

« FRUITS AND VEGETABLE CONSUMPTION
DETERMINANTS AMONG ADOLESCENTS »

Editorial

Adolescents in a complex world: what to eat and why?

Adolescents have to engage with a social environment of increasing complexity and diversity. The agents in this engagement include family and peer relationships, the internet, television, mobile phones, the media and electronic gadgetry. All of these provide a flow of information that influences adolescents' perception of their size and shape, self-esteem, fashions and ways of behaving (including dietary choices, skipping meals, eating fruits and vegetables and fast foods). In order to implement public health policies that are effective against adolescent overweight and obesity (and which contribute to health in other ways), it seems essential to obtain a picture of the relationship between the social environment, frequency of obesity and key dietary variables.

Recent surveys have been based on large numbers of adolescents ranging in age from 11 to 17 years. In the largest study – of more than 162 thousand adolescents in 35 countries – there were some surprises. For example, the relationship between the percentage of overweight/obese adolescents and economic inequality – or the social gradient (differences in wealth between top and bottom) – was different for the high income countries compared with those of middle income. Why should this be?

Clearly social dynamics operate differently in distinct cultures and in countries which vary in wealth. The sheer complexity of the relationship between country based economics and adolescent obesity is mirrored by the complexity of the relationships between family circumstances and adolescent dietary behaviours. These outcomes raise the question of whether it is possible to draw a single all embracing conclusion from such complicated arenas.

Although large surveys have value, they may not provide the elements for policy development. We can ask, is there an average adolescent? Answer – No! Consequently we are unlikely to find solutions in the 'average' values of variables that influence adolescent behaviour and body weight. In dealing with complicated environments where predictability is low, it may be better to do our research locally, and to uncover relationships in the areas where we live and work.

John Blundell

Institute of Psychological Sciences, University of Leeds, UK

Editorial Board



- S. Ben Jelloun** • INSTITUT AGRONOMIQUE VÉTÉRINAIRE HASSAN II • RABAT • MORROCO
E. Bere • UNIVERSITY OF AGDER • FACULTY OF HEALTH AND SPORT • NORWAY
E. Birlouez • EPISTÈME • PARIS • FRANCE
I. Birlouez • INAPG • PARIS • FRANCE
MJ. Carlin Amiot • INSERM • FACULTÉ DE MÉDECINE DE LA TIMONE • MARSEILLE • FRANCE
B. Carlton-Tohill • CENTER FOR DISEASE CONTROL AND PREVENTION • ATLANTA • USA
V. Coxam • INRA CLERMONT FERRAND • FRANCE
N. Darmon • FACULTÉ DE MÉDECINE DE LA TIMONE • FRANCE
H. Verhagen • NATIONAL INSTITUTE FOR PUBLIC HEALTH AND THE ENVIRONMENT (RIVM) • BILTHOVEN • NETHERLANDS
ML. Frelut • HÔPITAL SAINT-VINCENT-DE-PAUL • PARIS • FRANCE
T. Gibault • HÔPITAL HENRI MONDOR • HÔPITAL BICHAT • PARIS • FRANCE
D. Giugliano • UNIVERSITY OF NAPLES 2 • ITALY
M. Hetherington • UNIVERSITY OF LEEDS • UK
S. Jebb • MRC HUMAN NUTRITION RESEARCH • CAMBRIDGE • UK
JM. Lecerf • INSTITUT PASTEUR DE LILLE • FRANCE
J. Lindstrom • NATIONAL PUBLIC HEALTH INSTITUTE • HELSINKI • FINLAND
C. Maffei • UNIVERSITY HOSPITAL OF VERONA • ITALY
A. Naska • MEDICAL SCHOOL • UNIVERSITY OF ATHENS • GREECE
T. Norat Soto • IMPERIAL COLLEGE LONDON • UK
J. Pomerleau • EUROPEAN CENTRE ON HEALTH OF SOCIETIES IN TRANSITION • UK
C. Rémésy • INRA CLERMONT FERRAND • FRANCE
E. Rock • INRA CLERMONT FERRAND • FRANCE
M. Schulze • TECHNISCHE UNIVERSITÄT MÜNCHEN • FREISING • GERMANY
J. Wardle • CANCER RESEARCH UK • HEALTH BEHAVIOUR UNIT • LONDON • UK



5-7 MAY 2010 - BRUSSELS - BELGIUM

*Social and Health Benefits of Balanced Diet:
The role of Fruit and Vegetables*

www.egeaconference.com

IFAVA Board of Directors

- J. Badham** • South Africa • 5-a-Day for better health TRUST
R. Baerveldt • USA • Washington Apple Commission
S. Barnat • France • "La moitié" • Aprifel
L. DiSogra • USA • United Fresh
C. Doyle • USA • American Cancer Society
P. Dudley • New Zealand • 5+ A day
M. Richer • Canada • 5 to 10 a day
E. Pivonka • USA • 5 A Day
C. Rowley • Australia • Go for 2&5® • Horticulture Australia
V. Toft • Denmark • 6 a day

