Nordic Working Paper

Nordic network on dietary survey methodology 2019-2020

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Preface

Nordic researchers within the field of conducting national dietary surveys have a long tradition of meeting regularly and discussing challenges and exchange experiences within dietary survey methodology. In 2015, a more formal network was established on basis of funding from NKMT.

Through a workshop in April 2016 in Uppsala, national experts met to discuss methodological challenges related to recruitment and low participation rate. The participants gained insights and knowledge on best practices in participant recruitment and consequences of low response rate for national dietary surveys. The final workshop discussion made it clear that the experts wanted to continue networking and several ideas for the network were identified. The network met in connection with the 11th Nordic Nutrition Conference in Gothenburg in June 2016. On a final Skype meeting in March 2017, Denmark volunteered to take over the coordination for the next period.

The network discussed by email correspondence the topics of the next network period and applied for funding from NKMT in 2018. This report describes part 2 of the network period in 2019-2020.

Members of the network

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The original food list from the EFSA Ring Trial were provided by EFSA (Sofia Ioannidou). The food list were modified and prepared for the current project by dietician Karin Hess Ygil, National Food Institute, Denmark.

Short summary

In 2019, the network agreed to work with issues regarding 24 h recalls and clarify which steps, procedures and tool specifications can be recommended for this method. The set up of a recent EFSA ring trial was discussed as an inspiration, but it was agreed that a full setup would demand too many resources of each country. The discussions took place by e-mail correspondence in 2019 and 2020 and on one Skype meeting.

In February 2020, the Skype meeting was held and it was agreed that all five countries would perform

- A. 24 hour recalls about the same 7 days "menus", with a trained interviewee.
- B. nutrition and diet analysis on the same diet (7 days) calculated in the national calculation systems.

This was to get a better understanding of the strengths and weaknesses of our dietary assessment system, biases and variation. The network asked EFSA for permission to use the data on food intake from the ring trial. The national projects would involve 2-3 employees in each country and would require person-to-person interviews.

Due to the Covid 19 pandemic and lockdown in several countries in the spring of 2020, the network changed the set up. It was decided to perform part B by letting each country enter the same 7-day diet into national nutrients calculation systems and compare the intakes of individual food groups and nutrients on each day and as a daily average of the 7 days. The input was a standardized central food list for 7 days based on the Ring Trial. Each country would identify systematic differences possibly affecting the estimated food and nutrient intakes between countries.

It was planned to present the results at a 1½ day workshop in Copenhagen in autumn 2020. It turned out impossible to meet in Copenhagen, and a 1 day online workshop was then carried out on November 20th, 2020. In addition to the country specific presentations of the analysis, each country also gave a presentation on the latest national dietary survey.

The conclusion of the workshop was:

Despite standardized input, there were many differences in the results. These differences are a result of e.g. different food grouping, recipes, fortification strategies in each country, calculation system (yield/retention factors), real differences in food content and missing values in food composition database. The participants agreed that it is difficult to isolate and quantify the reasons responsible for differences in results because of the many possible sources of variation.

The exercise gave inspiration to look at future food grouping or several food groupings for different purposes, especially grain and starch and maybe a food group with nut-seeds and a food group with legumes. Data on added sugar differed between the countries and would require update if results from the analysis are to be compared.

The presentations on national dietary surveys showed differences and similarities of conducting dietary surveys and elucidated a lot of the common challenges researchers face. The presentations also revealed inspiration to how to present and disseminate results. Many of these topics could be further elucidated on future network meetings.

Introduction

The overall aim of the Nordic network on dietary survey methodology is to increase the knowledge about best practice in relation to conducting national dietary surveys among participants of the network and other researchers.

The objective of the network in 2019-2020 was originally to investigate the effect of different ways of using the 24 hour recall method in the Nordic countries in order to clarify/illuminate which steps, procedures and tool specifications can be/shall be recommended for this method. The 24 hour recall method is recommended by the European Food Safety Authority (EFSA)¹ and several countries have gained experiences with this method. Although it is the same method in principle, the interviewing tool, details of the interview structure, the composition of the food lists, the format of quantification tools, recipes, and food composition data vary from country to country and it has impact on the data quality. There is a need for sharing knowledge on best practice, with focus on collected details and instrument properties to carry out the 24 hour recall.

The aim of the network was to obtain knowledge on best practice with focus on details in the way to carry out the 24 hour recall interviews in order to reduce respondent burden and still ensuring the needed information about dietary intake. The initial plan was to let participating countries in the network perform 24 hour recall interviews with a person having the same dietary intake across countries but interview and process the data in the national system. Differences in results would be presented and discussed at a workshop and the methodological impact on the results would be identified in order to provide recommended procedures and tool specifications for the 24 hour recall method.

Activities and outcomes

In 2019, the network discussed by e-mail how to plan the work. The network was inspired by the EFSA Ring trial involving six European dietary assessment tools (with participation from e.g. Estonia, and Sweden and principles later used in the FinDiet 2017 survey^{1,2}. The study in the network would incorporate the experiences from the ring trial into a study in a Nordic context and thereby help the Nordic countries in making better and cost-effective future surveys.

In September 2019, the network discussed by e-mail how the set up of the analysis could be. It was agreed to perform a setup where all countries complete 24 h recall interviews with their own interview tool – using a common food intake list covering e.g. 7- 10 days of intake. The network agreed to have a physical workshop in the spring of 2020 and present the results of the analysis at NNC Helsinki 2020.

In February 2020, the network had a Skype meeting and agreed on how to perform the analysis in detail. In each country 2-3 researches would be involved and perform personal interviews and subsequent dietary calculations.

The network asked EFSA and got permission to use the data on food intake from the ring trial²

¹ European Food Safety Authority, 2014. Guidance on the EU Menu methodology. EFSA Journal 2014;12(12):3944, 77 pp. doi:10.2903/j.efsa.2014.3944

² Gavrieli A, Naska A, Berry R, Roe M, Harvey L, Finglas P, Glibetic M, Gurinovic M and Trichopoulou A, 2014. Dietary monitoring tools for risk assessment. EFSA supporting publication 2014: EN-607, 287 pp.

Due to the Covid-19 pandemic and the following lockdown and restrictions, it was decided medio 2020, to use the EFSA data from the ring trial in a more limited setup. It was decided to focus on investigating the effect of using the different food and nutrient intake calculation systems in the Nordic countries. All countries should enter a standardized 7-day dietary intake data into the national calculations systems and perform national calculations. Each country would calculate energy, nutrients and food groups on basis of the dataset and present results on the workshop. This would enable the network to compare the average intake for a week and look into differences on the different days. The results will provide basis for discussions of methods used for recipes (including fat/water losses and gains and retention factors used), food groupings, fortification strategies, food composition values etc.

Preparation of food list

Denmark prepared a food list. The original food list from the EFSA Ring Trial had many foods, where it was necessary with an interpretation. Most of these foods were prior to analysis described more in detail to limit uncertainties in interpretation. In the final list, every food had amounts in gram and it was specified that all foods had to be entered as edible amounts. Despite the more specified food list, there was still room for plenty of interpretations of foods, amounts, recipes etc. Composite dishes were primarily described in their total amount, but ingredients were not necessarily specified in amounts and types. For instance, the hamburger had specification of which ingredients in the hamburger, but not the amounts and not fat content of e.g. cheese or meat. Examples of the final food list are shown in table 1.

Fortified foods were omitted in the food list, but as all milk is fortified in Sweden, then fortified milk will be used in the Swedish calculations. However, if both fortified and non-fortified food options were available in a country, the researchers were asked to choose the non-fortified foods. Also, there would be national differences in fat content in e.g. full fat milk, but as long as each country recorded which type was entered in the calculations, it could be taken into account, when interpreting the results.

Each country was further asked to provide additional information regarding:

- Which recipes/foods were used for making the calculations. Has it been necessary to interpret some food/beverages as the exact food in the provided food list did not exist or has it been necessary to use another food/beverage than stated in the food list.
- If any fortified foods were used, which foods and which fortification.
- Waste (e.g. trimming, peels, bones) – range and examples.
- Loss (cooking) – fat/water - how are the range of losses used (examples of food where you don't have loss and examples of food where you incorporate loss). Examples of gains of fat when frying – how is this handled.

Table 1. Examples of specification of foods in the final food list

First version food list and description	Final food list for calculation
Rye bread, 1 slice	Rye bread, 50 g
Water, medium glass	Water, 180 ml
Chocolate bisquit, normal size	Oreo type chocolate bisquit, 30 g
Banana, 1 medium	Banan without peel, 100 g
Cheese, one piece	Parmesan, 35 g
Coffee with milk, large cup	Coffee, 250 ml with skimmed milk (200 ml coffe, 50 ml skimmed milk)
Hamburger 1 portion	Hamburger 175 g (bun, minced meat pork and beef, cheese, mayonnaise lettuce, tomatoes)

A core set of nutrients should be presented: Vitamin D, folate, iodine, iron and salt (Na) in addition to energy and macronutrients. Iodine and vitamin D would probably be difficult to compare since the fortification strategies differ between the countries e.g. fortified salt and fortified dairy products

The countries should specify if using fortified foods, so fortification could be taken into consideration when interpreting the results.

The network discussed how to present intake by food groups. As each country has different foods groups and in a varying number of details, it was suggested to present intake in more generic food grouping as it was expected that more generic food groups to some extent were comparable on important foods.

It was expected that the results could serve as a starting point for discussions on national calculation systems, food groupings, recipe generating, portion sizes etc. – all issues, that seldom are discussed in great details across countries but non the less very important for which results to obtain.

Workshop November 2020

It was planned to have a physical workshop in the autumn 2020, but as the pandemic continued, it was decided to have a virtual workshop. The virtual one-day network workshop was carried out on Microsoft Teams on November 20th 2020 (see the program in Appendix B).

Figure 1. Workshop on Microsoft Teams. Waiting for all participants to join.

Part 1. Country specific analysis

The analyses carried out in each country were presented (see Appendix C). Challenges with the recipe calculations in the different countries were missing recipes in the databases, unclear amounts and interpretation of amounts as ready to eat or edible part (e.g. an apple), foods not available or not

available in the described type in the national databases, choosing a non-fortified product, water and fat losses.

As an example of the differences in e.g. water losses in recipes among countries, Table 2 shows water losses for fried pork chop and risotto, which both were included in the 7 day intake data.

Table 2. Water losses in pork chop and risotto recipe in percent

	Pork Chop (Fried)	Risotto
Norway	30	6
Denmark	30	0
Iceland	20	20
Sweden	22	6
Finland	39	n.a.

Also, a presentation of similarities and differences of the analyses had been prepared in order to have a qualified discussion on why results differed from country to country (see Appendix D). The overall differences between countries in intake by food groups, energy and nutrients expressed as deviations compared to means as % of mean for 7 days are shown in figure 2 and 3.

Figure 2. Deviations compared to means as % of mean for 7 days (food groups)

Figure 3. Deviations compared to means as % of mean for 7 days (energy and nutrients)

Outcome

The outcome of this session showed that despite standardized input, there were many differences in the results of the country specific analysis. These differences are a result of e.g. different food grouping, recipes, fortification strategies in each country, calculation system (yield/retention factors), real differences between countries in food content, and missing values in food composition database. The participants agreed that it is difficult to isolate and quantify the reasons responsible for differences in results because of the many possible sources of variation.

