

« DIETARY PATTERNS IN ADOLESCENTS »

Editorial

Food and Adolescence

Adolescence is one of the most dynamic and complex transitions in the lifespan, characterised by rapid biological, psychological and social change. Adolescence is the age of exploratory, sometimes risky, behaviour and is a time when the physiological need for lifestyles including diets with high nutritional quality is particularly important.

The eating behaviours of adolescents are likely to play an important role in the development of a range of chronic conditions, including overweight and obesity. Furthermore, eating patterns, preferences and habits adopted during this life phase may track into adulthood. Many adolescents have unhealthy diets. For example, data from the Health Behaviour in School Children (HBSC) study shows that less than two-fifths of young people eat fruit daily, and only about a third eat vegetables each day. Furthermore, dietary trend data from the United States suggests that daily caloric intake appears to be increasing in young people – primarily from energy-dense nutrient-poor foods, an increase in snacks, eating away from home and an increase in portion sizes.

New research described in this Newsletter throws further light on adolescent eating behaviours. Female adolescents in particular were likely to report persistent use of unhealthy weight control behaviours, which are often associated with poorer dietary intake and less frequent meals. Females were more likely to eat out-of-home foods, compared to males. Out-of-home eating added a number of desirable foods and nutrients to adolescents' diets, but was also associated with higher consumption of energy from fat and sugars. Obesogenic diets and physical activity behaviours were associated – weakly, and associations differed for males and females.

The findings highlight the complexity of adolescent dietary behaviours. Gender differences in dietary behaviours warrant further investigation. Multi-level influences on adolescent dietary behaviours need to be better understood for the design and implementation of effective interventions promoting healthy dietary behaviours among adolescents.

Natalie Pearson

Postdoctoral Research Fellow
Centre for Physical Activity and Nutrition Research
School of Exercise and Nutrition Sciences
Deakin University

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Dietary intake and weight control behaviors: findings from Project Eating Among Teens (EAT)

— Nicole Larson, Dianne Neumark-Sztainer —

Division of Epidemiology and Community Health, University of Minnesota, USA

Numerous studies have found a high percentage of adolescents, particularly adolescent females, report using weight control behaviors¹⁻². Attempts to lose weight involving the implementation of healthy lifestyle behaviors (e.g., eating more Fruits and Vegetables (F&V)) may lead to improvements in health and help to prevent excess weight gain over time³. In contrast, dieting and the use of other unhealthy weight control behaviors (e.g., skipping meals) may compromise dietary intake during critical periods of adolescent development and have been found to predict a greater tendency towards obesity⁴⁻⁶. The available evidence suggests that health practitioners should encourage the use of healthy lifestyle behaviors and discourage dieting to help promote adequate nutritional intake. However, few studies have distinguished between different types of weight control behaviors in examining associations between weight control behaviors and dietary intake over time among adolescents.

We examined patterns of engaging in four healthy weight control behaviors and nine unhealthy weight control behaviors over five years in a US population-based sample of adolescents⁷. Participants were junior and senior high schools students at baseline when they completed the Project EAT (Eating Among Teens) survey and a food frequency questionnaire in school classrooms. Follow-up surveys were collected by mail five years later as participants progressed from early adolescence (junior high) to middle

adolescence (high school) or from middle adolescence (high school) to late adolescence (post-high school). There were 1,242 females and 1,007 males who completed all assessments at both baseline and follow-up.

Persistent use of healthy and unhealthy weight control behaviors throughout adolescence is not uncommon and most young people report using weight control behaviors at some point during these years.

Only a small percentage of adolescents (5% of females, 18% of males) did not report the use of any weight control behaviors at either time point. Use of unhealthy weight control behaviors at either baseline or follow-up was reported by 76% of females and 45% of males. Among these participants, 59% of females and 37% of males reported using unhealthy weight control behaviors at both assessments.

Most participants (99%) who reported using unhealthy weight control behaviors also reported using healthy weight control behaviors at either baseline or follow-up. In addition, use of only healthy weight control behaviors was reported by 19% of females and 37% of males. Among these participants, 55% of females and 41% of males reported using only healthy weight control behaviors at both assessments.

Persistent use of unhealthy weight control behaviors was related to lower intakes of several healthy dietary components and less frequent meals among female adolescents.

Among females, those who reported using unhealthy weight control behaviors throughout adolescence or initiating these behaviors at follow-up tended to have less frequent meals and poorer dietary intake at follow-up compared to those who stopped or never-engaged. Mean differences in intake were generally not large; however, persistent use of unhealthy weight control behaviors was associated with lower intakes of essential micronutrients, fiber, vegetables, and whole grains. Among males, findings for meal frequency were similar but few differences in dietary intake were found.

Persistent use of only healthy weight control behaviors was related to some measures of better dietary intake among female adolescents.

Among females, those who reported using only healthy weight control behaviors throughout adolescence tended to consume less fast food, saturated fat, snack foods, and sugar-sweetened drinks at follow-up compared to those who never or inconsistently reported these behaviors. Mean differences in intake among females were generally not large and, among males, no evidence of improved dietary intake was found.

Conclusion

Our study highlights the importance of nutritional guidance for adolescents with weight concerns. The results suggest that guidance provided to youth and their families should encourage taking a lifestyle approach to weight management.

