Characteristics of Canteens at Elementary Schools, Upper Secondary Schools and Workplaces that Comply with Food Service Guidelines and Have a Greater Focus on Food Waste

Policy actions to improve the nutritional environment include the provision of official food service guidelines. This study aimed to examine compliance with food service guidelines for hot meals as well as self-evaluated focus on food waste reduction across settings, i.e., elementary schools, upper secondary schools and workplaces, and different canteen characteristics. The same five criteria for hot meals were applied for all settings with regard to serving of fruit and vegetables, fish, wholegrain product and high fat meat and dairy products. A self-administered questionnaire survey was conducted as a cross-sectional study among 680 Danish canteens. Canteens having a high degree of organic food procurement were more likely to comply with the five criteria for hot meals combined (OR 2.00 (CI 1.13,3.53)). Also, the use of organic food together with having a meal policy was associated with reported focus on food waste reduction (OR 1.91 (CI 1.12,3.25) and 1.84 (CI 1.31,2.59), respectively). Compliance with individual criteria varied across settings with elementary schools being more likely to comply with criteria on, e.g., maximum serving of non-wholegrain products, whereas workplaces were more likely to comply with criteria on, e.g., minimum fruit and vegetable content and serving of fish. In addition, specific characteristics, e.g., serving system, were found to predict compliance with some of the criteria. These findings highlight the need to address differences in canteen characteristics when planning implementation support for both guideline and food waste reduction initiatives.

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Organic Food in Public Catering: How the Danish Organic Cuisine Label May Maintain Organic Food Production in the Longer Term

The aim of this mixed-method longitudinal study was to explore the role the Danish Organic Cuisine Label plays in maintaining organic food production in public catering. Baseline, end-point and 1-year-follow-up were compared among 622 kitchens participating in organic conversion projects. Numbers of certified kitchens increased from baseline to end-point (p < 0.001). This level was maintained at follow-up. Further, certified kitchens were found to increase their use of organic food at 1-year follow-up (p = 0.012) whereas non-certified kitchens did not. The study identified motives and barriers behind acquiring the label. In conclusion, the Organic Cuisine Label contributed to maintaining organic food productions.

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Corresponding author: Lassen, A. D.
Contributors: Sørensen, N. N., Sørensen, M. K., Trolle, E., Lassen, A. D.
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På vej mod en sundere og mere bæredygtig kost

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Contributors: Trolle, E., Lassen, A. D., Fagt, S., Christensen, L. M., Mogensen, L.
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Effekt af at reducere befolkningens indtag af salt

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Contributors: Lassen, A. D., Høberg Hansen, H., Lykke Jeppesen, J., Toft, U.
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Ernæringsfaglig baggrund for guide til sundere mad i daginstitutionen

General information
Hvad er på menuen i børnehaver med økologisk mad?

Sustainability of diets – challenges of developing sustainable food based dietary guidelines
The impact of worksite interventions promoting healthier food and/or physical activity habits among employees working ‘around the clock’ hours: a systematic review

We conducted a systematic review of randomised studies on the impact of worksite interventions to promote healthier food and/or physical activity among people who work irregular hours ‘around the clock’, that is, outside of ordinary daytime working hours. The population–intervention–comparator–outcomes–study (PICOS) design format was used. Data sources were PubMed and CINAHL. An updated search was conducted on October 2017 using Google Scholar and the related articles function in PubMed on initially included studies to identify additional studies. Risk of bias was used to assess study quality. A total of seven studies (reports published in 14 papers) were included in the systematic review: Two interventions with a broader lifestyle approach, three focusing on physical exercise and two on providing healthier food or meal options. The studies had sample sizes from 30 to 1,000 and targeted a mixture of occupations, including both male- and female-dominated occupational groups. The interventions lasted from 2 to 12 months. Only one had an extended follow-up. In general, the studies showed small-to-moderate effect sizes on several measures, including dietary and/or physical activity measures, suggesting acceptable effectiveness for interventions involving community-level behaviour change. Our findings highlight a need to further develop and implement well-designed health promotion interventions with comparable outcome measures and effect size reports. A mixture of health promotion strategies is recommended for future practice in this target population, including individually tailored programmes, improving the food and physical activity environment and using broader lifestyle approaches including the use of participatory and empowerment strategies. While more research is needed in this field, the existing knowledge base on effective approaches awaits translation into practice.

The Nutritional Quality of Lunch Meals Eaten at Danish Worksites

Monitoring the nutritional environment is important to help inform future initiatives to improve access to healthy foods. The objective was to examine the nutritional quality of lunch meals eaten at 15 worksite canteens and then to compare with results from a study conducted 10 years before. The duplicate-portion-technique with subsequent chemical analysis was
used to quantify 240 customers' lunch intake. Estimated mean energy intake was 2.1 MJ/meal (95% confidence interval (CI): 1.9 to 2.4 g/meal) and estimated energy density 599 kJ/100 g (95% CI 550 to 653 kJ/100 g). Energy density of the male participants' meals were significantly higher compared with the female participants' meals (+55 kJ/100 g, 95% CI: +12 to +98 kJ/100 g, p = 0.012), whereas no gender differences were found in macronutrient distribution or fruit and vegetable intake. Compared to the study conducted 10 years before several significant changes were observed, including an increase in mean estimated intake of fruit and vegetables (+38 g/meal, 95% CI: 19 to 57 g/meal, p <0.001) and a decrease in energy density (-76 kJ/100 g, 95% CI: -115, -37 kJ/100 g, p <0.001). In conclusion, this study suggests an equalization of gender differences in fruit and vegetable intake and a possible improvement in the nutritional quality of canteen lunch meals over a 10-year period.

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The Salt Content of Lunch Meals Eaten at Danish Worksites
Monitoring levels of sodium (salt) in meals consumed out-of-home is needed to support effective implementation of salt-reduction strategies. The objective of the study was to examine lunch salt intake at 15 worksite canteens and to compare with results from a comparable study conducted 10 years before. A duplicate-portion-technique with subsequent chemical analysis was used to quantify 240 customers’ lunch salt intake. Estimated mean salt intake was 2.6 g/meal (95% CI: 2.2 to 3.0 g/meal) and 0.78 g/100 g (95% CI: 0.69 to 0.88 g/100 g). Salt intake measured both as g per meal and per 100 g was found to be significantly higher for male compared with female participants (+0.10 g/100 g, 95% CI: +0.02 to +0.17 g/100 g, p = 0.011). Compared with the study conducted 10 years before, there was a significantly lower estimated salt intake of 0.5 g/meal (95% CI: −0.8 to −0.2 g/meal, p = 0.001), suggesting a possible reduction in canteen lunch salt intake during a 10-year period. Still, 40% of the meals exceeded the Nordic Keyhole label requirements of maximum 0.8 g salt per 100 g for ready meals. A further reduction of salt intake is warranted to comply with salt reduction targets.

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Successful and cost neutral strategies to increase organic food used in public kitchens: results from the Danish Organic Action Plan 2020

Introduction
This conversion project was conducted in 2015-16 as part of the Danish Organic Action Plan 2020. The objective of this study was to measure the effect of an organic cost neutral food conversion on the percentage of organic food used in Danish public kitchens and to gain knowledge of practical strategies being effective in increasing the organic food used in the public kitchens.

Methods
Study design included baseline data collection, training sessions for all kitchens employees, goal setting, strategy development and implementation for each kitchen, and end point data collection. Setting
174 public kitchens from 10 municipalities participated in an organic conversion project performed by a consultant corporation. Three types of public kitchen were included: childcare (n=52), worksite canteens (N=14) and elderly care (n=108).

Results
Significant increases in organic food percentage from baseline to end point were 29 percentage points (P< 0.001) during a period of 1½-2 years (baseline: 24% to endpoint: 53%). The organic conversion is completed with no subsidy to operations. All employees were trained in the principles of organic food production. The organic price premium was covered within existing budget by optimizing the budget and menu planning, minimizing food waste, increase production of homemade food, focusing on seasonal food, and optimizing meat and fish consumption.

