

School and workplace meals promote healthy food habits

Susanna Raulio^{1,*}, Eva Roos^{2,3} and Ritva Prättälä¹

¹National Institute for Health and Welfare, PO Box 30, FI-00271, Helsinki, Finland: ²Folkhälsan Research Center, Helsinki, Finland: ³Department of Public Health, University of Helsinki, Helsinki, Finland

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Abstract

Objective: The present study is to describe, on the basis of recent Finnish population surveys, (i) the frequencies of school and worksite canteen use, (ii) the determinants of having a hot lunch during school or working hours and (iii) the associations of lunch eating patterns with food habits.

Setting: The study summarises mainly basic reports and studies concerning catering services conducted in Finland based on nationally representative population surveys.

Design and subjects: Cross-sectional study. The most important surveys cited in this paper are the School Health Promotion Study, the Work and the Working Conditions survey, the National FINDIET 2002 Study, and the Health Behavior and Health among Finnish Adult Population survey.

Results: School lunch is eaten by on average 70–90% of children aged 9–18 years. Of all employees, 30% eat at a worksite canteen daily, whereas 30% of men and 45% of women eat packed lunches. Nationally representative cross-sectional population surveys show that the use of catering services is associated with more healthy food habits; schoolchildren eating school meals and employees eating lunch at a worksite canteen tend to make food choices closer to nutritional recommendations as compared to those not using catering services to the same degree.

Conclusions: Some evidence exists that catering services in schools and worksites contribute to healthy eating habits in the population. In order to verify the positive role of catering services more scientific research with prospective and intervention design studies will be needed.

Keywords
Catering services
Food pattern
School canteen
Worksite canteen

History of school and worksite meal services

Public catering services have a long history in Finland. They have been developed since the 1940s as part of the health and social policies typical to the Nordic countries. The idea of a public school meal service was introduced in Finland during the Second World War. The war led to food shortages and brought women into the labour force. Children's nutrition emerged as a social and public health problem. Even after the war the proportion of Finnish women having full-time jobs outside the home remained high (e.g. in 2008 approximately 69% of Finnish women were employed⁽¹⁾), and consequently school meal services have been considered important and maintained. Since 1948 the Finnish municipalities have arranged a free lunch for all pupils at elementary schools. The same benefit was gradually introduced to all levels of primary and secondary education. According to current law, students must be provided with a proper meal on every school day. In addition, university students have had subsidized meals since 1979.

Catering services at workplaces were developed especially in the 1970s when the Finns born in the 1940s and 1950s – accustomed to free school lunches – entered

the labour force. In 1971, the Finnish Institute of Occupational Health gave recommendations for eating arrangements at work based on the International Labor Organization's Welfare Facilities' recommendation⁽²⁾ that it should be possible for every employee to eat properly during the working day. Meal provision at work was included in trade union agreements in both the public and private sectors. Even though the economic support given to workplace meals has diminished since the peak years of the 1980s, workplace canteens or restaurants are still supported by different tax agreements and subsidies.

Around 34% of all Finns eat at least one meal outside the home every day⁽³⁾. In total, in 2008, 810 million meals were served by large-scale catering kitchens in Finland, equating to 153 meals per person. A major part, 27%, of these meals were served at schools⁽³⁾. The share of cafeterias was 22%, and that of restaurants and hotels was 16%. Old people's homes and day-care centres, hospitals and worksite canteens each accounted for about 10%⁽³⁾. All Finnish schoolchildren undergoing compulsory education, approximately 700 000, and 190 000 pre-schoolers in municipally funded day care, are offered a lunch at the day-care centre or school canteen every workday,

*Corresponding author: Email susanna.raulio@thl.fi

i.e. Monday–Friday. In 2008, on average 160 million meals were served in Finnish elementary schools and high schools, twenty-eight million at day-care centres and over sixty-one million meals at worksite canteens⁽³⁾.

Provided that catering services are frequently used and the quality of food served follows dietary recommendations, they comprise an important channel to promote healthy nutrition in a population. The current Finnish nutritional recommendations⁽⁴⁾ and the national recommendations for school lunches⁽⁵⁾ state that one-third of daily energy should be gained from lunch. Lunches and snacks served in pre-school should provide two-thirds of the daily energy intake⁽⁶⁾. The recommendations for pre-school and school lunches define more closely what the composition of the meal should be; it should contain a main course, vegetable side dish, milk or sour milk, bread and bread spread^(5,6). Meals offered at workplace canteens should be composed in the same way⁽⁷⁾.

