

Non-communicable Diseases III: The Eastern Caribbean Health Outcomes Research Network (ECHORN) Cohort Study

Chairpersons: T Hassell, M Frankson

O – 47

The Eastern Caribbean Health Outcomes Research Network (ECHORN) Cohort Study Protocol

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Objective: In the last decade, heart disease, cancer and diabetes have replaced infectious diseases as the leading causes of morbidity and mortality in the Caribbean and now contribute to almost 50% of disability-adjusted life years lost in the region. There is a need for locally generated information to address this disproportionate disease burden in the Caribbean. The purpose of this paper was to describe the research protocol of a regional cohort study that aimed to provide longitudinal information on diabetes, cancer, and cardiovascular disease and their associated risk and protective factors in the Caribbean.

Methods: The Eastern Caribbean Health Outcomes Research Network (ECHORN) cohort study is a longitudinal study performed in four Caribbean countries that differ in language, infrastructures, governance and ethnic/racial composition. Study procedures included a survey on sociodemographics and known risk factors for diabetes, cancer, and heart disease, a clinical assessment, laboratory tests and biobanking. A total of 2900 participants have enrolled into the study and will be followed at 4–5-year intervals to assess lifestyle and health changes. Primary outcomes include prevalence of risk factors for diabetes, heart disease, and cancer and changes in metabolic (eg blood pressure) and behavioural factors over time.

Conclusion: The ECHORN Cohort Study was an important step in characterizing the burden of non-communicable chronic diseases at a regional level in the Caribbean.

This longitudinal study will provide valuable information on three chronic diseases in different country settings and advance knowledge of healthcare utilization across different healthcare delivery systems in the eastern Caribbean.

O – 48

The ECHORN Cohort Study: Alcohol use among the elderly: Associations with non-communicable diseases and psychosocial issues

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Objective: To report on the prevalence of alcohol use and its association with non-communicable diseases (NCDs) and psychosocial issues.

Methods: The sample was 1032 participants aged 60 years or older from the Eastern Caribbean Health Outcomes Research Network (ECHORN) Cohort Study (Barbados, Puerto Rico, Trinidad and the US Virgin Islands). Four drinking profiles (ever drinker, current drinker, problem drinker and heavy drinker) were created and demographic, social, health and psychosocial characteristics were analysed for each profile using Chi-square tests.

Results: Nearly 70% (69.3%) reported 'ever' drinking, 21.8% were 'current' drinkers, 5.0% 'problem' drinkers and 6.5% 'heavy' drinkers. Respondents from Trinidad reported more 'problem' drinking (30.8%) and 'heavy' drinking (43.3%) compared to their counterparts on the other three Islands ($p < 0.001$). Nearly 52% (51.9%), had either Stage 1 or 2 hypertension; 32.1% were diabetic and 7.9% reported cancer. Approximately 12.5% reported symptoms suggestive of depression. Those with Stage 1 hypertension were more likely to report 'heavy' drinking

in the past month, compared to those who were not heavy drinkers ($p < 0.05$). Those who reported 'ever' drinking were more likely to report cancer, compared to those who reported not drinking ($p = 0.039$). Religiosity/spirituality was associated with less alcohol use ($p < 0.001$). All alcohol profiles were associated with early sexual activity ($p < 0.001$) and having more than five sexual partners ($p < 0.05$). Employment was significantly associated with heavy drinking in the past month.

Conclusion: Eastern Caribbean elderly with hypertension or psychosocial issues should be screened for heavy alcohol use.

O – 49

The ECHORN Cohort Study: Obesity and weight misperception among adults in the Eastern Caribbean

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Objective: Evidence suggests that weight misperception (underestimating one's actual weight) may reduce engagement in weight-loss programmes. The purpose of this study was to examine the prevalence of weight misperception among Eastern Caribbean adults and how it influenced engagement in weight control behaviour.

Methods: Data from the Eastern Caribbean Health Outcomes Research Network (ECHORN) Cohort Study (ECS) at baseline were analysed. The ECS is comprised of approximately 3000 adults aged 40 and older residing in the US Virgin Islands, Puerto Rico, Barbados and Trinidad and Tobago. Weight misperception is defined as participants who under-assess their actual weight. Binary multivariable logistic regression ($n = 1957$ participants) was used to examine the association of weight misperception with body mass index (BMI) category, age, gender, educational level, known history of non-communicable disease (NCD) and participant attempt to lose weight.