Conclusions
This study demonstrates a large potential for public kitchens to increase the level of organic food procurement and suggest a broad spectrum of strategies to sustain the organic conversions with no subsidy to operations after conversion to organic food.

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The effectiveness of healthy meals at work on reaction time, mood and dietary intake: a randomised cross-over study in daytime and shift workers at an university hospital

Our dietary habits affect both cognitive performance and mood. The aim of the study was to examine the effect of increased availability of healthy meals and water at work on healthcare staff. The study used an 8-week randomised cross-over design. A total of sixty physicians, nurses and nursing assistants, including sixteen working on shifts, were recruited. The participants received a self-selected keyhole-labelled (Nordic nutrition label) lunch, snack and bottled water during each shift throughout the intervention period. Reaction time (Go/No-Go test), mood-related scores (POMS) and dietary intake were assessed at run-in, and at the end of the intervention and the control periods. The intake of fat (P=0.030) and PUFA (P=0.003) was lower, and the intake of carbohydrate (P=0.008), dietary fibre (P=0.031) and water (P<0.001) was greater in the intervention period than in the control period. The intervention had no effect on reaction time or any of the mood-related scores in the group as a whole. In shift-working participants, the intervention period resulted in a 31.1 % lower Fatigue-Inertia Score (P=0.003), a 15.3 % higher Vigour-Activity Score (P=0.041) and a 42.7 % lower Total Mood Disturbance Score (P=0.017), whereas the only dietary component that significantly improved was water intake (P=0.034), when compared with the control period. Providing healthy meals, snacks and water during working hours seems to be an effective way of improving employees’ dietary intake. Moreover, increased intake of water may be associated with beneficial effects on fatigue, vigour and total mood in shift-working healthcare staff.

General information
Gender differences in purchase intentions and reasons for meal selection among fast food customers – Opportunities for healthier and more sustainable fast food

Understanding the factors that influence food selection and dietary behavior is fundamental to support the successful translation of dietary goals into consumer behavior. The present study aims to identify gender differences in fast food consumers’ reasons for actual fast food meal selection and their purchase intentions. Based on this background, possible opportunities toward implementing healthier and more sustainable fast food options are discussed. Data were collected at three fast food restaurants from different parts of Denmark among randomly selected customers (aged 15 or above). The customers were approached after having ordered their meal. They filled out a questionnaire on reasons for their actual fast food meal selection and purchase intentions in relation to four hypothesized burger menus, including a regular beef burger menu, a wholegrain beef burger menu, a nutrition labeled beef burger menu and a nutrition labeled chicken burger menu. Results showed that the majority of the fast food customers expressed a wish for healthier menus (55% males vs. 64% females agree or strongly agree, p < 0.001) and more sustainable menus in terms of environmental impact (43% males vs. 52% females agree or strongly agree, p < 0.001), however only 7% of the participants’ meals included healthier food choices (n = 740). Habits, taste and price were the main drivers among both genders for the actual meal selection. Compared with women, more men expressed that actual food choice was based on offers and promotions (p < 0.001), and on food perceived as the most satiating (p = 0.001). With regard to purchase intentions, the majority of men preferred a burger menu (healthier or regular) over a healthier chicken burger menu or a wholegrain burger menu, whereas the majority of women responded positively to either of the healthier-labeled burger menus (p < 0.001). In conclusion, the study shows that having a focus on gender differences is of particular importance in order to improve the food nutrition environment and support healthier food selections among fast food customers.

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Økologisk omstilling af offentlige køkkener under Økologisk Handlingsplan 2020 - ændringer i økologiprocent og medarbejdertilfredshed

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Contributors: Sørensen, N. N., Lassen, A. D.
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The effectiveness of the Danish Organic Action Plan 2020 to increase the level of organic public procurement in Danish public kitchens
To measure the effect of organic food conversion projects on the percentage of organic food used in Danish public kitchens participating in the Danish Organic Action Plan 2020. The current longitudinal study was based on measurements of organic food percentages in Danish public kitchens before and after kitchen employees participated in conversion projects. Public kitchens participating in the nine organic food conversion projects under the Danish Organic Action Plan 2020, initiated during autumn 2012 and spring 2013 and completed in summer 2015. A total of 622 public kitchens. The average (median) increase in organic food percentage from baseline to follow-up was 24 percentage points (P<0·001) during an overall median follow-up period of 1·5 years. When analysing data according to public kitchen type, the increase remained significant for seven out of eight kitchens. Furthermore, the proportion of public kitchens eligible for the Organic Cuisine Label in either silver (60–90 % organic food procurement) or gold (90–100 % organic food procurement) level doubled from 31 % to 62 %, respectively, during the conversion period. Conversion project curriculum mostly included elements of ‘theory’, ‘menu planning’, ‘network’ and ‘Organic Cuisine Label method’ to ensure successful implementation. The study reports significant increases in the level of organic food procurement among public kitchens participating in the Danish Organic Action Plan 2020. Recommendations for future organic conversion projects include adding key curriculum components to the project’s educational content and measuring changes in organic food percentage to increase the chances of successful implementation.

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Original language: English
Wellbeing at work among kitchen workers during organic food conversion in Danish public kitchens: a longitudinal survey

Background: In 2011, the Danish Ministry of Food, Agriculture and Fisheries launched the Danish Organic Action Plan 2020 intending to double the organic agricultural area in Denmark. This study aims to measure experienced physical and psychological wellbeing at work along with beliefs and attitudes among kitchen workers before and after participating in educational training programmes in organic food conversion. Method: This longitudinal study applied an online self-administered questionnaire among kitchen workers before and after the implementation of an organic food conversion programme with 1-year follow-up. The study targeted all staff members in the participating public kitchens taking part in the organic food conversion process funded by the Danish Organic Action Plan 2020. Results: Of the 448 eligible kitchen workers, 235 completed the questionnaire at baseline (52%) and 149 at follow-up (63% of those surveyed at baseline). No substantive differences between baseline and follow-up measurements of organic food conversion were detected on physical or psychological wellbeing at work. Kitchen workers reported a significant improvement in the perceived food quality, motivation to work and application of nutritional guidelines. Reported organic food percentages for the kitchens also increased significantly (P < 0.001) and a shift from using ready-made food products to producing more food from base was indicated. Conclusion: Within 1 year, a significant increase in motivation to work among kitchen staff was observed with no substantive changes in physical or psychological wellbeing at work identified. The results support the Danish Organic Action Plan 2020 and initiatives of similar kind.

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Organisations: Research group for Risk Benefit, National Food Institute, Center for Bachelor of Engineering Studies, Division of Risk Assessment and Nutrition, University of Sydney
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Hjælper du miljøet ved at spise sundere fastfood? Analyser af produkter udviklet under SpisVel projektet i forhold til traditionel fastfood

Mange mennesker køber dagligt fastfood, fordi det er nemt og relativt billigt. Samtidig er der flere undersøgelser, der peger på, at forbrugerne efterspørger et bredere sortiment af sundere og også gerne mere bæredygtige fastfood produkter. Dette er baggrunden for projekt SpisVel, hvor en gruppe af kokke, detailister, producenter og forskere har sat sig for at udvikle nye, sundere fastfood produkter med et højt kulinarisk niveau. De udviklede produkter lever således alle op til Neglehullets ernæringsmæssige krav om fx mindre fedt, mere fuldkorn og flere grøntsager. Men hvad med bæredygtigheden af produkterne? Er produkterne samtidig mere miljøvenlige end de mere traditionelle fast food
produkter? Det ønsker vi svar på med denne undersøgelse. Produkternes miljøbelastning vurderes på to forskellige måder, dels ved et nyudviklet Miljøscorecard under SpisVel, dels ved såkaldte livscyklusanalyser (LCA).

