Abstract

Characterising Diurnal and Irregularity Eating Patterns and Their Relationship with Obesity in the Italian Population in the INRAN-SCAI 2005–2006 Nutrition Survey †

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Abstract: Background and Objectives: Late food intake has been linked to weight gain while early meals have been associated with weight loss and maintenance. However, the impact of temporal (diurnal) eating patterns summarising the time of food intake throughout the day and the eating time irregularity across surveyed days has been less investigated. INRAN-SCAI is a cross-sectional nutrition survey conducted in 2005–2006 in a representative sample of the Italian population, collecting diet diaries over 3 days, including a questionnaire with socio-demographic and anthropometric variables. We aimed to characterise diurnal and irregularity eating patterns (DIEPs) and investigate their association with BMI/obesity in Italian adults (18–64 ys). Methods: We derived the DIEPs by Principal Component Analysis (with covariance matrix) jointly on indices of average and irregularity of energy intake using the reduced six time intervals corresponding to common eating time slots in Italy. The first five DIEPs explained 93% of the total variance, with the first DIEP score increasing with energy intake at main meals. A mixed-effect model with random intercept accounting for the correlation within household (ICC) was applied including only adults (complete case analysis n = 2022), with BMI as outcome, the main DIEPs as exposures and a set of confounders identified by a causal diagram. Results: The model resulted in a positive association of BMI with the first DEP (b = 0.75 per 100% score, p = 0.009; ICC = 0.195, p < 0.0001). A positive significant association also resulted between BMI and the third DIEP (10% variance) whose score increased with energy intake at snack times outside main meals (b = 0.89 per 100% score, p = 0.013) and with the fifth DIEP (6.4% variance), which mainly captured food intake at night and irregularity of intake at night (b = 0.34 per 100% score, p = 0.028). Discussion: Despite the limitations of a cross-sectional design, this study indicates that in the Italian adult population BMI tended to increase not only with large energy intake at main meals and at snack times but also with energy intake and irregularity of intake at night. This is in line with recent findings in the British population, indicating the relevance of surveying and modifying DIEPs, beside average daily intake, for obesity management.

Keywords: chrononutrition; obesity; nutrition survey; principal component analysis

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