Results: Weight misperception was common with 55% of the overweight (BMI 25–29 kg/m²), and 24% of obese class I (BMI 30–34.9 kg/m²) participants under-assessing their actual weight. There was no difference in weight misperception between men and women, but odds of weight misperception were lower in participants with higher education (OR = 0.51; $p < 0.0001$) and known history of prediabetes versus no known NCD (OR = 0.63; $p = 0.002$). Participants with weight misperception were less likely to report they

were 'trying to lose weight' than those with accurate weight perception (OR = 0.15, $p < 0.0001$).

Conclusion: Weight misperception was common among overweight and obese adults in the Eastern Caribbean and was associated with lower likelihood of attempting weight-loss. Addressing weight misperception is critical to the success of obesity interventions targeting Eastern Caribbean adults.

O – 50

The ECHORN Cohort Study: Physical activity among participants 40 years of age and over

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Objective: Determining physical activity levels of adults aged 40 years or over in Barbados, Puerto Rico, Trinidad and Tobago and the US Virgin Islands (USVI).

Methods: A representative population-based sample completed the Global Physical Activity Questionnaire. Associations with physical activity levels were explored by univariate Chi-square test and logistic regression.

Results: Of 2362 participants 34.0%, 29.2%, 24.9% and 12% were from Barbados, Trinidad and Tobago, Puerto Rico and the USVI, respectively; 34.3% were male; 24.5%, 35.2%, 39.3% were normal weight, overweight and obese, respectively, 60.5% had hypertension and 27.3% diabetes. Low, moderate and high physical activity levels were reported by 44.7%, 19.3% and 36%, respectively. People with diabetes vs those without (49.2% vs 43%, $p = 0.0064$) or hypertension vs those without (49.3% vs 37.7%, $p < 0.0001$), or obesity vs normal weight counterparts (51.5% vs 39.4%, $p < 0.001$) were more likely to report low physical activity levels. Men were less like than women to report low activity (36.1% vs 49.2%, $p < 0.001$). Logistic regression controlling for age and gender indicated that diabetes (odds ratio [OR] 1.23, 95% CI: 0.99, 1.53), hypertension (OR 1.57, 95% CI: 1.28, 1.92), obesity vs normal weight (OR 1.85, 95% CI: 1.45, 2.36), Puerto Rico vs Barbados (OR 2.54, 95% CI: 1.97, 3.27) or Puerto Rico vs Trinidad origin (OR 1.69, 95% CI: 1.31, 2.19) were predictors of low vs high physical activity levels.

Conclusion: A low level of physical activity was associated with increasing age, female gender, obesity, hypertension, diabetes and residing in Puerto Rico.

Moderate food insecurity is associated with nutrition-related cardiometabolic conditions in the ECHORN Cohort Study

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Objective: To describe the prevalence of food insecurity in the Eastern Caribbean Health Outcomes Research Network (ECHORN) Cohort Study and its association with the following nutrition-related cardiometabolic conditions: obesity, Type 2 diabetes mellitus, hypertension and heart disease.

Methods: Stratified multi-stage random sampling was used to empanel the ECHORN Cohort between 2013 and 2016 in Barbados, Trinidad and Tobago and Puerto and simple random sampling was used in the United States Virgin

Islands of St Thomas and St Croix. The present study was a cross-sectional analysis of baseline data from all island sites (n = 2087). Household food security was measured using a previously validated version of the Latin American and Caribbean Food Security Scale (ELCSA), nine-item sub-scale for adults (Cronbach's alpha = 0.90).

Results: Nearly 30% (28.7%) of the ECHORN Cohort had some level of household food insecurity: mild (17.4%), moderate (6.5%) or severe (4.7%). The prevalence of food insecurity was highest on the Island of Trinidad, followed by Puerto Rico, Barbados and USVI. Women, younger participants and those less educated were significantly more likely to report food insecurity. In multivariate regression models adjusting for gender, participant age, education, island site, and obesity status, participants from moderately food insecure households had significantly higher odds of heart disease and Type 2 diabetes, compared to those from food secure households.

Conclusion: Moderate food insecurity was associated with increased odds of heart disease and Type 2 diabetes. Households that are moderately food insecure may use limited resources to buy more energy dense processed foods that are cheaper and more readily available than fresh produce.