

¹ Savonlinna Department of Education, University of Joensuu, Finland

² Tampere School of Public Health, University of Tampere, Finland

³ Joensuu Department of Applied Education, University of Joensuu, Finland

⁴ Unit of Nutrition, Department of Epidemiology and Health Promotion, National Institute of Public Health, Finland

⁵ Tampere University Hospital, Department of Paediatrics and Medical Research Fund, Tampere, Finland

⁶ National Development and Research Centre for Health and Welfare (STAKES), Finland

Consumption of special diet among Finnish adolescents in 1979–2001: repeated national cross-sectional surveys

Submitted: 15 December 2003

Accepted: 6 October 2004

Summary

Objective: To study consumption of special diet (disease-related and non disease-related) among Finnish adolescents during 1979–2001.

Methods: Self-administered questionnaires were mailed to nationally representative samples of 12- (except in 1979), 14-, 16-, and 18-year-olds in 1979, 1993, 1997, 1999 and 2001.

Results: The total number of respondents was 33998. The response rate declined from 78 % in 1979 to 70 % in 2001. Consumption of special diet increased from 1979 to 2001: in 14-year-old girls from 4 % to 24 %, boys from 1 % to 12 %; 16-year-old girls from 5 % to 29 %, boys from 3 % to 11 %; and 18-year-old girls from 9 % to 30 %, boys from 3 % to 16 %. An increase was observed both in the consumption of disease-related diets (diabetic, lactose intolerance, allergies), and in non disease-related diets (weight reducing, sports and body-building, vegetarianism, other).

Conclusions: Adherence to special diet is partly explained by an increased prevalence of certain diseases (lactose intolerance, allergies, diabetes). Increase in vegetarianisms and diets related to body weight or shape are most likely explained by fads, ideals created by media, and by growing ecological awareness.

Keywords: Special diet – Trend – Adolescents – Nutrition.

In the Western world, food choice and food habits are nowadays more individual based choices than earlier (Meiselman 1996). Especially adolescents' food behaviour is changing: weight reducing and vegetarian diets are becoming more common while consumption of junk food is increasing (Edlund et al. 1994; Edlund 1997; Fisher et al. 1991; Gabhainn et al. 2002; Koskelainen et al. 2001; Larsson et al. 2001; Lau & Alsaker 2001; Neumar-Sztainer et al. 1999b; Neumar-Sztainer & Hannan 2000; Schneider 2000). Increase in obesity and overweight of children and young people shows that dietary changes deleterious to public health have taken place (e.g. Kautiainen et al. 2002; Nowak 1998; Schneider 2000).

Very little attention has been paid to the overall consumption of special diet among children and adolescents. In their review, Rolland-Cachera et al. (2000) and Schneider (2000) concluded that most of the earlier studies on adolescents' nutrition focus on the nutritional status or consumption of one special diet at a time, e.g. weight reducing, vegetarian, or diet related to a particular disease. The overall consumption of special diet among adolescents has not been examined, neither have changes in this behaviour over time.

In Finland, the dietary pattern of the population has changed to a remarkable degree during the past decades, generally towards national dietary recommendations (Lahti-Koski & Kilkinen 2001). However, in adolescents and young adults, healthy food choices are less frequent than in the older population (Lahti-Koski & Kilkinen 2001).

The aim of the study is to examine changes in the special diet consumption of 12- to 18-year-old Finns from 1979 to 2001. So far this is the longest time series data published. Data were collected as part of the Adolescent Health and Lifestyle Survey. The national repeated cross-sectional surveys were conducted in 1979, 1993, 1997, 1999 and 2001.

Methods

Subjects

The Adolescent Health and Lifestyle Survey is a monitoring system on adolescents' health and health behaviours started in Finland in 1977. Self-administered questionnaires were mailed in February every second year to nationally representative samples of 12-, 14-, 16- and 18-year-olds with two re-enquiries to non-respondents. The samples were obtained from the Population Register Centre and based on certain dates of birth, mainly in July, so that all Finns born on the sample days were included. In order to guarantee comparability, the sampling and data collection methods were kept similar throughout the study period.

Questions on the consumption of special diet were included in 1979, 1993, 1997, 1999 and 2001. In 1979, 12-year-olds were not included. In 1979, 1993 and 1997, the question on special diet (the main question) was formulated: "Are you on a special diet at present?" The alternatives were "no", and "yes, tell briefly what kind and for what reason___." In 1999 and 2001, the main question with "no"/"yes" alternatives was repeated. A new question on the type of special diet was added: "What kind of diet is it? Please answer all items." The following items were given with "yes" or "no" options: "I avoid certain foods because of allergy", "Low-lactose or lactose-free diet", "Diabetic diet", "Sports or body-building diet", "Weight reducing diet", "Vegetarian diet", and "Other, what ___." The respondents who answered "Yes" to the main question were defined as special diet consumers. In the surveys of 1999 and 2001, the type of special diet was defined on the basis of a "Yes" answer in the item. The open question in 1979–1997 was coded into the categories presented in the surveys of 1999 and 2001.

