPs worldwide have demonstrated that they are an important and ongoing source of skilled public health professionals who contribute to strengthening surveillance systems and the public health workforce. The CR-FELTP shares these goals, but faces many challenges. With external fiscal support ending in 2015, maintaining momentum will require aggressive resource mobilization, organizational commitment from the Caribbean Public Health Agency (CARPHA) and its partners and continued interest and commitment from member states.

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The Caribbean Consortium for Research in Environmental and Occupational Health

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Objective: To examine high-priority environmental and occupational health (EOH) risks in Suriname and those common to the increasingly vulnerable Caribbean region.

Design and Methods: Multi-pronged needs assessments were conducted to document baseline capacity levels and community needs focussed upon health outcome data, laboratory capacity, training programmes and environmental health policy. Environmental and occupational health research included determining gold mining-related mercury contamination, assessment of occupational and community risks for agriculturally related pesticides and analysis of medicinal plants and nutraceuticals.

Results: Environmental and occupational health policies in Suriname and other Caribbean countries are either absent, or where present, not enforced. Mercury contamination had been confirmed in fish species, sediment and communities near gold-mining areas but there were also indications that climate change may have influenced mercury deposition in non-gold mining areas. Produce analyses for key pesticides used in agriculture showed the presence of banned pesticides at levels above the World Health Organization (WHO) maximum residual levels. Mobile health technology-enabled and competency-trained community health workers assisted their community in identifying key pesticide use-related concerns and messages to promote safe pesticide use.

Conclusion: The overarching significance of preliminary studies of the Caribbean Consortium for Research in Environmental and Occupational Health (CCREOH) has been to gain insight into the major EOH issues Suriname is facing. Knowledge of the mercury-related contamination of the country’s estuaries and contamination of agriculture products with pesticide residues provide evidence-based direction for future EOH research. Assessing the healing properties of medicinal plants and nutraceuticals has the potential to advance knowledge in a culturally competent manner. The Caribbean Public Health Agency plays a key role in CCREOH’s policy translation and research dissemination.

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Cytotoxic and genotoxic effects of commonly used Surinamese medicinal plants in cultured Chinese hamster ovary cells

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Objective: Medicinal plants are popularly used in Suriname for treating a wide variety of conditions. However, there are often no records about their possible adverse maternal and perinatal effects. For this reason, we assessed a number of commonly used plant-derived folk medicines for their potential genotoxic effects in a cell culture model.

Design and Methods: Parts from *Aloe vera*, *Apium graveolens*, *Azardichta indica*, *Carica papaya*, *Cocos nucifera*, *Dioscorea villosa*, *Eryngium foetidum*, *Gossypium barbadense*, *Momordica charantia*, *Musa x paradisiaca* and *Senna reticulata* were extracted with distilled water, freeze-dried and stored at -20 °C. Next, they were evaluated at serial dilutions for their effects on the proliferation of and DNA damage formation in cultured Chinese hamster ovary (CHO) cells using a sulforhodamine B and a single cell gel electrophoresis (comet) assay, respectively. The latter studies were validated by assessing the DNA strand-breakage induced by etoposide.

Results: The extracts from *A vera*, *G barbadense*, *M charantia*, *M paradisiaca* and *S reticulata* inhibited cell growth at IC₅₀ values of 100 to 400 µg/mL, whereas the remaining samples were hardly cytotoxic (IC₅₀ values > 1000 µg/mL). However, only the extracts from *G barbadense* and *M paradisiaca* caused appreciable DNA damage viz 40 and 30%, respectively.

Conclusions: Preparations from *G barbadense* and *M paradisiaca* should be used with caution, particularly by pregnant women. These samples are now further evaluated in more comprehensive models of genotoxicity.

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An evaluation of pesticide residue levels in selected produce and a medical plant in Suriname

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Objective: This specific study objective was to characterize pesticide contamination in produce and medicinal plants in Suriname.

Design and Methods: Samples were collected during different seasons from several markets in Suriname. The preliminary assessment collected eight products from the largest market in Paramaribo during the rainy season. Results from the preliminary assessment informed the selection of products for the expanded assessment, which was focussed on seven products sampled from the same market, as well as the largest market in district Wanica during the dry season. Additionally, the vegetable tannia was sampled at three other markets within Paramaribo. All samples were analysed for pesticide residue with gas chromatography electron capture detector.

Results: The preliminary assessment conveyed that 12.5% of the samples tested had pesticide residues. The expanded characterization showed that 35.3% of the samples tested positive for pesticide residues. Half of all the samples with pesticide residues exceeded either one or more maximum residual levels (MRL) in the expanded assessment. Among the identified residues were endosulfan and lindane, which are banned for use in Suriname and are globally being phased out under the Stockholm Convention.