IFAVA Contact info

HEAD OFFICE
International Fruit And Vegetable Alliance
 c/o Canadian Produce Marketing Association
 162 Cleopatra
 Ottawa, Canada, K2G 5X2

IFAVA Committees

Global Leadership Committee

- J. Badham** • South Africa
S. Barnat • France
P. Dudley • New Zealand
C. Rowley • Australia

Scientific Clearing House Committee

- S. Barnat** • France
K. Hoy • USA
E. Pivonka • USA

Communications Committee

- J. Badham** • South Africa
P. Dudley • New Zealand
C. Rowley • Australia

IFAVA



CHAIRMAN:
C. Rowley, Australia
 E-mail : chairman@ifava.org

VICE CHAIRMAN:
P. Dudley, New Zealand
 E-mail : vicechairman@ifava.org

Family circumstance and adolescent dietary behaviours

— Natalie Pearson —

School of Sport, Exercise & Health Sciences, Loughborough University, UK

Background

The dietary behaviours of adolescents are likely to play an important role in the development of a range of chronic health conditions including overweight and obesity. The family environment has been identified as a critical context for the development of eating behaviours. The influence of family circumstance (e.g. parental marital status, parental education level, parental employment status, sibling status) on adolescents' food habits/choices has not been comprehensively explored, yet such characteristics may impact adolescent behaviours by influencing their daily home environment. Previous studies have focused on single components of family circumstance (e.g. parental education level), which limits the ability to compare the influence of different aspects of family circumstance on dietary behaviour across studies (due to different samples and methodologies). It is important to consider the influence of multiple indicators of family circumstance on eating behaviour in the same sample of adolescents, using the same methodology, because differential associations may point to different underlying pathways. The purpose of this study was to examine the influence of multiple indicators of family circumstance on adolescent dietary behaviours and changes in dietary behaviours over a two year period.

The Youth Eating Patterns study

The Youth Eating Patterns (YEP) study is a longitudinal study of dietary behaviours among adolescents in Melbourne, Australia. All co-educational state (government) and Catholic secondary schools (Years 7 to 12) with enrolments over 200, located in the southern metropolitan region of Melbourne and the non-metropolitan region of Gippsland, to the east of Melbourne, were invited to participate in the study. All students (n = 9,842) from Year 7 (aged 12-13 years) and Year 9 (aged 14-15 years) from participating schools were invited to complete the online survey at baseline. Teachers distributed parental consent forms via students asking permission for their child to participate in the study. The consent form also asked parents to provide information about their family circumstances (e.g., marital status, education level, employment status, number of children). Parental consent was obtained for 4,502 (46% of all eligible students). The YEP survey is an online food habits survey and was administered by teachers during a class when students had access to computers. The survey was administered during 2004 and 2005 (baseline, T1), and again two years later in 2006 and 2007 (follow-up, T2). At baseline, 3,264 adolescents completed the YEP survey. Final analyses were conducted with 1,884 adolescents (55% girls, mean age 13.2 years) who had completed the YEP survey at baseline and at the two-year follow-up.

Adolescent dietary behaviour by gender and age

At baseline, a higher proportion of adolescent girls, compared to boys, skipped breakfast, and were high Fruit and Vegetable (F&V) consumers. At baseline, a higher proportion of Year 9 students, compared to Year 7 students, skipped breakfast. A higher proportion of Year 7 students, compared to Year 9 students, were high F&V consumers.

The majority of participants did not change their dietary behaviours over the two-year period. A higher proportion of adolescent girls, compared to boys, increased their frequency of breakfast skipping. A higher proportion of adolescent boys, compared to girls, increased their snack and fast food consumption.

Targeting maternal education...

Generally maternal education was more consistently associated with positive dietary behaviour as well as positive changes in dietary behaviour than any other indicator of family circumstance. There was no consistency in the associations between gender and our predictor and outcome variables, suggesting that family circumstance differentially influences the dietary behaviours of males and females.

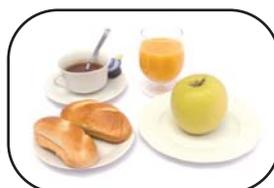
At baseline, compared to adolescent boys whose mothers had a low level of education, those whose mothers had a high level of education were less likely to skip breakfast and those whose mothers had a medium level of education were less likely to have low vegetable consumption.

