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Traumatic experiences, mental health and risky sexual behaviour in students at a Caribbean university campus

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Objective: To determine the relationship between mental health indicators and risky sexual behaviour in university students aged 18–30 years.

Design and Methods: A cross-sectional survey was administered to students at Cave Hill, The University of West Indies. Each student completed a self-administered questionnaire. Participants were asked if they had ever experienced traumatic experiences such as being hit by a sex partner. Depressive symptoms were assessed using the Center for Epidemiological Studies Depression (CES-D) scale. Human immunodeficiency virus (HIV) risk behaviour was assessed by asking students their number of sexual partners within the past 12 months, the frequency of protected sex and alcohol use before sex.

Results: Of the 1400 students sampled, 582 agreed to participate; 57.4% of which were men. The mean age of the study population was 21.6 years (SD 2.8 years). Regarding traumatic experiences, 7.1% reported having been hit by a sex partner and 7.5% reported having ever been forced to have sex. Having been hit was significantly associated with inconsistent condom use (OR 2.37, 95% CI 1.11, 5.06) and having sex after alcohol (OR 2.39, 95% CI 1.08, 5.25). A positive screen for depression was associated with two or more sexual partners (OR 2.57, 95% CI 1.13, 4.16) while women were more likely to report inconsistent condom use.

Conclusions: Having been hit by a sex partner is a strong predictor of risky sexual behaviour. Persons experiencing intimate partner violence may be targets for HIV/sexually transmitted infection (STI) prevention programmes. Further study is needed to explore factors influencing condom use in women.

Association between specific high-risk cervical human papillomavirus profiles and cervical abnormalities among human immunodeficiency virus-positive women in The Bahamas

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Objective: To identify homogeneous subgroups of women with similar profiles of high-risk human papillomavirus (HPV) types and determine the association of these profiles with cervical abnormalities.

Design and Methods: One hundred and sixty-seven non-pregnant, HIV-positive females ≥ 18 years were enrolled. Each participant received a vaginal examination, Pap smear, and completed a questionnaire. DNA was extracted for HPV testing in a subset ($n = 86$). Homogeneous subgroups of women with similar profiles of high-risk HPV types were defined using non-negative matrix factorization (NMF) followed by consensus clustering (CC) and classification and regression trees (CART) analysis.

Results: The majority of women carried high-risk HPV infections (78%) and more had abnormal cervical cytology (38%) in contrast to women who were high-risk HPV negative (22%). While 51% of women carried HPV16 and/or 18 infections, HPV genotypes of unknown risk were also frequently observed. Unsupervised clustering using NMF and CC identified two major subgroups of women based on their high-risk HPV type profiles. Secondary CART analyses revealed a statistically significant difference in the cervical abnormality profile between the two major subgroups. Human papillomavirus 58 (20/49, 41%) and 16 (15/49, 31%) were the most frequently occurring high-risk HPV types among the subgroup of women in cluster 1 while HPV 18 (23/37, 62%) and 52 (15/37, 41%) were the most frequently occurring risk types in the subgroup of women in cluster 2. Thirty-five out of the 49 (71.4%) women in cluster 1 did not show any cervical abnormality, six (12.2%) women had atypical

squamous cells of undetermined significance (ASCUS), while eight (16.3%) women presented with dysplasia.

Conclusions: High-risk HPV genotypes 52 and 58 along with 16 and 18 may be most influential in the development of cervical abnormalities among HIV-infected females in The Bahamas. Further studies are needed to determine whether HPV 52 and 58 play a significant role in the development of cervical cytological abnormalities in HIV+ women. Triage of HIV+ women with specific HPV genotype profiles may be helpful for cervical cancer control in this population.

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An assessment of behavioural risk factors in St Lucia

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Objective: To assess the prevalence of combined chronic non-communicable diseases (CNCD) risk in a St Lucian sample.

Design and Methods: Using the framework of the World Health Organization (WHO) Behavioural Risk Factor STEPwise Approach to Surveillance (STEPS) survey, a sample of 1834 person aged 25–64 years was surveyed using a stratified cluster sampling design at the enumeration district level. Combined risk prevalence was determined using the following five risk factors: daily smoking, consumption of < 5 servings of fruits and vegetables per day, low levels of activity, overweight/obesity, raised blood pressure.

Results: Data were analysed from 1834 respondents. Of these, 62% were female. The prevalence of daily smoking, intake of < 5 servings of fruits and vegetables daily and raised blood pressure was 63.7% [95% CI 52.2, 75.1], 88.3% [95% CI 74.7, 101.9] and 27.3% [95% CI [23.7, 30.9], respectively with no significant difference between the genders. Prevalence of low levels of physical activity and overweight/obesity was 29.7% [95% CI 21.4, 38.0] and 65.6% [95% CI 61.1, 70.1], respectively with significant differences between the genders. Combined risk assessment revealed a low prevalence of 2.3% [95% CI 0.6, 3.9], with no risk factor for chronic disease; 36.9% [95% CI 29.1, 44.6] had three to five risk factors and 60.9% [95% CI 54.2, 67.5] had one to two risk factors. There were no significant gender differences.

Conclusion: With 97.8% of respondents having at least one risk factor for CNCD, the need for the implementation of risk management strategies, interventions and policies should be paramount.