Free hot meals at school or subsidized meals at worksite canteen are common only in some Western countries like Finland and Sweden, and therefore there are practically no international studies in this field. However, public discussion on school meals and other forms of eating outside the home has increased during recent years, e.g. in the United Kingdom^(8–12). Even though there is a lack of international scientific research on catering services, there are several sources of nationally representative data in Finland that can be used to study eating patterns at schools and worksites. However, these data were not exploited to study the use of catering services until the turn of the century. In the present study, we summarize the results from these surveys.

We aim to describe, on the basis of recent Finnish population surveys, (i) the frequencies of school and worksite canteen use, (ii) the determinants of having a lunch at a canteen during school or working hours and (iii) the associations of lunch eating patterns with food habits and nutrient intake.

Monitoring the use of catering services

A group of experts brought together by the Finnish Heart Association made a proposal for a monitoring system of catering services in 2001⁽¹³⁾. The proposal was made because the contribution of catering services to the Finnish diet was estimated to be significant and because the existing dietary monitoring systems did not take them into account. Preparations for the system have continued as a project between the Finnish Institute for Health and Welfare (THL), Finnish Institution of Occupational Health (TTL) and the Finnish Heart Association. The project has analysed existing data on meal patterns among Finnish population groups in order to show how the current health monitoring systems could be utilized in evaluation and development of catering services^(14–17). In addition, the project will search for alternative data sources, such as registers and statistics

that could cost-effectively provide information on the quality of meals served outside the home. In the present study, the focus will be on school and workplace meals.

The most important surveys cited in the study are the following: (i) the School Health Promotion Study⁽¹⁸⁾, which is conducted by the National Institute for Health and Welfare (formerly the National Research and Development Centre for Welfare and Health). The School Health Promotion Study is a nationwide survey conducted annually among pupils in elementary and upper secondary schools. The data used were collected in 1996–2006. (ii) the Work and the Working Conditions survey conducted by the Finnish Institute of Occupational Health⁽¹⁹⁾. The data used were collected in 1997, 2000 and 2003 and included men and women aged 25–64 years. (iii) the National FINDIET 2002 Study⁽²⁰⁾ conducted by the National Institute for Health and Welfare (formerly the National Public Health Institute) as part of the National FINRISK Study⁽²¹⁾. Subjects were aged 25–64 years and from five regions in Finland. (iv) The Health Behavior and Health among Finnish Adult Population Survey⁽²²⁾. The data used were collected in 1979–2007 and included men and women from 15 to 64 years of age.

School meal and eating habits at school age

On average 70–90% of all children aged 9–18 years visit the school canteen daily according to the most representative⁽¹⁵⁾ and concise studies^(23–26). But, only 10–35% of the respondents eat all parts – main course, fresh vegetables, bread, bread spread and milk – of the meal daily^(15,24,25).

School meals are eaten less often by pupils who feel themselves obese, smoke, use alcohol, or whose parents have a lower educational level⁽¹⁵⁾. In addition, being bullied at school, not liking school, skipping breakfast, and not having dinner with the family in the evening are associated with less frequent use of the school canteen⁽¹⁵⁾.

Eating the school lunch is associated with higher consumption of vegetables, fruits, rye bread, milk, sour milk and cheese⁽¹⁵⁾. Skipping the school lunch is associated with higher consumption of French fries, potato chips, hamburgers, pizza, meat pies, ice cream, candy and chocolate⁽¹⁵⁾. If the pupil skips at least the main course of the school lunch, it is more likely that he/she eats unhealthy snacks like sweets, soft drinks and hamburgers, etc. (Table 1).

Two studies^(24,27) covering different age groups and regions showed that average energy intake from school lunch was lower than recommended. A school meal was nonetheless nutritionally better than dinner served at home (see Hoppu *et al.* in this issue). There are no nationally representative studies on the contribution of school meals to the daily nutrient intake of children.

Worksite lunch and eating habits of adults

On average 30% of all Finnish employees eat at a worksite canteen regularly, 30% of men and 45% of

Table 1 Associations between eating school lunch and unhealthy snacks at school, School Health Promotion Study 1996–2006⁽¹⁵⁾

	<i>n</i>	Unhealthy snacks* at least twice a week at school	Once a week or more		
			Sweets	Soft drinks	Meat pies, hamburgers, pizza, etc.
		%	%	%	%
Boys					
Eats school lunch, mostly	66 366	33	34	31	11
Eats school lunch, rarely	5408	42	40	39	18
Does not eat school lunch	3588	38	34	35	21
Girls					
Eats school lunch, mostly	67 247	23	33	14	4
Eats school lunch, rarely	11 775	33	41	22	6
Does not eat school lunch	3988	26	30	18	7

*Unhealthy snacks were sweets, soft drinks, meat pies, hamburgers, pizza, etc.