Seven categories were formed for the type of special diet (hereafter referred to as type of diet): allergy-related, lactose intolerance-related, diabetic, sports- or body-building-related, weight reducing, vegetarian, and other. For "other diets" respondents had named self-defined diets such as "celiac disease", "meat-only-diet", "avoiding-vegetables-diet", "pasta-only-diet", "sweets-only-diet" etc. Some respondents reported more than one type of diet.

From the total number of respondents (N = 33998), 323 (0.9%) were excluded due to missing data in all questions concerning special diet consumption, and 348 (1%) due to missing data on the type of diet. If the respondent had not answered every item concerning the type of diet in 1999 and 2001, the missing items (1.6%) were coded as "no".

Internal consistency

The internal consistency of the questions was analysed in the 1999 and 2001 data. Some of the respondents (n = 160, 1%) had answered to the type of diet even when they did not report adherence to a special diet in the main question. A few of the respondents (n = 14, 0.1%) answered "yes" to the main question but "no" to every type of diet given. Both groups were classified as special diet consumers. 12 respondents who reported following "other diet" and specified this as vegetarian were coded as vegetarians even if they did not give a "yes" answer to the item on vegetarian diet.

Assessment of non-response bias

Special diet consumption of non-respondents was assessed by dividing the respondents of the 2001 survey into three groups according to how promptly they had returned the questionnaire. It was assumed that the later the person answers (original questionnaire, first re-enquiry, second re-enquiry) the more he/she resembles a non-respondent. In girls, the prevalence rate of special diet consumption was 28.6% in the original questionnaire, 23.5% in the first re-enquiry and 21.6% in the second re-enquiry (p = 0.005), and in boys 14.3%, 10.8%, and 9.5% (p = 0.013), respectively.

This suggests that the prevalence of special diet consumption could be slightly lower among the population than among the respondents, because the observed rates of special diet consumption may be slightly overestimated in the surveys. As this non-response bias is supposed to remain steady over the study period, it does not cause a bias in the trend as such. However, together with the declining response rate over the years, non-response bias may cause a tiny overestimation in the increase of special diet consumption over the study period.

Repeatability of questions

To study the repeatability of the questions, a sub-sample was selected from the original subject series by a systematic sampling (every 5th subject, the first one was picked up randomly) in 2001. Four weeks after the researchers received the questionnaire, an identical questionnaire was mailed to the respondent. The sub-sample included 14-year-olds (N = 400) of which 254 respondents (response rate 64%) returned the questionnaire. Eight respondents were excluded due to

missing data on consumption of special diet, leaving 246 responses for analysis.

Cohen's Kappa coefficient was used to estimate the agreement of answering in order to correct the probability of chance agreement (Siegel & Castellan 1988). The overall repeatability of special diet consumption was high (Kappa = 0.81) as well as the repeatability of the disease-related diets: lactose intolerance (0.91), allergy (0.8), and diabetes (1.0). The repeatability of the non-disease-related diets, vegetarian diet (0.2), weight reducing diet (0.14), diet related to sports and body-building (0.0), and other diet (0.2), was low. Cohen's Kappa alone is not a sufficient measure of repeatability in cases where the proportion of false positives is high in relation to the proportion of true negatives. Thus, low Kappa coefficients can be obtained even in instances of reasonably high agreement in percentages. Therefore, we also used the percentage of the stability of response (the same answer in both surveys). The stability was high for the consumption of each type of diet: allergy 98%, lactose intolerance 99%, diabetes 100%, sports and body-building 98%, weight reducing 93%, vegetarian 92%, and other 98%.

Statistical analyses

All analyses were performed separately for boys and girls. The chi-square test was used to determine statistical significance. The statistical significance for change in special diet consumption is presented separately for the period of

1979–1997 (1979 vs. 1997) and 1999–2001 due to the change in the question formulation between the surveys of 1997 and 1999. Direct age-standardisation was used giving equal weights to each age group.

Results

The mean age of respondents was 12.6, 14.6, 16.6 and 18.6 years. There was a declining tendency in the response rates throughout the study period (Tab. 1). The total number of respondents in 1979–2001 was 33998. The response rate varied according to age and sex, and in all age groups, it was higher in girls than in boys.

