Development and Validation of a Nutrition Transition Diet Score for Adolescents in India

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Abstract

Background Emerging research suggests changes in dietary patterns among adults and youth during the global nutrition transition, but there is no dietary score to measure the extent of nutrition transition that may be occurring.

Objective To develop and validate an index-based Nutrition Transition Diet Score for adolescents in India.

Methods An evidence-driven index-based apriori Nutrition Transition Diet Score for adolescents was developed and validated against an exploratory factor analysis (EFA) derived Diet Score. The EFA with varimax rotation was used to derive dietary patterns from answers to a validated food frequency questionnaire provided by 198 adolescents in Vijayapura, India. The evidence-driven index-based Diet Score among adolescents who were in the top quartile ($\geq$75 percentile) of the main dietary pattern were compared using diet score means to the rest of the group.

Results The apriori index-based Nutrition Transition Diet Score (range 0 - 10) included six food groups: fried foods, sugar-sweetened beverages, dairy, fruits and vegetables, and bread, and four nutrients, namely total dietary fat, saturated fat, cholesterol, and simple sugars (table 1). The Spearman correlations between the index-based Diet Score and EFA-driven Diet Score was high (r=0.68, p <0.0001). Among the adolescents, the mean evidence-driven index-based Nutrition Transition Diet Score was 4.7 $\pm$ 1.1. The following three dietary patterns were identified using EFA: the transition 'westernized' pattern (factor loadings >4 for breads, fried foods, processed foods, sugar-sweetened beverages (fruits juices and carbonated beverages), and sweets and desserts), the animal-source pattern (factor loadings >4 for egg, lean meat, and red meat), and the traditional 'Indian' pattern (factor loadings >4 for grains, fruits and vegetables, dairy, sugar, traditional fried foods, and ghee) (table 2). The loading of traditional fried foods on both traditional and transition patterns indicate that as diets may become more 'westernized', this food group may continue to remain as one of the main components of the diet. The mean index-based Diet Score was significantly higher (p< 0.0001) among adolescents in the upper quartile of the transition pattern (score range: 4-8) when compared to the rest (score range: 1-6) (table 3). This shows that the evidence-driven index-based Nutrition Transition Diet Score is valid against an exploratory factor analysis (EFA) derived Diet Score for adolescents.

Conclusion The validated index-based Nutrition Transition Diet Score can be used to measure nutrition transition among adolescents in India. To our knowledge, this is the first diet score to assess the extent of nutrition transition.

View this table:	Table 1
»In this window »In a new window	Components of the Index-based Nutrition Transition Diet Score

View this table:	Table 2
»In this window »In a new window	

in South India (n=198)a

	Table 3
View this table: »In this window »In a new window	Intake of food groups (g/d) among adolescents with and without Nutrition Transition

diets (n=198)

Footnotes