The reproducibility and stability of dietary patterns

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Abstract
A person's dietary intake consists of multiple foods eaten as part of a meal as opposed to any one single food/nutrient. Therefore, it is important to understand the interactions between foods and how they affect diet-disease associations. As a result, dietary patterns have emerged as important tools in nutrition research. The objective of the current study is to assess the reproducibility and stability of dietary patterns across four different time-points. Anthropometric measurements were taken from a subset of participants of a free-living cohort study (n = 94), followed by the administration of a 24-hour dietary recall once a month, for four months. The dietary data was entered into dietary analysis software, Nutritics, by two researchers independently, and cross-checked. Foods were assigned to one of 33 predefined food groups, which were further collapsed to 18 food groups based on previous research. Statistical analysis was then performed on the final dataset. Intra-class correlation coefficients were derived to assess the reproducibility of each food group across the four time-points. Variables were standardized using z-scores and dietary patterns were derived using K-means cluster analysis. Stability was assessed by coding participants into one of six groups based on their dietary pattern transition between visit one and four. Analysis of this sub cohort revealed that the intake of food groups (% energy contribution) was reproducible across the time-points. The majority had good to very good agreement, with vegetables and vegetable dishes having the strongest agreement (ICC = 0.831) followed by milk and yogurts (ICC = 0.773), fruit and fruit dishes (ICC = 0.729), and breakfast cereals (ICC = 0.680). Two distinct dietary patterns were identified at each time-point; a 'Healthy' and an 'Unhealthy' dietary pattern. The 'Healthy' dietary pattern was characterized by a significantly higher energy contribution (p < 0.05) from the following food groups – vegetables and vegetable dishes; fruit and fruit dishes; milk and yogurts; breakfast cereals; butter, spreading fats and oils. The analysis on stability demonstrated 42% of participants remained in the same dietary pattern, while 58% transitioned from one dietary pattern to the other. Our results to date demonstrate that two distinct dietary patterns can be derived across multiple time-points using cluster analysis and the food group composition of these dietary patterns can be considered reproducible. Future work will explore these dietary patterns further incorporating the entire cohort and linking stability to health parameters.

Conflict of Interest
There is no conflict of interest