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Socio-economic and dietary associations of eating out of home in Vietnamese adolescents

— Carl Lachat^{1,2}, Bao Khanh Le Nguyen³, Patrick Kolsteren^{1,2} —

1. Nutrition and Child Health Unit, Institute of Tropical Medicine, Belgium

2. Department of Food Safety and Food Quality, Ghent University, Belgium

3. National Institute of Nutrition, Vietnam.

As low and middle income countries such as Vietnam experience rapid development, dietary patterns of vast segments of their population are changing as well. Although undernutrition and deficiencies are still omnipresent, various studies have documented how diet related chronic diseases are on the rise, in particular in its urban areas¹. Adolescence is known to be a period where dietary and lifestyle habits consolidate. Since adolescents make up a large share of the population in low and middle income countries, they are a key target group for nutrition promotion interventions that aim to reduce risk factors of diet-related non-communicable diseases².

An important development in industrialized countries has been the increase in eating out of home.

Studies mainly from the United States and Europe have documented how substantial eating out is associated with lower intakes of Fruit and Vegetables (F&V)³ and with a higher energy intake⁴. The nutritional importance of out of home eating in countries dealing with both under and over nutrition has been poorly studied. We carried out a survey in a sample of Vietnamese adolescents to explore the importance of eating out and to evaluate which socio-economic factors are associated to it.

Vietnamese adolescents

In our sample of 16 year old Vietnamese children from rural (Hanoi Province) and urban (Hanoi) areas, food prepared out of home provided 42% of F&V and 21% of energy per day⁵. There were differential dietary intakes between gender and this varied

according to location. On a daily basis, urban adolescents consumed more F&V compared to their rural peers (523.0 ± 38.4 g vs. 320.0 ± 38.4 g). The contribution of foods prepared out of home to the average daily intake of F&V was consistently higher in urban areas ($54.1 \pm 4.0\%$ of the total intake vs $29.5 \pm 4.0\%$ of the total intake per day in rural areas). Independent of household wealth, being female, living in urban areas and the amount of pocket money that the children received from their parents were all positively associated with the energy contribution of food prepared out of home in their daily diet. Foods prepared out of home were mainly consumed for breakfast and as snacks and contributed for more than half (57%) of the energy consumed during breakfast and 73% of the energy provided as snacks. In both rural and urban areas however, eating out of home was also associated with higher consumption of energy from fat and intake of sweets and soft drinks.

Foods prepared out of home are clearly an important part of the diet of Vietnamese adolescents.

In rural areas, foods prepared out of home were different from those in urban areas. Their composition positively contributed to the intake of micronutrients of high consumers. Fruit and noodle soups, characterized by their low energy density, were relatively more important than foods prepared out of home in urban areas. This difference in meals consumed might explain why participants consuming a greater proportion of foods prepared out of home, consumed more energy from fat but had a lower energy dense diet.



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Obesogenic diet and physical activity: independent or associated behaviours in adolescents?

— Russell Jago R. et al. —

Department of Exercise, Nutrition & Health Sciences, UK

Obesity is the result of a gap between energy intake and energy expenditure¹. Eating energy-dense food has been associated with an increase in BMI²⁻³ whereas Fruit and Vegetables (F&V)⁴ consumption has been associated with a decrease in BMI. Moreover, physical activity has been associated with positive dietary behaviours⁵.

The objective of the present study is to evaluate the association between physical activity and obesogenic dietary behaviours in British adolescents.

Adolescents from the ALSPAC study

The Avon Longitudinal Study of Parents and Children (ALSPAC)⁶ is a birth cohort study involving more than 14,000 pregnant women and following the newborns. Adolescents (n=5134) included in the present analysis were offspring of these women.

Adolescents answered to a one day diet questionnaire at age 10. Estimation of daily energy consumption and sources of energy (fat or carbohydrate) were estimated from this questionnaire, as well as F&V intake (excluding juice, potatoes and baked beans). At age 11, adolescents would wear an accelerometer for one week, which allowed assessing their physical activity (CPM: Count Per Minute; MVPA: Moderate-to-Vigorous Physical Activity).

Diet and physical activity: associated behaviors

There was a sex difference in dietary intakes (Table 1). Energy consumption was higher in boys, as well as energy density. Girls consumed a greater percentage of their energy from fat than boys, while boys consumed a greater percentage of their energy

from carbohydrate. Moreover, girls consumed on average more F&V than boys (152g/d vs. 141g/d).

Table 1	Boys	Girls	Sex differences
Energy (kcal)	2033.6	1881.1	P<0.05
% Energy from fat	36.4	36.9	P<0.05
% Energy from carbohydrate	53.8	53.4	P<0.05
Energy density (kj/g)	8.9	8.7	P<0.05
F&V (g/d)	141.0	152.5	P<0.05

In boys, energy from fat was only negatively associated with physical activity (β =[-0.055;-0.101] (depending on the adjustments), $p<0.05$). Total energy (β =[0.066;0.91], $p<0.05$) and energy from carbohydrate (β =[0.054;0.106], $p<0.05$) was positively associated with physical activity. In girls, F&V consumption was positively associated with physical activity (β =[0.056;0.074], $p<0.005$).

Conclusions

In this study, physical activity was only very weakly associated with dietary intakes. Interventions to change behaviours in adolescents should focus on diet as well as physical activity. Nevertheless, implementing strategies should assess the most effective means of changing diet and physical activity separately or in the same time.



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