Among boys and girls, compared to those whose mothers had low education levels, those with mothers who had high education levels were less likely to increase their breakfast skipping. Compared to those whose mothers had low education levels, adolescent boys whose mothers had medium education levels were more likely to decrease their snack consumption and adolescent girls whose mothers had high levels of education were less likely to increase their snack consumption.

... to improve adolescent dietary behaviour

This study highlights the complexity of relationships between family circumstance and adolescent dietary behaviours. Interventions aimed at promoting healthy eating among adolescents that include a family component have shown positive results in the past. Future research needs to target the family environment and assess the efficacy of strategies promoting maternal nutritional knowledge on the dietary behaviours of adolescents.

Choice of breakfast...



REFERENCES

Pearson N, MacFartlane A, Crawford D, Biddle SJH. Family circumstance and adolescent dietary behaviour. *Appetite* 2009, 52, 668-674.

Socio-Economic position, macroeconomic environment and overweight among adolescents in 35 countries

— ML Frelut —

Hôpital Saint Vincent de Paul, Paris, France

Inequality in adolescents and overweight

In the global village, quick information and oversimplification are linked. Here we discover that the 35 European countries and North America differ and require adapted prevention strategies of obesity in the young.

The authors base their analyses on data collected from a collaborative study of the World Health Organization (WHO) in 2001-2002. Cross sectional surveys were performed in countries participating in the Health Behavior in School-Aged Children (HSBC). A total of 162,305 adolescents aged 11, 13 and 15 years old were included from nationally random samples.

Height and weight could only be reported and not measured. However, other questions gave a look at the cross road of macro and micro socioeconomic environment. The questions directed to individuals included anthropometry and a family affluence scale. The description of economic environment within each country relied on the Gini coefficient which reflects the distribution of income among the population and the gross national income per capita (GNI) issued from the World Bank data base. Statistical standardization procedures then allowed within and between countries analyzes to be performed.

The final picture looks as follows:

English speaking and Mediterranean countries had the highest prevalence of obesity (United States 28%, Canada, United Kingdom and Mediterranean countries 20-23%). The ratio of overweight prevalence between the lowest and highest family affluence ranged from 0.51 in Estonian boys to 4.8 in Czech girls. In most countries this ratio is above one. In other words, overweight is more common in poorer families in most, but not all countries. Polish boys and those from the

Baltic Republics, Swedish and Croatian girls behave in an opposite way.

The impact of family affluence varies among countries: it does not seem to have an impact in boys on overweight prevalence in Russia (overweight prevalence 7.1%) and Wales (overweight prevalence 28.6%), while there is a strong negative correlation in the United States and Germany (interestingly slopes are parallel) and a strong positive correlation in Macedonia.

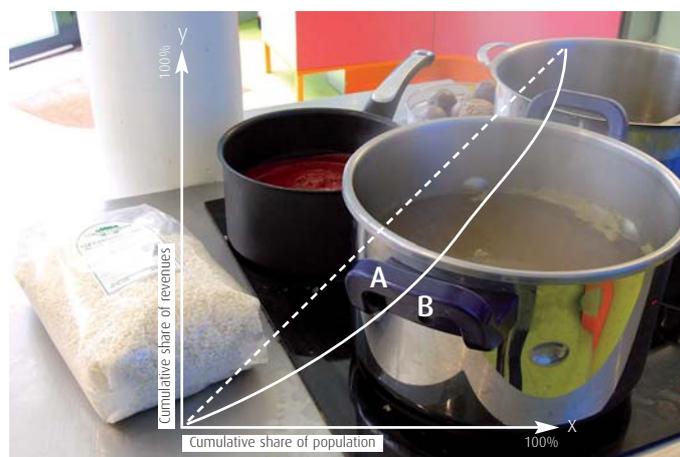
When both family (Gini coefficient for inequalities) and country incomes (GNI) are taken into account, GNI is associated with overweight prevalence in boys and girls.

At country-levels, the GNI is associated with overweight only in middle income countries.

The authors stress the fact that considering all countries together leads to a different conclusion than when countries are considered separately or as subgroups. When all countries are taken together, variation in prevalence of overweight is associated with the economic level of the country, but not with economic inequality.

When looking into more details, variation in overweight remains associated to the economic level in high income countries only. Inverse social gradients were found in almost all high-income countries, while the opposite was true in middle income countries. Inverse social gradients were found for boys and girls in three central European countries which raise questions about the pattern of shift toward westernized diet and behaviors.

Additional interesting information originates from Denmark. In this country the prevalence of overweight and obesity rose by phases which did not parallel trends in economic growth. Obesity prevention cannot be tackled separately from both the micro and macro economic conditions.



