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The dietary transition in French Polynesia: what objective scores to measure its extent and components?

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OBJECTIVE: Most of the studies investigating the dietary transition use either individual food consumptions or complex dietary patterns as a measure of dietary changes over age and space. Our aim was to build simple scores of dietary transition to be used in the framework of the ongoing cohort about the “Dietary and health transition in French Polynesia”.

DESIGN: Maoi participants aged 12-88 years (n=232) gave blood and spot urine samples and answered a 24-groups food-frequency-questionnaire. We measured the fatty acid profile of red blood cell (RBC) membrane phospholipids as a surrogate for individual intakes of PUFA and trans-fatty acids. We calculated two scores: the “dietary transition score” (DTS) was based on the sum of food frequency scores: local foods scored positively while store-bought-foods scored negatively. The “dietary fat transition score” (DFTS) was the ratio of (EPA+DHA) to trans-fatty acids in RBC.

We compared scores across three age groups (12-17 years, 18-49 years, 50 years+) and two communities (urban Papeete and rural Tubuai).

RESULTS: DTS varied greatly according to age: from -61.0±58.8 in teenagers to 12.3±52.9 in elders (p<0.0001), and community: -5.3±63.0 in Tubuai and -33.9±62.7 in Papeete (p=0.0006), without interaction. There was a positive linear trend from teenagers in Papeete to elders in Tubuai (p<0.0001). DTS was correlated to DFTS (Spearman R\textsuperscript{2}=0.40, p<0.0001), urinary iodine-to-creatinine ratio (R\textsuperscript{2}=0.32, p<0.0001), plasma selenium (R\textsuperscript{2}=0.35, p<0.0001), and non n-6 fatty acids in RBC (R\textsuperscript{2}=0.45, p<0.0001), n-6 being a marker of all types of low quality food. DFTS correlated even better with iodine (R\textsuperscript{2}=0.43, p<0.0001) and selenium (R\textsuperscript{2}=0.78, p<0.0001), which may be considered as markers of marine food consumption.

CONCLUSIONS: The simple dietary transition scores we propose capture generational and geographical differences in food consumption patterns that may be relevant to the study of the ongoing health transition in French Polynesia and other populations facing social change.

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