

Industrial feeding in Finland in 1970¹⁾

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Abstract. A questionnaire was distributed to the customers of industrial canteens. This contained questions concerning the composition of the meal eaten by the worker on the day of the inquiry, as well as questions concerning his breakfasts in general, his likes and dislikes, etc. The employers were asked about the annual food consumption figures of their canteens, menus and menu planning, kitchen facilities, education of the kitchen personnel, etc.

The nutritive value of meals was estimated as follows: (1) by grouping the dishes and foods eaten into the following groups: A. fruit and vegetables; B. bread made of whole grain flour; C. dish made of meat, fish and/or eggs; and D. milk and milk products; (2) by sorting out the food combinations eaten by individuals; (3) by calculating the consumption of food raw materials per working day and per customer of the canteen based on the annual consumption reported by the employers. The figures obtained from (1) to (3) were compared with one third of the basic food group of the Pattern Dietary. According to the results only 21 % of the persons replying had eaten the combination A + B + C + D. Even these combinations did not always contain enough fruit and/or vegetables, and meat, fish and/or eggs.

Since many also ate a nutritionally poor breakfast, they probably did not obtain sufficient quantities of several essential nutrients. Also the sodium/potassium equilibrium of the food seemed to be unfavourable, and the consumption of fats and saturated fatty acids was too high.

Introduction

The study on industrial feeding in Finland was made in order to obtain a rough estimate of the nutritive content of the meals eaten at the industrial canteens. The meal eaten by workers in industrial canteens should cover at least one third of the daily requirements of the essential nutrients.

Method

A questionnaire was distributed to the customers of canteens, and another one to the employers. The former contained questions concerning the composition of the meal eaten by the worker on the day of the inquiry, as well

¹⁾ Lecture given at the symposium of the Scientific Agricultural Society of Finland in Helsinki on December 11, 1973.

as questions concerning his breakfasts in general, his likes and dislikes, etc. The employers were asked for the annual food consumption figures of their canteens, about the menus and menu planning, kitchen facilities, education of the kitchen personnel, etc.

The information about the meal obtained was compared with the recommendation for a meal pattern given by the Industrial Feeding Committee of the Institute of Occupational Health. The meal pattern recommendation is a modification of the USDA Daily Food Guide recommendation as calculated into foods by MITCHELL et al. (1968). The aim of this recommendation is to guarantee the intake of the daily requirement of the essential nutrients. The recommendation for an industrial meal pattern is one third of the daily one.

Although there was no possibility for chemical analyses of the meals eaten, it was possible to make a rough estimate of the nutrients omitted from these meals.

The contents of the breakfast eaten at home was also requested. The results of the industrial meals, of the breakfasts, and the annual food consumption figures in Finland were compared with the recommendations.

Except for the annual consumption figures of food raw materials which was quantitative, the questionnaire was qualitative. The content of the meal eaten by the worker on the day of inquiry was requested. The number of questionnaires filled acceptably was 1080. Of these, only about one half ($N = 516$) came from persons who ate regularly at the canteen. The questionnaires were sent and filled during the first half of June.

A pilot study was made in four canteens, and the actual study in nineteen canteens. Of all these, fifteen were connected with a factory, five with an office, and three were for workers in service industries. The questionnaires were mainly distributed and collected by the local industrial nurses.

The contents of the meals eaten by the employees were estimated in the following way:

1. The food groups
Group A = vegetables and/or fruit (potatoes excluded)
Group B = bread made of whole grain flour
Group C = warm dish and/or cold cuts
Group D = milk, other milk products, cheese, ice cream, gruel
chosen by the employees who ate regularly at the canteens were picked up from the ADP data.
2. The combinations of the food groups given above chosen by employees in eleven canteens were taken for further treatment. The number of meal combinations chosen by each worker were calculated as per cent of the total.
3. The consumption of food raw material was calculated per worker and per working day from ten canteens.
4. The information thus (Nos. 1 to 3) obtained was compared with the recommendation and also with the information about the industrial menus given in the employers' questionnaires.

Results and discussion

A summary of the results is given in Figure 1.

The results showed that only 21 per cent of the workers had eaten a complete meal containing all the items recommended. However, even this combination did not always contain enough fruit and/or vegetables, and meat, fish and/or eggs.