But some specific differences were observed, especially differences in recipes e.g. inclusion of vegetables and fish in mixed dishes. Visible foods e.g. beverages and fruits performed much better. Furthermore, there were specific differences in food grouping e.g. inclusion of bread and cakes in the cereal group vs. keeping these products as separate food groups and inclusion of poultry in the meat group. The comparisons also showed differences in estimated nutrient intakes especially with regard to vitamin D and iodine. This was due to different fortification strategies. However, overall the calculated energy and macronutrient intakes were similar between countries, except for specific fatty acids.

The exercise gave inspiration to look at future food grouping or several food groupings for different purposes, especially grain and starch containing foods, maybe a food group with nut and seeds, and a food group with legumes. Data on added sugar differed between the countries and needs update in order to make the results more comparable.

The results were neither solid enough for being presented in a scientific paper nor suitable for presenting at the virtual NNC in December 2020.

Part 2. Dietary surveys.

In addition to the country specific presentations of the analysis, each country also gave a presentation on the latest national dietary survey (see Appendix E).

Outcome

The outcome of this session showed many similarities in ways to conduct dietary surveys but also elucidated the challenges national surveys face with participation rate, lack of funding, challenges of set up for conducting personal interviews and last, but not least, challenges for some countries of conducting surveys during a pandemic. As part of the most recent dietary survey in Sweden, an infographics concept was established for the dissemination of the study results. The infographic slides have been used when presenting results, as part of written articles/texts or in social media.

Many of these topics could be further elucidated on future network meetings.

Future of the network

The workshop participants agreed to continue the network, as it is considered fruitful to discuss different issues of conducting dietary surveys. A lot of the topics being discussed within the network are seldom discussed in great details across countries but are none the less very important for which results to obtain.

The network will have a yearly virtual meeting and continue without funding from NKMT. Norway will be coordinating a meeting in 2021.

Appendix A. Food list (example of two days intake)

Food item day 1	Quantity	key-quantity	Characteristics 1	Recipe	preparation	quantity related
Before breakfast						
water	1 medium glass/ml	180ml	tap water			
Breakfast						
capuccino	1 cup/ml	150ml	cow milk, full fat 3.5%			50 ml milk (½ dl)
yoghurt		125g	cow milk, full fat 3.5%, fruit yoghurt, sweetened			Musli =25 g (4 tablespoons)
bread	1 slice/ g	50g	rye, whole grain			
butter	thin layer	5g				
Snack						
juice	1 large glass/ ml	300ml	orange juice, fortified with extra vit C, 100% juice			
chocolate biscuit	2 normal size	30g	Oreo type chocolate biscuit with white filling			
Lunch						
beef stew	1 large portion/gr	330g	with vegetables	beef, tomato juice, carrots, onions, oil n.s.		
baked potatoes	1 medium portion/ g	200g			baked	5 g oil (1 teaspoon)
mixed salad	1 small portion/ gr	40g	fresh,	green lettuce, rucola, olive oil		12 ml (1 tablespoon)
cola	1 can/ 330ml	330ml	light			
banana	1 medium	100g	fresh			
During the afternoon						
water	1 medium glass/ml	180ml	still mineral water			
coffee	1 cup/ ml	60ml	espresso			5 g = 1 teaspoon)
chocolate biscuit, (filled)	2 normal size	30g	Oreo type chocolate biscuit with white filling			
During the afternoon						
chocolate bar	1 (50g)	50g	milk chocolate, caramel filling			
Dinner						
beer	1 small can/ 330 ml	330ml	5.5% alcohol, blond			
pizza	1 whole/ gr pre-baked	480 g	with cheese and ham	tomato sauce, ham and cheese (white bun)	frozen, baked in oven	
After dinner						
mixed nuts and dried fruits	1/2 sack/ g	50g		peanuts, walnuts, almonds, raisins (without salt)		
soft drink	walky cup large	500ml	sugar sweetened, orange taste			

Food item day 2	Quantity	key-quantity	Characteristics	Recipe
Before breakfast				
water	1 large plastic cup n.s.	350g	carbonated, plastic bottle, lemon aroma	
Breakfast				
coffee with milk	1 large cup	250ml	instant coffee Nescafe, skimmed milk, UHT, no sugar added	
orange juice	1 large glass/ ml	300ml	orange 100% juice, packed in Tetra-pack, fortified with extra Vit C	
biscuits for toddlers	4 small light	10g	rice biscuits, fortified with vitamins and minerals	
bread	1 slice	50g	rye, whole grain	
butter	thin layer on the rye bread	5g	normal	
Snack				
pumpkin seeds	20 gr	20g	homemade, baked in oven, salted	
coffee	1 cup/ml	60ml	espresso , 1 tea spoon (ts) white sugar (g)	
Lunch				
vegetable soup	1 medium portion/gr	300 g	clear, with vegetables, boiled	
salmon	1 small piece of fillet/ gr	50 g	baked in oven, n.s.	
broccoli	1 dl/ gr	55 g	steamed	
rapeseed oil	1 tablespoon/ ml	12g	n.s.	
energy drink	1 can/ 250 ml	250ml	Red Bull, can, with caffeine, fortified with vitamins	
During the afternoon				
water	1 large glass n.s.	300 g	still mineral water, plastic bottle	
banana	1 medium (g including unedible part)	120g	fresh	
Dinner				
beer	1 small can	330g	Heineken, can, blond, 5.5% alcohol	
cheese	1 piece/ gr	35g	extra hard, parmesan, 32 months seasoned, cow milk	
risotto with chicken and spinach	1 small portion/ gr	500g	chicken and spinach, boiled	900 ml chicken stock, 50 gr butter, 1 tsp olive oil extra vergin, 1 onion chopped, 1 garlic clove crushed, 300 gr arborio rice, 150 ml dry white wine, 225 gr baby spinach leaves, 280 gr cooked flamegrilled chicken, 50 gr Parmesean cheese
margarine, low fat 40%, plant sterols	2 ts. On top of the risotto	10g	plant sterols, Becel proactiv or Benecol	
ice cream	2 scoops/ gr	90g	milk-based, vanilla, plastic container	
After dinner				
beer	1 small can/ 330 ml	330ml	Heineken, can, blond, 5.5% alcohol	
crackers	3	10g	graham	

Appendix B. Agenda for the November 20th 2020 workshop

Nordic network workshop November 20th 2020 by Teams

10.00-10.15 Welcome. Brief recap about the network (Sisse Fagt, Anja Biloft-Jensen, Ellen Trolle)

10.15-11.30 Short round of presentations from each country. Including:

1. Description of challenges with calculations.
2. Presentation of waste range, fat and water losses on prepared meat and one mixed dish (Wednesday grilled pork chop, Friday risotto).
3. Present results on vitamin-D, folate, iodine, iron and salt (Na) in addition to energy and macronutrients (energy, protein, fat total, saturated fat, monounsaturated fat polyunsaturated fat, carbohydrate, added sugar, dietary fibre) based on 7 day average. Describe if some days are very different and possible explanation.

10.15-10.30 Iceland (Holmfridur Thorgeirsdottir)

shift

10.35-10.50 Denmark (Sisse Fagt)

shift

10.55-11.10 Norway (Lene Frost Andersen)

shift

11.15-11.30 Sweden (Jessica Sipinen)

shift

11.35-11.50 Finland (Liisa Valsta)

Lunch 11.50-12.30

12.30-13.00 Results across the countries (Anja Biloft-Jensen)

13.00-13.30 Discussion of similarities and differences

Break 15 min

13.45-15.00 Presentation of latest dietary survey

13.45-14.00 Iceland (Holmfridur Thorgeirsdottir)

14.00-14.15 Norway (Lene Frost Andersen)

14.15-14.30 Sweden (Eva Warensjö Lemming)

14.30-14.45 Finland (Liisa Valsta)

14.45-15.00 Denmark (Sisse Fagt)

15.15-15.30 Discussion of above

15.30-16.00 Discussion of the future of the network

7- days of consumption Iceland

20. November 2020

Hólmfríður Þorgeirsdóttir, project manager, Directorate of Health

Challenges with calculations

- Recipes not in our recipe database.
 - Then we tried to find something similar. If not possible then we put in a new recipe (4 new recipes).
- Recipes in our database different from what was on the menu.
 - E.g. pumpkin seeds not baked in oven or salted.
 - Meat loaf (meetballs), only minced beef, not pork.
 - Fat used for cooking in recipes is a mixture of fat according to how participants in a survey answer the question on what cooking fat is used in their household.
- In some cases we did not have the food item in our Food Composition Data Base and then not in our recipe database.
 - Then we had to find something similar e.g. for ham canned, whipping cream 20%, goose liver pate and so on.....
- In some cases it was not quite clear if the quantity was for the total recipe or not.
 - E.g. mixed salad 40g, olive oil 12 ml.
 - Baked potatoes 200g, 5 g oil

Waste range, fat and water losses on prepared meat and one mixed dish

- Pork chops lean:
 - Pork, lean 97 g (4,6% fat), fat (mixture) 2 g, salt 1 g.
 - Water loss 20%
- Friday risotto
 - Recipe for risotto (without chicken and cheese) water loss 20%, 402 g
 - Recipe for grilled chicken: Chicken (with skin) 99 g and salt 1 g, water loss 20%, 81 g.
 - Parmesan cheese 14 g and mascarpone cheese 3 g

Energy and macronutrients

Nr	Energy (KJ)	Energy (Kcal)	Protein, total (g)	Fat, total (g)	Saturated fatty acids (g)	Mono-unsat. f.a. (g)	Poly-unsat. f.a. (g)
1	14752	3526	142	112	39	39	20
2	10486	2506	89	103	39	35	17
3	12627	3018	176	119	34	47	23
4	12747	3047	91	90	32	21	13
5	12575	3005	95	96	37	28	15
6	24406	5833	212	232	77	80	45
7	16425	3926	171	135	58	39	21
Average	14860	3552	139	127	45	41	22

Macronutrients

Nr	Carbohydrate total (g)	Added sugar (g)	Fiber (g)
1	446	115	29
2	244	54	15
3	275	46	20
4	391	64	21
5	376	83	28
6	569	109	43
7	488	143	31
Average	398	88	27

Vitamin and minerals

Nr	Vitamin-D (ug)	Folate (ug)	Iron (mg)	Iodine (ug)	Salt (g)	Na (mg)
1	1,0	391	16,2	117	12,9	5146
2	8,1	357	11,3	101	8,2	3285
3	10,3	358	14,5	57	17,7	7090
4	2,9	207	14,2	190	8,8	3512
5	2,1	338	19,4	181	9,7	3870
6	16,3	785	28,2	411	26,2	10472
7	0,7	390	10,7	276	15,2	6092
Average	5,9	404	16,3	190	14,1	5638

Thank you!

