Pilot European Regional Interventions for Smart Childhood Obesity Prevention in Early age

Report on the interventions in Danish kindergartens

Sansolios, Sanne; Mikkelsen, Bent Egberg

Published in:
Pilot European Regional Interventions for Smart Childhood Obesity Prevention in Early age

Publication date:
2010

Document Version
Early version, also known as pre-print

Project no. 2006341

PILOT EUROPEAN REGIONAL INTERVENTIONS FOR SMART CHILDHOOD OBESITY PREVENTION IN EARLY AGE

(PERISCOPE)

REPORT ON THE INTERVENTIONS IN DANISH KINDERGARTENS

Sanne Sansolios
&
Bent Egberg Mikkelsen
MENU
Mela Sciences and Public Health Nutrition
Aalborg University, Denmark
2009

Contents

List of kindergartens attending the Periscope studies

Name Code Address on kindergarten	Intervention- or control group	Amount of children participating
A	Intervention group	46 children
B	Control group (this kindergarten became an intervention kindergarten during the project)	17 children
C	Control group (this kindergarten became an intervention kindergarten during the project)	10 children
D	Control group	27 children
E	Control group	34 children
F	Control group (this kindergarten became an intervention kindergarten during the project)	23 children
G	Control group	20 children
H	Intervention (this kindergarten became a control kindergarten during the project)	21 children
I	Control group	20 children
J	Intervention (this kindergarten became a control kindergarten during the project)	36 children
K	Control group	19 children
L	Intervention group	46 children
M	Intervention group (this kindergarten became a control kindergarten during the project)	22 children
N	Intervention group	20 children

Enrolments of kindergartens

In Denmark 14 kindergartens, in three municipalities, were enrolled in the Periscope Project. Before start all kindergarten headmistress and headmasters were approached by the project staff, acceptances were given to participate and a time schedule was devised. After that all kindergarten received a letters to pedagogues and kitchen staff as well as to parents explaining about the project. Furthermore the parents were given a permission-letter (acceptance for the child to participate).

652 permission-letters were handed out in the 14 kindergartens and 360 came back signed (55%). Out of the 360 questionnaires that were given to the parents in the summer 2008, 321 were filled out and returned (89%).

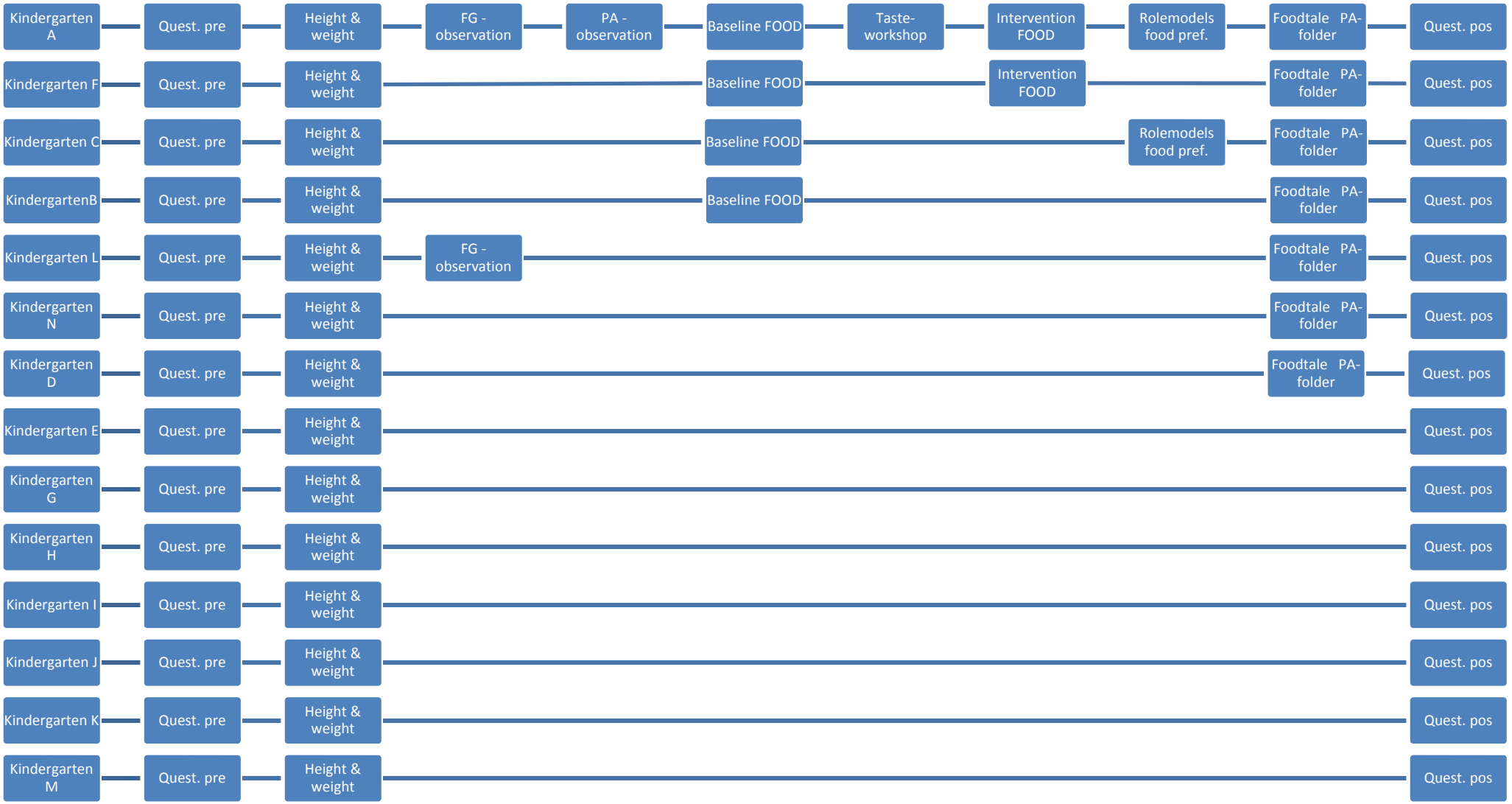
Out of the 360 children between the age 3-6 years of age, that had been signed up for the project, 340 children were measured (height and weight) between the 5th of August and 25th of August 2008 (94%).

