Proceedings of the Nutrition Society (2020), **79 (OCE2)**, E406 doi:10.1017/S0029665120003547

The 13th European Nutrition Conference, FENS 2019, was held at the Dublin Convention Centre, 15–18 October 2019

PNNS-GS2: Development and validation of a dietary quality score reflecting the French nutritional recommendations of 2017

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Abstract

Introduction

The food-based dietary guidelines having been revised in March 2017, it appeared necessary to update the National Nutrition Health Program - Guidelines Score (PNNS-GS), the diet quality score developed according to the 2001 recommendations. This study was therefore aimed at developing and validating the PNNS-GS2, the diet quality score based on the new recommendations.

Material and methods

Our sample included 80,965 French adults enrolled in the prospective NutriNet-Santé cohort. Collected data included 24-hour dietary records over two years, socio-demographic data, and (in a sub-sample of 16,938 individuals) clinical and biological indicators. The cut-offs and weights of the components of the PNNS-GS2 were developed collegially by nutrition experts who were involved in the update of the recommendations. The score has 13 components for a theoretical value ranging from -∞ to 13.5 points. Nutritional, socio-demographic, clinical, and biological data were described according to the PNNS-GS2 quintile. The face, content, construct and criterion validities were also evaluated.

Results

In our sample, mean PNNS-GS2 was 2.1 (SD = 3.1) in women and -0.3 (SD = 3.6) in men. A high PNNS-GS2 (and therefore a better adherence to the new recommendations) was positively associated with (mean difference Q5-Q1) a high age (Δwomen = + 8.4 / Δmen = + 4.7 years), higher educational level (Δwomen = + 3.9 / Δmen = + 7.4% with a university level), more physical activity (Δwomen = + 13.3 / Δmen = + 3.5% with ≥ 60 min/day) and a larger proportion of non-smokers (Δwomen = + 9.7 / Δmen = + 13.7%). A high PNNS-GS2 was also positively associated with a higher fiber intake (Δwomen = + 8.7 / Δmen = + 10.7 g/d) or vitamin C (Δwomen = + 36.6 / Δmen = + 43.8 mg/d), and negatively with mean arterial pressure (Δwomen = -3.0 / Δmen = -2.8 mmHg) and plasma LDL-cholesterol concentrations (Δwomen = -0.07 / Δmen = -0.06 g/L) and triglycerides (Δwomen = -0.1 / Δmen = -0.16 g/L). All tests were significant ($p < 0.05$).

Discussion

Associations observed between the PNNS-GS2 and socio-demographic, nutritional and clinico-biological factors are consistent and corroborate its validity. Further studies will be needed to estimate its association with mortality and morbidity.

Conflict of Interest

There is no conflict of interest