Denmark

Danish data

Nordic Network on dietary surveys workshop

Sisse Fagt, DTU

November 29th 2020

DTU, Sisse Fagt

Danish data

1

Waste, losses and gains

- Pork chops – water loss 30%
- Risotto – water loss 0% - all added liquid absorbed

In general

- Mixed dishes water loss 5-20%
- Meat 16-30%
- Fish 10-20%

Challenges with calculations

- Despite uniforming the original dataset from EFSA a lot of interpretations of recipes and food list
- We had to decide losses, interpret amounts as as ready to eat, peeled, whether total amounts was including all ingredients (e.g. mixed salad 40 g with or without oil, whipped cream with/without sweetener)?
- In general, no problem with finding recipes (Karin had just finished the recipes for our national dietary survey and had a lot to choose from)

Average per day based on 7 days

Energy (MJ)	15,4
Protein (g)	130
Fat (g)	145
Saturated fat (g)	53
Monounsaturated fat (g)	54
Polyunsaturated fat (g)	23
Carbohydrates (g)	397
Dietary fibre (g)	28
Added sugar (g)	85
Vitamin D (ug)	5,1
Folate (ug)	434
Iron (mg)	18
Sodium, Na (mg)	6910
Iodine, I (mg)	307

Energy, MJ

November 29th 2020

DTU, Sisse Fagt

Danish data

6

November 29th 2020

DTU, Sisse Fagt

Danish data

7

Micronutrients

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Vitamine D (ug)	2	7	5	3	1	15	3
Folate (ug)	528	350	319	238	433	643	527
Sodium (mg)	5286	3520	9273	5097	4489	12472	8231
Iron (mg)	16	10	17	17	18	32	15
Iodine (mg)	136	121	312	272	231	617	460

If more comparable analysis

A lot more preparatory work needs to be done

- describing all ingredients in details
- leaving no doubt on which amount should be punched in
- providing recipes for every composite dish

UiO : **Institutt for medisinske basalfag**
Det medisinske fakultet

Nordic Workshop Nov. 20th 2020

Norway

Challenges with calculations

- No specific challenges (Experienced “Coder”, edible)
- Food not available (e.g. gåselever)
- Recipes without ingredients
- Without fortification

29.12.2020

3

Presentation of waste range, fat and water losses on prepared meat and one mixed dish (Wednesday grilled pork chop, Friday risotto)

Waste

- In our database = edible amounts (without peel and bone).
 - E.g. pork Wednesday maybe overestimated, coded as without bone

Losses

- Grilled port chop: not grilled but fried.
 - 30% (water) losses (from raw to fried)
- Risotto:
 - 6% (water) losses

29.12.2020

4

7 days: Macronutrients Norway

Day	Energy (MJ)	Protein (g)	Fat (g)	Sat. fat (g)	Unsat. Fat (g)	Polyun sat. Fat (g)	Carbo- hydrate (g)	Fibre (g)	Added sugar (g)
Monday	15.5	138,6	135,3	55,2	49,6	20,0	446	24	102,5
Tuesday	9.6	76,7	84,8	31,7	30,9	13,9	252	13,4	51,2
Wednesday	14.2	210,4	145,2	38,0	64,0	30,4	278	22	42,6
Thursday	12.0	84,7	77,1	29,9	29,7	11,9	381	21,4	58,6
Friday	11.4	77,2	88,8	40,7	27,6	12,2	349	27,4	82,6
Saturday	24.6	213,3	235,8	86,2	93,3	35,2	571	50,9	128,6
Sunday	15.2	127,4	137,4	62,1	45,7	18,3	455	33,6	115,4
Average	14.6	132.6	129.2	49.1	48.7	20.3	390	27.5	83.1

29.12.2020

7 days: Micronutrients Norway

Day	Vitamin D (µg)	Folate (µg)	Iron (mg)	Iodine (µg)	Salt (g)
Monday	1,3	449	14,6	90	5.8
Tuesday	8,2	305	8,5	232	9.1
Wednesday	18	267	13,9	109	18.4
Thursday	1,6	255	11,9	81	11.1
Friday	2,6	297	12	83	10.9
Saturday	15,3	692	23,4	550	22.1
Sunday	6,2	434	11,5	546	9.2
Average	7.6	386	13.7	243	12.4

8

Sweden

Livsmedelsverket

Sweden - 7 days of consumption

Jessica Petrelius Sipinen

Agenda

- 1 Livsmedelssystemet
- 2 Registration issues
- 3 Nutrient intake

Brief explanation of the food system used

Livsmedelssystemet (the food system)

- Several parts (dietary surveys, food composition database - FCDB, menu planner)
- Approx. 3900 foods (quality 1 and 4)
- Approx. 2200 quality 1 foods (public database)
- Possibility to get complete data for about 50 nutrients
- Menu planner (connected to the FCDB) used in this exercise

The screenshot shows the Livsmedelssystemet web application. At the top, there is a navigation bar with links: Startside, Nytt, Sök, Fönster, Hjälp, and Admin. Below this is a search section titled 'Sök'. It features a dropdown menu currently set to 'Matvaneundersökning'. A search box contains the text 'Livsmedel'. To the right of the search box are buttons for 'Livsmedel', 'Meny', and 'Li'. Below the search box, there are several input fields: 'Typ' with a dropdown menu showing 'Projekt', 'Från datum', and 'Till'. There are also checkboxes for 'Matvaneundersökning' and 'Meny'.

Meny 2020 NKMT 7 dagarsmeny

Arkiv

Allmänt Måltid NNR 2012 Livsmedelsgrupper

Måltidsnamn: Ingen vald

2020 NKMT 7 dagarsmeny

Vecka 1

Måndag

Måltid innan frukost, Måltid
Frukost, Frukost1
Mellanmål fm, Mellanmål
Mellanmål fm 2
Lunch, Lunch1
Mellanmål em, Mellanmål
Mellanmål em 2, Mellanmål
Middag, Middag1
Kvällsmål, Kvällsmål1
Övrigt ätande

Tisdag
Onsdag
Torsdag
Fredag
Lördag
Söndag

Innehåll

I måltid	Nr	Livsmedel	Mängd	Form	Vikt(g)
Vecka 1 Månda	1953	Vatten kranvatten	180	Gram	180
Vecka 1 Månda	123	Mjolk fett 3% berikad	50	Gram	50
Vecka 1 Månda	1957	Kaffe bryggt	100	Gram	100
Vecka 1 Månda	712	Frukostflingor flingblandning fullko	25	Gram	25
Vecka 1 Månda	2049	Fruktyoghurt olika smaker fett 3,6	100	Gram	100
Vecka 1 Månda	210	Bröd fullkorn graham m. mjolk fibr	50	Gram	50

Näringsinnehållspaket: Energi, energigivare, vatten och aska ☐ Visa alla

Näringsinnehåll och NNR 2012: -

Näringsämne	Total för dag	% av NNR 2012	NNR 20
Ener (kJ)	14954		
Ener (kcal)	3577		
Kolh (g)	427,87		
Fett (g)	138,47		
Prot (g)	113,08		
Fibe (g)	29,04		
Vatt (g)	2788,06		
Alko (g)	14,19		
Aska (g)	27,65		

Incheckad: Jessica Petrellus Sipinen(2020-11-09 11:28:06)

Svenska

Livsmedelsverket

Different ways to get output

- Food groups
 - Major groups according to the "Mat cirkeln"
 - Different composite foods
 - Additional subgroups like meat, fish or vegetables
- Food items
- Raw commodities
- All these can be combined almost in an endless number of ways depending on question, however the work is manual

Grupper

- Gruppering efter matcirkeln
 - Bröd o spannmål
 - Frukt o bär
 - Fett o olja
 - Grönsaker o baljväxter
 - Kött fisk skaldjur rom ägg
 - Ost o mjölkprodukter
 - Potatis
 - Soja- veteprotein o quorn
- Blandade rätter
- Övriga grupper
- X-test
- Övrigt

Livsmedelsverket

Yield and retention factors

- All foods in the food system are without waste
- Automatic calculation of yield and retention factors in recipes
- According to Bogner and other literature

6705: Risetto m. kyckling spenat - Beräknat livsmedel (Svenska)

Arkiv Livsmedel

Namn | Allmänt | Klassificering | Grupper | Foodex2/Råvaror | Näringsvärden | Volymvikt

Livsmedelsversion
☒ Ja Senaste versionen används
☐ Nej Använd version: den 13 november 2020

Publikation
 Publikationstyp:
 Referens:
 Kommentar:
 Recept från IACT projektet. Mängden buljong har justerats m.a.p. upplagget.

Tillagningssätt
 Kollering

Tillagningsanvisning

Nr	Livsmedel	Kvalitet	Status	Mängd	Form	Vikt (g)	Tillagningsfaktor	Faktorgrupp	Vatten	Fett	Publikation	Referens
1	2057 Ris avorio skukt	1 Livsme	Publicera	300	Gram	300	Ris, kokt	Bröd o spannm	17,2		Retenti	
2	103 Ost hårdost parmesan fet	1 Livsme	Publicera	50	Gram	50	Tillag ej	Övrigt	1		SLV - R	
3	344 Lök gul	1 Livsme	Publicera	1	st m	95	Lök, stekt	Grönsaker o ba	8,85		Retenti	
4	361 Spenat frysvara	1 Livsme	Publicera	50	Gram	50	Grönsaker, rostfrukter, ko	Grönsaker o ba	1		Retenti	
5	1224 Hånsbuljong stf.	1 Livsme	Publicera	332	Gram	332	Vätska, kokt	Öst o rejälgrö	8,79		Retenti	
6	29 Smör fett 80%	1 Livsme	Publicera	50	Gram	50	Matfett, olja	Fett o olja	1		SLV - R	

Summa Vikt (g): 1 547

Näringsämnespalet Energi, energigivare, vatten och a

Visa alla näringsämnen.

Beräknade ingredienser

Nr	Livsmedel	Vikt (g)	Ener (kJ)	Ener (kcal)	Kolh (g)	Fett (g)	Prot (g)	Fibe (g)	Vatt (g)	Alko (g)	Aska (g)
2057	Ris avorio	868,13	4487	1074	234,39	3,84	26,22	3,68	663,29	0,00	2,87
103	Ost hårdost	50,00	940	225	1,90	15,00	26,75	0,00	8,85	0,00	3,50
344	Lök gul	82,30	155	37	6,94	0,10	1,13	1,79	71,95	0,00	0,45

Summa beräknad Vikt (g): 2 005

Värden för publicering

Ener (kJ)	Ener (kcal)	Kolh (g)	Fett (g)	Prot (g)	Fibe (g)	Vatt (g)	Alko (g)	Aska (g)
490	117	12,40	4,46	6,05	0,56	74,67	8,25	1,14

Senast incheckat: Jessica Petrelius Sjögren (2020-11-09 11:11)

Svenska

Pork chop

1025: Gris fläskkotlett stekt - Beräknat livsmedel (Svenska)

Arkiv Livsmedel

Namn | Allmänt | Klassificering | Grupper | Foodex2/Råvaror | Näringsvärden | Volymvikt

Livsmedelsversion
☒ Ja Senaste versionen används
☐ Nej Använd version: den 20 november 2020

Publikation
 Publikationstyp: Vår kokbok 2013
 Referens: Stekt fläskfilé sid. 331
 Kommentar: Saltmängd enligt Bogner: del 2 table 6

Tillagningssätt
 Stekning

Tillagningsanvisning

Nr	Livsmedel	Kvalitet	Status	Mängd	Form	Vikt (g)	Tillagningsfaktor	Faktorgrupp	Vatten	Fett	Publikation	Referens
1	971 Gris fläskkotlett rå fettka	1 Livsme	Publicera	600	Gram	600	Fläsk kött, tillagad	Kött	0,78		USDA tabl	Skattat från sid
2	1975 Salt m. jod	1 Livsme	Publicera	1,3	Gram	1	Torrvaror	Bröd o spannm	1		SLV - Rikt	Logisk slutledn

Summa Vikt (g): 601

Näringsämnespalet Energi, energigivare, vatten och a

Visa alla näringsämnen.

