

Breakfast consumption among children and adolescents in the Netherlands

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Background: The Netherlands Nutrition Centre (NNC) recommends eating a daily breakfast preferably including products from five food groups. The aims of this study were to examine to what extent breakfast consumption among Dutch youngsters attending primary and secondary education (aged 10–19 years) is in accordance with these recommendations and whether breakfast habits differ among demographic subgroups. **Methods:** A cross-sectional study was conducted among 2404 youngsters at 71 schools in the Netherlands. All Dutch schools were stratified by educational level and province, and randomly ordered within the strata. Participants completed an online questionnaire at school including food frequency items and a 24-h recall. **Results:** The percentage of participants reporting to consume breakfast every day varied between 62.9 and 95.5 in different subgroups. Skipping breakfast was associated with being older, being a girl, attending vocational or senior general education and being of non-Dutch origin. Of the participants, <9% consumed products from five food groups as recommended. Participants especially ate products from the 'grain group', followed by the 'dairy group', the 'fats group', 'the liquids group' and the 'fruit/fruit juice group'. Bread, butter and milk were the most frequently consumed products and the majority chose healthy (i.e. low-fat) variants within food groups (i.e. wholemeal bread). **Conclusion:** Health promotion efforts should aim to stimulate breakfast consumption, particularly among vocational school students and adolescents of non-Dutch origin. Special attention should be given to breakfast quality. Future research should investigate whether better adherence to the recommendations of the NNC results in enhanced nutrient intake at breakfast.

Keywords: adolescents, breakfast, children, nutrition.

Introduction

Breakfast consumption after the long period of fasting during the night is important to maintain health, especially during early development in life.¹ Breakfast consumption decreases the risk that the lack of nutrients and energy is compensated for by consuming unhealthy snacks during the day.² As a result, eating breakfast can impact favourably on children's health and well-being, since it is related to higher overall diet quality and nutritional status, better body weight maintenance and lower plasma cholesterol levels.^{2–4} Consuming breakfast also increases the ability to concentrate at school because it raises blood glucose levels and hence enhances cognition and learning.⁵

This study aimed to assess whether breakfast consumption among children and adolescents attending primary and secondary education (aged 10–19 years) in the Netherlands is in accordance with the recommendations for a healthy breakfast by the Netherlands Nutrition Centre (NNC). In addition, we investigated whether breakfast habits differ among demographic subgroups.

According to the NNC, a healthy breakfast should be eaten every day.⁶ Additionally, the NNC states that a breakfast should contain at least (wholemeal) bread or another fibre-rich product (i.e. cereals).⁷ Preferably, breakfast should consist of products from each of the five food groups in the so-called 'disc of five': (i) fruit and (low-sugar) fruit juice

(fruit/fruit juice group); (ii) grains, in the case of breakfast (wholemeal) bread or cereals (grain group); (iii) dairy products, in the case of breakfast (low-fat) milk and milk products, cheese, meat products and eggs (dairy group); (iv) fats and oils, in the case of breakfast (low-fat) margarine (fats group) and (v) water, tea or coffee (without sugar) (liquids group).⁶ Furthermore, a healthy breakfast should provide about 15% of the age-specific daily recommended energy intake. Breakfast should preferably also contain a maximum of nine energy percent (en%) of saturated fat and a minimum of 1.4 g fibre per 100 kcal.⁷

Despite the positive effects of consuming a healthy breakfast, 'breakfast skipping' is highly prevalent among adolescents in the USA and Europe (10–30%).^{4–8} As regards 'breakfast quality', previous studies in the USA found that energy intake at breakfast ranged from 275 to 669 calories and the contribution of fat to total energy ranged from 14 to 40%, indicating poor breakfast quality. This is in line with findings from European studies.⁴

We identified 15 studies conducted in the last decade to assess breakfast habits among Dutch children and adolescents.^{9–20} However, most studies only focused on breakfast frequency, used different definitions and measures and did not assess breakfast content or actual product choice. Furthermore, most studies were local or regional studies and/or were conducted among specific age groups or educational level groups, and can therefore not be generalized to all Dutch youngsters.