Due to reformulation of the questions in 1999, the results are presented separately for the periods of 1979–1997 and 1999–2001. Consumption of special diets increased during both periods in all age and sex groups (Tab. 2, Fig. 1). The sharper increase between 1997 and 1999 was partly due to the reformulation of the question. However, as the increasing consumption can be observed both before 1997 and after 1999, the increasing trend can be considered as a valid observation.

The increase was not limited to some types of diets only but concerned each of them (Tab. 2). As some respondents reported more than one type of diet, the number of special diet consumers in Tables 2 and 3 is lower than the sum of the consumers of each type of diet (Tab. 2 and 3).

Table 1 Number of respondents and response rates (%) by age, sex, and year

	1979 ^a	1993	1997	1999	2001
Girls					
12 years	–	437	440	407	425
14 years	317	1299	1347	1315	1485
16 years	338	1389	1379	1332	1138
18 years	303	1265	1415	1315	976
Boys					
12 years	–	399	427	442	351
14 years	331	1203	1168	1186	1251
16 years	302	1168	1126	1110	892
18 years	317	1029	1088	1112	774
Total	1908	8189	8390	8219	7292
Response rate					
Girls					
12 years	–	84	87	85	82
14 years	83	86	84	85	79
16 years	84	87	87	85	82
18 years	77	83	83	80	76
Boys					
12 years	–	73	76	79	72
14 years	78	74	69	74	66
16 years	75	70	68	68	62
18 years	68	66	60	63	53
Total	78	78	76	76	70

^a In 1979, 12-year-olds were not in the sample

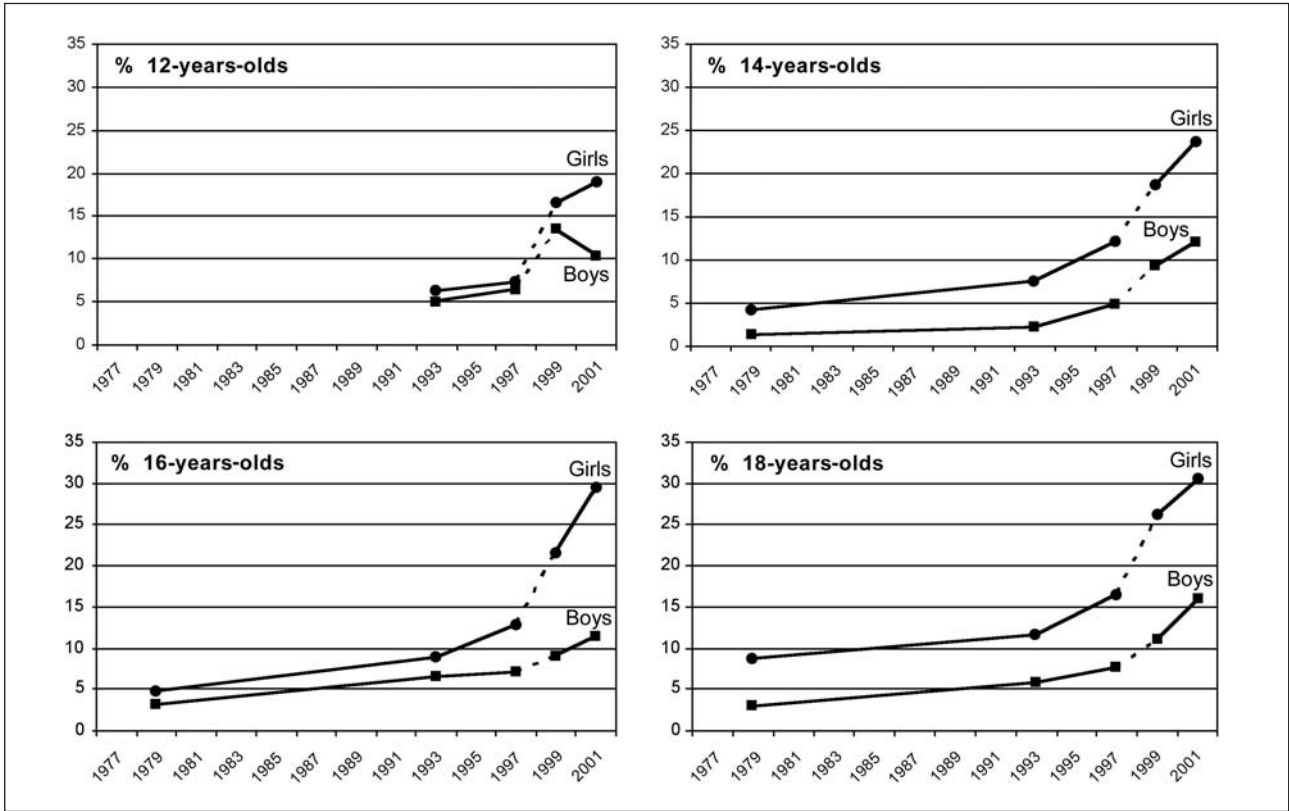


Figure 1 Percentage of 12–18-year-olds, who consumed a special diet in 1979–2001, by age and sex