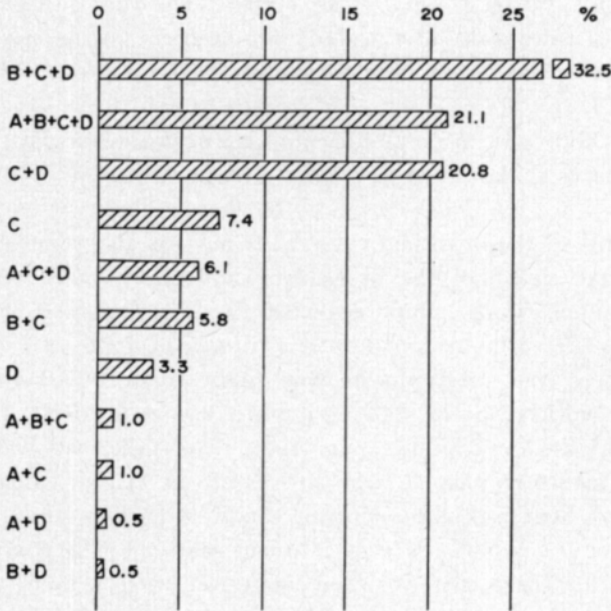


Fig. 1. Meal combinations (per cent of replies)
 A = vegetables and/or fruit (potatoes excluded)
 B = bread made of whole grain flour
 C = warm dish and/or cold cuts
 D = milk, other milk products, cheese, ice cream, gruel

Only 36 per cent of the workers eating regularly at the canteens indicated that they had eaten fresh grated vegetable, boiled vegetables, fresh salad, fruit, fruit juice or tomatoes which would offer vitamin C to the diet. The meal combinations were calculated from eleven canteens. Only 30 per cent of the workers eating in these had eaten the vegetables and fruit mentioned above.

The most popular combination was bread, warm dish and milk. This was taken by 32 per cent of the workers. When vegetable and/or fruit are omitted in the meal, the amount of vitamin C will be too low, and it is likely that the sodium/potassium equilibrium will be unfavourable.

About 50 per cent of the workers eating regularly at the canteen took rye bread, and about 10 per cent of them ate other kinds of whole grain bread. Only five per cent ate white bread, but seven per cent had taken white, sweet

coffee pastries. In the 11 canteens, 61 per cent had whole grain bread in their meal combinations.

The conclusion may be drawn that the workers who ate neither fruit and vegetables nor bread did not obtain enough vitamin C, potassium, magnesium, iron, and several vitamins of the B group.

All the employees who ate regularly at the canteen had taken the warm dish and/or cold cuts which represent the meat, fish and egg group of the menu pattern. In the eleven canteens 96 per cent of the workers had chosen this item. However, although almost all workers had taken the meat dish, the annual consumption figures of the food raw materials showed that the amount of meat did not always reach the recommended amounts per consumer and working day. This means that they did not have enough of iron, and several of the vitamins of the B group in their meal.

Sixty-three per cent of the workers eating regularly at the canteens had taken milk, and other milk products were taken as well. In the eleven canteens, about 85 per cent of the workers had taken milk or other milk products in their meal combination.

Only about 13 per cent had not taken milk or milk products. These workers had too little calcium in their meal since in Finland milk and milk products are the only reliable source of calcium in the diet.

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Toimipaikkaruokailusta Suomessa v. 1970¹⁾

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Toimipaikkaruokaloiden asiakkaille jaettiin tiedustelulomake, joka sisälsi kysymyksiä työntekijän tiedustelupäivänä nauttiman aterian koostumuksesta sekä tietoja hänen varhaisaamiaisistaan yleensä, ruokaa koskevista mieltymyksistään ja vastenmielisyyksistään, jne. Työnantajilta tiedusteltiin ruokaloiden vuotuisia elintarvikkeiden kulutuslukuja, ruokalistoja, ruokalistan suunnittelua, keittiön laitteistoa, keittiöhenkilökunnan koulutusta jne.

Aterioiden ravintoarvot arvioitiin seuraavasti:

1) ryhmittelemällä nautitut ruokalajit ja ruoka-aineet seuraaviin ryhmiin: A. kasvikset, hedelmät ja marjat; B. täysjyväleipä; C. liha-, kala- ja/tai munaruoka; D. maito ja maitovalmisteet; 2) poimimalla vastauslomakkeista yksityisten henkilöiden valitsemat ateriyhdistelmät; 3) laskemalla eri raaka-aineiden kulutus työpäivää ja ruokailijaa kohden; 4) vertaamalla kohdista 1–3 saatuja lukuja ruoka-aineina ilmoitettujen päivittäisten ravintosuositusten kolmannekseen, ravinnontarvelukuihin sekä ruokalistoihin.

Tulosten mukaan ainoastaan 21 % vastaajista oli syönyt yhdistelmän A + B + C + D. Tässäkään yhdistelmässä ei aina ollut riittävästi kasviksia, marjoja ja/tai hedelmiä eikä lihaa, kalaa ja/tai kananmunia. Kun useiden varhaisaamiainen myös oli ravitsemuksellisesti puutteellinen, eivät he luultavasti saaneet riittävästi useita suojaravintoaineita. Ruoan natrium/kalium-tasapaino näytti epäsuotuisalta sekä rasvojen ja tyydyttyneiden rasvahappojen kulutus liian suurelta.

¹⁾ Esitelmä, jonka tohtori Laakkonen piti Suomen Maataloustieteellisen Seuran symposiumissa 11. 12. 1973.