The limitations of these previous studies underlined the need for a study providing a clear overview of the breakfast behaviour of Dutch children and adolescents. Such an overview can provide policy makers and health promoters with the right information about the need for interventions to improve unhealthy breakfast habits and in which risk groups unhealthy breakfast habits are more prevalent. In earlier

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studies in the Netherlands and abroad, skipping breakfast was found to be more prevalent among girls, older children and adolescents, children from lower socio-economic status and children of fathers with only secondary education.^{4,8,9,21,22}

The specific research questions addressed in this study were: (i) What percentage of children and adolescents eat breakfast every day? (ii) From which of the five food groups do youngsters consume products? (iii) Which specific products do youngsters eat for breakfast? (iv) To what extent is breakfast consumption in accordance with the recommendations of the NNC? (v) Are there differences in breakfast habits between demographic subgroups (in terms of age, gender, educational level, ethnicity, level of urbanization and socio-economic position [SEP])?

Methods

Design, sample and procedure

A cross-sectional design was used, in which participants were recruited through schools. Schools from a list of all primary and secondary schools in the Netherlands were divided into strata to ensure that the final sample had enough regional variation and consisted of a sufficient number of participants from each educational level. Primary schools (grades 7 and 8) comprised the first stratum. For each of the 12 provinces, secondary schools were divided into four strata based on educational level: university preparatory education (six grades), senior general secondary education (five grades), the theoretical levels of preparatory secondary vocational education (four grades) and the practical levels of preparatory secondary vocational education (four grades). Within the strata, the schools were randomly ordered. We aimed to recruit two schools of each educational stratum in each of the 12 Dutch provinces.

The data collection took place between June and December 2008. The schools were contacted by phone and teachers of Personal Care or Biology were asked to participate in the study by recruiting at least one class of each grade to complete an online questionnaire. Additional information about the procedure was sent by e-mail or post. The study was exempt from ethical review according to prevailing Dutch standards, because the study was considered to be low-risk, participation was voluntary and completion of the questionnaire was considered to be equivalent to assent by students.

Measures

A maximum of 5 min was needed to complete the online questionnaire. 'Demographic characteristics' that were measured included age, gender, country of birth of the participant and each of the parents, place of residence and postal code. Breakfast was defined as any food or drinks consumed before the first school break. 'Breakfast frequency' was measured by two items, using the food frequency method; one asking participants on how many days per week they habitually ate breakfast at home and one asking on how many days per week they took breakfast with them, when not consuming breakfast at home. The food frequency method was also used to measure 'Breakfast quality'. Participants were asked to indicate, on a list of the five food groups, from which of the groups they habitually ate any items (e.g. bread, milk). Participants who indicated consuming different breakfasts on week versus weekend days completed two lists, i.e. one for week days and one for weekend days. To measure breakfast frequency and quality on the morning of the assessment, a 24-h recall was used. Participants were again presented with a list of food groups and asked to indicate

from which groups they had consumed any items that morning. Subsequently, they were directed to a list of specific products belonging to the chosen groups and asked to indicate the products they had consumed (e.g. wholemeal bread, yoghurt). For some products they were also asked to further specify the type of product (e.g. semi-skimmed yoghurt, low-fat margarine) or answer that they did not know this.

Statistical analysis

A dichotomous variable (Dutch origin or not) was created based on the definition of ethnic minorities by Statistics Netherlands, that is, having at least one parent born abroad.²³ Information about the division of Dutch municipalities into five urbanization rate categories was used to recode place of residence into the variable 'level of urbanization' (1 = rural to 5 = very highly urbanized).²⁴ Postal code was recoded into the variable 'SEP', based on a factor score (range -4 [high] to 4 [low]) calculated over four indicators of SEP for all Dutch postal code areas.²⁵ The SEP variable was divided into tertiles (low-intermediate-high).