Intervention and control kindergartens

Out of the 14 kindergarten six were chosen to be intervention-kindergartens and eight as control-kindergartens. The inclusion was made based on a researcher assessment of resources available, involvement and commitment from the kindergarten headmistress/master, pedagogues and parent boards. An oral agreement were made with the headmistress/master about participating in the intervention including providing resources and agreeing to take so far as possible the specified intervention action.

Timeline

(Next page)


Kindergarten A
Quest. pre
Height & weight
FG - observation
PA - observation
Baseline FOOD
Taste-workshop
Intervention FOOD
Rolemodels food pref.
Foodtale PA-folder
Quest. pos
Kindergarten F
Quest. pre
Height & weight
Baseline FOOD
Intervention FOOD
Foodtale PA-folder
Quest. pos
Kindergarten C
Quest. pre
Height & weight
Baseline FOOD
Rolemodels food pref.
Foodtale PA-folder
Quest. pos
KindergartenB
Quest. pre
Height & weight
Baseline FOOD
Foodtale PA-folder
Quest. pos
Kindergarten L
Quest. pre
Height & weight
FG - observation
Foodtale PA-folder
Quest. pos
Kindergarten N
Quest. pre
Height & weight
Foodtale PA-folder
Quest. pos
Kindergarten D
Quest. pre
Height & weight
Foodtale PA-folder
Quest. pos
Kindergarten E
Quest. pre
Height & weight
Quest. pos
Kindergarten G
Quest. pre
Height & weight
Quest. pos
Kindergarten H
Quest. pre
Height & weight
Quest. pos
Kindergarten I
Quest. pre
Height & weight
Quest. pos
Kindergarten J
Quest. pre
Height & weight
Quest. pos
Kindergarten K
Quest. pre
Height & weight
Quest. pos
Kindergarten M
Quest. pre
Height & weight
Quest. pos

Purpose of intervention

- Increasing the **discovery and knowledge** of healthy never tasted foods by the children
- Increasing the **exposure** to these specific foods
- Improving the **parents empowerment** in food and general education
- **Training the parents and the teachers** in eating habit modification techniques
- Reducing the **junk food exposure** in kindergarten and family environment (as active action taken by the whole community in each of the settings – children and teachers in kindergarten and children and parents in the families)
- Training the parents on cheap and fast **recipes**
-

Action components (tools used):

1. Improving the esthetics of foods (improving the appearance of vegetables and legumes dishes mixing colours, adding decorations, etc)
2. Improving and varying the ways of cooking these disliked foods
3. Introducing the children's most often disliked foods through short tales
4. Taste shop med Sapere
5. Activity involving the children in food processing
6. The acceptance of kindergarten meals (waste percentage)

Questionnaires

Questionnaires were proposed to parents, pre and pos intervention, to get information on parents feeding style and their children's life style. The topic that were covered by the questionnaire; Family eating style, child's food preferences and physical activity (PA) style, parents knowledge of basic principle of nutrition, social economical determinants in food choosing, child's TV use, and self-reported parents nutritional status (height and weight).

360 questionnaires were handed out in the summer 2008. 320 were filled out and returned (89%).

In May – June 2009 the second round of questionnaires were handed out in the 14 kindergartens. Out of the 321 from the first round only 145 questionnaires were filled out and returned (45%). The reason for the small responds might be due to the fact that the oldest children had let the kindergarten to start a four-five month pre-school before school in August, and also that the pedagogues are required to do more paper-work due to different changes from the municipality. Also the changes of headmistress in three kindergartens created problems with the cooperation between the researches and the kindergartens. Furthermore we were informed by the pedagogues that the parents have said that the questionnaire was too long, or that there were so many different projects going on at the same time.