Table 2 Age-adjusted percentages and p-values for 14–18-year-olds who consumed a special diet in 1979–2001 by type of diet, year and sex

Sex	Type of diet	Study year					p-values	
		1979	1993	1997	1999 ^b	2001	1979 vs. 1997	1999 vs. 2001
Girls	Disease-related							
	Allergy-related	0.2	0.5	0.5	6.8	8.4	0.388	0.017
	Lactose-intolerance	0.4	2.3	3.3	8.3	9.3	0.000	0.237
	Diabetic	0	0.4	0.5	0.6	0.8	0.093	0.225
	Non-disease-related							
	Sports and body building	0.2	0.1	0.2	1.8	2.2	0.721	0.191
	Weight reducing	2.8	2.0	2.1	4.1	7.3	0.417	0.000
	Vegetarian	0.8	1.6	5.0	9.2	9.9	0.000	0.593
	Other diets	1.5	1.2	3.2	2.2	2.6	0.000	0.251
	Boys	Disease-related						
Allergy-related		0	0.4	0.3	2.9	4.0	0.127	0.015
Lactose-intolerance		0.1	1.0	1.6	3.7	5.1	0.001	0.013
Diabetic		0.4	0.3	0.5	0.7	0.6	0.168	0.782
Non-disease-related								
Sports and body building		1.0	0.9	1.2	3.3	4.3	0.615	0.066
Weight reducing		0.2	0.7	1.0	0.9	1.6	0.045	0.009
Vegetarian		0	0.3	0.4	1.2	1.7	0.180	0.077
Other diets		0.4	0.6	1.7	0.8	1.2	0.000	0.090
Girls		Special diet consumer ^a	5.8	9.2	13.8	22.1	27.8	0.000
Boys	Special diet consumer ^a	2.4	4.8	6.4	9.8	13.1	0.000	0.000

^a consumes one or more special diets
^b reformulation of the main question in 1999

Table 3 Percentages of 12-18-year-olds who consumed a special diet in 2001 by type of diet, age and sex

Type of diet	Girls				Boys			
	12	14	16	18	12	14	16	18
Disease-related diets								
Allergy-related	6.8	7.3	9.5	8.5	2.9	4.2	3.3	4.6
Lactose-intolerance	8.5	7.9	9.2	10.7	4.9	4.7	4.7	5.8
Diabetic	0	0.9	0.5	1.0	0.6	0.8	0.5	0.4
Non-disease-related diets								
Sports and body building	2.9	1.7	2.2	2.8	1.7	3.0	4.8	5.1
Weight reducing	5.1	6.0	8.2	7.7	1.7	1.6	0.9	2.2
Vegetarian	3.1	7.4	10.2	12.0	0.6	1.6	0.6	3.0
Other diets	1.4	2.1	2.5	2.8	1.4	1.1	0.7	1.8
Special diet consumer ^a	18.8	23.6	29.2	30.4	10.4	12.1	11.3	15.8

^a consumes one or more special diets

Use of special diet was approximately twice as common among girls as among boys, with the exception of diets related to sports and body-building which were more prevalent among boys. Consumption of special diet increased by age (Tab. 2 and 3).

Discussion

Consumption of special diet has increased to a remarkable extent in the last two decades among Finnish adolescents. The increase is not limited to certain types of diet only but is seen in all disease-related and non-disease-related diets that were studied. Although adherence to special diet is more common among girls than boys, the growth was seen among boys as well.

Evidently, there are various causes for the increase in adherence to special diet. Medical causes have to be considered with the growing prevalence of diseases requiring special diet in the population. Regarding the increase of non-medical diets, however, more complex explanations, from growing ecological awareness and media influences to an increased concern of body shape and weight, need to be considered.

Disease-related diets

The prevalence of lactose intolerance has increased in the Finnish population (Vesa et al. 2000). Improved diagnostic methods together with better awareness in the population of the symptoms of the disease and its treatment explain a growing adherence to non-lactose or low-lactose diet. The prevalence of lactose intolerance in the adult population is 17% (National Public Health Institute of Finland 2001), while in adolescence it is lower. In our study 10% of girls and 5% of boys at age 18 used diet related to lactose intolerance. The prevalence of type 1 and type 2 diabetes is increasing in

most Western countries (Gale 2002). This development is seen especially in Finland where the incidence of type 1 diabetes has increased four-fold during the last four decades (Onkamo et al. 1999). In our study, the consumption of diabetic diet was 0.8% in 2001.