Summing the breakfast frequency at home and on the way yielded a new variable, 'total breakfast frequency'. Two new variables, breakfast quality on weekdays and weekend days, were created, indicating from how many of the recommended five food groups respondents habitually ate items. Additionally, 10 new dichotomous variables were created, indicating whether participants habitually consumed any items from the recommended five food groups on week days and weekend days.

Data were analysed using SPSS 15.0. Descriptive statistics were used to describe key participant characteristics and subgroup results on the different outcome measures. A multiple logistic regression analysis using the Enter method was conducted to determine correlates of daily breakfast consumption with age, gender, educational level, ethnicity, level of urbanization and SEP as categorical independent variables. Contrasts of the correlates were tested by repeating the analysis, using a different reference group for every categorical variable each time. Similar logistic regression analyses were conducted to determine correlates of consuming products from a food group or not, and correlates of having consumed key products (wholemeal bread, semi-skimmed milk and low-fat margarine) at breakfast that morning. *P* values of <0.05 were considered to be statistically significant.

Results

Response and participants

During the recruitment period, we managed to contact a total of 239 schools, 121 of which (50.6%) agreed to participate in the study. However, 50 of the schools were not able to participate, which means that the final response was 28.5% (71 schools). The sample consisted of 16 primary schools, 15 schools offering the practical level of vocational education, 12 schools offering the theoretical level of vocational education, 13 schools offering senior general education and 12 schools offering university preparatory education.

The study population included 2404 participants with a mean age of 13.4 years, ranging from 10 to 19 years (table 1). The participants were not equally distributed over the age groups. As expected, the number of older adolescents was relatively low, as in some types of school pupils receive their diploma when they are aged 15 or 16 years. Girls were slightly overrepresented in the sample²⁶ (56%) and the participants were more or less equally distributed over the different

Table 1 Means (SD) and percentages of participant characteristics

	n	Mean (%)
Mean age, years (SD)	2404	13.5 (1.6)
Age in years (%) (n = 2404)		
≤11	365	15.2
12–13	903	37.6
14–15	840	34.9
≥16	296	12.3
Gender (%) (n = 2404)		
Boys	1052	43.8
Girls	1352	56.2
Educational level (%) (n = 2364)		
Primary education	445	18.8
Practical level of vocational education	482	20.4
Theoretical level of vocational education	405	17.1
Senior general education	386	16.3
University preparatory education	646	27.3
Ethnicity (%) (n = 2404)		
Dutch origin	1926	80.1
Non-Dutch origin	478	19.9
Mean level of urbanization (SD) (range 1–5)	2361	2.61 (1.15)
Level of urbanization (%) (n = 2361)		
Low urbanized	1257	52.3
Moderately urbanized	535	22.3
Highly urbanized	569	23.7
Mean SEP (factor score) (range –4 to 4)	2336	0.11 (0.9)
SEP (%) (n = 2336)		
Low	770	33.0
Intermediate	785	33.6
High	781	33.4

educational levels. Almost 20% of the participants belonged to ethnic minorities, which means that the sample was representative of the Dutch population.²⁷ Participants living in a very highly urbanized area were somewhat under-represented compared with the other four levels of urbanization.²⁶ The mean factor score of SEP in our sample was close to the mean national score. Missing values were not replaced before conducting the analyses. However, no significant differences in terms of the dependent variables were found between participants with missing values and the entire sample.

Frequency of daily breakfast consumption

The frequency of (daily) breakfast consumption in the different subgroups varied between 61.2 (for participants attending the practical level of vocational school) and 92.8% (for participants aged ≤11 years) (table 2, part a). In the total sample (uncorrected for overrepresentation of certain subgroups), 80.9% reported that they had breakfast every day, and <3% never had breakfast. Skipping breakfast was significantly associated with being older, being a girl, attending vocational education or senior general education and being of non-Dutch origin (table 2, part a).

