

Contribution of isotopic techniques in the diagnosis of chronic non-communicable diseases: a community experience

Objective: In Argentina, chronic non-communicable diseases (NCDs) represent a relevant public health problem. Due to the importance to approach isotopic techniques at the service of the community, the aim was to conduct an evaluation of NCDs risk factors that included assessment of fat mass in adult population of Basavilbaso, located in Province of Entre Ríos, in support of the Project for the Protection of the Vulnerable Population against Chronic Non-communicable Diseases (PROTEGER) of the National Ministry of Health.

Methodology: Invitation to participate in the evaluation of risk factors was made in March 2018 at the Primary Health Care Center (PHCC) Pueblo Nuevo, which is located 325 km from country's capital. Part of the work team, which belongs to Department of Nutrition, Faculty of Pharmacy and Biochemistry, University of Buenos Aires (UBA), moved to PHCC to perform the assessment. Inclusion criteria were: ≥ 18 y, healthy or in treatment by NCDs. On study day, 19 women (W) and 9 men (M) ($n=28$) attended voluntarily. Data on pre-existing treatments and received medication were collected in a personal interview. Blood pressure (BP,mmHg), weight (kg), height (m) were measured and BMI (kg/m^2) was calculated. Total body water was assessed by isotopic dilution technique and fat mass (FM%) was estimated. Measurement of deuterium enrichment was performed in a Shimadzu FTIR co-funded by IAEA and UBA. Blood sample was collected to determine glycemia (Gly, mg/dL), cholesterol (Chol, mg/dL) and triglycerides (Tg, mg/dL). 24-hour urine sample was collected to determine sodium (Na) and potassium (K) by atomic absorption spectrometry and estimate salt intake (SI, g/day). Previously, participants were trained to collect 24-hour urine sample and collaborators to help in the administration of deuterated water. After 15 days, participants received their individual report and it was organized a meeting at Hospital of Basavilbaso to show the results to the authorities of the Coordination Office of NCDs Prevention of Entre Ríos.

Results: 95% W and 66% M were overweight or obese. FM% was elevated in 100% W (41.7 ± 5.4) and 78% M (28.3 ± 7.5). Although 90% of the participants received antihypertensive, lipid-lowering and hypoglycemic medication, mean values of Gly, Chol and Tg were 117.5 ± 64.4 ; 205.6 ± 38.7 and 182.8 ± 115.6 ; being elevated in 29%, 54% and 43%, respectively. BP was increased in 32% of participants. In addition, 72.5% presented SI higher than WHO recommendation of 5 grams/day (9.1 ± 4.4) with a decreased K/Na ratio (0.4 ± 0.2). Taking into account the sum of risk factors (FM%, Gly, Chol, Tg, BP, SI), 64.5% of participants presented three or more, being FM% elevated in 86%.

Conclusion: Community participation and application of isotopic techniques were successful. The study of risk factors in the population demonstrates the double burden of obesity and associated factors to the excessive consumption of sodium. Isotopic techniques contributed as a tool for better diagnosis of NCDs.

Country

Argentina

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