Conclusions: A percentage of selected produce items cultivated in Suriname were contaminated with pesticides. To ascertain the association with adverse health effects, this research will be followed-up by a human health assessment that includes a dietary assessment and biomarker testing.

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Health impacts of climate change in the Caribbean

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Objective: Climate change has substantial impacts on public health and the provision of healthcare. Man-

agement of its health risks requires responses at local levels by healthcare providers, and raises ethical questions about causes and impacts. We examined related observations in two Caribbean countries.

Design and Methods: Building on previous work, and using a semi-structured approach, we conducted focus groups of Caribbean physicians, nurses, veterinarians and technicians who discussed their professional perceptions and experiences. Certain categories of providers were excluded to minimize bias. Focus groups were conducted in Trinidad and Tobago and Grenada. Their responses reflect contextual differences between a large and industrial nation, and a smaller, developing one.

Results: Participants in both nations describe climate change as impacting on patients and hospital admissions. Responses common to both include increases in respiratory-related, mosquito-borne, flood-related and mental illnesses; increased reliance on bottled water and imported food; reduced water quality during floods and the dry season; and changing seasonal weather patterns. Differences in responses include Trinidad and Tobago's concern with floods, landslides and industrial pollution, and Grenada's concern with the ocean that supports its fishing and tourism.

Conclusion: Scientific and news media reports document that some of the problems common to Trinidad and Tobago and Grenada occur in other locations. This verification suggests that the health impacts described are generalizable. To reduce and manage the harms of climate change in the Caribbean, the health sector must become attentive, responsive and be provided with greater resources for educational and other interventions.

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Assessment of Grenadian coastal recreational water quality

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Objective: To investigate the quality of recreational water along the southern coast of Grenada.

Design and Methods: A total of 12 sites were sampled along the southern coast. Water samples were collected bi-weekly for four weeks, during the month of November. Samples were taken from six sites per day, two samples per site, amounting to 24 samples per week, totalling 96 samples for four weeks. The samples were collected between the hours of 8 am and 12 pm. Rainfall data for the sampling period were also collected. Variables measured

were Enterococci, total coliform, pH, turbidity, nitrate and phosphate.

Results: The site with the highest percentage of sampling days exceeding recommended limits was Beausejour Bay. Sixty per cent of sampling days on the Carenage showed a high rate total coliform readings exceeding 200.5 CFU/100 mL. Flamingo Bay (10%) showed the lowest percentage of sampling days that exceeded the recommended limit for Enterococci. Overall, 30.2% of samples from all sites showed Enterococci level above the recommended limits set by the Caribbean Environmental Health Institute (35 CFU/100 mL). Temperature, turbidity, pH and rainfall variables were inconsistently associated with microbial content.

Conclusion: Recreational water on the majority of the beaches along the southern end of Grenada for the month of November 2008 exceeded the recommended limits of total coliform and Enterococci. No positive correlation between rainfall and Enterococci was found.

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Presence of non-fecal coliform bacteria in potable water in tropical Grenada

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Objective: An investigation into the presence of non-coliform bacteria in potable water in Grenada.

Design and Methods: Water samples (444) were collected from three university campuses between January 2013 and January 2014 on a weekly basis and quantified utilizing the membrane filtration technique. Positives were streak plated on the eosin-methylene blue (EMB) and M-Endo agar and confirmed on *E coli* (EC) and lactose broths. The pure cultures were with analytical profile index (API 20 E). The organisms which did not produce gas on EC or lactose at 44.5 C were considered as non-coliform bacteria.

Results: In total, we isolated 20 different gram-negative non-gas producing species, 95% belonging to class Gammaproteobacteria and 5% belong to the class Flavobacteria. During the analysed period, there were no fecal indicators detected in any of the samples, however, gram-negative bacteria were accounted and identified in 15% of samples. The most commonly identified non-coliform organisms were *Acinetobacter lwoffii* and *Cedecea lapagei*, both found in 2.29% of samples collected. The most prevalent organisms belonged to Enterobacteriaceae, which represented eight genera and 15 different species. Most of the species were identified only once. They belonged to the families of Xantomonadaceae, Moraxellaceae and Flavobacteriaceae.

Conclusions: Most of the species were of environmental origin and did not represent a risk for health of non-immune compromised individuals, depending on the

infectious dose and prevalence. However, high cell counts of *Shigella* serogroup represented a waterborne pathogen in over 1% of the samples analysed.