

Prospective association between breast cancer risk and an individual dietary index based on the British Food Standards Agency nutrient profiling system

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Deschasaux M, Julia C, Zelek L, Kesse-Guyot E, Gourlet V, Lécuyer L, Méjean C, Ducrot P, Peneau S, Latino-Martel P, Fézeu L, Fassier P, Hercberg S and Touvier M. Sorbonne Paris Cité Epidemiology and Statistics Research Center (CRESS), Inserm U1153, Inra U1125, Cnam, Paris 13 University, Nutritional Epidemiology Research Team (EREN), Bobigny, France; Avicenne Hospital, APHP, Bobigny, France.

Body: Background: The Food Standards Agency Nutrient Profiling System (FSA-NPS) constitutes the basis for the Five-Colour Nutrition Label suggested in France to be put on the front-of-pack of food products. At the individual level, a dietary index (FSA-NPS DI) has been derived and validated and corresponds to a weighted mean of all FSA-NPS scores of foods usually consumed by the individual, reflecting the nutritional quality of his/her diet. Our aim was to investigate the association between the FSA-NPS DI and breast cancer risk in a large cohort.

Methods: This prospective study included 46,864 women aged over 35y from the NutriNet-Santé cohort (2009-2015) who completed at least three 24h dietary records during the first 2y of follow-up (median follow-up: 4.0y). 555 incident breast cancers were diagnosed. FSA-NPS DI was computed for each subject using the following nutrient content for 100g of each foods and beverages consumed: energy, total sugar, saturated fatty acid, sodium, fruits and vegetables (%), fibres and proteins. Higher values of the FSA-NPS DI correspond to a lower nutritional quality of the diet. Associations were characterized by multivariate Cox proportional hazards models.

Results: The FSA-NPS DI was directly associated with breast cancer risk (HR_{1-point increment}=1.06 (1.02-1.11), P-trend=0.005; HR_{Q5vs.Q1}=1.52 (1.11-2.08), P-trend=0.002). These associations were similar after the exclusion of cases diagnosed during the first year of follow-up.

Conclusions: In this prospective study, a higher FSA-NPS individual score was associated with an increased breast cancer risk. These results suggested that unhealthy food choices may be associated with a 52% increase in breast cancer risk (FSA-NPS DI \geq 7.7 (Q5) vs. <4.1 (Q1)), supporting the public health relevance of developing front-of-pack nutrition labels based on this score.