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**Markedsudvikling af velsmægende, sunde og bæredygtige måltider på spisesteder (SpisVel)**

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DTU Fødevareinstituttet • Madkulturen • Ålborg Universitet • Fødevarestyrelsen • McDonald’s • Statoil • 7-eleven • Easyfood • Nr. Onsild Slagtehus • DLG Foods • Lantmænnen Schulstad A/S • Rose Poultry
Desuden et kulinarisk team bestående af: Carsten Kyster, Ronny Isvik, Claus Holm samt Winnie From Thesbøl
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**Plate waste and intake of school lunch based on the New Nordic Diet and on packed lunches: A randomised controlled trial in 8- to 11-year-old Danish children**
The aim of the present study was to compare total food intake, total and relative edible plate waste and self-reported food likings between school lunch based on the New Nordic diet (NND) and packed lunch from home. In two 3-month periods in a cluster-randomised controlled unblinded cross-over study 3rd- and 4th-grade children (n 187) from two municipal schools received lunch meals based on NND principles and their usual packed lunch (control). Food intake and plate waste (n 1558) were calculated after weighing lunch plates before and after the meal for five consecutive days and self-reported likings (n 905) assessed by a web-based questionnaire. Average food intake was 6 % higher for the NND period compared with the packed lunch period. The quantity of NND intake varied with the menu (P < 0·0001) and was positively associated with self-reported likings. The edible plate waste was 88 (sd 80) g for the NND period and 43 (sd 60) g for the packed lunch period whereas the relative edible plate waste was no different between periods for meals having waste (n 1050). Edible plate waste differed between menus (P < 0·0001), with more waste on soup days (36 %) and vegetarian days (23 %) compared with the packed lunch period. Self-reported likings were negatively associated with percentage plate waste (P < 0·0001). The study suggests that portion sizes need to be considered in new school meal programmes. New strategies with focus on reduction of plate waste, children's likings and nutritious school meals are crucial from both a nutritional, economic and environmental point of view.

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Resultater fra projekt SpisVel: Markedsudvikling af veismagende, sunde og bæredygtige måltider på spisesteder.

Resultater fra projekt SpisVel: Markedsudvikling af veismagende, sunde og bæredygtige måltider på spisesteder.

Salt og sundhed

Salt og velfærd for mennesker
The Danish Organic Action Plan 2020: assessment method and baseline status of organic procurement in public kitchens

Objective With political support from the Danish Organic Action Plan 2020, organic public procurement in Denmark is expected to increase. In order to evaluate changes in organic food procurement in Danish public kitchens, reliable methods are needed. The present study aimed to compare organic food procurement measurements by two methods and to collect and discuss baseline organic food procurement measurements from public kitchens participating in the Danish Organic Action Plan 2020. Design Comparison study measuring organic food procurement by applying two different methods, one based on the use of procurement invoices (the Organic Cuisine Label method) and the other on self-reported procurement (the Dogme method). Baseline organic food procurement status was based on organic food procurement measurements and background information from public kitchens. Setting Public kitchens participating in the six organic food conversion projects funded by the Danish Organic Action Plan 2020 during 2012 and 2013. Subjects Twenty-six public kitchens (comparison study) and 345 public kitchens (baseline organic food procurement status). Results A high significant correlation coefficient was found between the two organic food procurement measurement methods (r=0.83, P<0.001) with measurements relevant for the baseline status. Mean baseline organic food procurement was found to be 24 % when including measurements from both methods. Conclusions The results indicate that organic food procurement measurements by both methods were valid for the baseline status report of the Danish Organic Action Plan 2020. Baseline results in Danish public kitchens suggest there is room for more organic as well as sustainable public procurement in Denmark.
Effectiveness of offering healthy labelled meals in improving the nutritional quality of lunch meals eaten in a worksite canteen

Healthier meal selections at restaurants and canteens are often limited and not actively promoted. In this Danish study the effectiveness of a healthy labelling certification program in improving dietary intake and influencing edible plate waste was evaluated in a quasi-experimental study design. Employees from an intervention worksite canteen and a matched control canteen were included in the study at baseline (February 2012), after completing the certification process (end-point) and six month from end-point (follow-up) (total n=270). In order to estimate nutrient composition of the consumed lunch meals and plate waste a validated digital photographic method was used combining estimation of food intake with food nutrient composition data. Food satisfaction was rated by participants using a questionnaire. Several significant positive nutritional effects were observed at the intervention canteen including a mean decrease in energy density in the consumed meals from 561kJ/100g at baseline to 368 and 407kJ/100g at end-point and follow-up, respectively (P<0.001). No significant changes were seen with regard to food satisfaction and plate waste. In the control canteen no positive nutritional effects were observed. The results of the study highlight the potential of using healthy labelling certification programs as a possible driver for increasing both the availability and awareness of healthy meal choices, thereby improving dietary intake when eating out.

Nøglehullet på spisesteder: Erfaringer med certificerede spisesteder

Nøglehullet på spisesteder: Erfaringer med certificerede spisesteder

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Contributors: Lassen, A. D., Munkholm Vognsen, K., Gross, G.
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A school meal study: comparing platewaste and likings of packed lunch and school lunch based on the New Nordic Diet

Background and objectives: The majority of Danish children do not eat in accordance with the national dietary guidelines. The OPUS School Meal Study is a school-based intervention study testing the health effects of the New Nordic Diet (NND). The aim of this sub-study was to compare edible plate waste and self-reported likings between packed lunch from home and the served NND meal.

Methods: The OPUS School Meal study is a cluster-randomized controlled 2-period cross-over study consisting of two three-month periods: an intervention period (NND) and a control period. 187 children (8-11y) at two schools were assigned to the food waste sub-study. Edible plate waste was measured by weighing individually the meal for 5 consecutive days before and after lunch at the end of each dietary period. Self-reported smiley ratings from a web-based dietary assessment software for children were compared to edible plate waste. Data were statistical modelled in two steps, a generalised linear mixed model was fitted for the probability of waste/no waste, and secondly a model for positive waste data was fitted.

Results: 74% of all meals (N=1558) had edible plate waste (>5g). Looking at all lunches the odds for leaving edible plate waste was 11 times higher for NND than for packed lunch (P < 0.001). Looking at the meals (N=1060) with edible plate waste the amount was not significantly different between meal types; the median (IQR) for NND was 85.0 (36.5; 150.0) and the median (IQR) for packed lunch 70.0 (40.0; 119.0). Lunches rated as ‘really bad’ or ‘bad’ in the self-reported likings had more waste than lunches rated ‘really good’ (P < 0.001).

Conclusions: The odds of having edible plate waste were significantly higher for NND meals compared to packed lunch. Liking of school meals are a significant determinant in order to reduce edible plate waste.

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Research output: Contribution to conference › Poster – Annual report year: 2013 › Research › peer-review

A school meal study: comparing platewaste and likings of packed lunch and school lunch based on the New Nordic Diet

Background and objectives: The majority of Danish children do not eat in accordance with the national dietary guidelines. The OPUS School Meal Study is a school-based intervention study testing the health effects of the New Nordic Diet (NND). The aim of this sub-study was to compare edible plate waste and self-reported likings between packed lunch from home and the served NND meal.

Methods: The OPUS School Meal study is a cluster-randomized controlled 2-period cross-over study consisting of two three-month periods: an intervention period (NND) and a control period. 187 children (8-11y) at two schools were assigned to the food waste sub-study. Edible plate waste was measured by weighing individually the meal for 5 consecutive days before and after lunch at the end of each dietary period. Self-reported smiley ratings from a web-based dietary assessment software for children were compared to edible plate waste. Data were statistical modelled in two steps, a generalised linear mixed model was fitted for the probability of waste/no waste, and secondly a model for positive waste data was fitted.