Beräknade ingredienser

Nr	Livsmedel	Vikt (g)	Ener (kJ)	Ener (kcal)	Kolh (g)	Fett (g)	Prot (g)	Fibe (g)	Vatt (g)	Alko (g)	Aska (g)
971	Gris fläskkotlett	510,90	4644	1110	0,00	72,00	116,40	0,00	315,90	0,00	6,60
1975	Salt m. jod	1,30	0	0	0,00	0,00	0,00	0,00	0,01	0,00	1,29

Summa beräknad Vikt (g): 512

Värden för publicering

Ener (kJ)	Ener (kcal)	Kolh (g)	Fett (g)	Prot (g)	Fibe (g)	Vatt (g)	Alko (g)	Aska (g)
907	217	0,00	14,06	22,73	0,00	61,68	0,00	1,54

Risotto

6102: Risotto m. Kyckling spenat - beräknat livsmedel (svenska)

Arkiv Livsmedel

Namn: Allmänt | Klassificering | Grupper | Foodex2/Råvaror | Näringsvärden | Volymvikt

Livsmedelsversion: ☒ Senaste versionen används ☐ Använd version: den 29 november 2020

Publikation: Publikationstyp: - Referens: -

Tillagningsmetod: Kokning

Kommentar: Recept från NKMT projektet. Mängden buljong har justerats m.a.p. upptaget av vatten i re

Tillagningsanvisning													
Nr	Livsmedel	Kvalitet	Status	Mäng	Form	Vikt	Tillagningsfaktor	Faktorgrupp	Vatte	Fett	Publikation	Referens	Salt
1	2057 Ris avorio okokt	1 Livsme	Publicera	300	Gram	300	Ris, kokt	Bröd o spannm	17,2		Retentions	Del 1, tabell 29	
2	103 Ost hårdost parmesan fet	1 Livsme	Publicera	50	Gram	50	Tillagas ej	Övrigt	1		SLV - Riktl	Logisk slutledn	
3	344 Lök gul	1 Livsme	Publicera	1	st m	95	Lök, stekt	Grönsaker o ba	0,85		Retentions	Del 1 tabell 17	
4	361 Spenat frysva	1 Livsme	Publicera	50	Gram	50	Grönsaker, rotfrukter, ko	Grönsaker o ba	1		Retentions	Del 1 tabell 17,	
5	1224 Hönbuljong adf.	1 Livsme	Publicera	332	Gram	332	Vätska, kokt	Ost o mjölkpro	0,79		Retentions	Del 1 tabell 3 o	
6	29 Smör fett 80%	1 Livsme	Publicera	50	Gram	50	Matfett, olja	Fett o olja	1		SLV - Riktl	Logisk slutledn	
7	4659 Olivolja extra jungfruolja	1 Livsme	Publicera	1	tsk -	4	Matfett, olja	Fett o olja	1		SLV - Riktl	Logisk slutledn	
8	371 Vitlök	1 Livsme	Publicera	1	klyfta	3	Grönsaker, rotfrukter, ko	Grönsaker o ba	1		Retentions	Del 1 tabell 17,	
9	1908 Vin vitt vol. % 12	1 Livsme	Publicera	150	ml -	150	Alkohol, kokt, stekt	Alkohol	0,79		SLV - Riktl	Ämvärt samma	
1	4941 Spenat färsk	1 Livsme	Publicera	225	Gram	225	Grönsaker, rotfrukter, ko	Grönsaker o ba	1		Retentions	Del 1 tabell 17,	
1	107 Färskost cream cheese fe	1 Livsme	Publicera	2	tsk -	6	Vätska, bakad, värm	Ost o mjölkpro	0,95		NLG	Coop, SLV, Coc	
1	352 Persilja blad	1 Livsme	Publicera	2	tsk fl	2	Grönsaker, högre vattenh	Grönsaker o ba	0,77		Retentions	Del 1 tabell 19	
1	1190 Kyckling kött kokt stekt g	1 Livsme	Publicera	280	Gram	280	Tillagas ej	Övrigt	1		SLV - Riktl	Logisk slutledn	

Summa Vikt (g): 1 547

Näringsämnespaket: Energi, energigivare, vatten och a ☐ Visa alla näringsämnen.

Beräknade ingredienser												
Nr	Livsmedel	Vikt (g)	Ener (KJ)	Ener (kcal)	Kolh (g)	Fett (g)	Prot (g)	Fibe (g)	Vatt (g)	Alko (g)	Aska (g)	
2057	Ris avorio ok	868,13	4497	1074	234,30	3,84	20,22	3,60	603,20	0,00	2,97	
103	Ost hårdost	50,00	940	225	1,90	15,00	20,75	0,00	8,85	0,00	3,50	
344	Lök gul	82,30	155	37	6,94	0,10	1,13	1,79	71,95	0,00	0,45	

Summa beräknad Vikt (g): 2 005

Värden för publicering								
Ener (KJ)	Ener (kcal)	Kolh (g)	Fett (g)	Prot (g)	Fibe (g)	Vatt (g)	Alko (g)	Aska (g)
490	117	12,40	4,46	6,05	0,56	74,67	0,25	1,14

Livsmedelsverket

Registration issues

- 6 foods were created for this exercise (e.g. oreo cookies, waldorf salad, caprese salad)
- Food choices
 - Generic foods have been chosen for some foods where closer specification has been missing (e.g. bread, bisquits)
 - whipping cream 20% fat was changed into whipping cream 40% fat since we don't have that food in the database
 - Scrambled eggs fried with liquid margarine instead of butter
 - Pasta with seafood – our choice pasta with tuna sauce
- Margarine and milk is fortified with vitamin D (these foods are also included in recipes)
- Salt with iodine is used in the registration for added salt and home cooked foods

Nutrient intake (per day and 7 day average)

Nutrient	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Average intake	Unit
Energy	15	9,7	13,9	13,4	11,7	24,1	15,8	14,8	MJ
Energy	3580	2320	3310	3190	2790	5750	3790	3530	kcal
Protein	114	80	160	95	87	191	47	125	g
Fat	138	86	145	87	71	228	136	127	g
- SFA	53	33	42	36	35	74	62	47,8	g
- MUFA	53	31	72	34	23	96	46	51,1	g
- PUFA	21	16	22	10	7	39	18	19,2	g
Carbohydrates	428	244	307	427	384	585	470	406	g
- Added sugar	-	-	-	-	-	-	-	-	-
- Dietary fiber	29	15	24	26	33	47	32	29,3	g
Vitamin D	2	7	10	6	4	24	10	9,0	µg
Folate	457	350	281	250	478	626	441	412	µg
Iron	15	9	14	12	15	23	9	14	mg
Sodium	4340	2610	8110	5140	3480	10250	5040	5570	mg
Salt (NaCl)	11	7	20	13	9	26	13	13,9	g

Livsmedelsverket

nutrients

Article

Procedure to Estimate Added and Free Sugars in Food Items from the Swedish Food Composition Database Used in the National Dietary Survey Riksmaten Adolescents 2016–17

Julia Wanselius ^{1,*} , Cecilia Axelsson ² , Lotta Moraeus ² , Christina Berg ¹ ,
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† These authors share senior authorship.

Livsmedelsverket

Nutrient intake

- Saturday differed – much more foods were consumed that day
- Protein higher - Wednesday, Saturday and Sunday
- Fat higher – Monday, Wednesday, Saturday and Sunday
- Iodine/sodium/salt higher – Wednesday and Saturday

7 day consumption - Finland

Liisa Valsta

1/20/2021

Finnish Institute for Health and Welfare

Tasks

- 1) Description of challenges with calculations.
- 2) Presentation of waste range, fat and water losses on prepared meat and one mixed dish (Wednesday grilled pork chop, Friday risotto).
- 3) Present results on vitamin-D, folate, iodine, iron and salt (Na) in addition to energy and macronutrients (energy, protein, fat total, saturated fat, monounsaturated fat, polyunsaturated fat, carbohydrate, added sugar, dietary fibre) based on 7 day average.
- 4) Describe if some days are very different and possible explanation.

Firstname Lastname

1/20/2021

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Challenges with calculations

- Postponed exercise, limited time and staff available
- Starting conditions in the countries were not clear before the start - instructions came bit by bit.
- Rules of taking common fortification into account were a little bit vague – not everything was available without fortification.
- Internal misunderstanding concerning the disaggregation to be taken into account (calculation was carried out twice). Finland uses two different food groupings 1) ingredient level classification (dishes disaggregated) and 2) food use classification. Give different pictures of the

Firstname Lastname

1/20/2021

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Waste range, fat and water losses of meat

- Wednesday grilled pork chop

Mass	Foodid	English name	Igclass	Access	Amount	Proport	Losses %
300	703	PORK CHOP, THICK LAYER OF FAT	PORK	PUBLIC	418	1.39	39
300	30	SALT, IODISED	SALT	PUBLIC	7.092	0.023	0

Firstname Lastname

1/20/2021

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Waste range, fat and water losses of meat

- Friday risotto, code 33063, chicken and vegetable risotto

Mass	Foodid	English name	Igclass	Amount	Proport	Prntfid	Prntfid english name	Weight losses/gains %
500	922	WATER, TAP WATER	WATER	330.4	0.66	30315	CHICKEN BROTH	37
500	29009	CHICKEN BOUILLON CUBE, CONTAINS WHEAT	INGRMIS	7.3	0.014	30315	CHICKEN BROTH	0
500	500	BUTTER	BUTTER	13.3	0.02	33063	RISOTTO	0
500	536	OLIVE OIL	OIL	1.3	0.002	33063	RISOTTO	0
500	335	ONION	VEGONI	14.6	0.03	33063	RISOTTO	12
500	393	GARLIC	VEGONI	1.33	0.003	33063	RISOTTO	0
500	156	RICE, WHITE	RICE	79.5	0.16	33063	RISOTTO	267
500	925	WHITE WINE, DRY	WINE	39.8	0.08	33063	RISOTTO	34
500	33456	SPINACH	VEGLEAF	59.6	0.12	33063	RISOTTO	12
500	750	CHICKEN	POULTRY	74.2	0.15	33063	RISOTTO	14
500	643	CHEESE, HARD CHEESE, EDAM TYPE, 24-27% FAT	CHEECUHI	13.3	0.03	33063	RISOTTO	0

Firstname Lastname

1/20/2021

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7-day average nutrient intake per day

Nutrient	Unit	Amount	Nutrient	Unit	Amount
Energy	kJ	15541	Energy	Kcal	3714
Prot	g	133	Prot	E%	14.4
Fat	g	161	Fat	E%	38.9
Carbohydrates_avl	g	366	Carbohydrates_avl	E%	39.4
Carbohydrates_fib	g	412	Carbohydrates_fib	E%	44.3
Sucrose	g	94	Sucrose	E%	10.1
Fibre	g	31	Fibre	g	31
Saturated fats	g	56	Saturated fats	E%	13.7
Polyunsaturated fats	g	26	Polyunsaturated fats	E%	6.3
Monounsaturated fats	g	65	Monounsaturated fats	E%	15.8
Sodium	mg	6590	Sodium	g	6.6
Salt	mg	16792	Salt	g	16.8
Iodine	ug	354	Iodine	ug	354
Iron	mg	18	Iron	mg	18
Vitamin D	ug	7	Vitamin D	ug	7
Folate	ug	492	Folate	ug	492

Firstname Lastname

1/20/2021

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Explanations for differences

- Totally different menus of the days
- Probably different level of fortifications during different days

Firstname Lastname

1/20/2021

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Appendix D. Presentation of comparison between countries

This presentation has been slightly changed after the online presentation, as the figures from Finland have been altered in order to make comparison between countries better. The changed figures and added explanations are shown in red. The data behind the analysis of the comparison between countries has not been recalculated.

