



Research Article

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Frequency of Fruit and Vegetable Consumption in Adolescents with Overweight, Correlation with their Parents



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Abstract

Low fruit and vegetable intake and excess weight frequently coexist during adolescence, while the home food environment may shape dietary behavior. To describe fruit and vegetable consumption among adolescents with overweight and the corresponding consumption patterns reported for their parents in Bogotá, Colombia we conducted a descriptive cross-sectional survey that included 422 adolescents (250 boys and 172 girls) with a mean age of 13.0 ± 0.9 years and body mass index at or above the 85th percentile. A questionnaire assessed the frequency and quality of fruit and vegetable intake and parental consumption habits. 210 adolescents (49.8%) reported no fruit or vegetable intake, 82 (19.4%) consumed fruit only at breakfast, and 130 (30.8%) consumed fruit at breakfast and some vegetables at dinner. Thus, 69.2% reported either no fruit and vegetables or fruit only at breakfast. Greater parental intake was reported in groups with greater adolescent intake, but an individual-level correlation was not available. Limited fruit and vegetable intake was common in adolescents with overweight. The descriptive parent-child pattern supports further evaluation of family-centered dietary strategies, using validated intake measures and paired analyses.

Keywords: Adolescents; Fruit; Vegetables; Overweight; Parents; Dietary behavior.

Introduction

Childhood and adolescent overweight have become major public health concerns worldwide. Global pooled analyses show that obesity among children and adolescents has increased substantially over recent decades, alongside persistent undernutrition in many settings. Dietary patterns characterized by high consumption of energy-dense, highly processed foods and low consumption of nutrient-dense foods are among the modifiable factors relevant to excess weight and cardiometabolic health [1].

Fruits and vegetables provide dietary fiber, vitamins, minerals, and diverse bioactive compounds. The World Health Organization recommends that people older than 10 years consume at least 400 g of fruits and vegetables per day. Whole fruits and vegetables are preferred as part of a healthy dietary pattern; fruit juice should not automatically be considered equivalent to whole fruit because it may contribute free sugars and less fiber [2]. However, many adolescents do not reach recommended intake levels [2].

Adolescent eating behavior develops within family, school,

social, and commercial environments. Parents may influence intake through food availability, meal structure, purchasing, encouragement, and role modeling. Studies have found positive associations between parental modeling or parental intake and children's fruit and vegetable consumption [3-6]. Family meals have also been associated with healthier dietary patterns extending into young adulthood [7].

Materials and Methods

Descriptive cross-sectional study was conducted among adolescents with overweight recruited from private endocrinology clinic in Bogotá, Colombia. Participants with overweight according to BMI were selected. Adolescents with hormonal or genetic abnormalities were excluded. Eligibility required a body mass index (BMI) at or above the 85th percentile. A questionnaire was designed to record the frequency and quality of fruit and vegetable consumption and to collect anthropometric information.

Parental consumption habits were also assessed. Adolescent intake was summarized into three mutually exclusive categories:

- i. No fruit or vegetable consumption;
- ii. Fruit consumed only at breakfast;
- iii. Fruit consumed at breakfast with some vegetables at dinner.

Weight and height were measured and BMI was calculated as weight in kilograms divided by height in meters squared. BMI-for-age was classified according to CDC growth charts. Categorical variables were summarized as counts and percentages, and age was summarized as mean and standard deviation.

Results

422 participants were included 250 boys (59.2%) and 172 girls (40.8), with a mean age of 13.0 ± 0.9 years. All participants had a BMI at or above the 85th percentile. Nearly half of the adolescents ($n=210$; 49.8%) reported consuming neither fruits nor vegetables. A further 82 participants (19.4%) reported consuming fruit only at breakfast. The remaining 130 participants (30.8%) reported consuming fruit at breakfast and some vegetables at dinner. Consequently, 292 adolescents (69.2%) reported either no fruit and vegetable intake or fruit only at breakfast, with no vegetables included in the stated pattern (Table 1).

Table 1: Adolescent fruit and vegetable consumption and corresponding parental pattern.

Adolescent consumption pattern	n	%	Parental pattern reported for corresponding group
No fruits or vegetables	210	49.8	Fruit juice only in the morning
Fruit only at breakfast	82	19.4	Fruits and vegetables twice daily
Fruit at breakfast and some vegetables at dinner	130	30.8	Three to four servings of fruits and vegetables

Parent-child consumption pattern

The parental pattern reported for each adolescent category increased progressively across the three groups: morning fruit juice only in the group whose adolescents consumed no fruits or vegetables; fruits and vegetables twice daily in the group whose adolescents consumed fruit only at breakfast; and three to four servings of fruits and vegetables in the group whose adolescents consumed fruit at breakfast and some vegetables at dinner.