Results: 74% of all meals (N=1558) had edible plate waste (>5g). Looking at all lunches the odds for leaving edible plate waste was 11 times higher for NND than for packed lunch (P < 0.001). Looking at the meals (N=1060) with edible plate waste the amount was not significantly different between meal types; the median (IQR) for NND was 85.0 (36.5; 150.0) and the median (IQR) for packed lunch 70.0 (40.0; 119.0). Lunches rated as ‘really bad’ or ‘bad’ in the self-reported likings had more waste than lunches rated ‘really good’ (P < 0.001).

Conclusions: The odds of having edible plate waste were significantly higher for NND meals compared to packed lunch. Liking of school meals are a significant determinant in order to reduce edible plate waste.
Comparing plate waste and likings of packed lunch and school lunch based on the New Nordic Diet

Research output: Contribution to journal › Conference abstract in journal – Annual report year: 2013 › Research › peer-review

Effectiveness of offering keyhole labelled meals in improving the nutritional quality of lunch meals eaten in worksite canteens

Research output: Contribution to conference › Poster – Annual report year: 2013 › Research › peer-review
Effectiveness of a Canteen Take Away concept in promoting healthy eating patterns among employees.

Objective: To investigate the effectiveness of a relatively novel concept of providing employees with healthy ready-to-heat meals to bring home to their families, here referred to as Canteen Take Away (CTA). Design: Employees’ dietary intake on two weekdays when they received free CTA was compared with that on weekdays when they did not receive CTA. Four nonconsecutive 24 h dietary recalls were applied to assess dietary intake on a daily basis. Moreover, a digital photographic method was used to assess evening meal intake for three consecutive weeks. Data were analysed using a mixed-effects model. Setting: A financial worksite offering CTA. Subjects: Twenty-seven employees. Results: Overall dietary quality as expressed by the energy density of the food (excluding beverages) was found to be significantly lower on days consuming CTA meals compared to days not consuming CTA with regard to evening meal intake (average difference: 2187 (95% CI 2225, 2149) kJ/100 g) and on a daily basis (average difference: 277 (95% CI 2132, 221) kJ/100 g). Other favourable differences included increased vegetable intake (average difference: 83 (95% CI 62, 155) g/evening meal, 109 (95% CI 62, 155) g/d). Conclusion: The present study shows that providing healthy take-away dinners has potential for promoting healthy dietary habits among employees. This reinforces the importance of availability and convenience as effective tools to promote healthy eating habits.
A workplace feasibility study of the effect of a minimal fruit intervention on fruit intake

Objective: The main purpose of the study was to investigate the feasibility of using workplaces to increase the fruit consumption of participants by increasing fruit availability and accessibility by a minimal fruit programme. Furthermore, it was investigated whether a potential increase in fruit intake would affect vegetable, total energy and nutrient intake.

Design: A 5-month, controlled, workplace study where workplaces were divided into an intervention group (IG) and a control group (CG). At least one piece of free fruit was available per person per day in the IG. Total fruit and dietary intake was assessed, using two 24 h dietary recalls at baseline and at endpoint. Setting: Eight Danish workplaces were enrolled in the study. Five workplaces were in the IG and three were in the CG. Subjects: One hundred and twenty-four (IG, n 68; CG, n 56) healthy, mainly normal-weight participants were recruited. Results: Mean daily fruit intake increased significantly from baseline to endpoint only in the IG by 112 (SE 35) g. In the IG, mean daily intake of added sugar decreased significantly by 10·7 (SE 4·4) g, whereas mean daily intake of dietary fibre increased significantly by 3·0 (SE 1·1) g. Vegetable, total energy and macronutrient intake remained unchanged through the intervention period for both groups. Conclusions: The present study showed that it is feasible to increase the average fruit intake at workplaces by simply increasing fruit availability and accessibility. Increased fruit intake possibly substituted intake of foods containing added sugar. In this study population the increased fruit intake did not affect total energy intake.
Improving the diet of employees at blue-collar worksites: results from the "Food at work" intervention study.

Objective. To examine the impact of a 6-month participatory and empowerment-based intervention study on employees' dietary habits and on changes in the canteen nutrition environment. Design. Worksites were stratified by company type and by the presence or absence of an in-house canteen, and randomly allocated to either an intervention group (five worksites) or a minimum intervention control group (three worksites). The study was carried out in partnership with a trade union and guided by an ecological framework targeting both individual and environment levels. Outcome measures included: (i) changes in employees' dietary habits derived from 4 d pre-coded food diaries of a group of employees at the worksites (paired-data structure); and (ii) the canteen nutrition environment as identified by aggregating chemical nutritional analysis of individual canteen lunches (different participants at baseline and at endpoint). Setting. Eight blue-collar worksites (five of these with canteens). Subject. Employees. Results. In the intervention group (n 102), several significant positive nutritional effects were observed among employees, including a median daily decrease in intake of fat (—2.2% E, P = 0.002) and cake and sweets (—18 g/10 MJ, P = 0.002) and a median increase in intake of dietary fibre (3 g/10 MJ, P <0.001) and fruit (55 g/d, P = 0.007 and 74 g/10 MJ, P = 0.009). With regard to the canteen nutrition environment, a significant reduction in the percentage of energy obtained from fat was found in the intervention group (median difference 11% E, P <0.001, n 144). Conclusions. The present study shows that moderate positive changes in dietary patterns can be achieved among employees in blue-collar worksites. Copyright © The Authors 2010.
Positive changes in dietary behaviour among employees in blue-collar worksites: The Food at Work Study

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Contributors: Lassen, A. D.
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Healthy eating at worksites: Effectiveness of a Canteen Take Away concept in promoting healthy eating among employees

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Development and validation of a new simple Healthy Meal Index for canteen meals
OBJECTIVE: Nutrition evaluation tools should be developed both for scientific purposes and to encourage and facilitate healthy nutritional practices. The purpose of the present study was to develop and validate a simple food-based Healthy Meal Index (HMI) reflecting the nutritional profile of individual canteen meals. DESIGN: The development process included overall model selection, setting nutritional goals and defining scoring systems and thresholds. Three index components were included: (i) contents of fruit and vegetables, (ii) fat content and quality and (iii) contents of wholegrain products and potatoes. The development was built on the principles embodied by the Plate Model, but providing more specificity in some areas. The simple HMI was validated against weighed and chemically analysed food and nutrient content of a representative sample of canteen meals. The sample was split into four categories according to the total index score and compared across categories. SETTING: A total of 180 meals from fifteen worksite canteens. RESULTS: Average energy density decreased significantly across categories (from 876 kJ/100 g to 537 kJ/100 g, P <0.001). Also, the content of total and saturated fat, carbohydrate and fruit and vegetables varied across categories with higher score values being closer to dietary guidelines (P <0.001). CONCLUSIONS: The simple HMI was successful in ranking canteen meals according to their nutritional quality. The index provides a valuable tool to both researchers and food and nutrition professionals, e.g. caterers and dietitians, who wish to evaluate nutritional quality of meals in line with the recommendations for healthier eating without the use of nutrition calculation programs.
Evaluation of a digital method to assess evening meal intake in a free-living