Consumption of products from the five food groups

On week days, 3.2% of the participants consumed products from none of the five food groups, 15.3% consumed products from one group, 26.7% from two groups, 30.2% from three groups and 19.5% from four groups, whereas 5.2% reported consuming products from all five food groups, as recommended. On weekend days, 3.2% consumed products from none of the food groups, 14.6% from one group, 23.9% from two groups, 28.7% from three groups, 20.8% from four groups and 8.7% from all five groups. Participants especially ate products from the 'grain group', followed by the 'dairy

group', the 'fats group', the 'liquids group' and the 'fruit/fruit juice group' (see overall consumption in table 3).

We identified specific subgroups consuming significantly less from particular food groups (table 3). The younger the participants were, the less they consumed from the 'liquids group'. Fewer boys than girls consumed products from the 'fruit/fruit juice group' on weekend days and from the 'liquids group' on week and weekend days. Vocational education students were less likely to consume products from the 'grain group', 'dairy group' and 'fats group' than participants attending the other educational levels. Fewer participants of non-Dutch origin than of Dutch origin consumed products from the 'dairy group' and 'fats group', whereas fewer participants of Dutch origin consumed products from the 'liquids group' on weekend days. The more urbanized the area participants lived in, the lower their consumption from the 'fats group'. Fewer intermediate SEP participants than low SEP participants consumed products from the 'liquids group' on week days.

Actual product choice at breakfast on the morning of assessment

Our findings showed that 1.8% of the participants had not consumed anything at breakfast the morning before completing the questionnaire. Among the most frequently eaten products were brown bread (46.9%), low-fat margarine (18.0%), chocolate sprinkles (17.1%), and cheese (14.5%). Semi-skimmed milk (22.5%), fruit juice (14.1%) and tea with sugar (12.1%) were the most common liquids (table 4).

Some key products were consumed significantly less in specific subgroups (table 2, part b). Fewer primary and vocational school students and fewer participants of non-Dutch origin than of Dutch origin consumed wholemeal bread. The more urbanized the area participants lived in, the lower their consumption of wholemeal bread, low-fat margarine and semi-skimmed milk. Fewer vocational school students and fewer participants of non-Dutch origin than of Dutch origin consumed low-fat margarine and semi-skimmed milk. Fewer low SEP participants than intermediate SEP participants consumed semi-skimmed milk.

Discussion

The current study aimed to assess whether breakfast consumption among Dutch children and adolescents is in accordance with the recommendations for a healthy breakfast by the NCC, and whether breakfast habits differ between subgroups. A total of 80.9% of participants reported consuming breakfast every day. Of the total <3% indicated never having breakfast, whereas almost 2% had skipped breakfast within the preceding 24-h period. Previous studies among Dutch youngsters found higher numbers of breakfast skippers, ranging from 3.3 to 24.7% depending on study population characteristics.^{9,11,13,14} Although the higher numbers of daily breakfast consumers found in our study could be attributed to differences in methodology and research population, breakfast consumption among children and adolescents in the Netherlands may also have increased over the past 10 years. However, a recent Dutch study among adolescents aged 12–15 years in Rotterdam schools reported only 56.4% of the participants to be daily breakfast consumers.²⁰ In this Rotterdam study, though, >50% of the participants attended vocational education and 50% belonged to ethnic minorities, which may greatly decrease the total percentage of breakfast consumers, since our study and previous studies identified vocational education students and

Table 2 Frequency of daily breakfast consumption and consumption of wholemeal bread, low fat margarine and semi-skimmed milk among all subgroups and multivariate tests of subgroup differences (n = 2279)