Comparison of Food and nutrient intake from the same diet calculated by 5 different Nordic Countries

Nordic Network Meeting, dietary surveys November 20th 2020
Iceland, Finland, Sweden, Norway and Denmark

Anja Biltoft-Jensen, DTU Food

Date DTU Title 1

Agenda:

- Aim of the exercise
- Method
- Food groups (7: Beverages, Fruit, Vegetables, Fish, Meat, Grain, potatoes)
- Nutrients (8: Energy, Protein, Dietary fibre, Added sugar, NaCl, Iodine, Vitamin D)

The aims were to:

All countries calculated the same 7-day diet with their local nutrient and food estimation system, yield factors, food composition database and recipe collection. Aim to:

- Compare intakes of individual food groups and nutrients from the same diet registration calculated by Iceland, Finland, Norway, Sweden and Denmark.
- To try to identify systematic differences possible affecting the estimated food and nutrient intakes between countries.

Do we expect similar results?

- Fortification strategies: Margarine, other fat spreads, milk, other milk products, salt, flour
- Indirect fortification: soil (fertilizers, e.g. selenium in Finland), feed to animals (e.g. iodine)
- Large variation of nutrient contents of foods e.g. vitamin D values in fish (also the same species caught at different locations)
- Analytical methods for assessing nutrient content in foodstuff
- Processing/calculation procedures
- Updating of the food composition databank
- Yield/retention factors (cooking losses of vitamins, fat uptake, fat melting, water losses)
- Recipes (and how foods are prepared in different countries)
- Different ways of grouping foods

Comparison - method

- List all results in a comparable manner: time consuming especially for food groups
- Never agreed on how data should be compared – I decided.
- **Range**: measure of dispersion, by how much the values in the data set are likely to differ from their mean. Calculated by subtracting the lowest from the highest value in the set.
- **Percent relative range**: The range divided by the average value, and multiplied by 100 to calculate the relative percent range. Used to compare the range while taking into account the "sizes" of the foods/nutrients being compared.
- Kruskal Wallis non-parametric test – hmm. The dataset is very small.
- Z-score to the total mean– it's a measure of how many standard deviations below or above the population mean a raw score is- hmm. The dataset is very small.

Average food intake pr. day (classified in foodgroups)						Notes
						* Data on this foodgroup is not available OR this foodgroup might be included in one of the other foodgroups for that country
Foodgroups (gram)	Denmark	Norway	Sweden	Finland	Iceland	Information about certain foodgroups are not available for all countries
Other foodgroups	7	39	*	*	*	
Beverages	1941	1807	1697	1680	1743	Finland: The Finnish figure has been corrected to include only beverage water and other beverages.
Oils_fats	67	37	18	76	34	
Fish_fishproducts	58	73	87	50	79	
Poultry	47	*	34	40	38	
Fruit_fruitproducts	325	311	303	354	308	Iceland: fruits, dried fruits, jam, berries and fruit juice (100%) Denmark: fruits, dried fruits, jam, berries, cordial, nuts, juice Finland: Fruit as in other countries (no nuts), but also fruit from disaggregated recipes, if any!
Vegetable_vege-tableproducts	278	242	287	259	211	Iceland: roots, other vegetables, beans and mushrooms, canned vegetables.
Dairycream	26	*	26	26	26	
Drinkingmilk_cannedmilk	183	170	113	164	139	Sweden: cream and cremefraiche Denmark: Milk and milkproducts also fermented milkproducts and cream
Grain_starchproducts	328	171	133	250	244	Iceland: grain, flour, cereals, biscuits, pasta Sweden: cereals, pasta, rice, noodles, biscuits Denmark: flour, cereals, pasta, rice, noodles, bread, biscuits, cake Finland: flours, uncooked grains, raw pasta from disaggregated recipes. (cakes and breads are disaggregated in this classification to their ingredients).
Spices	10	3	1	1	5	
Meat_meatproducts	207	188	153	216	151	Iceland: beef, pork, other meat products and offal Denmark: both raw /fresh meat) and prepared meat (pålæg, meat cuts) Finland: raw meat from recipes, but sausages and coldcuts

Beverages g/day

	Mean	95% CL		Std.	Min	Max	Range	Range as % of mean	Zscore	Sig.
		Lower	Upper							
Monday	1743	1491	1996	203	1425	1947	522	30	-0,17	
Tuesday	2057	1772	2342	230	1820	2309	489	24	0,26	
Wednesday	333	153	513	145	230	533	303	91	-2,12	
Thursday	1744	1528	1960	174	1610	1986	376	22	-0,17	
Friday	1902	1506	2299	320	1660	2444	784	41	0,05	
Saturday	2888	2660	3117	184	2710	3161	451	16	1,41	
Sunday	2424	2094	2754	266	2170	2760	590	24	0,77	
Mean_7_days	1855	1657	2053	159	1697	2088	391	21	-0,02	.593

- Greatest deviation compared to means: Wednesday (91% range of mean) also large Z-Score
- Min. value: 230, Norway, Sweden, Iceland, **Finland (230 g as beverages)**
- **Max. value: 533, Finland (does include ingredient water, which is NOT a beverage)**
- Possible explanation for the difference: There is almost no beverages this day (some coffee and whisky 230). Finland has 303 g water – is this fluid from recipes? – YES, **the ingredient class classification of Finland disaggregates large amount of composite foods to their ingredients, e.g. water)**

Fruit and fruit products g/day

	Mean	95% CL		Std.	Min	Max	Range	Range as % of mean	Zscore	Sig
		Lower	Upper							
Monday	431	405	457	20,8	410	456	46	11	0,68	
Tuesday	400	365	436	28,6	372	440	68	17	0,49	
Wednesday	9	-13	30	17,6	0	40	40	444	-1,99	
Thursday	187	174	200	8,0	175	192	17	9	-0,86	
Friday	458	413	504	36,5	410	510	100	22	0,85	
Saturday	456	272	639	147,9	334	713	380	83	0,83	
Sunday	298	225	371	58,9	240	363	123	41	-0,16	
Mean_7_days	320	294	346	20,7	303	354	52	16	-0,02	.994

Greatest deviation compared to means: Wednesday (444% range of mean). Zscore -1,99.

Min. value: 0 Finland, Iceland

Max. value: 40 Norway

Possible explanation for the difference: No fruit in diet plan; maybe raisins from sponge cake or mixed salad?

Date DTU

Title 8

Vegetable and vegetable products g/day

	Mean	95% CL		Std.	Min	Max	Range	Range as % of mean	Zscore	Sig
		Lower	Upper							
Monday	246	177	315	55,3	183	320	137	56	-0,12	
Tuesday	221	203	238	14,2	199	235	36	16	-0,33	
Wednesday	168	133	202	27,7	144	208	64	38	-0,76	
Thursday	91	9	172	65,6	10	190	180	198	-1,39	
Friday	304	135	472	135,5	172	521	350	115	0,36	
Saturday	429	356	502	58,7	348	514	166	39	1,39	
Sunday	369	237	501	106,3	206	492	287	78	0,90	
Mean_7_days	255	217	293	30,4	211	287	76	30	-0,04	.739

Greatest deviation compared to means: Thursday (198% range of mean)

Min. value: 10 Finland

Max. value: 190 Norway

Possible explanation for the difference: (no single veggies in diet plan) How much vegetables in bolognese recipe? Onions and other in meat loaf? **(This is the case in Finland – onions in the recipes)**

Date DTU

Title 9

Fish and fish products g/day

	Mean	95% CL		Std.	Min	Max	Range	Range as % of mean	Zscore	Sig
		Lower	Upper							
Monday	0	0	0	0,0	0	0	0	0	-0,91	
Tuesday	64	38	90	20,9	50	100	51	80	-0,07	
Wednesday	102	40	164	50,0	48	177	129	126	0,44	
Thursday	0	0	0	0,0	0	0	0	0	-0,91	
Friday	0	0	0	0,0	0	0	0	0	-0,91	
Saturday	132	111	152	16,3	124	161	37	28	0,82	
Sunday	186	54	318	106,7	86	300	214	115	1,54	
Mean_7_days	69	50	88	15,2	50	87	37	53	0,00	.988

Greatest deviation compared to means: Wednesday (126% range of mean)

Min. value: 48 Sweden

Max. value: 177 Norway

Possible explanation for the difference: How much seafood is in pasta with seafood. Recipe variation

Date DTU

Title 10

Meat and meat products

	Mean	95%		Std.	Min	Max	Range	Range as % of mean	Zscore	Sig
		Lower	Upper							
Monday	189	142	236	37,9	146	248	102	54	0,09	
Tuesday	14	-26	54	32,2	0	72	72	514	-0,67	
Wednesday	475	405	546	56,9	431	560	129	27	1,05	
Thursday	242	156	329	70,0	163	327	163	67	-0,44	
Friday	76	33	120	35,3	53	138	85	112	-0,68	
Saturday	272	146	398	101,7	179	403	225	83	0,55	
Sunday	40	3	77	29,7	20	90	70	175	0,12	
Mean_7_days	183	146	220	30,0	151	216	65	36	-0,02	.890

Greatest deviation compared to means: Tuesday (514% range of mean)

Min. value: 0 (All but Norway)

Max. value: 72 (Norway)

Possible explanation for the difference: (No meat only chicken) Norway includes chicken in the meat group

Date DTU

Title 11

Grain and starch products g/day

	Mean	95%		Std.	Min	Max	Range	Range as % of mean	Zscore	Sig
		Lower	Upper							
Monday	155	13	298	114,8	25	270	245	158	-0,58	
Tuesday	96	35	157	48,8	20	143	123	128	-1,08	
Wednesday	290	246	335	35,9	257	340	83	29	0,54	
Thursday	324	269	380	44,7	300	404	104	32	0,83	
Friday	146	44	249	82,8	30	240	210	144	-0,66	
Saturday	270	28	512	194,9	120	547	427	158	0,37	
Sunday	296	172	419	99,3	167	411	244	82	0,58	
Mean_7_days	225	131	319	75,7	133	328	195	87	0,00	.064

Greatest deviation compared to means: Monday and Saturday (158% range of mean)

Min. value: 120 Sweden (Saturday)

Max. value: 547 Denmark (Saturday)

Possible explanation for the difference: Denmark include bread (not as recipe) in this group.