Background: In recent years new applications of technologies, including digital images, to capture dietary behaviour in real time have been explored. Objectives: To validate a digital method for estimating evening meal intake in a free-living adult population, and to examine the feasibility of the method for recording evening meal intake over a prolonged period of time. Design: The digital method was compared against weighed records of 19 participants’ usual evening meals for five consecutive days. Two trained image analysts independently estimated the weight of individual foods within the meals into major food categories, and the nutrient content was calculated. A second study included interviews with 28 participants recording their evening meals on weekdays for three consecutive weeks to get their perspective on the feasibility of the method. Results: High correlation coefficients between the digital method and weighed records were found for all measured food categories and nutrients. Comparable means and acceptable limits of agreement (mean difference +/- 2 SD) were found with regard to macronutrient distribution (e.g. fat content –5 to 6 E%), energy density (–75 to 91 kJ/100 g), and energy-adjusted foods (e.g. fruit and vegetable content –241 to 236 g/10 MJ). The majority of the participants expressed satisfaction with the method and were willing to record their evening meals for 1 month or more using the digital method. Conclusion: The digital method is valid and feasible for evening meal estimation in real-time where a prolonged recording period of participants’ meals is needed.
Long-term sustainability of a worksite canteen intervention of serving more fruit and vegetables

Objective: To analyse the 5-year sustainability of a worksite canteen intervention of serving more fruit and vegetables (F&V). Design: Average F&V consumption per customer per meal per day was assessed in five worksite canteens by weighing F&V served and subtracting waste. Data were collected by the canteen staff during a 3-week continuous period and compared to data from the same five canteens measured at baseline, at end point and at 1-year follow-up. The intervention used a participatory and empowering approach, self-monitoring and networking among the canteen staff, management and a consultant. The method focused on providing ideas for increased F&V for lunch, making environmental changes in the canteens by giving access to tasteful and healthy food choices and reducing the availability of unhealthy options. Setting: Five Danish worksites serving from 50 to 500 meals a day: a military base, an electronic component distributor, a bank, a town hall and a waste-handling facility. Subjects: Worksite canteen managers, canteen staff. Results: Four of the five worksite canteens were able to either maintain the intervention or even increase the consumption of F&V. The average increase from baseline to 5-year follow-up was 95 g per customer per meal per day (18, 144, 66, 105 and 141 g, respectively). On average, the five canteens at the long-term follow-up had an F&V consumption of 208 g/meal per customer. Conclusions: The present study indicates that sustainability of F&V is possible in worksites where the participatory and empowering approach, self-monitoring, environmental change, dialogue with suppliers and networking among worksite canteens are applied.

Salt content in canteen and fast food meals in Denmark

Background: A high salt (NaCl) intake is associated with high blood pressure, and knowledge of salt content in food and meals is important, if the salt intake has to be decreased in the general population. Objective: To determine the salt content in worksite canteen meals and fast food. Design: For the first part of this study, 180 canteen meals were collected from a total of 15 worksites with in-house catering facilities. Duplicate portions of a lunch meal were collected from 12 randomly selected employees at each canteen on two non-consecutive days. For the second part of the study, a total of 250 fast food samples were collected from 52 retail places representing both city (Aarhus) and provincial towns. The canteen meals and fast food samples were analyzed for chloride by potentiometric titration with silver nitrate solution, and the salt content was estimated. Results: The salt content in lunch meals in worksite canteens were 3.89–1.8 g per meal and 14.79–5.1 g per 10 MJ for men (n 109), and 2.89–1.2 g per meal and 14.49–6.2 g per 10 MJ for women (n 71). Salt content in fast food ranged from 11.89–2.5 g per 10 MJ (burgers) to 16.39–4.4 g per 10 MJ (sausages) with a mean content of 13.89–3.8 g per 10 MJ. Conclusion: Salt content in both fast food and in worksite canteen meals is high and should be decreased.
Workforce gender, company size and corporate financial support are predictors of availability of healthy meals in Danish worksite canteens

Objective: Environmental strategies at worksites may help consumers (change dietary behaviour towards a more healthy diet. The present study aimed to evaluate the availability of healthy meal options at Danish worksite canteens and to identify predictors of worksite canteens providing healthy meals. Design: A self-administered questionnaire was randomly mailed to 1967 worksite canteen managers. Besides information and characteristics about the canteen and the worksite, the canteen managers specified the Menus available Two different health groups (Healthy and Less Healthy) were defined in three different meal categories (Sandwiches, Lot meals and Salads) as well as a combined category (Combined) combining all the three meal categories The characteristics of the worksites were compared With regard to the different health groups. Setting Randomly selected Danish worksite canteens. Subjects 553 Danish worksite canteen managers replied, resulting in a response rate of 29% Results Only 12% of the canteens applied to the Healthy group combining all the three meal categories in particular, worksites with more than 75% female employees served healthy menus on a frequent basis The size of the worksite was positively correlated with more healthy meal options Furthermore, the present study suggest... The positive relationship between corporate financial support and the availability of healthy meal options Conclusions Among the selected variables studied, workforce gender, company size and corporate financial support were significant predictors of the availability of healthy meal options in work site canteens. More research is needed to explore the role that variance in organisation environment, plays for the potential of worksite intervention, to make a difference in terms of healthy eating

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Workforce gender, company size and corporate financial support are predictors of availability of healthy meals in Danish worksite canteens

Objective: Environmental strategies at worksites may help consumers (change dietary behaviour towards a more healthy diet. The present study aimed to evaluate the availability of healthy meal options at Danish worksite canteens and to identify predictors of worksite canteens providing healthy meals. Design: A self-administered questionnaire was randomly mailed to 1967 worksite canteen managers. Besides information and characteristics about the canteen and the worksite, the canteen managers specified the Menus available Two different health groups (Healthy and Less Healthy) were defined in three different meal categories (Sandwiches, Lot meals and Salads) as well as a combined category (Combined) combining all the three meal categories The characteristics of the worksites were compared regarding to the different health groups. Setting Randomly selected Danish worksite canteens. Subjects 553 Danish worksite canteen managers replied, resulting in a response rate of 29% Results Only 12% of the canteens applied to the Healthy group combining all the three meal categories in particular, worksites with more than 75% female employees served healthy menus on a frequent basis The size of the worksite was positively correlated with more healthy meal options Furthermore, the present study suggests... The positive relationship between corporate financial support and the availability of healthy meal options Conclusions Among the selected variables studied, workforce gender, company size and corporate financial support were significant predictors of the availability of healthy meal options in worksite canteens. More research is needed to explore the role that variance in organisation environment, plays for the potential of worksite intervention, to make a difference in terms of healthy eating

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Organisations: Division of Nutrition, National Food Institute, Department of Informatics and Mathematical Modeling
Contributors: Thorsen, A. V., Lassen, A. D., Andersen, J. S., Mikkelsen, B. E.
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Kan arbejdspladsen gøre en forskel?

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Contributors: Lassen, A. D., Jørgensen, M. S.
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Nutrient composition of sandwiches provided by workplace canteens - Implication for development of a Healthy Canteen

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Nutrient composition of sandwiches provided by workplace canteens - Implication for development of a Healthy Canteen

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Kantinemåltider - Ernæringsmæssig kvalitet

General information
Comparison of buffet and a la carte serving at worksite canteens on nutrient intake and fruit and vegetable consumption

Objective: To evaluate the nutritional composition of worksite canteen lunches and to examine the impact of two meal serving systems on employee intake, i.e. buffet style with a fixed price for a varied number of dishes and A la carte style with a separate price for each item on the menu. Design: Laboratory technicians observed employees' food selection and collected identical dishes. Food items were weighed separately to calculate the content of fruit and vegetables. The content of protein, fat and ash of each dish was chemically analysed and the carbohydrate and energy content calculated. Setting: Fifteen randomly chosen worksite canteens in Denmark: eight canteens serving buffet style and seven canteens with an A la carte line. Subjects: one hundred and eighty randomly chosen employees having lunch at the worksite canteens. Results: The average percentage energy from fat was 37 +/- 12 among men and 33 +/- 12 among women. No association was found between the meal serving system and energy intake or macronutrient composition. Eating at canteens serving buffet style, on the other hand, was associated with an increased intake of fruit and vegetables, on average 76 g, and a lower energy density of the food for both genders. Conclusion: The results highlight the possibilities of promoting healthy food choices in the catering sector and the need to identify models of healthy catering practice. Serving buffet style appears to be a promising strategy in order to increase fruit and vegetable consumption in food served away from home.
selected issues in the official Danish recommendations for institutional food service as an indicator for progress. The issues included: using nutrient calculated recipes/menus, offering menu choice options, using feedback routines on acceptability of menus, maintaining nutritional steering committees, employing food and nutrition contact persons, employing official recommendations and offering choice between three different menu energy levels. Results: Hospitals had a higher compliance compared to nursing homes. In 1995, this was the case for all questions asked and differences were statistically significant. Also in 2002/3, hospitals had a higher compliance, except in the case of established feedback routines. Differences were statistically significant. The results indicate that nutritional care is higher on the agenda in hospital, than in nursing homes. However, very little progress can be seen in compliance when results are analysed over the 8-year period. The only progress for nursing homes was that more homes had implemented feedback routines on acceptability of food service in 2002/3 than in 1995. The difference was statistically significant. For hospitals, however, no progress was found between 1995 and 2002/3. Conclusion: The attempts to improve the nutritional status of hospital patients and nursing home residents seem to have failed. Still, the initiatives taken to improve the situation seem relevant. Especially the nursing homes might benefit from advantage of these experiences.