	Part A	Part B		
	Daily breakfast (%)	Wholemeal bread (%)	Low-fat margarine (%)	Semi-skimmed milk (%)
Age in years (n = 2404)				
≤11 (1)	95.3	41.4	18.9	22.5
12–13 (2)	86.4	52.0	18.7	26.0
14–15 (3)	73.5	43.8	18.0	19.2
≥16 (4)	67.2	47.0	14.5	21.6
Significant contrasts ^a	2, 3, 4 < 1; 3, 4 < 2; 4 < 3			
Gender (n = 2404)				
Boys (1)	86.0	50.0	18.1	25.6
Girls (2)	76.9	44.5	17.9	20.2
Significant contrasts ^a	2 < 1			
Educational level (n = 2364)				
Primary education (1)	92.8	40.7	19.1	21.1
Practical level of vocational education (2)	61.2	34.6	11.2	11.6
Theoretical level of vocational education (3)	79.0	46.4	18.3	19.5
Senior general education (4)	79.0	51.0	18.9	27.5
University preparatory education (5)	89.9	57.6	21.5	31.1
Significant contrasts ^a	2 < 1, 3, 4, 5; 3, 4 < 5	1 < 3, 4, 5; 2 < 3, 4, 5; 3, 4 < 5	2 < 1, 4, 5; 3 < 5	1 < 5; 2, 3 < 4, 5
Ethnicity (n = 2404)				
Dutch origin (1)	82.9	49.3	20.0	23.9
Non-Dutch origin (2)	72.6	37.2	9.6	16.9
Significant contrasts	2 < 1	2 < 1	2 < 1	2 < 1
Level of urbanization (n = 2361)				
Low urbanized (1)	82.3	51.2	21.6	24.2
Moderately urbanized (2)	79.4	40.6	12.1	17.8
Highly urbanized (3)	79.1	44.8	15.6	23.9
Significant contrasts ^a		2, 3 < 1	2, 3 < 1	2 < 1
SEP (n = 2336)				
Low (1)	77.8	44.4	15.6	17.9
Intermediate (2)	82.3	48.3	20.3	25.2
High (3)	83.1	48.1	18.7	24.3
Significant contrasts ^a				1 < 2

a: Significant contrasts if $P < 0.05$.

The numbers in parentheses after the independent variables correlate with the numbers used to provide the significant contrasts.

ethnic minorities as risk groups for not consuming breakfast every day.^{4,8,15,18}

With regard to breakfast quality, the current study showed that the majority of the participants did not consume a breakfast including products from all five food groups. Of the total <9% consumed products from all five groups and thus complied with the advices of the NNC. Additionally, almost half of the sample consumed products from no more than two food groups. These results indicate that the advice to consume products from all five food groups may not be realistic for youngsters to comply with. Further research should therefore assess whether consumption according to the advices increases breakfast quality or not, which may indicate if the NCC should revise their advices. However, adherence to some advices appears to be realistic, since participants tended to consume products belonging to the healthier category (wholemeal bread, semi-skimmed milk, low-fat margarine) when they consumed products from a specific food group. Moreover, about 80% of the participants did consume products from the grain disc, as recommended. Comparison of our findings with those of other studies is difficult. Only two studies in the Netherlands have assessed breakfast quality in the past 10 years. Martens *et al.*²⁸ reported quality of breakfast at the level of nutrient intake among the specific group of vocational school students aged 12–14 years. Poort *et al.*²⁹ did assess breakfast quality, but instead of the recommended five food groups, they used different recommendations. Comparison with international studies shows that the present

findings on breakfast quality seem to be consistent with the negative trend in nutrient intake at breakfast.⁴

This study also tried to provide an overview of risk groups as regards breakfast frequency and quality. Our study identified younger participants, girls, vocational school students and participants of ethnic minorities as the most important target groups for interventions to improve breakfast frequency. With regard to breakfast quality, our study found that vocational school students, participants of ethnic minorities and participants living in a more urbanized area need extra attention, since they consume less from one or more of the food groups and/or consume less of the key products. The risk groups our study identified are largely in line with previous research, which was limited to breakfast skipping.^{4,8,9,15,18,29,30}

A strength of the current study was the use of two dietary assessment methods, the food frequency method and the 24-h recall method, to measure breakfast frequency as well as quality. Almost all previous studies used one of the two methods, whereas the current study adjusted for the limitations of both methods by combining them. Secondly, this study assessed breakfast frequency as well as breakfast quality, whereas most previous studies lacked information about the quality of the breakfast. Thirdly, in contrast to earlier studies, we defined breakfast in our study questionnaire, to ensure that we only assessed relevant intake.