Focus group interviews

Kindergartens as important arena

Children spend a large time of their waking hours in daycare (BUPL capital). This means that children in a very early age are in contact with other adults than their parents. This makes daycare a very important arena for children's development and learning (Grønfeldt, 2007), as they experience a "double socialization" (Sølvhøj, et al 1994, p. 127).
The present age is characterized by duality, leaving conflicting movements, but a search to find a space for both the children's self-determination and autonomy on the one hand, educators and active participation on the other side (Broström 2004).

The aforementioned development set up requirements to the pedagogues' didactic teaching skills (Broström, 2004). Didactic reflection and planning tools to justify the choices and forcing are necessary for the pedagogues to reflect on whether something is more important than something else. The Danish principle of decentralization is maintained. The overall objective of notice is the same for all municipalities, but it is up to each municipality to clarify the values and visions for the educational work, and then for each kindergarten to interpret and develop its own curriculum (ibid p.12).

The growing demands on institutions and pedagogues are reflected in the introduction of annual and corporate plans in kindergartens and the educational curricula designed to describe educational goals and practices (Broström, 2004).

In November 2008 two intervention-kindergartens were chosen for the focus groups (FG) interviews. First a pilot-project was performed in a non-Periscope kindergarten, - both children and adults FG. Afterwards the focus groups were carried out accordingly to the methods described in Periscope. Due to the fact that the expatiations on the physical activity were not met during the children FG, it was decided to videotape the children playing in their natural environment in the kindergarten and analyzes the results from the observations together with the results from the FG. In December 2008, in one of the FG intervention-kindergartens the children participated in drawing their favorite game.

Stakeholders

Development of interventions aimed at improving lifestyle including PA and healthy eating in settings such as kindergartens cannot be developed alone with strict scientifically based and potentially narrows domains. Instead they must be informed by practitioners' broader everyday life perspective.

Parents and kindergarten teachers are important stakeholders in the lives of children. Thus, these stakeholders seem obvious to involve in the present project. Moreover, by involving these stakeholders important perspectives of how children eat and prefer their meals as well as their level of PA might be accomplished. The perspective on what might limit or encourage

healthy eating and PA patterns in children, is especially important in current project as the children involved has a limited cognitive development, due to their young age.

This were the starting point, for the focus group (FG) interviews for children as well as adults, to capture kindergarten age children and other stakeholders (i.e. parents and kindergarten staff) views on possible intervention strategies to eating and PA.
The focus groups were conducted first as a pilot-project and then in two kindergartens containing children in one group and parents, pedagogues, head of kindergarten, kitchen staff in another in order to obtaining background information on health behavior in the kindergartens as well as in the families.

The interviews were conducted in consistency with the methodological framework developed by Margherita Caroli and followed the guidelines outlined in the PERISCOPE protocol. However, it was found that recruitment of participants were rather difficult, due to a) time restrains, as the participant is relatively occupied in their spare time, and b) lack of resources in the kindergartens. Hence, the number of participants was reduced, in order to conduct the interviews within deadline.

Two separate interviews with parents and pedagogues (stakeholders) were carried out, regarding what they saw as limitations and possibilities for the children to develop healthy eating habits and improve their movement and PA.
After serious consideration, it was decided not to include parents and pedagogues in the same interview, due to assumed conflicts of interest. However, the interview guide used in both interviews was identical.
As to open the FG interview, the stakeholders were asked to discuss what they understood by the term 'health habits', to ensure an association regarding the specific topic. The following stage of the interview was divided into two main phases, one regarding the dietary and one with the physical activity angle, respectively. The two main phases were furthermore divided into two sub phases, one on the subject of limitations (a) and one on possibility (b) to develop healthy eating habits as well as improve patterns of PA.

Children FG

As the aim of the FG, were to gain knowledge about children's perception on food and meals as well as physical activity, it were decided that a qualitative method would be most appropriate for kindergarten age children.
Within the last two decades, there has been a change regarding the use of children as respondents in empirical research (Andersen & Kjærulff, 2003). They are now considered as an important source to gain information on how children themselves are experiencing the world in which they live in. Furthermore, by using and considering children as valid sources, knowledge on perspectives that may not be obvious to adults might be accomplished (Andersen & Kjærulff, 2003).
Thus recognizes the participants as experts of their world, FG's have the additional advantages of minimize the possibility of the children responding to please the interviewer,

and also remove the pressure from the individual child (Heary & Hennessy, 2002). Non-leading and open-ended questions, which let to generate discussion among the children, were started out with general questions followed by more specific ones. Due to the fact that children in this age can have difficulties in understanding abstract questions due to their cognitive level, it were emphasised that the questions were modified in accordance to this. Furthermore, it was decided to separate the interview into two (one for food and one for PA), in order to keep the interview relatively short, for the children not to lose focus and concentration as well as structure the FG part around a few activities, as these would help facilitate children's participation in a discussion and dialogue (Heary & Hennessy, 2002). The activities included selecting pictures, dialogue based on pictures and the children's drawings of healthy food and best physical activity, as to get a visual association.