Factors influencing participation rates and employees' attitudes toward promoting healthy eating at blue-collar worksites

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Organisations: Division of Nutrition, National Food Institute, Division of Microbiology and Risk Assessment
Contributors: Lassen, A. D., Bruselius-Jensen, M. L., Sommer, H. M., Thorsen, A. V., Trolle, E.
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Web of Science (2007): Indexed yes
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Fakta om kantinemåltider

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Contributors: Lassen, A. D.
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Genveje til sundhed

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Contributors: Jørgensen, S. B. (ed.), Lassen, A. D.
Publication date: 2007
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Increased fruit intake and body weight management in healthy adults - A worksite intervention study

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Contributors: Alinia, S., Lassen, A. D., Tetens, I.
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Web of Science (2007): Indexed yes
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Research output: Contribution to journal › Conference abstract in journal – Annual report year: 2007 › Research › peer-review

Kantinemåltider - forskelle i indtag afhængig af køn, menusammensætning og serveringsform

General information
Organizing and evaluating F&V consumption in a worksite canteen intervention

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Organizing and evaluating F&V consumption in a worksite canteen intervention

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The modernization of hospital food service - findings from a longitudinal study of technology trends in Danish hospitals

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Are green caterers more likely to serve healthy meals than non-green caterers? Results from a quantitative study in Danish worksite catering

Objective: The present study aimed to investigate whether organic conversion in catering has positive effects on the nutritional quality of menus offered. Design: The methodology was based on a self-administered questionnaire. The self-declared priority given to the use of organic foods was measured as the basis for assigning catering managers to one of two groups: ‘green’ or ‘non-green’ caterers. These groups were then compared with regard to the relative nutritional quality of the menu options offered to customers. Setting: The study was carried out among randomly selected Danish worksite catering outlets. Subjects: The subjects participating in the study comprised 526 Danish worksite catering managers. Results: The results showed a strong correlation between caterers' 'green-ness' and the nutritional quality of the menu options offered. Green caterers had more healthy options in their menus than non-green caterers, which is likely to result in improved nutritional quality of the diets of end consumers. The reason for this may partly be the increased service training efforts that green caterers practise in order to be able to implement organic foods successfully. It may also be associated with the fact that the price premiums and availability of the organic products forces caterers to serve menus with higher amounts of root and non-green leafy vegetables, pulses and seasonal vegetables. Conclusion: The present findings suggest that organic conversion of public canteens may be a good opportunity to promote healthier eating in public catering.

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Odds model med ordinal polynomial respons til testning af effekten af interventioner omhandlende sund mad på arbejdspladsen

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Source: orbit
Source-ID: 237008
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2006 › Research

Odds model med ordinal polynomial respons til testning af effekten af interventioner omhandlende sund mad på arbejdspladsen

General information
Publication status: Published
Attitudes towards semi-processed foods in the hospital sector: Results from a quantitative study in the Øresund Region

The paper addresses some of the challenges the food service sector faces in relation to the increased pressure for cost effective operations. The approach pertains to application of semi-prepared constituents for meals the so-called meal elements. The study uncovers attitudes towards application of preprocessed foods in the hospital sector. The study was based on 46 returned questionnaires, which is later reduced to 43. The data analysis revealed that a clear distinction can be made between kitchens preparing the food from the ground (these being the smaller kitchens) and those who predominantly apply semi-prepared products. Increasing health concern was found to be correlated to minimal use of semi-prepared food products. Furthermore the analysis also shows a distinction between kitchens using warm-hold and cook-chill and that focus on price does not explain any behavioral trends.

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute, Food Production Engineering, Department of Systems Biology
Contributors: Mikkelsen, B. E., Friis, A., Lassen, A. D.
Publication date: 2005

Mad på arbejde - Metode, forløb og evaluering af projektet

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Number of pages: 48
Publication date: 2005

Medarbejdere vil have sundere mad på arbejdet

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D.
Publication date: 2005
Strategies to promote healthier eating at worksites - analysis of experiences from a social shaping perspective

There is a strong need for strategies that can help promote healthy eating. The paper explores the shaping of initiatives aimed at promoting and implementing healthy eating in a worksite catering setting by analysing the sustainability of the intervention of healthier eating in a canteen model study. The results after one year were promising, showing an increase in the consumption of fruit and vegetables. The paper analyses the long-term sustainability of the increased consumption 4 years after the intervention.

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute, Innovation and Sustainability, Department of Management Engineering
Contributors: Thorsen, A. V., Jørgensen, M. S., Lassen, A. D., Mikkelsen, B. E.
Publication date: 2005

Host publication information
Title of host publication: Global and National Perspectives
Keywords: worksite, catering, embedding of project, Social shaping
URLs:
http://www.ipl.dtu.dk/publikation/9185/dk/
Source: orbit
Source-ID: 187860
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2005 › Research › peer-review

Kantine Måltider: Undersøgelse af udbud og sortiment i 20 danske arbejdspladskantiner

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Hansen, K. S., Lassen, A. D.
Number of pages: 28
Publication date: Dec 2004

Publication Information
Publisher: Danmarks Tekniske Universitet, Fødevareinstituttet
Original language: Danish
Source: orbit
Source-ID: 248011
Research output: Book/Report › Report – Annual report year: 2004 › Research

Catering i Øresundsregionen - en analyse af behovet for sundhed, kvalitet og nemhed ved udespisning i Øresundsregionen indenfor cateringsektoren

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Publication date: 2004

Publication Information
Publisher: Øresund Food Network
Original language: English
Source: orbit
Successful strategies to increase the consumption of fruits and vegetables: results from the Danish '6 a day' Work-site Canteen Model Study

Objective: To investigate changes in the consumption of fruits and vegetables in work-site canteens using the tools of continuous quality improvement, and to gain knowledge of practical strategies being effective in increasing the consumption. Design: Study design included baseline data collection, an 8 h training session for all canteen staff, goal setting, strategy development and implementation for each canteen, end-point data collection and a follow-up data collection 4 months from the end-point (1 year from baseline). The main outcome measurement was average grams of fruits and vegetables per lunch meal served per customer (net weight; potatoes not included). Setting: Five workplaces in Denmark: a military base, an electronic component distributor, a bank, a town hall and a waste-handling facility. Subjects: Work-site canteen managers, staff and customers. Results: There were significant increases in the total consumption of fruits and vegetables for all five work-site canteens from baseline to end-point, 70 g per customer on average (67, 54, 39, 88 and 103 g, respectively). The follow-up data collection showed that the canteens either maintained or significantly increased consumption, the average increase being 95 g per customer compared with baseline (77, 60, 86, 70 and 183 g, respectively). Conclusions: This study demonstrates a large potential for work-site canteens to increase customers' intake of fruits and vegetables at lunch and suggests a broad spectrum of strategies to compose meals that are both rich in fruits and vegetables and attractive to customers.
6 om dagen på arbejdspladsen

