

ABSTRACT

Staggering increases in health insurance claims by University staff suggested a significantly high burden of disease, with NCDs and their risk factors suspected as being the major culprit. This problem warranted an assessment of the disease burden and identification of associated risk factors in order to generate credible evidence to formulate a culturally appropriate intervention: this constituted the overall aim of the work reported herein. In Phase 1 of the study, a cross-sectional study was conducted on 273 proportional and randomly selected University staff. Standardized measurements of anthropometry, dietary intake, biochemistry and lifestyle behaviors were made. Mean age was 45 ± 10 years. Males had higher mean values ($p < 0.01$) for blood pressure (133/83 vs 126/77 mmHg), blood glucose (110 vs 99 mg/dL) and triglycerides (146 vs 101 mg/dL). Most prevalent risk factors were low HDL (54%) and high cholesterol (48%), with 50% having ≥ 3 NCD risk factors. BMI and waist circumferences were positively associated ($p < 0.01$) with blood pressure, glucose and triglycerides. Physical activity was regarded as being adequate for 48%. Dietary energy intake, assessed from 494 twenty-four hour recalls was 2129 kcal (males) and 1660 kcal (females); protein and carbohydrate intakes were adequate; fat intake was high, particularly among females; fiber intake was low and sodium intake was high. Mean fruit and vegetable servings was 2.6/day. In order to improve the accuracy of dietary assessments, 380 recipes were collected for 106 composite dishes and analyzed. Dietary assessment also allowed for the development of a draft QFFQ comprising 146 food/drink items. In Phase 2, a 6-month RCT was implemented

with sufficient statistical power to detect a reduction in waist circumference by 2cm. Participants with ≥ 2 NCD risk factors (n=148) were randomly assigned to intervention or control. Intervention included standardized protocols for promoting healthy eating, increased physical activity, close monitoring and monthly workshops that resulted in mean changes ($p < 0.01$) for weight (- 2.2 [95% C.I. -3.1, 1.3] kg), BMI (-0.8 [95% C.I. -1.1, -0.5] kg/m²) and waist circumference for females (-7.3 [95% C.I. -9.1, -5.5] cm). Glucose and triglycerides were reduced by 13.4% and 17.7% respectively and HDL increased by 11.6% among females; daily consumption of ≥ 5 servings of fruits and vegetables increased by $\sim 15\%$. Intervention effect was significant ($p = 0.001$) for weight and BMI. The significant improvements in anthropometric and certain NCD risk factors highlight the value of culturally appropriate intensive lifestyle interventions in reducing disease burden.

Trial Registration clinicaltrials.gov Identifier: NCT01277614

Keywords: nutritional intervention, food frequency questionnaire, dietary assessment, burden of disease, lifestyle intervention, nutritional composition, Trinidad.