Date DTU

Title 12

Potatoes

	Mean	95%		Std.	Min	Max	Range	Range as % of mean	Zscore	Sig
		Lower	Upper							
Monday	212	189	235	18,4	195	234	39	18	-0,08	
Tuesday	26	-9	62	22,4	0	55	55	212	-1,30	
Wednesday	208	187	229	17,1	194	234	40	19	-0,18	
Thursday	208	187	229	17,1	194	234	40	19	0,48	
Friday	3	-2	8	4,3	0	9	9	300	-0,78	
Saturday	445	421	469	19,2	426	468	42	9	1,96	
Sunday	28	-24	80	41,8	0	100	100	357	-0,10	
Mean_7_days	161	145	177	12,9	150	181	31	19	-0,00	.836

Greatest deviation compared to means: Sunday (357% range of mean)

Min. value: 0 (Denmark, Sweden)

Max. value: 100 (Finland) – **coming from the disaggregated recipe**

Possible explanation for the difference: (No potatoes in diet plan) Potatoes in minestrone? **(yes, in Finland)**

Date DTU

Title 13

Sum up food-groups

- Overall Saturday is the day deviating most in relation to the 7-day mean. Not surprisingly because of the wedding.
- Tuesday and Sunday is the days where the countries deviate mostly from each other. The reason being meat and meat products and potatoes (food grouping and recipes).
- Grain and grain products is the food group with the overall largest deviation between countries. When you see how foods are grouped differently it is not a surprise. Some grain products can be flour (from bread and cakes), bread (including fluid, seeds etc). Norway, Sweden and Iceland has separate groups for bread and cake. Finland has two groupings, 1) "ingredient class" grouping (most of the composite foods, e.g. bread and cakes are disaggregated into their ingredients, e.g. cheese or berries eaten as such and from all disaggregated recipes and 2) "food use class" grouping, where bread is bread, cake is cake, soups are soups, porridges are porridges etc.
(different classifications are useful for different purposes. When carrying out comparisons, similar groupings should be compared with each others, e.g. as the FoodEx2 grouping by EFSA is used internationally).
- Visible foods/drinks do better than foods incorporated in recipes e.f. beverages and fruits.

Deviations compared to means (7-day)

Energy MJ/day

	Mean	95% CI		Std.	Min.	Max	Range	Range as % of mean	Z-score	Sig
		Lower	Upper							
Monday	15,5	14,7	16,2	0,6	14,8	16,3	1,5	10	0,09	
Tuesday	9,8	9,2	10,3	0,4	9,3	10,5	1,2	12	-1,16	
Wednesday	14,0	12,9	15,1	0,9	12,6	15,1	2,4	17	-0,23	
Thursday	13,3	12,1	14,6	1,0	12,0	14,5	2,5	19	-0,38	
Friday	11,7	11,0	12,3	0,5	11,3	12,6	1,3	11	-0,74	
Saturday	25,6	23,0	28,2	2,1	24,1	29,1	5,0	20	2,31	
Sunday	15,5	13,9	17,2	1,4	13,4	16,8	3,5	22	0,11	
Mean 7 days	15,1	14,5	15,6	0,4	14,7	15,6	0,9	6	0,00	.995

Greatest deviation compared to means: Sunday (22% range of mean)

Min. value: Finland (13,4)

Max. value: Denmark (16,8)

Possible explanation for the difference: How much fat used for minestrone, fish casserole and pie.
This is not clear? Recipe deviation?

Date DTU

Title 16

Protein g/day

	Mean	95% CI		Std.	Min	Max	Range	Range as % of mean	Z-Score	Sig
		Lower	Upper							
Monday	133	116	150	13,6	114	146	32	24	0,02	
Tuesday	81	75	87	4,8	77	89	12	15	-1,10	
Wednesday	179	154	203	20,0	160	210	51	28	1,00	
Thursday	98	83	113	12,0	85	114	30	31	-0,73	
Friday	87	77	97	8,1	77	95	18	21	-0,98	
Saturday	215	186	244	23,3	191	254	63	29	1,80	
Sunday	132	96	168	29,2	98	171	72	55	0,00	
Mean 7 day	132	126	138	5,1	125	139	14	11	0,00	.978

Greatest deviation compared to means: Sunday (55% range of mean)

Min. value: Finland (98)

Max. value: Iceland (171)

Possible explanation for the difference: Amount of fish and pizza with/without meat?

Date DTU

Title 17

Dietary fibre g/day

	Mean	95% CI		Std.	Min	Max	Range	Range as % of mean	Z-Score	Sig.
		Lower	Upper							
Monday	29	24	34	4,1	24	35	11	38	0,08	
Tuesday	15	13	17	1,3	13	17	4	27	-1,37	
Wednesday	21	19	24	1,9	19	24	5	24		
Thursday	22	18	26	2,9	18	26	8	36	-0,67	
Friday	30	24	36	5,0	25	38	13	43	0,18	
Saturday	48	42	53	4,3	43	53	11	23	1,97	
Sunday	34	30	37	2,9	31	39	7	21	0,54	
Mean 7 day	28	27	30	1,5	27	31	4	14	0,00	.966

Greatest deviation compared to means: Friday (43% range of mean)

Min. value: Denmark (21)

Max. value: Finland (38)

Possible explanation for the difference: Variations in ryebread content, dates, legume soup. And variation in the analysis method (AOAC or ?)

Date DTU

Title 18

Added sugar g/day

	Mean	95% CI		Std.	Min	Max	Range	Range as % of mean	Z-Score	Sig.
		Lower	Upper							
Monday	109	95	124	11,7	97	127	30	28	0,71	
Tuesday	50	46	54	3,2	45	54	8	16	-1,08	
Wednesday	45	39	51	5,1	40	53	13	29		
Thursday	62	59	64	2,0	59	64	6	10	-0,74	
Friday	79	70	89	7,7	67	87	20	25	-0,21	
Saturday	121	102	141	15,8	106	145	38	31	1,07	
Sunday	135	112	158	18,2	115	152	36	27	1,49	
Mean 7 day	86	79	93	5,4	80	94	14	16	0,00	.986

Greatest deviation compared to means: Saturday (31% range of mean)

Min. value: Denmark (106)

Max. value: Finland (145)

Possible explanation for the difference: Denmark has not updated their values for added sugar in the food composition databank and many missing values, therefore they are low.

Finland does not have yet a real "added sugar" variable, but sucrose is used as a marker for added sugar. This is an overestimation, because of the sucrose coming e.g. from fruit and berries and other natural sources.

Date DTU

Title 19

Saturated fat g/day

	Mean	95% CI		Std.	Min	Max	Range	Range as % of mean	Z-Score	Sig
		Lower	Upper							
Monday	55	41	68	11,1	39	70	31	56	0,25	
Tuesday	34	29	38	3,4	30	39	9	26	-0,95	
Wednesday	42	32	52	8,1	34	55	22	52	-0,47	
Thursday	38	27	49	8,9	30	52	22	58	-0,70	
Friday	38	35	40	2,2	35	41	6	16	-0,73	
Saturday	86	73	98	9,9	74	96	22	26	2,03	
Sunday	60	53	68	6,2	51	68	17	28	0,57	
Mean	50	45	56	4,4	45	56	11	22	0,00	.851

Greatest deviation compared to means: Thursday (58% range of mean)

Min. value: Norway (30)

Max. value: Finland (52)

Possible explanation for the difference: Variations in fat in whipping cream. 20% is stated in the diet plan, but 38% might be used. Fat in pie and for cooking? Standard fat or different types of fats used in calculation according to the information received from each subject?

Salt, NaCl g/day

	Mean	95% CI		Std.	Min	Max	Range	Range as % of mean	Z-Score	Sig
		Lower	Upper							
Monday	11	7	15	3,2	6	13	8	73	-0,52	
Tuesday	9	7	10	1,3	7	10	4	44	-0,92	
Wednesday	20	17	23	2,1	18	23	5	25	0,75	
Thursday	11	9	13	1,6	9	13	4	36	-0,51	
Friday	10	9	11	1,1	9	11	3	30	-0,71	
Saturday	28	21	36	5,9	22	37	15	54	2,00	
Sunday	14	9	19	4,2	9	21	11	79	-0,09	
Mean 7 day	15	12	17	2,0	12	17	5	33	0,00	.597

Greatest deviation compared to means: Sunday (79% range of mean)

Min. value: Norway (9)

Max. value: Denmark (21)

Possible explanation for the difference: Different level of salt in recipes or foods (bread, ham, pizza cheese)?

Iodine mg g/day

	Mean	95% CI		Std.	Min	Max	Range	Range as % of mean	Z-Score	Sig
		Lower	Upper							
Monday	167	48	285	95,2	90	331	241	144	-0,68	
Tuesday	156	90	222	53,3	101	232	131	84	-0,73	
Wednesday	345	8	682	271,5	57	628	571	166	0,28	
Thursday	209	110	307	79,3	81	272	191	91	-0,45	
Friday	168	94	242	59,7	83	231	148	88	-0,67	
Saturday	551	422	680	103,9	411	676	265	48	1,38	
Sunday	458	227	690	186,3	276	721	446	97	0,89	
Mean 7 day	289	199	380	72,9	191	373	183	63	-0,02	.208

Greatest deviation compared to means: Thursday (166% range of mean)

Min. value: Iceland (57)

Max. value: Finland (628)

Possible explanation for the difference:

Finland: Salt is fortified with iodine but also in Denmark. In Finland, since the recommendation by the National Nutrition Council in 2015, in addition to the "table and home cooking salt", also salt in the food industry and food services is widely fortified. This is taken into account in the Fineli database.

Iceland: Iodized salt is not commonly used: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2691155/>

Date DTU

Title 22

Vitamin D µg g/day

	Mean	95% CI		Std.	Min	Max	Range	Range as % of mean	Z-Score	Sig
		Lower	Upper							
Monday	1,5	1,1	2,0	0,4	1,0	2,0	1,0	67	-0,97	
Tuesday	7,6	6,7	8,4	0,7	6,6	8,3	1,7	22	0,09	
Wednesday	10,4	4,5	16,2	4,7	5,3	18,0	12,6	121	0,59	
Thursday	4,0	1,4	6,5	2,1	1,6	6,2	4,6	115	-0,54	
Friday	2,1	0,7	3,6	1,2	1,1	3,9	2,8	133	-0,86	
Saturday	18,3	13,3	23,3	4,0	15,0	24,3	9,3	51	1,98	
Sunday	5,4	1,0	9,8	3,6	0,7	9,8	9,1	169	-0,29	
Mean 7 day	7,0	5,1	8,9	1,5	5,1	9,0	3,9	56	0,00	.744

Greatest deviation compared to means: Sunday (169% range of mean)

Min. value: Iceland (0,7)

Max. value: Sweden (9,8)

Possible explanation for the difference:

Sweden: Skimmed milk (0,5%), semi-skimmed milk (1,5%) and margarine is fortified with vitamin D. In Finland, about all liquid milks as well as vegetable fat spreads and margarines are fortified with vitamin D (about 1 µg/l of milks and 10-20 µg/100 of fat spreads – it was a bit unclear, whether the fortified codes were to be used if unfortified foods are available)

Variations in content in fish bowl (fish varies a lot in their content)

Date DTU

Title 23

Sum up nutrients

- As for food groups, nutrients deviate most in relation to the 7-day mean on Saturday. Not surprisingly because of the wedding – except added sugar where Sunday deviate the most (chocolate bisquits, icecream, softdrink, candy).
- Sunday is the day where the countries deviate most from each other. The largest reason being differences in iodine and vitamin D (fish casserole, pasta with seafood, margarine (fortified) milk and bread (fortified))
- For iodine and vitamin D the relative deviation is 3 times as large as for the other nutrients. This is most likely because of different fortification strategies.

