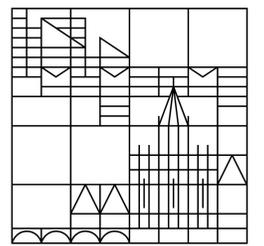


The behavioural signature of snacking – a visual analysis



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Background

Snacking behaviour constitutes an essential part of our daily diet and is seen as one major contributor to overweight and obesity. However, empirical findings are ambiguous¹.

Compared to main meals, snacking is characterized by an irregular occurrence throughout the day, resulting in great variability not only between but also within persons².

Since multiple decisions are involved about how much, what, when and where to eat, an adequate assessment of snacking is challenging³.

To adequately investigate and illustrate snacking behaviour, research has to go beyond aggregated values and focus on individual, temporal and context-based variances in the behaviour⁴.

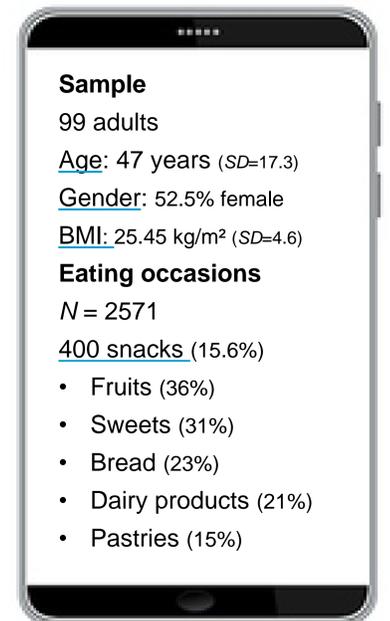
The present study aims to account for these variances by analysing different dimensions of the behavioural signature of snacking in order to reveal inconsistencies in previous research concerning snacking and BMI and derive adequate intervention strategies.

Methods

Design

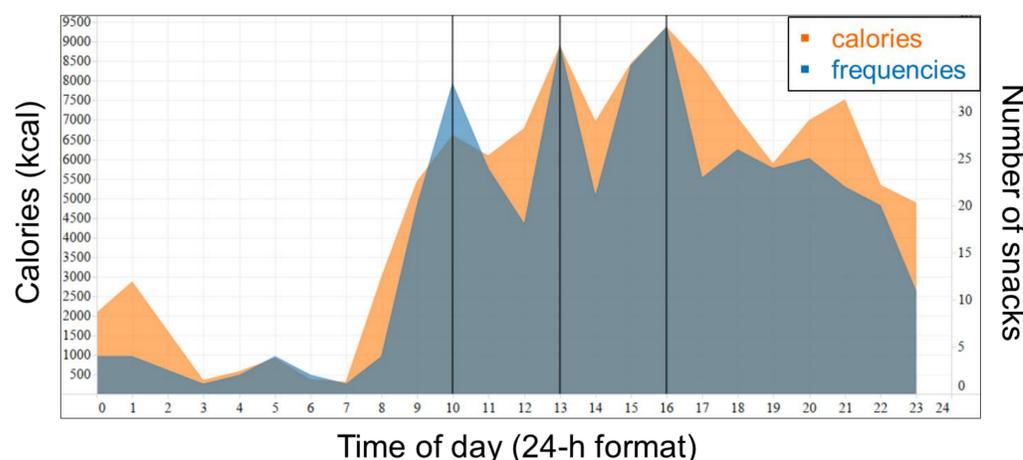
Smartphone- and photo-based EMA to capture snacking in real-time and real-life:

- Eight consecutive days
- Recording of every eating occasion by pictures and food descriptions
- Assessment of time & place
- Coding of food pictures by trained raters as well as extraction of calories & nutrients
- Data analyses via graphic visual analysis techniques (Tableau 9.3)

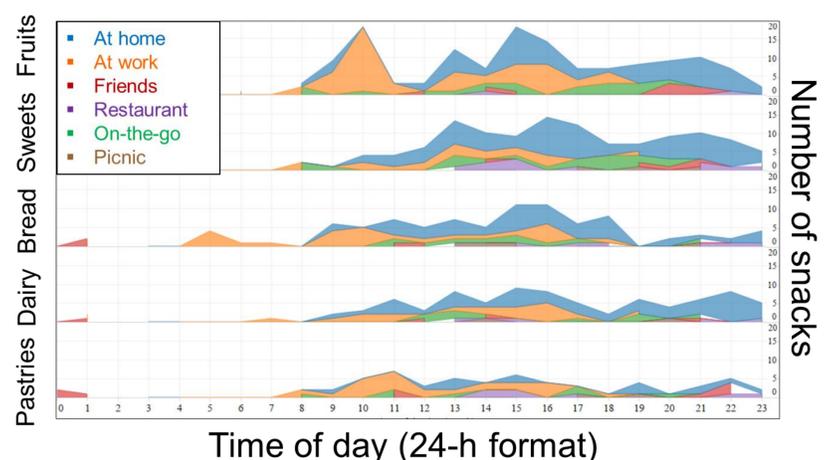


Results

The behavioural signature of snacking

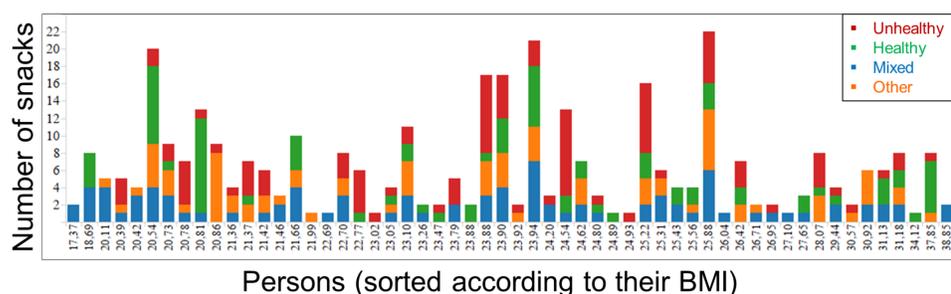


When, how often, and how much. Frequency and calorie distribution of snacking as an overlapping function of time of day reveal three pronounced snacking peaks at 10am, 1pm, and 4pm. However, the 10am peak shows a partly different pattern with a higher frequency compared to calorie intake.



When, how often, what, and where. A more detailed analysis of the top five snack categories shows that fruits are predominantly snacked in the morning at work, whereas in the afternoon, sweets and fruits are likewise snacked at home.

Snacking on an individual level



How often, what and who. To investigate snacking on an individual level, number of snacks are subdivided into four categories and displayed per person. Data showed no exclusively „unhealthy“ snacking pattern but a cluster of people bordering on overweight and snacking unhealthier and more frequent.

Discussion

The present study revealed three distinct snacking peaks at 10am, 1pm, and 4pm. More specifically, in the morning and at work predominantly fruits are consumed as snacks, explaining the mismatch of frequency and calorie distribution.

Associations of BMI and snacking frequency did not support the stereotype of overweight people snacking more often or unhealthier. However, visual analyses are able to yield a cluster of people with frequent and unhealthy snacking behaviours that borders on overweight.

This new methodological approach has the potential to identify meaningful target groups in order to improve the development of adequate and tailored dietary interventions.

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