Increase in allergies has continued for over two decades by now (National Public Health Institute of Finland 2001), which is noticeable as growing adherence to allergy-related diet. In Finnish studies, while the prevalence of food allergies among Finnish children is estimated as 10% (National Public Health Institute of Finland 2001), it decreases with age, and remains stable at 1–2% among adults (Wood 2003). In our study, consumption of diets related to food allergies was 8.4% in girls and 4.0% in boys in 2001. Whether these reported food allergies are medically diagnosed cannot be estimated on the basis of the self-reported data.

Non-disease-related diets

Boys are more likely than girls to adopt eating and exercise patterns serving to increase muscle tone and weight (McCabe et al. 2002). In our study, diet related to sports and body-building was the only diet more prevalent among boys. In Finnish surveys, young teenagers have reported the use of vitamins, proteins, other nutrients and even hormones for body-building (STAKES 2003). We can assume that diet related to body-building and sports here often refers to such extra nutrients and hormones. The products, though originally meant for competitive sports, are now increasingly being adopted by teenagers. From the health point of view, the rationale in the use of products designated for body-building in growing teenagers can be questioned.

Girls are more conscious of their weight and body image than boys (Nowak 1998). In our study, although adherence to weight reducing diet was four times more common among girls, the increase in the consumption was observed in both

sexes. Previous studies have suggested that weight reducing is increasing among girls especially in the Western cultures (e.g. Conner et al. 1996; Edlund et al. 1994; Edlund 1997; Gabhainn et al. 2002; Koskelainen et al. 2001; Lau & Al-saker 2001; Neumar-Sztainer & Hannan 2000; Neumar-Sztainer et al. 1999a; Richards et al. 1990).

Based on the same data as our study, the Adolescent Health and Lifestyle Survey, Kautiainen et al. (2002) have shown that overweight and obesity increased linearly among Finnish adolescents from 1977 onwards. Thus it seems that the increase in weight reducing diet reflects the growing prevalence of obesity and overweight (Livingstone 2000). However, the increasing trend in the consumption of weight reducing diet may not be directly related to the increase in overweight and obesity. In another paper based on the Adolescent Health and Lifestyle Survey from the years 1979 to 1999, Kaltiala-Heino et al. (2003) showed that even if the adolescent population had gained weight during the 20 years' period, their weight concerns during that period had not changed. This means that the change in the objective measure of body weight on the population level and the change in the subjective perception of whether one is overweight or not, on the population level, did not match. Since we can assume that dieting because of overweight is not started unless one perceives him/herself as overweight, the interpretations suggesting that overweight is a cause of increased dieting are too simple a model. Indeed, we need to consider a possibility that dieting and overweight are correlates of a third factor altered in the society during the last 20 years.

There were sex differences in adherence to weight reducing diets. As Lupton (1996) argues, the Western ideal for a healthy body is usually described as slim, youthful, attractive, and sexual. During puberty, the adolescent body starts to undergo changes to become adult body. In girls, this usually means changes not conforming to the Western ideal for the female body, while in boys, puberty works to the contrary (McCabe et al. 2002). This could be one explanation to why weight reducing is more common among girls than boys.

Vegetarianism

According to earlier studies, consumption of vegetarian diet has increased among girls (e.g. Hebbelnicke et al. 1999; Larson et al. 2001; Nathan et al. 1997; Neumar-Sztainer et al. 1997). Our study not only confirmed the finding but also showed that in Finland vegetarian diet is becoming more popular among boys as well. However, the prevalence is still six times more common among girls.

The fact that the increase is seen in both sexes suggests that potential motives for the increase of vegetarianism are societal and not only related to the female concern of own

health or body image. Ecological and animal rights movements as present day ideologies are closely related to avoidance of meat and other animal food products. Willingness to change to vegetarian or at least to red-meat-elimination diet has lately been fostered by the mad cow disease (BSE) outbreak, as well as other food safety issues, and the ill-treatment of animals.

The role of media, fads, and peers

It is evident that the media play a role in adolescents' food choice (McCabe 2002). The above mentioned food catastrophes are examples where media played an important role in raising the ecological awareness, awareness of risks of food products, and interest in animal rights. Most probably, all these have had an indirect effect on diet. How important this kind of information is for youth cannot be estimated in this study. Other indirect ways of influencing food behaviour among youth through media are role models, together with fads and trends promoted by television, radio channels, youth magazines, Internet and other means. Considering the role of media, it is obvious that also advertisement of food, which is based on "labelling", probably has a direct effect on a person's food choice and food behaviour.