Children FG on Food

When the pictures of food were presented for the children, it was observed that the children had different knowledge of food items. The children at one kindergarten did not have the same perception of the content, as the children in one of the others. This was especially observed during the debate about the content of the salad dish in the picture. They discussed whether or not salad was a leaf or a dish; additionally they agreed on that the yellow piece in the salad was cheese. The children in one kindergarten identified the yellow "pieces" correctly as mango.

Despite the relatively young age of the children, they still had a perception of healthy and unhealthy foods. In the final phase of the interview the children were asked to draw some food, which they considered as healthy. Almost all the children drew different fruit (mostly apples) and rye bread. When the children subsequently were asked why they regarded the items drawn as healthy, they expressed that it was because they liked them. Later on in one of the FG interview a boy expressed that unhealthy food is unhealthy, as it contains sugar. When asked why they think healthy food is healthy, three children, respectively expressed that healthy food helps build muscles and contain vitamins.

During the focus group interviews with the children, is was revealed that the children attending the two Periscope kindergartens (that had a lunch scheme), had knowledge of more varied food items, as these children in general could mention more different dishes and food items, compared to the pilot-kindergarten, (which had no lunch scheme) where the children showed a limited knowledge. This indicates that having a platform for praxis can potentially lead to increased learning opportunities. This might be an indicator of that a lunch scheme contributes to a more comfortable and advanced relation to new foods presented, than packed lunches. Child peers eating together were both by the stakeholders and a few children, mentioned as a factor, which could increase the appetite for trying new dishes or foods. Surprisingly it was found that pedagogues seem to play a more important role as intermediaries in children's meal than kitchen staff, whom did not seem to play a role as active intermediaries.

Children FG on PA

Based on the PA results from the FG it was decided to use yet another alternative methodology to get a better understanding on the factor revolving children's physical activity level . Researchers observed the children in their natural settings in one of the kindergartens (both inside and outside) supported by digital video cameras to record the observations. Using this method it was possible to capture the movement of the children, in a context of their natural environment in the kindergarten and then use it as supplement to the interviews and different drawings made earlier.
Using videotaping as a method within FG' and observation research is relatively new, which is mainly due to technical reasons. Therefore, limited literature is to be found on how to systemise, analyse and present it (Rønholt, H. et al. 2003). The method has several forces, compared with traditional written note taking, given that it has the capability to capture movement, talk, sounds, colours and actions, as these are captured in time *and* space. This gives the interpreter advantages when reviewing the videotape and it is therefore possible to interpret on actions not visible and not captured by the eye and memory. Thus it has the ability to get closer to reality than traditional methods (ibid). However, when a researcher enters 'the field', it must be recognized that the researcher will influences it and hereby spoils the natural environment (Kristiansen & Krogstrup, 1999).

The observations were carried out at different times, as it was necessary to follow the kindergartens routines. In one kindergarten the children spent the time between approx 7.30 – 10.30, outside at the playground. Post lunch, approximately 12.30-13 the children were outside again until the afternoon. This was common routine, regardless of the weather. If the weather was harsh, they considered keeping the children inside.
The children at the other kindergarten were inside in the morning and usually outside after lunch approximately from 12 -14. However, if the weather was really bad, they decided to stay inside or spent less time outside.

In general all the children were quite active, but differences between genders were observed, as the boys were the most active, while the girls were more cautious and engaged in more non-active activities, such as digging in the sandbox. Furthermore, it seemed like the girls needed more initiatives from the kindergartens teachers than the boys, to play games, which demands that they themselves were physical active. However, when an activity was initiated by the kindergartens teachers the children participated equally (e.g. dancing to music). It was observed that the children were using the entire playground and all its facilities both in a traditional way but also untraditional, e.g. walking and dancing upwards a large slide. Moreover, the children were climbing almost everywhere possible, on the outside of the climbing frame, on the fence around the soccer court etc. This was not interrupted by the kindergarten teachers.
During the observation inside the kindergartens, it was observed that here the children took full advantage of the space available.

Children drawing session

Before the drawing session all of the children sat down with one researcher and talked about how to move once body. This were to gain information on the children's knowledge, as well as the children's understanding of the words; "moving" and "physical activity". To develop a wider platform for the children to talk about, the researcher showed pictures of physical active children.
During the following drawing session the children sat quietly next to each other. Even though the children were told to draw that physical activity that they enjoyed most (alone or with others) they were influent by each other, and therefore some of the drawings are very much alike and cannot be included in the evaluation.

Edition to the drawings each child were interview individually. The same question were asked and in the same order. The interviews were carried out by the same researcher that had been conducting the drawing session.
The children preferred to play with friends, but a few indicated the important of sometimes being able to just play by themselves. Majority of the boys preferred to be physical active when playing. None of the children thought that the kindergarten needed any other toys or playing equipment, beside what was already there.