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D., Möller, L. D., Trolle, E.
Publication date: 2003
Peer-reviewed: No
Event: Abstract from Fødevareministeriets ernæringskonference, København, Denmark.
Source: orbit
Source-ID: 239919
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2003 › Research

Projekt 6 om dagen i storkøkkener: Brugerundersøgelser

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Darting, B., Thorsen, A. V., Lassen, A. D., Trolle, E.
Publication date: 2003

Publication information
Original language: Danish
Source: orbit
Source-ID: 239943
Research output: Book/Report › Report – Annual report year: 2003 › Research

Projekt 6 om dagen i storkøkkener: Kantinepersonalet

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Elsig, M., Lassen, A. D., Thorsen, A. V.
Publication date: 2003

Publication information
Original language: Danish
Source: orbit
Source-ID: 239942
Research output: Book/Report › Report – Annual report year: 2003 › Research › peer-review

Projekt 6 om dagen i storkøkkener: Slutrapport

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Thorsen, A. V., Trolle, E., Lassen, A. D.
Publication date: 2003

Publication information
Original language: Danish
Source: orbit
Source-ID: 239941
Research output: Book/Report › Report – Annual report year: 2003 › Research
A comparison of the retention of vitamins B1, B2 and B6, and cooking yield in pork loin with conventional and enhanced meal-service systems

In this study different simulated meal-service systems were compared with respect to vitamin B-1, B-2 and B-6 retention, and cooking yield in pork roasts. Initially the roasts were cooked traditionally or sous vide. No significant differences were observed between cooking methods. Further processing included warm-holding, conventional cook-chill, modified atmosphere packaging (MAP) and sous vide. Compared to retention in the freshly cooked samples, vitamin B-2 retention remained unaffected, irrespective of the meal-service system used and storage period. As regards vitamin B-1 and vitamin B-6, retentions declined significantly, by 14% and 21% respectively during 3 h of warm-holding, and by 11% and 19% respectively after 1 day of storage and subsequent reheating (cook-chill, MAP and sous vide). Vitamin B-1 retention declined by an extra 4% during storage for 14 days (sous vide) (not significant) It is concluded that conventional and enhanced meal-service systems produce roasts with similar quality attributes. Adjustment factors of 15% and 20% for vitamin B-1 and B-6 respectively are suggested, in addition to the losses caused by the initial heat treatment.

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D., Kall, M., Hansen, K., Ovesen, L.
Pages: 194-199
Publication date: 2002
Peer-reviewed: Yes

Publication information
Journal: European Food Research and Technology
Volume: 215
Issue number: 3
ISSN (Print): 1438-2377
Ratings:
Scopus rating (2002): SJR 0.689 SNIP 0.838
Web of Science (2002): Indexed yes
Original language: English
Keywords: cook-chill, warm-holding, sous vide, modified atmosphere packaging, vitamin retention
Source: orbit
Source-ID: 229917
Research output: Contribution to journal → Journal article – Annual report year: 2002 → Research → peer-review

Stegning af kød - myter, fakta og nye metoder

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Clausen, I., Lassen, A. D.
Publication date: 2002

Publication information
Place of publication: Mørkhøj, Danmark
Publisher: Fødevaredirektoratet
ISBN (Print): 87-91189-16-0
Original language: Danish
(FødevareRapport; No. 2002:01).
Source: orbit
Source-ID: 240124

Effect of different cooking Conditions on cooking yield and retention of vitamin B1 in pork neck

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D., Kall, M., Hansen, K.
Publication date: 2001
Peer-reviewed: No
Event: Abstract from Levnedsmiddelkongres 2001, Copenhagen, Denmark.
Source: orbit
Source-ID: 239927
Research output: Contribution to conference → Conference abstract for conference – Annual report year: 2001 → Research
Effect of different cooking Conditions on cooking yield and retention of vitamin B1 in pork neck

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D., Kall, M., Hansen, K.
Publication date: 2001
Peer-reviewed: No
Event: Poster session presented at Levnedsmiddelkongres 2001, Copenhagen, Denmark.
Source: orbit
Source-ID: 239928
Research output: Contribution to conference › Poster – Annual report year: 2001 › Research

Effect of final Core Temperature and Days of Storage on Retention of Vitamin B6 and Vitamin B2 in sous-vide processed Pork Roast

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D.
Publication date: 2001
Peer-reviewed: No
Event: Poster session presented at Winter Meeting.
Source: orbit
Source-ID: 240090
Research output: Contribution to conference › Poster – Annual report year: 2001 › Research

Effect of final Core Temperature and Days of Storage on Retention of Vitamin B6 and Vitamin B2 in sous-vide processed Pork Roast

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D.
Publication date: 2001
Peer-reviewed: No
Event: Abstract from Winter Meeting.
Source: orbit
Source-ID: 240089
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2001 › Research

Stability of vitamins in meat and vegetables processed by different catering techniques

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D.
Publication date: 2001

Host publication information
Title of host publication: Levnedsmiddelkongres 2001 – kvalitet fra jord til bord
Source: orbit
Source-ID: 239925
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2001 › Research

Effect of different cooking Conditions on cooking yield and retention of vitamin B1 in pork neck

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Effect of different cooking Conditions on cooking yield and retention of vitamin B1 in pork neck

Fakta om sous-vide - tilberedning i vakuumpose

Tab af B-vitaminer i kød – sammenligning mellem forskellige tilberedninger og produktionsmetoder i storkøkkener

Fødevareindkøb - erfaringer med fælles indkøbsaftaler og storkøkkenernes praksis ved indkøb af kød
Vitamin losses in vegetables processed by four different catering techniques

**General information**
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D., Eriksen, H., Kall, M., Hansen, K.
Publication date: 1999

**Host publication information**
Title of host publication: Third European Symposium on sous vide
Source: orbit
Source-ID: 239914
Research output: Chapter in Book/Report/Conference proceeding – Annual report year: 1999 › Research › peer-review

Håndbog om Kød i storkøkkener – Specifikationer på svine-, okse- og kalvekød & fakta om kød fra opdræt til tilberedning

**General information**
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Clausen, I. (ed.), Lassen, A. D. (ed.)
Publication date: 1998

**Publication information**
Publisher: Veterinær- og Fødevaredirektoratet
Original language: Danish
Source: orbit
Source-ID: 240131
Research output: Book/Report – Annual report year: 1998 › Research › peer-review

Kostforplejningen på danske sygehuse - opdelt efter produktionsform

**General information**
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D.
Publication date: 1998
Peer-reviewed: No
Event: Poster session presented at Levnedsmiddelkongres 98, Kgs. Lyngby, Denmark.
Source: orbit
Source-ID: 240096
Research output: Contribution to conference › Poster – Annual report year: 1998 › Research

Kostforplejningen på danske sygehuse - opdelt efter produktionsform

**General information**
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D.
Publication date: 1998
Peer-reviewed: No
Event: Abstract from Levnedsmiddelkongres 98, Kgs. Lyngby, Denmark.
Source: orbit
Source-ID: 240097
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 1998 › Research
Næringsstoftab ved anvendelsen af forskellige teknologier i storkøkkensektoren

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Hansen, K., Lassen, A. D.
Publication date: 1998

Publication information
Publisher: Veterinær- og Fødevaredirektoratet
Original language: Danish
(IFE rapport; No. 1998.5.).
Source: orbit
Source-ID: 240154

End-point temperature and cooking loss of neck loin prepared in institutional catering

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Clausen, I., Lassen, A. D., Mikkelsen, B. E.
Pages: 550-551
Publication date: 1997