The influence of media and peers may have accentuated through changes in food behaviours in Finnish families during the last decades. Having dinner together has become less common, and nowadays only every second family with teenagers has a daily dinner together (STAKES 2002). This means that influential factors other than parents' food behaviour are now stronger than previously, especially among 16- to 18-year-old adolescents.

In the adolescents' world, food or eating healthy are probably not the most important components (Neumar-Sztainer et al. 1999b). Children may also use their food choice and consumption of special diet as a means to rebel against both their parents and adults' ideals in general, or even as an idealistic attempt to save the world. While food choice is becoming more individual-based (Meiselman 1996), global media and food market offer new alternatives for food choice together with new ideals and trends in food habits. Fads, ethical, social and ideological reasons, and a growing ecological awareness may well explain some of the widening popularity of special diets in the older age groups among adolescents.

Methodological considerations

This study is based on cross-sectional, time series data of large representative samples of 12-, 14-, 16- and 18-year-old adolescents in 1979–2001. The self-reported anthropometric data will be presented in a separate paper. The potential

biases in our study are caused by a declining response rate as well as the reformulation of the question in the 1999 survey. On the basis of the analysis of non-respondents, we estimated that the observed prevalence of special diet consumption as well as the rise in the consumption might be slightly higher than the actual figures.

The consumption of special diet during the period 1979–1997 may seem lower than the actual one due to the formulation of the question. The purpose of the reformulation of the question in 1999 was indeed to assist the respondents in understanding the concept of “special diet”, and, consequently, in easier definition of the type of diet. Accordingly, this resulted in a larger number of special diets. To address the possible methodological problem caused by reformulating the question, the consumption of special diets was examined separately for the two periods 1979–1997 and 1999–2001. The results indicated that the increase in the trend was verifiable in both periods, confirming that the increasing trend during the entire period is a valid observation.

According to the repeatability analysis, answering to the consumption of disease-related diets was more coherent than of non-disease-related diets such as body weight or vegetarian diets. The presumable explanation is that adolescents start certain special diets, like vegetarian, without profound consideration. In contrast, a therapeutic diet is essential in the treatment of diabetes, allergy or lactose intolerance, which ensures that these diets are more constant. Overall, the results seem to reflect real changes and impulsiveness in adolescents’ behaviour.

Public health considerations

For the adolescents’ physical and mental growth, an adequate intake of energy and nutrients is important. Increasing

consumption of special diets, especially non-disease-related diets such as related to body weight or vegetarianism, heightens the risk for nutrition-related diseases like anaemia and vitamin deficiencies. A wide knowledge of nutrition is necessary to determine the effect of elimination of certain foods on health, e.g. foods of animal origin, and intake of iron or vitamin B-12 or vitamin D among vegetarians. This knowledge is most often insufficient in adolescence.

Increase in special diets complicates the school meal service demanding extra work and financial resources. In Finland, a warm lunch is served free at school. From the pupil’s point of view, a potential problem with disease-related diets is the risk of becoming “labelled” and thereby separated from the important peer group. Adherence to a special diet may also cause skipping the school meal or selecting just a part of it with a consequence of not getting an adequate intake of nutrients and energy.

Our study is a good example of how a monitoring system can reveal major changes in behaviours relevant to adolescent health. These changes give hints, e.g. for health education as to what topics to select, and for school health services as to which laboratory measures are relevant.

Acknowledgements

The Ministry of Social Affairs and Health in Finland supported the study (the §27 Appropriation of Tobacco Act). For the grants received, the authors wish to thank the Juho Vainio Foundation; Finnish Cultural Foundation, Regional Fund of Mikkeli; University of Tampere, School of Public Health; University of Joensuu, Faculty of Education; and the University Foundation of Itä-Savo; and, for the language check of the manuscript, Marja Vajaranta, University of Tampere.

Zusammenfassung

Das Einhalten spezieller Diäten durch finnische Jugendliche: wiederholte nationale Querschnittserhebung, 1979–2001

Fragestellung: Untersuchung der Einhaltung von Diäten durch finnische Jugendliche im Zeitraum von 1979–2001.

Methoden: Schriftliche Befragung ausgewählter Stichproben von 12-, 14-, 16-, und 18-Jährigen in ganz Finnland in den Jahren 1979 (ohne 12-Jährige), 1993, 1997, 1999 und 2001.