Stakeholders GF on Food

The parents saw themselves as the most important role models in the life of their children, and one parent stated, that she thought parents should be more supportive about the work of the kindergartens teachers, by carrying on the initiatives at home (e.g. let the children set the table, allow them to participate in the kitchen).
All the parents saw the pedagogues as role models. An aspect of this is that the pedagogues are eating the same food as the children during the meal, instead of just supervising and eating their own food. This perspective was seconded by the kindergarten teachers, as they recognised their own importance, both as role models but also as facilitators, as they thought that it was not only important that they ate the same food as the children, but furthermore also encourage them to try new foods. Although the pedagogues recognize themselves as role models, one pedagogue stated that she would not take responsibility for the children's nutrition.
In both kindergartens it was a rule that the children tried to taste new foods before rejecting them. If the children disliked the food after tasting, it was emphasised by the pedagogues not to create a conflict about it.

The parents had in addition a general conviction in which the children would be more reluctant to try and eat different foods, when presented for them in the kindergarten, as this social setting is different from the one at home.
One pedagogue also experienced, that the children either could encourage or discourage each other to taste new food, due to group relations and peer pressure.
One topic that was repeated among the parents, were the increasing number of children pr.

pedagogue, as this could decrease activities, such as participation in the kitchen. Furthermore, the parents believed that it could also worsen the meal situation, if the pedagogue had to supervise a larger number of children.

In the FG there were an agreement among the parents and the pedagogues that healthy eating focused kindergarten lunch scheme could contribute in improving the dietary habits of the children, as it has the potential to offer a variety of dishes and foods as well as a different setting than the one at home.
Furthermore, in order to increase ownership of the food provided in a lunch scheme, both the parents and pedagogues mentioned that it was central that the food was prepared in the kindergarten and not delivered from elsewhere. The ideal situation would be if the children could be involved in the cooking, as this would further increase ownership.

This particular part of the intervention were seen by the stakeholders as one of the most important strategies in improving children's dietary habits, as it were supposed that the children hereby could increase their knowledge on how food is prepared, and what the components of a meal can be. In addition, the parents assumed that participation in cooking would increase the child's motivation for eating it afterwards.

All the kindergarten teachers agreed on to emphasize that the children had knowledge about where food origins, as they see this as a perspective of being healthy. In most of the kindergartens, farm visits were a regular activity. In addition, several kindergartens had different herbs growing in the garden and one kindergarten had their own kitchen garden at one of the farms where they grew their own vegetables, which were used in the kindergarten kitchen after harvesting.