Deviations compared to means (7-day)

Limitations and Conclusion

- A very small data set
- There were no standards against which the estimates of intake could be compared (e.g. the analysed diet for different days – so do not know if one is closer to true).
- We most likely saw a result of mixed influences on the results, both different food grouping, recipes, fortification, calculation system (yield/retention factors), real differences in food content, missing values in food composition database, human faults etc..
- It is difficult to isolate and quantify the reasons responsible for differences in results because of the many possible sources of variation
- Gave inspiration to look at future food grouping or several food groupings for different purposes), especially grain and starch and should we have a nut-seeds, legume etc. Updating of added sugar – check of NaCl in recipes

Appendix E. Presentations of latest dietary survey

Iceland

The slide features a vertical blue gradient bar on the left side. The main title is centered in a large, dark blue font. Below the title, the date is centered in a smaller, grey font. At the bottom left, there is a logo for the Directorate of Health, consisting of a coat of arms and the text 'Embætti landlæknis' and 'Directorate of Health'. To the right of the logo, the name and title of the project manager are listed. A horizontal blue gradient bar is positioned at the bottom of the slide.

National Dietary Survey in Iceland 2019-2020

20. November 2020

Hólmfríður Þorgeirsdóttir, project manager, Directorate of Health

**Embætti
landlæknis**
Directorate of Health

National dietary survey among adults 2019-2020

- Started in September 2019.
- The survey is in cooperation with the Unit of Nutrition Research (RIN) at the University of Iceland which conducts the survey.
- A random sample of 2000 people, 18-80 years of age, drawn from the national population register.
- 2 x 24 hour recall interviews by telephone with questions on frequency of consumption of certain foods and food groups.
- The interviewers: BSc and MSc students from the University of Iceland
 - trained in data gathering, interview techniques, use of computer programs and databases and coding of interviews.

National dietary survey 2019-20202

- The age group 19-39 years is also invited to participate in the project [European Human Biomonitoring Platform](#) (HBM4EU) where PAH, bisphenol and cadmium will be measured in urine samples and maybe also mercury and fluorinated substances.
- Blood samples are collected from these participants.

National dietary survey 2019-2020

We have had a lot of challenges:

- We did not get as many interviewers as we hoped for and those who did sign up turned out to have other engagement.
- We offered another training course for interviewers in January but it did not change the situation very much.
- Problem with the interview program in the beginning.
- Another significant challenge is that many participants do not have a home phone anymore but instead have a mobile phone, many of which do not have registered number. In addition, many people now a days do not answer if they don't know the number that is calling so it is difficult to reach potential participants.
- We had to stop the survey in the middle of March because the local where it was conducted was taken for Covid-19 hospital.
- We started again in June just with a few interviewers to finish the second interviews.

Covid-19 question

- In June we added a question whether the diet had changed compared to before Covid-19.
- 91 person answered that question during the summer, 24 persons or 26% said yes, that their diet had changed.

Covid-19 question

	Fruits	Vegetables	Fish	Processed meat	Cakes, bisquits
Decreased much / somewhat (n)	8	6	7	4	7
Unchanged (n)	9	11	11	17	7
Increased much / somewhat (n)	7	7	6	3	10
Total number	24	24	24	24	24

Covid-19 question

	Sweets	Snacks	Soft drinks	Fast food	Alcohol
Decreased much / somewhat (n)	8	7	8	11	5
Unchanged (n)	7	10	9	5	18
Increased much / somewhat (n)	9	7	7	8	1
Total number	24	24	24	24	24

National dietary survey 2019-2020

- We started the survey again in September by training new interviewers (8 persons).
- Covid-19 has interrupted again.
- Some of the interviewers have left for Covid work, other never showed up or seldom so we only have 5 active interviewers now.

The Food Composition Database

- Has not been updated since 2011, except for new food items that were added before we started the survey last year.

UiO : **Institutt for medisinske basalfag**
Det medisinske fakultet

Nordic Workshop Nov. 20th 2020

Norway

National dietary surveys

Lene Frost Andersen

Dietary surveys last 10 yrs

29.12.2020

3

Participants

- **Invited:**
 - ≈ 3000 children/mothers, scandinavian

- **Participation:**

	1998-99	2006-07	2018/19
6 mo	80%	67%	73%
12 mo	66%	57%	66%
2 yrs	57%	56%	47%

Participation – education mother

Spedkost

■ Ikke universitet/høyskole
■ Universitet/høyskole

Småbarnskost

■ Ikke universitet/høyskole
■ Universitet/høyskole

Method

- Usual diet- last 14 days
- FFQ (paper/web) at 6 mo
 - Breastfeeding
 - ≈50 foods
 - Most frequency
 - No estimation of energy and nutrients
- FFQ (paper/nett) at 12 & 24 mo
 - Breastfeeding
 - ≈ 200 matvarer
 - Frequency & amounts
 - Estimation of energy and nutrients

Method

- **Amount:**
 - Picture booklet 17/18 series 1 & 2 yr
 - In addition household measures

UiO Institutt for medisinske basalfag
Det medisinske fakultet

Exklusiv breastfeeding

Development over time, exclusive breastfeeding

Breastfeeding

Ammede barn inkluderer andel barn som fikk morsmelk, enten alene eller sammen med annen mat.

Development the first year, breastfeeding

Breastfeeding according to education

National action plan 2017 - 2021

Goals vs Spedkost 3:

- 60% exclusive breastfeeding age 4 mo
 - Spedkost 3: 39%
- 25% exclusive breastfeeding towards age 6 mo
 - Spedkost 3: 5% exclusive breastfed 5.5 mo
- 50% breastfeeding at 12 mo
 - Spedkost 3: 48%

<https://www.regjeringen.no/no/dokumenter/nasjonal-handlingsplan-for-bedre-kosthold-20172021/id2541870/>

Summary

- Still - a high proportion were breastfed the first year of life!
- The proportion breastfeeding at 4 mo of age were similar to findings in 2006 and 2013. But a lower proportion were breastfeeding at age 6 mo
- Higher proportion were introducing solid food around age 4 mo than observed earlier

Riksmaten ungdom 2016-17

Riksmaten småbarn

NKMT workshop on dietary surveys 20 Nov 2020, Eva Warensjö Lemming

Riksmaten ungdom 2016-17

- School based national representative survey
- School years 5, 8 and 11
- 131 participating schools
- Overall participation rate, 68 %, n=3099
- Participation rate biomonitoring part, 55%
- Measured weight and height
- Accelerometers for 7 days

Livsmedelsverket

Moraues et al. *Food & Nutrition Research*, 2018 Aug 28;62. doi: 10.29219/fnr.v62.1381. eCollection 2018

Finally- validation study of RiksmatenFlex

Livsmedelsverket

JOURNAL OF MEDICAL INTERNET RESEARCH

Lindroos et al

Original Paper

Use of a Web-Based Dietary Assessment Tool (RiksmatenFlex) in Swedish Adolescents: Comparison and Validation Study

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Abstract

Background: A Web-based dietary assessment tool—RiksmatenFlex—was developed for the national dietary survey of adolescents in Sweden.

Objective: This study aimed to describe the Web-based method RiksmatenFlex and to test the validity of the reported dietary intake by comparing dietary intake with 24-hour dietary recalls (recall interviews), estimated energy expenditure, and biomarkers.

Methods: Adolescents aged 11–12, 14–15, and 17–18 years were recruited through schools. In total, 78 students had complete dietary information and were included in the study. Diet was reported a few weeks apart with either RiksmatenFlex (the day before and a random later day) or recall interviews (face-to-face, a random day later by phone) in a cross-over, randomized design. At a school visit, weight and height were measured and blood samples were drawn for biomarker analyses. Students wore an accelerometer for 7 days for physical activity measurements. Dietary intake captured by both dietary methods was compared, and energy intake estimated by both methods was compared with the accelerometer-estimated energy expenditure (EE) and intake.

*FISK 2-3 GÅNGER/VECKA ÄR BRA FÖR HÄLSAN

NÄSTAN ALLA ÄTER

FISK

----- I SNITT -----

**1,6 GÅNG
PER VECKA***

ALLA ÄTER

GRÖNSAKER

MEN ALLDELES FÖR

LITE

KILLAR I GYMNASIET
**DRICKER
MEST
LÄSK**

STÖRKONSUMENT-
ERNA DRACK
NÄSTAN 1 LITER
PER DAG!

TONÅRSTJEJER
FÅR FÖR LITE JÄRN FRÅN MATEN
----- OCH NÄSTAN -----
VAR TREDJE
----- KAN HA -----
JÄRNBRIST

I KIESMATEN UNGDOM DELTÖG DRYGT 3 000 UNGDOMAR. UNDERSÖKNINGEN ÄR REPRESENTATIV FÖR ÅK 9, 8 OCH ÅK 7 PÅ GYMNASIET.

Riksmaten småbarn (small children)

- Age groups: 9 and 18 months, 4 years
- Aim for 1000 children per age group
- Dietary assessment method (web-based):
 - 9 months- frequency questionnaire
 - 18 mon & 4 years: two day diary (non consecutive)
- Questionnaires (web-based)
- Recruitment of participants at Livsmedelsverket

Livsmedelsverket

Other measurements

In 18 months & 4 years (n=600)

- Blood and urine sample collections at 7 clinics
- Accelerometer data

All age groups

- Stool samples (home collection, all age groups)

Livsmedelsverket

Timeline

Dietary monitoring in Finland

Liisa Valsta, Research Manager, Ph.D., Title of Docent

Finnish Institute for Health and Welfare

THE FINDIET 2017 SURVEY

- Carried out in connection to the National FinHealth 2017 Study

Target population:

- Finnish adults aged 18+ years in mainland Finland (5.5 mil.)
- The territory of Åland islands is excluded (29 000 inhabitants)
- National representative sample:
 - reflects the demographic distribution of the Finnish population
 - allows data collection at reasonable cost.

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SAMPLING IN THE FINHEALTH 2017 SURVEY

Sampling frame:

- National Population Register:
- Permanent residents in mainland Finland

Sampling strategy:

- Stratified random sampling: 10 247 adults in corrected sample, 18+ years
- 15 largest cities and 35 HCDs from the rest of Finland
- Proportion sampled corresponds to pop. size of each stratum
- **About 33% of the FinHealth sample were invited to the FinDiet 2017 Survey**

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Two 24-hour dietary recalls from each participant

■ First dietary recall

- A Computer assisted personal interview (CATI)
- January - May 2017

■ Second dietary recall

- A telephone interview (CATI)
- February - October 2017

6 dietary interviewers:
One per a team

50 study areas

4 telephone interviewers
at THL

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GENERAL DESIGN OF THE FINDIET 2017 STUDY

Data collection by ambulatory teams in six geographical areas:

- Several study centre locations within area
- Health examination (anthropometrics) and background questionnaires

One trained dietary interviewer/study team:

- First 24-hour dietary recall (CAPI)
- FPQ (incl. supplements)
- Agreement on the second 24-hour dietary recall (CATI)

Trained telephone interviewers at THL, Helsinki (CATI)

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DIETARY METHODS

Administration of the interview:

- 24-hour CAPI during health examination of the FinHealth Study
- 24-hour CATI on at least 8 days interval to CAPI
- CATI appointment times scheduled to emphasize:
 - Distribution of days throughout week (ratios 5:7 for weekdays; 2:7 for week-end)
 - Distribution of the seasons (summer!)