Host publication information
Title of host publication: Congress Proceedings 43rd International Congress of Meat Science and Technology
Source: orbit
Source-ID: 240099
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 1997 › Research

End-point temperature and cooking loss of neck loin prepared in institutional catering

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Clausen, I., Lassen, A. D., Mikkelsen, B. E.
Publication date: 1997
Peer-reviewed: No
Source: orbit
Source-ID: 240100
Research output: Contribution to conference › Poster – Annual report year: 1997 › Research

Improvement of the culinary quality as one of the possible methods of improving the nutritional status of recipients of institutional catering

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D., Clausen, I.
Publication date: 1997
Peer-reviewed: No
Source: orbit
Source-ID: 240103
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 1997 › Research
Improvement of the culinary quality as one of the possible methods of improving the nutritional status of recipients of institutional catering

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D., Clausen, I.
Publication date: 1997
Peer-reviewed: No
Source: orbit
Source-ID: 240104
Research output: Contribution to conference → Poster – Annual report year: 1997 → Research

Offentlig kostforplejning i Danmark: Betænkning nr. 1334 fra udvalget om offentlig kostforplejning

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: EFSA Publication
Publication date: 1997
Publication information
Publisher: Levnedsmiddelstyrelsen
Edition: Bind II
Original language: Danish
Source: orbit
Source-ID: 240163

Offentlig kostforplejning i Danmark: Betænkning nr. 1334 fra udvalget om offentlig kostforplejning

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: EFSA Publication
Publication date: 1997
Publication information
Publisher: Levnedsmiddelstyrelsen
Edition: Bind I
Original language: Danish
Source: orbit
Source-ID: 240164

EMMA-kursusmateriale: Revideret udgave

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Publication date: 1996
Publication information
Place of publication: Søborg, Danmark
Publisher: Levnedsmiddelstyrelsen
Original language: Danish
(Publikation nr. 16 fra Storkøkkencentret).
Source: orbit
Source-ID: 240162
Tilberedning i combisteamer, kipgryde og kipsteger - sammenligning af vitamintab, fedtoptagelse, el- og vandforbrug

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Sølling, H. V., Mortensen, P., Lassen, A. D., Mikkelsen, B. E.
Publication date: 1996

Publication information
Place of publication: Søborg, Danmark
Publisher: Levnedsmiddelstyrelsen
Original language: Danish
(Kartofler i Catering).
Source: orbit
Source-ID: 240158
Research output: Book/Report › Report – Annual report year: 1996 › Research

Vitamin retension in prepacked foods: Comparison to traditional techniques

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Eriksen, H., Lassen, A. D.
Publication date: 1996
Peer-reviewed: No
Event: Abstract from Second European Symposium on Sous Vide, Leuven, Belgium, .
Source: orbit
Source-ID: 240107
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 1996 › Research

Vitamin retension in prepacked foods: Comparison to traditional techniques

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Eriksen, H., Lassen, A. D.
Publication date: 1996
Peer-reviewed: Yes
Event: Poster session presented at Second European Symposium on Sous Vide, Leuven, Belgium, .
Source: orbit
Source-ID: 240108
Research output: Contribution to conference › Poster – Annual report year: 1996 › Research › peer-review

Affald og emballage i storhusholdningen

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Pedersen, B., Lassen, A. D.
Number of pages: 46
Publication date: 1995

Publication information
Place of publication: Søborg, Danmark
Publisher: Levnedsmiddelstyrelsen
Original language: Danish
(Publikation nr. SB 22 fra Storkøkkencentret).
Source: orbit
Source-ID: 240156
Research output: Book/Report › Report – Annual report year: 1995 › Research

Biomarkers of Habitual Fish Intake in Adipose-Tissue
The association between habitual fish and marine n-3 polyunsaturated fatty acid (PUFA) intake, and the fatty acid composition of subcutaneous fat was studied in 24 healthy young volunteers. Habitual dietary intakes were estimated from
three 7-d weighed food records made at months 0, 5, and 8 of the 8-mo study period. The adipose tissue fatty acid composition of each individual was determined by gas chromatography as the mean of two gluteal biopsies, obtained in the first and the last month of the study. The daily consumption of fish and of marine n-3 PUFAs in absolute terms (g/d) was significantly associated with adipose tissue docosahexaenoic acid content (DHA; \( r = 0.55 \) and \( 0.58, \) respectively, \( P < 0.001 \)), but not with eicosapentaenoic and docosapentaenoic acid contents. Our study indicates that the adipose tissue DHA content is the biomarker of choice for the assessment of long-term habitual dietary intakes of fish and marine n-3 PUFAs.

**General information**
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Marckmann, P., Lassen, A. D., Haraldsdottir, H., Sandström, B.
Pages: 956-959
Publication date: 1995
Peer-reviewed: Yes

**Fatty acid composition in Danish infant formula compared to human milk**

**General information**
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Jørgensen, M. H., Lassen, A. D., Michaelsen, K. F.
Pages: 50-54
Publication date: 1995
Peer-reviewed: Yes

**Kvalitetsudvikling i storkøkkener: Produktionskontrol**

**General information**
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D. (ed.)
Number of pages: 67
Publication date: 1995
Kvalitetsudvikling i storkøkkener: Tids- og temperaturkontrol

**General information**
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D. (ed.)
Number of pages: 130
Publication date: 1995

**Publication information**
Place of publication: København, Danmark
Publisher: Økonomaforeningen
Original language: Danish
Source: orbit
Source-ID: 240159
Research output: Book/Report › Report – Annual report year: 1995 › Research

Kvalitetsudvikling i storkøkkener: Udportioneringskontrol

**General information**
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D. (ed.)
Number of pages: 52
Publication date: 1995

**Publication information**
Place of publication: København, Danmark
Publisher: Økonomaforeningen
Original language: Danish
Source: orbit
Source-ID: 240160
Research output: Book/Report › Report – Annual report year: 1995 › Research › peer-review

Nutritional effects of microwave cooking

**General information**
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D., Ovesen, O.
Pages: 8-10
Publication date: 1995
Peer-reviewed: Yes

**Publication information**
Journal: Nutrition and Food Science
Volume: 95
Issue number: 4
Original language: English
Source: orbit
Source-ID: 238395
Research output: Contribution to journal › Journal article – Annual report year: 1995 › Research › peer-review

Økologiske fødevarer i storkøkkener - med 45 spændende opskrifter

**General information**
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Lassen, A. D., Nielsen, T., Jørgensen, M. S., Mikkelsen, B. E., Clausen, I.
Number of pages: 44
Publication date: 1995

**Publication information**
Place of publication: Søborg, Danmark
Pakketeknikker indflydelse på næringsstofindhold

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Hansen, K., Eriksen, H., Lassen, A. D.
Number of pages: 116
Publication date: 1995

Publication information
Place of publication: Søborg, Danmark
Publisher: Levnedsmiddelstyrelsen
Original language: Danish
(Intern rapport ILE; No. 1995.5.).
Source: orbit
Source-ID: 240155
Research output: Book/Report › Report – Annual report year: 1995 › Research

QA in catering: Results from a case study in four Danish catering facilities

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Mikkelsen, B. E., Lassen, A. D., Jensen, K.
Publication date: 1995
Peer-reviewed: No
Event: Poster session presented at 9th World Congress of Food Science and Technology, Budapest, Hungary.
Source: orbit
Source-ID: 240119
Research output: Contribution to conference › Poster – Annual report year: 1995 › Research

QA in catering: Results from a case study in four Danish catering facilities

General information
Publication status: Published
Organisations: Division of Nutrition, National Food Institute
Contributors: Mikkelsen, B. E., Lassen, A. D., Jensen, K.
Publication date: 1995

Host publication information
Title of host publication: Symposium on: Current Tasks and Results of Quality Assurance of Food Manufacturing
Source: orbit
Source-ID: 240120
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 1995 › Research