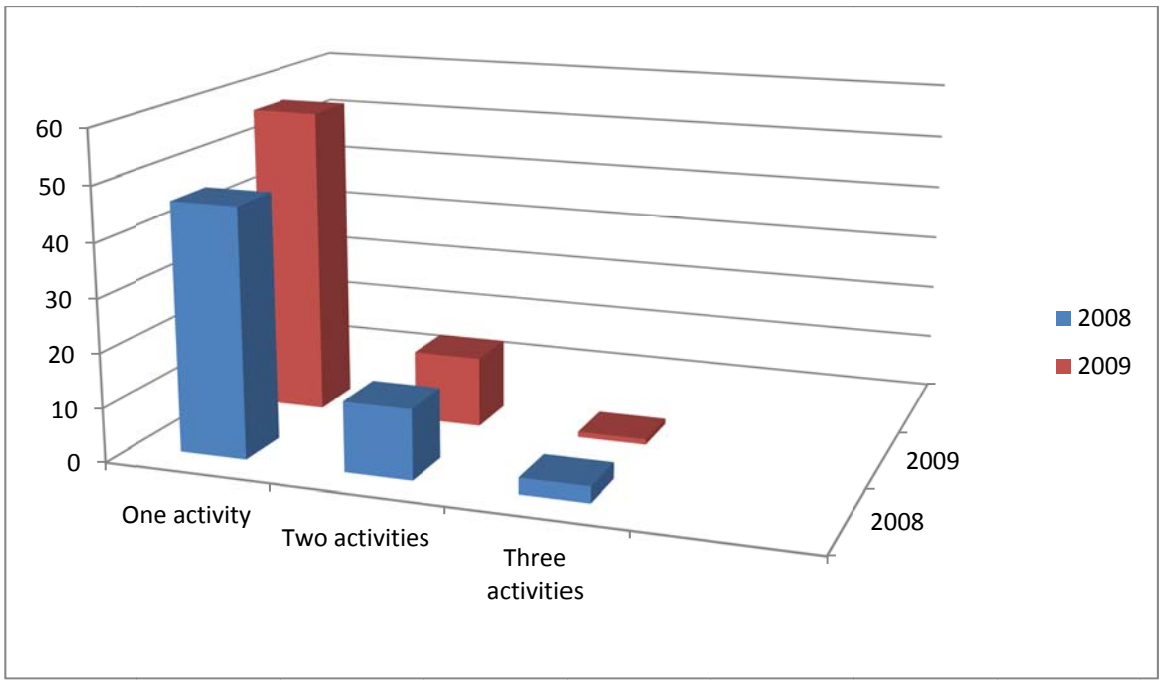
Stakeholders FG on PA

The level of how much parents themselves regarded their own involvement and responsibility on the subject of PA and movement were diverse. However, some parents did see it as important, to support the health improving approaches in the kindergarten, for instance by letting the children walk the distance from the home to the kindergarten, instead of being driven.
This is in line with the result from the questionnaire where 37% of the children either walk or bike (themselves) to kindergarten and 45% home again. (Unfortunately it was not possible to compare the results from the previous questionnaire, because last time it was not stated clean enough whether it was the child or the parent riding the bike). But even though only 41% lives further away than 1 kilometre, 50% are driving to kindergarten by car and 42% home from kindergarten.

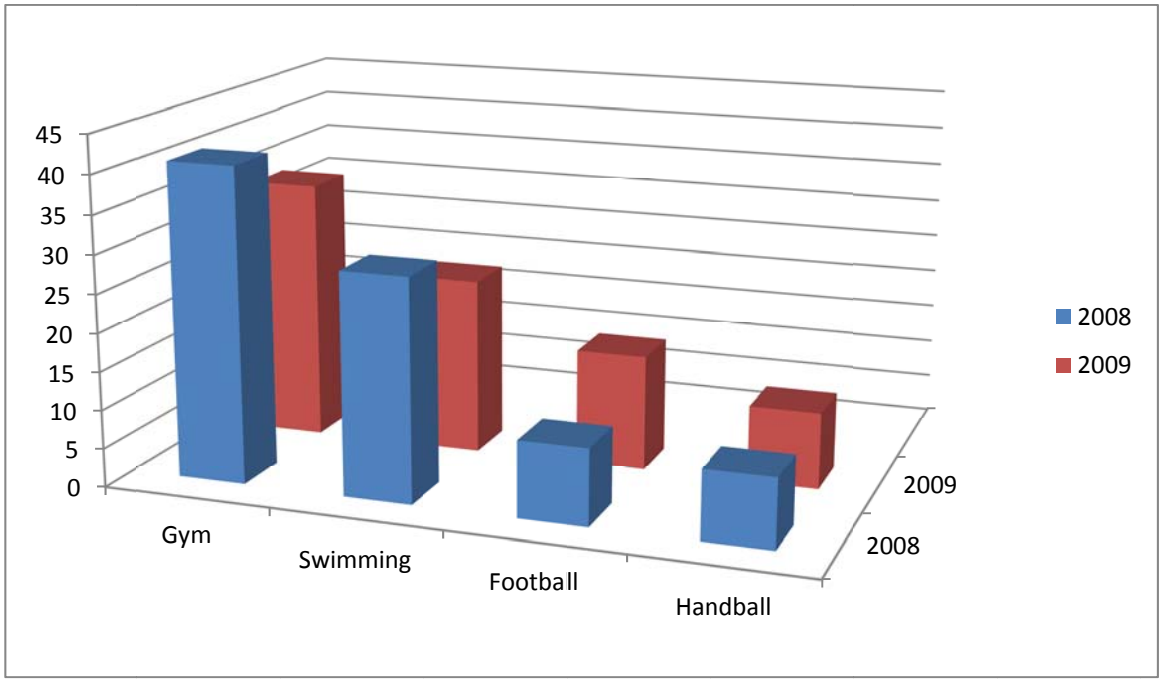
Some parents, were furthermore very keen on letting their children attend to i.e. swim classes or gymnastics, since, they recognized that play does not always contained much actually movement or physical activity. This view was especially regarding girls, as parents of boys

saw no problem with their children not getting enough PA trough play. On the contrary they stated that it was a problem to keep them still.

This statement is in line with the results from the questionnaire where 57% of the children attend one sport activity, 13% children attend 2 sports activities and only 1% attend a third activity. The most popular sports are gymnastics, swimming, soccer, handball and dancing. This results show an increase of 11%, since in previous questionnaire only 46% went to an activity during the week.



The figure below shows that the spread between the biggest group has not changed much from 2008-2009. The most popular sports are gymnastics, then swimming, soccer and handball. Other activities mentioned were dance (incl. ballet and hip hop), icehockey, scout and golf.



The stakeholders acknowledged the important role of the pedagogues, as they saw them as important role models. Two aspects of how the pedagogues could act as role models were debated. One on how, pedagogues could participate actively in the play games. Secondly, especially the aspect on how the pedagogues could act in order to initiate play and PA was discussed. Even though children have a natural way of initiate play and games, it were still pointed out that they still need adults to act as catalysts and organisers in certain situations, for instance soccer games, tag, etc.

In reviewing the observations on physical activity, it was found that almost independently of the possibilities in the surroundings, the children was rather skilled in taken advantage of them, however, this did not always contribute to actual movement and PA. This indicate that environment only is not a sufficient precondition for movement but that motivation, support and help from pedagogues is needed in addition. In other words physical environment is important but the organisational environment is even more important a determinant of PA. This means that pedagogues has the potential to initiate more physical activity and movement in the kindergarten, but that any intervention needs to be supported by necessary resources as well as by management commitment.