Some limitations must be acknowledged as well. Since analyses were based on cross-sectional data, the results cannot

Table 3 Frequency of consumption from the five food groups at breakfast among all subgroups, and multivariate tests of subgroup differences (n = 2279)

Food groups	Breakfast quality on week days					Breakfast quality on weekend days				
	Fruit/fruit juice group	Grain group	Dairy group	Fats group	Liquids group	Fruit/fruit juice group	Grain group	Dairy group	Fats group	Liquids group
Overall consumption (%)	28.9	80.2	71.7	41.9	40.3	36.3	79.9	74.0	41.1	44.2
Age in years (n=2404)										
≤11 (1)	28.5	73.2	75.3	38.6	33.7	31.8	73.2	75.6	37.8	40.8
12–13 (2)	29.1	85.3	73.2	45.6	39.0	38.0	83.8	76.2	43.7	42.0
14–15 (3)	27.4	76.4	68.8	39.2	43.3	35.2	77.5	70.4	39.5	46.0
≥16 (4)	33.1	83.8	70.9	42.2	44.3	39.5	83.1	75.7	41.9	50.0
Significant contrasts ^a					1 < 3, 4, 2 < 3; 1 < 4					2 < 4
Gender (n=2404)										
Boys (1)	27.1	80.3	74.3	43.0	37.7	33.1	79.2	76.9	41.9	40.9
Girls (2)	30.3	80.0	69.7	41.1	42.4	38.8	80.5	71.7	40.5	46.7
Significant contrasts ^a					1 < 2	1 < 2				1 < 2
Educational level (n=2364)										
Primary education (1)	29.1	73.5	75.0	43.6	38.0	32.9	73.5	76.3	41.8	43.1
Practical level of vocational education (2)	27.4	69.2	63.7	31.6	41.2	33.7	72.0	64.1	30.8	46.2
Theoretical level of vocational education (3)	28.1	77.3	70.1	44.0	41.5	33.1	78.5	72.8	44.4	41.7
Senior general secondary education (4)	32.9	85.8	71.2	42.5	40.9	38.6	84.7	76.2	41.7	46.6
University preparatory education (5)	28.5	90.7	77.2	47.3	39.5	40.8	87.7	80.1	46.7	42.9
Significant contrasts ^a		1, 2, 3 < 4, 5 4 < 5	2 < 4 2, 3, 4 < 5	2 < 1, 4, 5 3, 4 < 5		2 < 5	1, 2 < 4, 5 3 < 5	2 < 1, 3, 4, 5 2 < 4; 2, 3 < 5	2 < 1, 3, 4, 5 4 < 5	
Ethnicity (n=2404)										
Dutch origin (1)	28.5	81.2	73.4	44.1	38.9	35.7	80.9	75.3	42.9	42.4
Non-Dutch origin (2)	30.8	76.2	64.9	32.8	46.0	38.7	75.9	68.6	34.1	51.5
Significant contrasts			2 < 1	2 < 1	2 > 1		2 < 1	2 < 1	2 < 1	2 > 1
Level of urbanization (n=2361)										
Low urbanized (1)	28.1	81.4	73.7	47.3	41.8	34.8	80.7	74.9	44.8	43.4
Moderately urbanized (2)	27.3	75.5	67.9	32.9	36.8	34.8	75.9	68.8	34.2	43.9
Highly urbanized (3)	31.5	83.0	70.7	38.5	39.9	40.6	83.3	76.4	40.2	45.2
Significant contrasts				2, 3 < 1					2 < 1	
SEP (n=2336)										
Low (1)	27.7	77.8	70.5	40.4	44.0	34.8	78.7	74.2	40.9	47.0
Intermediate (2)	28.7	80.8	74.4	45.0	37.6	35.2	80.4	74.6	42.8	42.3
High (3)	30.3	82.3	70.3	40.3	39.1	39.3	81.3	74.0	40.3	42.6
Significant contrasts ^a					1 > 2					

a: Significant contrasts if $P < 0.05$.