Lorenz curve and Gini coefficient

REFERENCE

Due P et al Socioeconomic position, macroeconomic environment and overweight among adolescents in 35 countries. *Int J Obesity* 2009;1-10

Nutrition information covered in mass media predicts fruit and vegetable consumption among adolescents

— Heinz Freisling —

Department of Nutritional Sciences, University of Vienna, Austria

Background

Exposure to mass media such as television, radio, the Internet, magazines and others, may have a considerable impact on eating habits in youth. Besides being used as a major channel for food marketing and advertising, mass media plays also an important role as a source of nutrition information. We investigated whether exposure to nutrition information as covered in mass media was associated with consumption of Fruits and Vegetable (F&V) among adolescents.

Cross-sectional nutrition survey data among adolescents

We analyzed data of a sample of 2,949 adolescents in vocational training in Vienna, Austria, with a mean age of 17.3 years (SD 1.7).

Exposure to nutrition information sources was assessed by means of self-administered questionnaires, asking subjects where they usually obtained their information about nutrition.

Frequency of eating FV was measured by means of a food-frequency questionnaire, which asked about usual frequency of consumption of 59 food items during the previous months. Responses to the two items "fruit (fresh)" and "vegetables (raw and cooked)" were recorded into dichotomous variables (0 = less than daily; 1 = at least daily).

To which degree and direction do different mass media nutrition information sources predict daily F&V consumption?

Figure 1 shows the probability of daily FV consumption when adolescents reported exposure to the specific nutrition information sources. For example, adolescents who reported booklets as their preferred nutrition information source were almost 70% more likely to eat FV daily than adolescents who did not refer to booklets. This was irrespective of age, gender, ethnicity, body mass index, and weekly allowance.

Adolescents who reported advertisements as their nutrition information source were less likely to eat FV daily. Particularly, exposure to radio commercials decreased the probability of daily F&V consumption by 26% and 33%, respectively.

The use of fully adjusted regression models, which included in addition to the covariates mentioned above, smoking, leisure-time physical activity, and TV viewing, did not essentially change the findings.

Which potential mechanisms may explain the influence of specific nutrition information sources on FV consumption among adolescents?

Likelihood of exposure is increased if the adolescent is interested in healthy eating and actually searches for the information. However, exposure may also be accidental (e.g. advertisements). Subsequent behaviour may be affected by how the information is perceived, either consciously or subconsciously, with stronger effects when perception happens consciously. If perception leads to understanding and liking of the information, the "healthy eating" slogan may finally be used in making choices.

Adolescents who name booklets, the Internet, and newspaper and magazine articles as their preferred source of information are probably more interested in nutrition-related topics and actively seek them out. In contrast, nutrition information disseminated through TV and radio (particularly advertisements), schools, and relatives/friends does not necessarily require active search to achieve exposure.

Two other important characteristics of nutrition information sources are the quality of their content (in terms of objectivity and scientific soundness) and credibility of the source.

In the case of booklets, which are disseminated through pharmacies, general practitioners, and other health professionals, the nutrition information provided may be regarded as coherent and congruent with dietary guidelines.

Despite TV/radio (programs), relatives/friends, and school being reported the top three sources of nutrition information for adolescents, they were not associated with FV consumption. Disliking and/or misunderstanding due to poor content quality and/or low credibility of nutrition information covered in these sources may explain these findings.

The negative impact of TV and radio commercials on FV consumption among adolescents in the present study was as expected.

That advertisements covered in newspapers and magazines showed no effect on FV consumption and may be explained by the less frequent and probably less persuasive exposure to these media.

To increase daily FV consumption among adolescents...

Print media, specifically booklets and newspapers, and the Internet should be emphasized in the dissemination of "healthy eating" slogans.

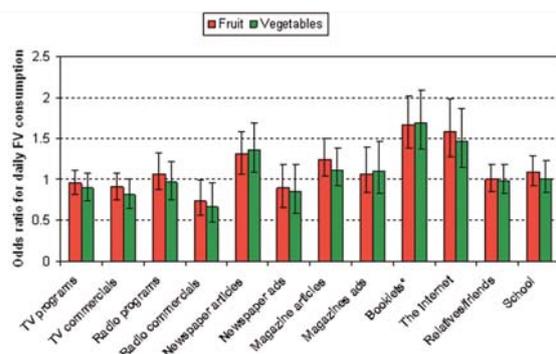


Figure 1

Odds ratios and 95% confidence intervals for daily F&V consumption associated with exposure to a specific nutrition information source among adolescents (n = 2949), controlling for age, gender, ethnicity, salary, and body mass index

*Disseminated mainly through health professionals

REFERENCES

Freisling H, Haas K, Elmadfa I. Mass media nutrition information sources and associations with fruit and vegetable consumption among adolescents. *Public Health Nutr.* 2009 Aug 26:1-7. [Epub ahead of print] PubMed PMID: 19706216.