Ergebnisse: Insgesamt 33998 Jugendliche antworteten. Die Rücklaufquote sank von 78 % im Jahr 1979 auf 70 % im Jahr 2001. Der Anteil an Jugendlichen, die eine spezielle Diät einhalten, stieg zwischen 1979 und 2001 bei 14-jährigen Mädchen von 4 % auf 24 %, bei 14-jährigen Jungen von 1 % auf 12 %; bei 16-jährigen Mädchen und Jungen von 5 % auf 29 % resp. von

3 % auf 11 %; bei 18-jährigen Mädchen von 9 % auf 30 % und bei gleichaltrigen Jungen von 3 % auf 16 %. Sowohl die Einhaltung von krankheitsbedingten Diäten (Diabetes, Laktose-Intoleranz, Allergien) als auch von Diäten ohne Krankheitsbezug (Gewichtsabnahme, Sport und Bodybuilding, Vegetarismus o. ä.) ist häufiger geworden. Die beobachtete Zunahme könnte aufgrund einer geringfügigen Modifikation der Fragestellung im Jahr 1999 etwas grösser als in Realität ausfallen.

Schlussfolgerungen: Die wachsende Bedeutung von Diäten im Jugendalter lässt sich zum Teil durch eine steigende Prävalenz gewisser Krankheiten erklären (Laktose-Intoleranz, Diabetes). Der zunehmende Vegetarismus und das Einhalten von Diäten zur Kontrolle von Körpergewicht oder -form dürften vor allem durch Modeerscheinungen, von Medien geschaffene Ideale und ein wachsendes ökologisches Bewusstsein zu erklären sein.

Résumé

Suivi d'un régime spécifique parmi les adolescents finlandais: enquêtes nationales répétées (1979–2001)

Objectifs: Etudier le suivi de régimes spécifiques par les adolescents finnois entre 1979 et 2001.

Méthodes: Des questionnaires auto-administrés ont été envoyés à des échantillons nationaux représentatifs d'adolescents de 12, 14, et 18 ans en 1979, 1993, 1997, 1999, 2001 (12 ans pas inclus en 1979).

Résultats: 33 998 réponses ont été reçues. Le taux de réponse est passé de 78 % en 1979 à 70 % en 2001. Le suivi d'un régime spécifique a augmenté entre 1979 et 2001: chez les adolescentes de 14 ans de 4 à 24 %, chez les garçons de 1 à 12 % ; chez

les adolescentes de 16 ans de 5 à 29 %, chez les garçons de 3 à 11 % ; chez les adolescentes de 18 ans de 9 à 30 %, chez les garçons de 3 à 16 %. Cette augmentation a été observée aussi bien pour les régimes en lien avec une maladie (diabète, intolérance au lactose, allergie) que pour d'autres régimes (régime amaigrissant, en lien avec la pratique d'un sport ou de body-building, régime végétarien, etc.)

Conclusions: Le fait de suivre un régime spécifique s'explique partiellement par une prévalence augmentée de certaines maladies (intolérance au lactose, allergies, diabète). L'augmentation de la pratique d'un régime végétarien et de régimes en lien avec le poids corporel est très probablement à mettre en lien avec la mode, les idéaux relayés par les médias et par une conscience écologique de plus en plus répandue.

References

Conner M, Martin E, Silverdale N (1996). Dieting in adolescence: an application of the theory of planned behaviour. *Br J Health Psychol* 1: 315–25.

Edlund B, Hallqvist G, Sjoden P (1994). Attitudes to food, eating, and dieting behaviour in 11- and 14-year-old Swedish children. *Acta Paediatrica* 83: 572–7.

Edlund B (1997). Dieting in Swedish children and adolescents. *Acta Univ Ups* 63: 74.

Fisher M, Schneider M, Pegler C, Napolitano B (1991). Eating attitudes, health-risk behaviours, self-esteem, and anxiety among adolescent females in a suburban high school. *J Adolesc Health* 12: 377–84.

Gabhainn SN, Nolan G, Kelleher C, Friel S (2002). Dieting patterns and related life-styles of school-aged children in the Republic of Ireland. *Public Health Nutr* 5: 457–62.

Gale EAM (2002). Perspectives in diabetes: the rise of childhood type 1 diabetes in the 20th century. *Diabetes* 51: 3353–61.

Hebbelnick M, Clarys P, Malsache AD (1999). Growth, development, and physical fitness of Flemish vegetarian children, adolescents, and young adults. *Am J Clin Nutr* 70 (Suppl): S579–85.

Kaltiala-Heino R, Kautainen S, Virtanen SM, Rimpelä A, Rimpelä M (2003). Has the adolescents' weight concern increased over 20 years? *Eur J Public Health* 13: 4–10.

Kautainen S, Rimpelä A, Vikat A, Virtanen AM (2002). Secular trends in overweight and obesity among Finnish adolescents in 1977–1999. *Int J Obes Relat Metab Disord* 26: 544–52.