Discussion

In this sample of 422 adolescents with BMI at or above the 85th percentile, limited fruit and vegetable intake was common. Almost one-half reported consuming neither fruits nor vegetables, and approximately one-fifth reported fruit only at breakfast. Taken together, 69.2% had a reported pattern that included no vegetables. Only 30.8% reported both fruit and some vegetables, and even this category did not quantify the number or size of portions. Therefore, the study cannot determine how many participants met the World Health Organization recommendation of at least 400 g per day for people older than 10 years [2].

Evidence from Colombia indicates that fruit and vegetable consumption is frequently below recommendations. In Bogotá children, a substantial proportion did not report daily fruit or vegetable consumption, and insufficient intake was more common among participants with excess weight [8]. Other Colombian studies have similarly described limited habitual intake among young people and socioeconomic inequalities in fruit and vegetable consumption [9,10].

The progressive ordering of parental intake across adolescent consumption groups is consistent with the hypothesis that the home food environment may influence adolescent eating. Previous

research has associated parental intake and role modeling with children's fruit and vegetable consumption [3-6], while regular family meals have been associated with healthier dietary patterns [7]. These findings suggest that counseling focused exclusively on the adolescent may be insufficient. Family-centered strategies should address household availability, parental modeling, meal planning, repeated exposure to vegetables, and substitution of whole fruit for fruit juice when appropriate [11,12].

Conclusion

Limited fruit and vegetable intake was frequent among adolescents with overweight in this Bogotá sample. Nearly seven in ten reported either no fruit and vegetable intake or fruit only at breakfast, with no vegetables in the stated pattern. Greater parental consumption was reported in groups with greater adolescent consumption.

References

1. NCD Risk Factor Collaboration (NCD-RisC) (2024) Worldwide trends in underweight and obesity from 1990 to 2022: a pooled analysis of 3663 population-representative studies with 222 million children, adolescents, and adults. *Lancet* 403(10431): 1027-1050.
2. World Health Organization (2023) Carbohydrate intake for adults and children: WHO guideline. World Health Organization, Switzerland.
3. Fisher JO, Mitchell DC, Smiciklas-Wright H, Birch LL (2002) Parental influences on young girls' fruit and vegetable, micronutrient, and fat intakes. *J Am Diet Assoc* 102(1):58-64.
4. Draxten M, Fulkerson JA, Friend S, Flattum CF, Schow R (2014) Parental role modeling of fruits and vegetables at meals and snacks is associated with children's adequate consumption. *Appetite* 78: 1-7.
5. Linde JA, Horning Dehmer ML, Lee J, Friend S, Flattum C, et al. (2022) Associations of parent dietary role modeling with children's diet quality in a rural setting: baseline data from the NU-HOME study. *Appetite* 174: 106007.

6. Couch SC, Glanz K, Zhou C, Sallis JF, Saelens BE (2014) Home food environment in relation to children's diet quality and weight status. *J Acad Nutr Diet* 114(10): 1569-1579.e1.
7. Larson NI, Neumark-Sztainer D, Hannan PJ, Story M (2007) Family meals during adolescence are associated with higher diet quality and healthful meal patterns during young adulthood. *J Am Diet Assoc* 107(9): 1502-1510.
8. Cruz Thiriat R, Ramírez-Vélez R, Martínez-Torres J, Correa-Bautista JE (2017) Stages of behaviour change and nutritional status regarding fruit and vegetable consumption among schoolchildren from Colombia: the FUPRECOL study. *Rev Chil Nutr* 44(4): 307-317.
9. Parra BE, Manjarrés LM, Velásquez CM, Agudelo GM, Estrada A, Uscátegui RM, et al. (2015) Perfil lipídico y consumo de frutas y verduras en un grupo de jóvenes de 10 a 19 años, según el índice de masa corporal. *Rev Colomb Cardiol* 22(2):72-80.
10. Herrán OF, Patiño GA, Gamboa EM (2019) Socioeconomic inequalities in the consumption of fruits and vegetables: Colombian National Nutrition Survey, 2010. *Cad Saude Publica* 35(2): e00031418.
11. de Onis M, Onyango AW, Borghi E, Siyam A, Nishida C, Siekmann J (2007) Development of a WHO growth reference for school-aged children and adolescents. *Bull World Health Organ* 85(9): 660-667.
12. von Elm E, Altman DG, Egger M, Pocock SJ, STROBE Initiative, et al. (2007) Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *BMJ* 335(7624): 806-808.



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