In relation to this, observations point to the fact that it is central that the surroundings support and challenge these skills, among others by the pedagogues, as it was observed that some children had the need for adults to initiate PA and movement. Observations indicated that girls need more support and attention and some pedagogues expressed concerns of the lack of resources available for this.

Report of food intervention menu and taste workshop result in kindergarten

FOOD Baseline menu

From January 2009 – February 2009 four intervention-kindergartens participated in the food-intervention (A, B, C and F). A baseline menus from all four kindergartens were collected (for analyzing the nutrition and quantity) and in each kindergarten observations were made for five days on; how the food were made, how the food were presented, how the children ate (physically/logistic), how much the children ate and how much were wasted (664 meals in total).

Two of the kindergartens served buffet (there was always bread and cold cut served together with the warm dish incase the children did not like the dish of the day). The other two kindergartens served only one type of food per day.

Before visiting the kindergartens letters were sent to the headmistress/headmaster explaining the important that everything should be as normal as possible and that we would only observed the making of the food and the lunch situation itself. No interfering would be made. A letter of information was hung up on the parent-information board, so they could see when the researches would be in their child's kindergarten, and especially what they would be observing.

FOOD Intervention menu

In March 2009, after the four weeks of observation in four intervention-kindergartens, all data's were keyed in and analyzed. Accordingly to the results the kindergarten food had already high standards. The standards of the NNR (Nordic Nutrition Recommendation) were made.

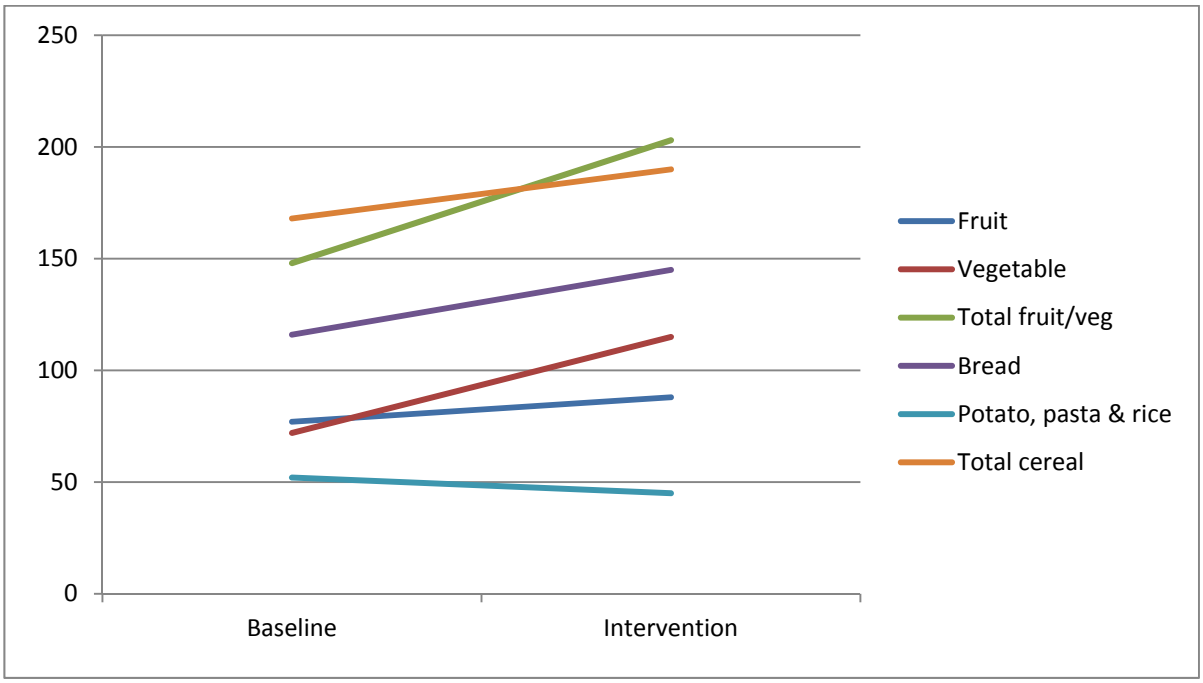
The basis of the Danish intervention were chosen to as followed; More legumes, more varies vegetable (carrots were the most popular vegetable), more dark-green vegetable, less bread at lunch time, more oil in food and less butter on the bread and more milk.
Five lunch recipes and four afternoon snack recipes were created specifically for the intervention containing the food mentioned above. Out of the four kindergartens, two were chosen to participate in the food-intervention; one buffet-kindergarten and one kindergarten where they served one type of food (A and F).

Letters were sent to the two kindergarten headmistress, explaining the menus, the important of cooperation, not just from the kitchen staff and but also the pedagogues during the intervention week. Since the pedagogues eat the same food as the children and with the children (pedagogic meal), it was important that they knew the background for the changes of the food and that they understood their role as being role-models for the children.