Dietary software used:

- Finessi®, developed in THL (used in dietary surveys since the year 2002)
- Updated in spring 2016 to meet the EFSA criteria (e.g. FoodEx2)
- Facet descriptors to be interviewed (e.g. packaging material, cooking method, brand name)
- Instant energy intake calculation

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DETERMINATION OF PORTION SIZES

CAPI: 170-item photographic picture booklet

- validated: Pietinen et al. 1988
- tested: Ovaskainen et al. 2008
- re-tested during pilot study in Sept 2016
- Plates, glasses, cups, household measures, ruler
- Aids of food identification: picture catalogues of foods on the market

CATI:

- 20-item shortened picture booklet (incl. ruler)
- Generally known household measures (spoons, dl)

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STUDY FLOW OF THE DATA COLLECTION

Reception and measurements (60 min)

- Ensuring participant's identity & Receiving written informed consent
- Handing out background questionnaires (incl. the FPQ)
- Measurement of e.g. height, weight, waist circumference
- Blood sampling
- Receiving filled background questionnaires

24-hour dietary recall interview etc. (CAPI) (~ 60 min)

- Ensuring participant identity and checking background info
- Receiving and checking the FPQ
- 24-hour dietary recall (< 45 min)
- Agreement on a second contact (CATI)

24-hour dietary recall interview (CATI) (< 45min)

QUALITY CONTROL OF PROCEDURES

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PARTICIPATION RATE OF THE FINDIET STUDY

(n=3099 invited, ~30% of the FinHealth sample)

	Men N (%)	Women N (%)	All N (%)
Participated in the health examination	870 (54%)	946 (63%)	1816 (59%)
Participated in at least one interview	848 (53%)	934 (62%)	1782 (58%)
At least one accepted interview	842 (53%)	933 (62%)	1775 (57%)
Two accepted interviews (CAPI+CATI)	780 (49%)	875 (58%)	1655 (53%)
FPQ*	851 (53%)	938 (62%)	1789 (58%)

(*The food propensity questionnaire)

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FINELI[®] FOOD CODES USED

	Number of food codes			
	Food	Dish	Food supplement	Total
During data collection	1671	3013	764	5448
Added prior to calculations	50	209	261	520
Available codes, in total	1721	3222	1025	5968

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EVALUATION OF THE DATA COLLECTION

- Health examinations and CAPI interviews carried out between 31.1. – 19.5.2017 and CATI interviews between 8.2.-9.10.2017
- Weekdays 73% and week-end days 27% (target 71% and 29%)
- Seasons: winter 24%, spring 44%, summer 23%, autumn 9%
- Interviews' average duration 33 ± 11, P50 32 min (CAPI)
and 31 ± 11, P50 30 min (CATI)
- Of the FPQs given out, 99% were received back
- Out of the subjects participating in the CAPI interview, 94 % participated
also in the CATI dietary interview.

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About 60 % of the energy from the main meals
 (men: 9.5 M.J/ day men, women: 7.3 M.J/ day)

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Usual intake distributions (SPADE)

- Meat consumption (red and processed meat)

- Nutrient intakes (Sodium as salt)

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Some adults get too little of vitamins from food

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Osa aikuisista saa ruoasta liian vähän vitamiineja

Vähintään neljäsosa väestöstä saa ruoasta liian vähän folaattia ja tiamiinia.

Viidesosa miehistä saa ruoasta liian vähän C- ja A-vitamiinia sekä riboflaviinia eli B₂-vitamiinia.

IKÄRYHMÄ: 18–74-vuotiaat

Niiden osuus väestöstä (%), jotka saavat ruoasta liian vähän ko. vitamiinia

TERVEYDEN JA HYVINVOINNIN LAITOS

Lähde: THL, FinRavinto 2017 -tutkimus

Vitamin D intake from food and dietary supplements together (FinDiet Surveys)

thl

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Iodine status – Health 2000 – FinHealth 2017

WHO population recommendation

- > 300 µg/L too much
- 200-299 µg/L over the adequate
- 100-199 µg/L adequate 😊
- < 100 µg/L – mild deficiency

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The FinDiet 2017 report

FinDiet 2017 Survey report:

<http://urn.fi/URN:ISBN:978-952-343-238-3>

- In Finnish
- Abstracts in English and Swedish
- English vocabulary and translations

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Energy intake (kJ/day) by interviewers

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Entered food information vs. reference

(n= 11 dietary interviewers)

Reference day	Type of the day	Total weight of the diet	Energy	Food weight (% of the reference weight)		Energy content of the foods (% of the reference weight)	
		g/day	MJ/day	Mean	SD	Mean	SD
Day 1	Normal	4509	13.8	99	6	98	4
Day 2	Sick	3253	4.7	94	4	107	4
Day 3	Normal	3547	12.3	100	4	104	3
Total		11309	30.8	98		102	

(Data collection method as in Gavrieli et al. 2019)

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FINDIET 2017 AS PART OF THE EU MENU INITIATIVE

- The EU Menu initiative is coordinated by the DATA Unit of the European Food Safety Authority (Parma, Italy)
- All EU Member States
- Covering all age groups (0-74 yrs)
- ~ 80,000 people in total
- All food, beverage, food supplement consumption
- 2 non-consecutive days + questionnaire allowing modelling of intake distributions
- Using a dietary software collecting detailed food descriptors
- Incorporated quality control measures
- Anthropometric measurements (e.g. measured weight and height)
- FinDiet 2017 is the EU Menu Finland for the adult population (18-74 yrs)

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**FinDiet 2017
Dietary
Interviewers**
Kirsi Ali-Kovero
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European Food Safety Authority (EFSA)
EU Menu (OC/EFSA/DATA/2015/03)

The Survey participants

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The **D**anish **N**ational **S**urvey on **D**iet and Physical **A**ctivity

DANSDA 2020-2021

Sisse Fagt, National Food Institute

2. november 2020

DTU Fødevarerinstitutet

New dietary survey

- Original plan: Data collection January 2020 - December 2021
- 4000 participants 4-80 years
- 7 day record diet and physical activity, webbased
- Measurement of height, weight, waist circumference
- Measurement of blood pressure (15-80 years)
- Blood sample (40-70 years)

Webbased food record

[Hjem](#)
[Omkring](#)

[Sæsoner](#)
[Færdiggjort](#)
[Tidspunkt](#)
[Eftermiddag](#)
[Aftensmad](#)
[Middag](#)

[Sæsoner](#)
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[Tidspunkt](#)
[Eftermiddag](#)
[Aftensmad](#)
[Middag](#)

Registrer kost

Morgenmad	➤
Færdiggjort	➤
Frokost	➤
Eftermiddag	➤
Aftensmad	➤
Middag	➤

For du kan afslutte dagen, skal du registrere alle måltider. Hvis du ikke har spist noget, så klik på måltidet, og vælg 'har ikke spist noget'.

From 400 to 1700 foods
From 44 to >400 photo series

[illegible][illegible]

FFQ (food propensity questionnaire)

Sådan vil undersøgelsen forløbe:

Blood laboratories

Located all over Denmark, so distance for participants is as low as possible

We collect 35 ml of blood. Planned analysis: Triglycerides, fasting glucose, HDL, total cholesterol (metabolic syndrome).

All samples are analysed at Holbæk Sygehus.

Surplus blood is stored in research biobank at DTU in -80 graders freezer for future research projects.

Corona – Denmark locked down March 12th and the data collection was put on hold

March 2020-October 2020

- Communication to all blood laboratories
- Communication to health board (not drawing samples, before we start again)
- Discussions on when to start up again and how to regain sufficient number of participants on fewer months
- When society opened up, discussion on whether people want to participate and invite interviewers into private homes for interview, anthropometric measures etc
- Decision on concentrating data collection in 1 year
- Decisions on which precautions to take at home visits (facial masks, sanitizer, distance etc.)
- Pilot study august – feasibility and compliance
- Decision on how to monitoring infection rates locally. Possibility to avoid highly infected municipalities in period (20 infected per 100.000 inhabitants)
- Protocol for precautions and new information material

Start October 19th

Kommune	Befolkningstal	Befolkningstal/100.000	Antal smittetilfælde seneste 7 dage	Smittetilfælde pr. 100.000 indbyggere
Aarhus	349.983	3,50	179	51
Rødovre	40.652	0,41	11	27
Ishøj	22.989	0,23	6	26
Randers	97.805	0,98	24	25
Skive	45.851	0,46	10	22
Glostrup	23.128	0,23	5	22
Brøndby	35.090	0,35	7	20
Odense	204.895	2,05	40	20
Struer	21.036	0,21	4	19
København	632.340	6,32	94	15
Albertslund	27.731	0,28	4	14
Frederiksberg	104.305	1,04	15	14

We are rolling

Monitor participation rate very carefully – which actions to take. We might come in situation where it is not possible to collect data or our sample gets too skewed.

If we have to stop the data collection over longer time, we don't think it is possible to collect data until we are back to "normal"

But what is normal and how does the current situation affect the diet and physical activity?

Corona survey on approx 950 participants – FFQ by webpanel april and september

The screenshot shows the DTU Mine deltager 2202 web interface. At the top, there are navigation links: Mine deltager, Statistik, and Dokumenter. A user profile dropdown shows 'sefa@food.dtu.dk'. Below the navigation, there's a breadcrumb 'Oversigt / Mine deltagere'. The main heading is 'Mine deltagere 2202'. To the right of the heading are two dropdown menus: '- valg interviewer -' and 'IP eller TF, nummer' with a 'Søg' button. Below the heading, there are several tabs: 'Tilkyttede' (100), 'Invitationsfase' (100), 'Interviewfase' (100), 'Kostdagbogperiode' (100), and 'Afsluttede deltagere' (100). The 'Invitationsfase' tab is selected. Below the tabs, there's a section titled 'INVITATIONSFASE' with a sub-section 'På modtager invitation'. This section contains a table with 5 columns: 'Navn', 'Type', 'Alder', 'Seneste handling', and 'Seneste ændring'. The table lists 6 participants, all with 'e-Boks-invitation planlagt' as the last action on '27-10-2020'.

Navn	Type	Alder	Seneste handling	Seneste ændring
Deltager	Voksen	50 år	e-Boks-invitation planlagt	27-10-2020
Deltager	Voksen	70 år	e-Boks-invitation planlagt	27-10-2020
Deltager	Voksen	49 år	e-Boks-invitation planlagt	27-10-2020
Deltager	Barn	8 år	e-Boks-invitation planlagt	27-10-2020
Deltager	Voksen	52 år	e-Boks-invitation planlagt	27-10-2020
Deltager	Voksen	74 år	e-Boks-invitation planlagt	27-10-2020