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Trans-generational epigenetic effects of folic acid supplementation of a ‘cafeteria’ diet on insulin-signalling, lipid and carbohydrate metabolism genes in Sprague Dawley rats

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Objective: To determine whether prenatal folic acid supplementation alters DNA methylation percentage changes induced by high-fat, high-sucrose (HF/HS) exposure in male offspring (rat) for insulin-signalling, carbohydrate and lipid metabolism genes.

Design and Methods: Pregnant Sprague Dawley rats were randomly assigned to a control, HF/HS or folic acid-supplemented HF/HS (HF/HS/FA) diet (n = 5/group). Litter weight data were collected for ten weeks during which they were fed American Institute of Nutrition (AIN) control diet. Mean DNA methylation percentages were obtained for male offspring skeletal muscle and dam and male offspring livers. Mean differences were assessed by one-way analysis of variance (ANOVA) [$p \leq 0.05$ significant] with Bonferroni’s post-hoc test for multiple comparisons.

Results: High-fat/high-sucrose (HF/HS) offspring had significantly higher mean litter weights than control or HF/HS/FA from postnatal weeks seven to 10 ($p \leq 0.05$). Carbohydrate and lipid gene methylation percentages were significantly lower in HF/HS/FA vs HF/HS offspring ($p \leq 0.05$). Hepatic genes were generally hypermethylated while skeletal muscle genes were hypomethylated for both groups. Significant differences existed between control and HF/HS/FA dams in the methylation percentages for the insulin receptor substrate 1 and lipoprotein lipase genes (95% CI: 0.133, 9.183 and 0.241, 1.90, respectively).

Conclusions: Male rat offspring liver and skeletal muscle DNA methylation percentages can be altered significantly by folic acid-supplementation of a prenatal HF/HS diet.

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Carbapenemase-producing *Enterobacteriaceae* detected in sewage on the island of Barbados

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Objectives: To screen sewage for carbapenemase-producing *Enterobacteriaceae* and to determine the susceptibility of the isolates to a variety of antibiotics.

Design and Methods: Raw and treated sewage were collected from the two wastewater treatment plants on Barbados over a two-week period. Diluted samples were enriched in brain-heart infusion broth in the presence of meropenem to select for carbapenemase-producers. The enriched samples were plated on eosin methylene blue agar. Phenotypic confirmation of carbapenemase production was performed by the modified Hodge test using ertapenem as the indicator. The susceptibility of carbapenemase-producing isolates to a panel of eight antibiotics was determined by disc diffusion assay according to Clinical Laboratory Standards Institute (CLSI) guidelines.

Results: All sewage samples yielded carbapenemase-producers. One hundred and thirty presumptive carbapenemase-producers were isolated, of which 120 (92%) were confirmed. Of the 120 confirmed isolates, 110 (92%) were identified as *Klebsiella pneumoniae*, seven (6%) were identified as *Enterobacter aerogenes* and three (2%) were identified as *E. intermedium*. There was a high-level resistance to amikacin (69%) and gentamicin (65%). The isolates were largely susceptible to doxycycline (54%), tigecycline (56%) and fosfomycin (56%). Ninety per cent of the isolates were resistant to more than one class of antibiotic.

Conclusions: This study demonstrated the presence of carbapenemase-producers in sewage from Barbados which may implicate the community as a reservoir for these pathogens. The carbapenemase-producers demonstrated a high-level of co-resistance but were largely susceptible to doxycycline, tigecycline and fosfomycin.

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Use of social media to strengthen disaster management in the Ministry of Health, The Bahamas

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Objective: To assess social media use in The Bahamas, and its suitability for use in disaster management.

Design and Methods: The study was carried out in two phases. Phase I – nationally representative sample where telephone interviews assessed the population's social media use and willingness to employ it in emergencies. Phase II – subset from Phase I was assessed on receipt of a transmitted social media message.

Results: Phase I had - 751 respondents, ages 18–90 years (median 38 years). Many persons (84.8%) had internet access. Social media was used among 88.1% of the respondents; text messaging (41.2%, CI 37.4%, 45.0%), Facebook™ (30.3%, CI 26.1%, 34.5%) and e-mail (18%, CI 14.5%, 21.5%). Persons 18–34 years were more likely to use Facebook™ (91.0%, CI 84.5%, 94.9%) whereas those 35–44 years preferred e-mail (71.0%, CI 62.1%, 78.5 %). Those with college degrees used e-mail (33.0%, CI 25.2%, 41.9%) while those with primary school education used text messaging (49.4%, CI 27.1%, 71.9%, $p < 0.0005$). Social media users wanted to receive alerts, including location of medical services (60.7%) and food/water (56.9%). Further, 34.5% (95% CI 27.3%, 42.3%) have used e-mail and 24.2% (95% CI 17.9%, 31.5%) Facebook™ to get information about an emergency. In Phase II, 365 respondents (49%) consented; 10% (36 persons) was selected for follow-up and were sent alerts *via* their preferred social media contact, eight (22.3%) responded.

Conclusions: Social media use is popular in The Bahamas, and the population is willing to use it in emergency situations. Preferred methods of communication were shown to vary by age, thus a variety of approaches should be used.