The numbers in parentheses after the independent variables correlate with the numbers used to provide the significant contrasts.

reveal trends in breakfast behaviour.³¹ Second, the results are based on self-reported breakfast behaviour and may therefore be subject to memory and recording errors. However, the combination of two self-reported measures was included to adjust for possible memory bias. Third, due to difficulties in recruiting schools for participation, the results of the current study may not be representative of the entire target population, since certain subgroups may have been too small.

Our findings have important implications for the field of health promotion. Despite the possible increase in overall breakfast frequency, health promotion efforts should still be aimed at stimulating daily breakfast consumption among specific subgroups identified in our study. Moreover, our study shows that breakfast 'quality' needs serious attention as well. Health promotion efforts should aim to increase the consumption from the grain group, especially among vocational school students. Consumption from the other food groups should be stimulated among the entire target group. So far, there is no clear overview of intervention programmes to stimulate breakfast consumption in the Netherlands. It is our impression that most initiatives are regional and often aimed at lower age groups. Moreover, effect evaluations have been very limited.^{28,32}

Further research should examine whether better adherence to the recommendations of the NNC results in enhanced

nutrient intake at breakfast. Additional research is also necessary to further assess personal and environmental determinants of breakfast behaviour.

Conflicts of interest: None declared.

Key points

- Earlier studies assessed frequency of breakfast consumption, but did not take quality in terms of consumed food groups into account.
- Our study provides an overview of breakfast behaviour among a representative sample of Dutch children and adolescents, whereas previous studies were limited to specific subgroups.
- We identified specific subgroups in which unhealthy breakfast habits are more prevalent.
- Our study provides current and detailed information regarding breakfast consumption habits, breakfast quality and compliance with the NNC recommendations, which can inform policy makers and health promoters about the need for interventions to improve unhealthy breakfast habits.

Table 4 Actual product choice at breakfast on assessment morning (n = 2404)

Products	Percentage of total group
Food group 1: fruit and fruit juice	19.7
Fruit	8.2
Apple, banana, orange, pear, kiwi, mandarin orange, grapes, strawberries, melon, mango, pomegranate, other fruits ^a	
Fruit juice	14.1
Orange juice	7.5
Apple, grape, pineapple juice and other fruit juice ^a	
Food group 2: Grains	75.4
Bread	64.6
Wholemeal bread	46.9
White bread	9.6
White bun, biscuit rusk, cracker, currant bread, rye bread, crispbread (knäckebröd), Turkish bread, 'Cracottes' cracker biscuits, toast, croissant ^a	
Cereals	12.6
Cornflakes, muesli, crunchy muesli, Kellogg's special k cornflakes, All-bran cornflakes, choco pops, frosties, smacks, honey pops, porridge, oatmeal porridge, other cereals ^a	
Food group 3: Dairy products	59.1
Milk products	38.8
Semi-skimmed milk	22.5
Chocolate milk, full fat milk, 'Optimel' yoghurt drink, Yoghoghurt drink, low fat milk, buttermilk, 'Fristi and similar yoghurt drink, Milk7 Fruit, other milk products ^a	
Meat products	16.5
High-fat sliced cold meat	10.4
Low-fat sliced cold meat	6.6
Cheese	14.5
Yoghurt, soft curd cheese and pudding	5.4
Egg ^a	
Food group 4: fats and oils	32.8
Butter	32.8
Low-fat margarine	18.0
Margarine	5.3
Unknown	7.7
Butter ^a	
Food group 5: water, tea or coffee	31.8
Tea/Coffee	22.4
Tea with sugar	12.1
Tea without sugar	8.4
Coffee ^a	
Water	11.1
Items not included in the five food groups	44.6
Ready-to-eat breakfast products	3.2
Other sandwich fillings	34.7
Chocolate sprinkles	17.1
Chocolate spread	8.9
Peanut butter	6.2
Marmalade, chocolate chips, fruit sprinkles, aniseed comfits, aniseed sugar crumble, coconut slices, sandwich spread ^a	
Other drinks ^a	
Other foods ^a	

a: These products were eaten by <5% of the total population.

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