Table 2 OR* and 95 % CI for consumption of fresh vegetables, boiled potatoes and fish dishes six to seven times a week according to lunch place, Health Behavior and Health among Finnish Adult Population Survey 2000–2001⁽¹⁴⁾

	Men (<i>n</i> 2125)		Women (<i>n</i> 2615)		All (<i>n</i> 4740)	
	OR	95 % CI	OR	95 % CI	OR	95 % CI
Lunch place						
Worksite canteen	1		Consumption of vegetables		1	
Restaurant, bar	0.85	0.62, 1.17	1.18	0.77, 1.79	0.76	0.60, 0.97
Other	0.54	0.41, 0.70	0.62	0.51, 0.74	0.64	0.55, 0.74
Home	0.79	0.60, 1.03	0.69	0.55, 0.87	0.72	0.60, 0.85
Consumption of fish dishes						
Worksite canteen	1		1		1	
Restaurant, bar	0.68	0.50, 0.92	0.90	0.54, 1.48	0.66	0.51, 0.85
Other	0.68	0.54, 0.86	0.60	0.49, 0.74	0.65	0.56, 0.75
Home	1.01	0.78, 1.31	0.66	0.51, 0.84	0.81	0.68, 0.97
Consumption of boiled potatoes						
Worksite canteen	1		1		1	
Restaurant, bar	0.56	0.31, 1.01	0.65	0.29, 1.45	0.57	0.36, 0.91
Other	0.94	0.66, 1.32	0.51	0.37, 0.72	0.69	0.54, 0.87
Home	0.98	0.68, 1.41	0.96	0.67, 1.37	0.96	0.75, 1.24

*Adjusted for age, education and place of residence.

women eat packed lunches, 17 % of men and 5 % of women eat at other restaurants or cafés and 14 % of men and 11 % of women eat at home⁽²⁸⁾. The possibility to eat at a canteen given by having one situated in or near one's workplace exists for, on average, only 54 % of Finnish-employed men and 61 % of employed women, according to the Health Behavior and Health among the Finnish Adult Population survey. Of those adult Finns who have the possibility of using a canteen during the working day, about 50 % use it regularly (Raulio *et al.*, unpublished data). Use of worksite canteens has been stable in Finland over two decades between 1979 and 2001⁽²⁹⁾.

Those with more years of education and experience of living in the Helsinki capital area eat more often at the worksite canteen than the others^(14,28–30). Finns with the lowest education and living somewhere outside the capital area prefer packed meals⁽²⁸⁾. Differences in worksite canteen use defined by years of education and place of residence have not changed remarkably in Finland between 1979 and 2001⁽²⁹⁾.

Financial situation, i.e. having enough money for food and clothes, is not associated with worksite canteen use

among employees from the city of Helsinki⁽³⁰⁾. However, reduction in subsidies for catering services is associated with a decrease in meals eaten at canteens⁽³¹⁾. Employees working in health and social welfare and all kinds of office workers at small workplaces use canteens more often than employees in other trades⁽²⁸⁾. Male workers in trading or service industries and in various office jobs at small workplaces eat packed meals less often than workers in other occupations⁽²⁸⁾.

There are also some associations between work-related factors and the practice of eating packed lunches or at the canteen among men. Among men low social support and high mental strain at work are associated with more frequent use of packed meals⁽²⁸⁾ and physically demanding jobs are associated with a snack-dominated meal pattern⁽³²⁾. On the contrary, low social support at work encourages the use of canteens among men⁽²⁸⁾. Among women associations between work-related factors and eating habits during working hours are less systematic and weaker.

Finnish employees, who frequently have their lunch at a worksite canteen, tend to make food choices closer to nutrition recommendations at the workplace canteen

than when eating at other lunch places^(14,30,33). Fresh vegetables, vegetable foods, boiled potatoes and fish dishes are chosen more frequently by those who eat lunch at a canteen compared to those who eat at other lunch places (Table 2).

