

Observation of food intake by mobile application of adolescents aged 12 to 14 with obesity and educational style of their parents

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Introduction

- Obesity has multifactorial causes.
- Parental authoritative style has showed a protective effect against obesity compared to permissive or authoritarian style¹.
- The level of food processing has increased significantly. The NOVA classification categorize food from unprocessed (1) to ultra-processed foods (4)².
- Association between the consumption of ultra-processed foods and increased risk of overweight and metabolic disorders³.

In Switzerland, data on the quality of diet of adolescents with obesity and the educational style of their parents that can influence their eating habits are lacking.

Objectives

To observe the dietary habits of adolescents in obesity counseling related to educational style and parents' socio-economic status.

We performed a pilot study to evaluate the feasibility of collection of food intake data photographed by mobile phone.

62 families solicited, including 9 excluded

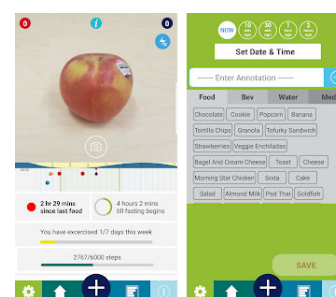
16 families accepted

12 adolescents came to 1st appointment



Method

- Observational study
- 12 adolescents aged 12 to 14 years
- Photographs of meals for 14 days using mobile phone + comparison with a 24-hour food recall on the last day
- Assessment of parents' educational style with validated questionnaires
- Comparisons using non-parametric statistical tests

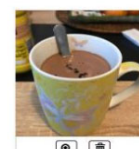
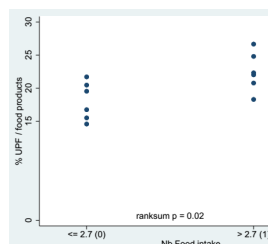
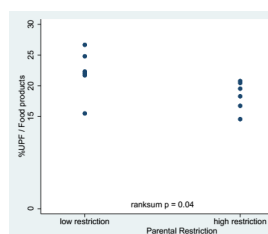


Results

- Adolescents had unbalanced dietary habits with lack of vegetables, fruits, starchy foods and excess of fatty, sugary and ultra-processed foods (UPF). UPF accounted for 20-26% of the food consumption.
- Parents' educational feeding style was not permissive. All teenagers defined their parents as being restrictive in terms of diet.
- The highest consumption of UPF was associated with lower parental restriction and larger number of food consumption.
- The comparison of food pictures from the application highlighted differences with the 24h food recall on the last day of the study.

Comparison of intake by application during 2 weeks and a 24h recall compared to recommended daily portions of the Swiss Society of Nutrition (SSN) for adolescents aged 13 to 14 years and intakes measured among Swiss adults in the menuCH 2015 study (average)

Food per day	Application	24h recall	SSN	menuCH2015
Fruits	0.36	0.50	2	1.9
Vegetables raw and cooked	1.16	1.50	3	1.7
Starchies	2.52	3.50	4.5	2.4
Meat, fish and egg	1.41	1.50	1	1
Dairy products	1.08	1.08	3	3
Sweet products	1.18	1.83	1	1.6
Fat products	1.31	1.92	1	-
Sweet drinks	0.17	0.17	0	2.4
UPF Food	1.55	2.50	-	-
UPF Food / total Food (%)	20.91	26.24	-	-
Meals per day	2.76	3.33	3 to 5	-
Breakfast meals	0.60	0.58	1	0.65



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Discussion

- The diet of studied adolescents is imbalanced and related to parental practices for UPF and sugary foods. This pilot study shows an interest of participants, but also the limitations of a mid-term data collection via a smartphone application.
- Limitations: small sample size, desirability bias of families, measurement bias induced by the 2-week data collection.
- Strengths: one of the first studies using a novel means to collect dietary data from adolescents with photos, giving us an insight into what food was consumed and the frequent intake of UPF.

References

- ¹ Larsen JK, & al. General Parenting Styles and Children's Obesity Risk: Changing Focus. Front Psychol 2018
- ² Monteiro CA & al. Ultra-processed foods: what they are and how to identify them. Public Health Nutr. avr 2019;22(5):936-41
- ³ Costa CS, Del-Ponte B, Assunção MCF, Santos IS. Consumption of ultra-processed foods and body fat during childhood and adolescence: a systematic review. Public Health Nutr. janv 2018;21(1):148-59

Perspectives

The importance of role model of parents during meals and food available at home for teenagers.

More studies are needed to compare eating habits of parents and teenagers.

A shorter data collection period may be enough with a mobile application, as well as a direct feedback on what data has been captured.



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