Koskelainen M, Sourander A, Helenius H (2001). Dieting and weight concerns among Finnish adolescents. *Nord J Psychiatry* 55: 427–31.

Lahti-Koski M, Kilkkinen A (2001). Nutrition report 2000. Helsinki: The National Public Health Institute of Finland: 11–4.

Larsson CL, Klock KS, Nordrehaug-Åström A, Haugejorden O, Johansson G (2001). Food habits of young Swedish and Norwegian vegetarians and omnivores. *Public Health Nutr* 4: 1005–14.

Lau B, Alsaker F D (2001). Dieting behaviour in Norwegian adolescents. *Scand J Psychol* 42: 25–32.

Livingstone B (2000). Epidemiology of childhood obesity in Europe. *Eur J Pediatr* 159 (1 Suppl): S14–34.

Lupton S (1996). Food, the body and the self. Wiltshire: Redwood Press: 131–53.

Meiselman HL (1996). The contextual basis for food acceptance, food choice and food intake: the food, the situation and the individual. In: Meiselman HL, MacFie HJH. Food choice, acceptance and consumption. London: Blackie Academic & Professional: 239–63.

McCabe MP, Ricciardelli LA, Finemore J (2002). The role of puberty, media and popularity with peers on strategies to increase weight, decrease weight and increase muscle tone among adolescent boys and girls. *J Psychosom Res* 52: 145–53.

Nathan I, Hackett AF, Kirby S (1997). A longitudinal study of growth of matched pairs of vegetarian and omnivorous children, aged 7–11 years, in the North-West of England. *Eur J Clin Nutr* 51: 20–5.

National Public Health Institute of Finland (2001). Nutrition report 2000. Helsinki: National Public Health Institute of Finland. <http://www.ktl.fi/nutrition/>

Neumark-Sztainer D, Story M, Resnick MD, Blum RW (1997). Adolescent vegetarians: a behavioral profile of a school-based population in Minnesota. *Arch Pediatr Adolesc Med* 151: 833–8.

Neumark-Sztainer D, Story M, Falkner NH, Beuhring T, Resnick MD (1999a). Socio-demographic and personal characteristics of adolescents engaged in weight loss and weight/muscle gain behaviours: who is doing what? *Prev Med* 28: 40–50.

Neumark-Sztainer D, Story M, Perry C, Casy MA (1999b). Factors influencing food choices of adolescents. *J Am Diet Assoc* 99: 929–37.

Neumark-Sztainer D, Hannan PJ (2000). Weight-related behaviours among adolescent girls and boys: results from a national survey. *Arch Pediatr Adolesc Med* 154: 569–77.

Nowak M (1998). The weight-conscious adolescent: body image, food intake, and weight-related behaviour. *J Adolesc Health* 23: 389–98.

Onkamo P, Väänänen S, Karvonen M, Tuomilehto J (1999). Worldwide increase in incidence of type I diabetes – the analysis of the data on published incidence trends. *Diabetologia* 42: 1395–1403.

Richards MH, Casper RC, Larson R (1990). Weight and eating concerns among pre- and young adolescent boys and girls. *J Adolesc Health Care* 11: 203–9.

Rolland-Cachera M-F, Bellisle F, Deheeger M (2000). Nutritional status and food intake in adolescents living in Western Europe. *Eur J Clin Nutr* 54 (1 Suppl): S41–46.

Schneider D (2000). International trends in adolescent nutrition. *Soc Sci Med* 51: 955–67.

Siegel S, Castellan J Jr (1988). *Nonparametric statistics for the behavioral sciences*. 2nd ed. New York: McGraw-Hill: 284–91.

STAKES, National Development and Research Centre for Health and Welfare (2002). *Kouluterveyskysely 2002 – Valtakunnalliset tulokset, Ruokailutottumukset*. Helsinki: STAKES. <http://www.stakes.fi/kouluterveys/taulukot/2002/ruoka.htm>

STAKES, National Development and Research Centre for Health and Welfare (2003). *School Health Promotion Survey 2003*. Helsinki: STAKES. <http://www.stakes.fi/kouluterveys/taulukot/2003/tervey03.htm>

Vesa TH, Marteau P, Korpela R (2000). Lactose intolerance. *J Am Coll Nutr* 19 (2 Suppl): S165–75.

Wood RA (2003). The natural history of food allergy. *Pediatrics* 111: 1631–37.

Address for correspondence

Heli Kosonen
University of Joensuu
Savonlinna Department of Education
P.O. Box 55
Fin-57101 Savonlinna
Tel.: + 358-15-5117 886
Fax: +385-15-531 060
e-mail: heli.kosonen@joensuu.fi



To access this journal online:
<http://www.birkhauser.ch>