Discussion

Nationally representative health monitoring surveys show that the use of catering services is common in Finland, especially among schoolchildren. School lunch is eaten on average by 70–90% of children. Even though all Finnish school children are offered a free school meal every school day, there are some who skip the meal daily or who eat only some parts of the meal. In addition, less than one-third eat all parts of the meal daily. Current studies do not report the causes for not utilizing the possibility to take the free lunch. However, skipping the school meal is associated with lower parental education and with some unhealthy lifestyle factors, like smoking and drinking alcohol.

Of the employed Finnish men 54%, and of employed women 61%, have the possibility to eat at a worksite canteen and about half of them do so regularly. Of all employees, 30% eat at a worksite canteen daily, whereas 30% of men and 45% of women eat packed lunches. Among men high mental strain at work is associated with the use of packed meals. It is understandable that when work is hectic, employees tend to eat as fast as possible, sometimes even behind their desks while working⁽³⁴⁾.

Higher education and living in the Helsinki capital area are associated with more frequent worksite canteen use among employees, compared to those with lower education and living in other parts of the country. The association between education and the use of a worksite canteen could be partly explained by work-related factors, since well-educated people are more likely to work at places where the canteens are arranged properly, and they may also have better financial resources for eating at the canteens. Well-educated people are more health-orientated⁽³⁵⁾ and might thus choose a balanced meal at the worksite canteen instead of grabbing something to eat while working.

Only a few studies have provided information on changes and sociodemographic variation in the use of school and worksite canteens in Finland, and representative data on the nutritional quality of the served meals is lacking. Comparable international research in this field is also lacking, because free school lunches and subsidized hot meals at worksites are common mainly in Finland and Sweden.

Some evidence exists on the contribution of catering services to food habits and nutrition across the population. Most of the evidence is based on studies among small and select subpopulations. Nationally representative population

surveys have been used in a few cross-sectional studies. They suggest that the use of catering services is associated with more healthy food habits; schoolchildren eating school meals and employed people eating lunch at a worksite canteen tend to make food choices closer to nutritional recommendations compared to those not using catering services in same degree^(15,30,33). A Finnish study of secondary-school children⁽²⁴⁾ showed that the nutrient content of the school lunch, served by school catering services, was closer to the nutrient recommendations than the dinner eaten in the evening mainly at home. One reason for this could be that communal family meals eaten in the evening are rarer in Finland than in other Organization for Economic Cooperation and Development countries⁽³⁶⁾. This could lead to the use of convenience foods and fast foods, which have a poorer nutritional profile than home-made food^(37–40). With cross-sectional studies we cannot conclude whether catering services have an effect on food habits. A reason for the associations found can be that the use of catering services promotes healthy food habits by serving more healthy foods that can have a further impact on food consumption patterns during the rest of the day. But, the explanation can also be that people who eat at school or worksite lunch have healthier food habits regardless of the use of catering services.

In 2004, the Finnish Heart Association assessed the nutritional quality of food served by institutional kitchens providing food services for the public sector, and only a few of the kitchens studied managed to fulfil all the nutritional criteria set by a group of nutrition experts⁽¹⁷⁾. In most institutional kitchens, the customer could not choose a daily meal that fulfilled all the criteria. The main problems were that there were not enough fresh vegetables served in schools. In particular, kitchens providing food for adults used too much of, and not the recommended type of, fat and all kitchens, but especially those providing food for schools, used too much salt. These results do, however, give us only some suggestions of the dietary quality of some institutional kitchens, not the actual nutritional composition of the lunches as such, or in contrast to packed lunches.

The development and monitoring of catering services is currently on the political agenda in Finland. The Finnish government included the development of catering services in its 4-year policy programme for health promotion launched in 2007⁽⁴¹⁾. As part of this programme, a specific working group on catering services was nominated by the Finnish Ministry of Social Affairs and Health. The goal of the working group is to improve the availability, quality and monitoring of catering services. The tasks of the working group are to make recommendations (i) on the content and use indicators of nutritional quality of meals offered by catering services, (ii) on how to promote the use of high-quality catering services and (iii) on a national monitoring system for catering services.

Conclusions

Catering services in Finland are likely to have an important role in the promotion of healthy food habits among the population, both by serving food based on the national dietary recommendations and by showing models for optimal meals, thereby improving the Finnish diet throughout the whole day. In order to evaluate the implementation of the forthcoming recommendations and to estimate the role of catering services in the promotion of healthy food habits a low-cost monitoring system will be needed. In addition, more scientific research with prospective and intervention studies, as well as more studies that estimate the nutrient and food intake from meals produced by catering services, should be conducted.

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