The menus were sent out before the intervention, not just for the kindergarten staff to be able to get the ingredients, but also for them the get to know the recopies and to work out a time frame for the making of the food (372 meals in total). A poster were hung up on the parents information board with menus, explanations for the different ingredients and thanking for the cooperation during the weeks the project had been going on in their child's kindergarten.

Intervention menu results

The finding from the observation-baseline (the 4 kindergarten x 5 days) showed that the children were eating lots of carbohydrates, majorly rye bread and homemade white/whole grain bread. The total amount of cereal products, were during baseline 168g pr child pr week and 190g during intervention, out of which 116g was bread during baseline and 145g during intervention. In general they eat many vegetable, but the source is very limited. Carrots, cut out as small sticks, are the main vegetable source. During baseline the children had 72 g of vegetable a week and during intervention this was increased till 115g.
In two of the kindergartens one piece of fruit pr child approximately every day is being provided by the kindergarten, in one kindergarten ½ pieces of fruit pr child is provided and in the fourth kindergarten the children bring one piece of fruit everyday for themselves. In average the children had 77g of fruit a week (mostly apple, banana, clementine, and pear) during baseline and 88g during intervention.

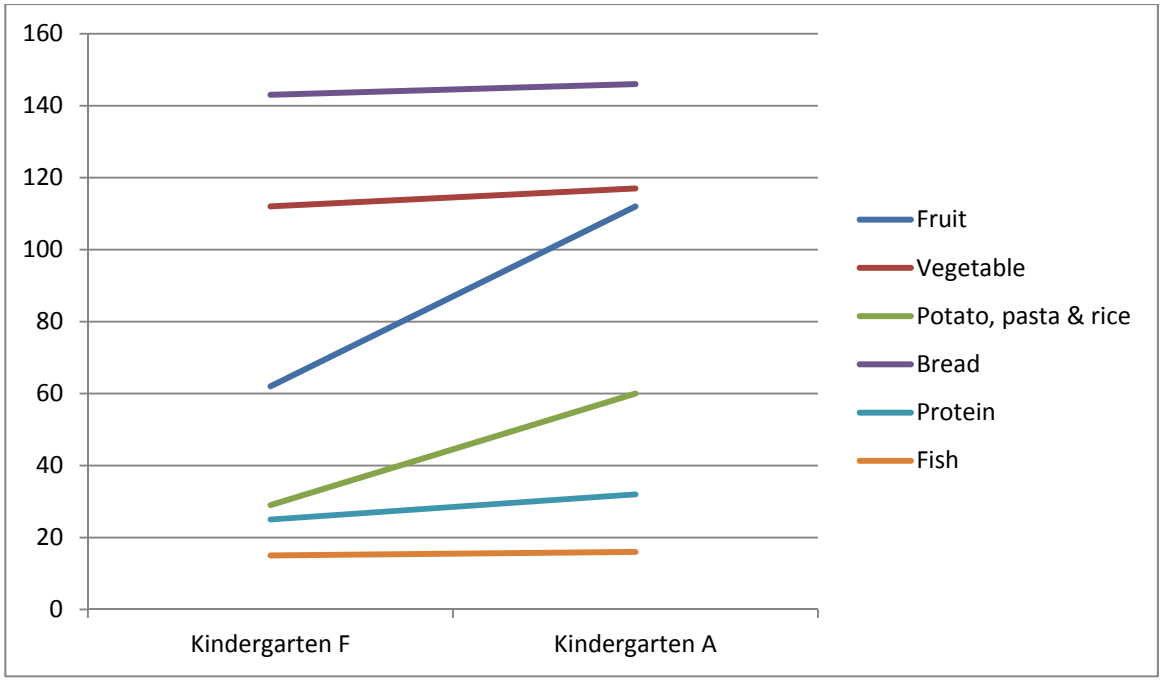


One finding was very surprisingly. Especially in one kindergarten (kitchen staff) was afraid of using fat (butter, oil and fatty dairy products). The reason for this might partly be found in the public awareness on children's in general fatty diet. But also, as it was observed, because of the pedagogues interfering in the menu, due to the fact that because the pedagogues eat the

same food as and with the children (pedagogic meal), they are very much aware of the fat level in the food. This was especially noted when the two intervention kindergarten were presented the new menu. Several comment were made from the female pedagogues that if that kind of food were presented in the kindergarten they could gain weight and due to the use of legumes and more whole grain products comments were made by the male staff.

Below is a figure that shows the different intake in the two intervention kindergarten. Especially one of the kindergartens did not consume the quantities that where expected. The reason for the different might be found in the fact that one kindergarten was a "buffet-kindergarten" (rye bread with some different cold cut was always served beside the main dish) while the other kindergarten only served one dish for lunch. During the intervention only one dish was served. This was a very big problem in one kindergarten, because they were very much use to having a choice.

The figure below shows the average intake (in gram) per child over the week of the intervention:

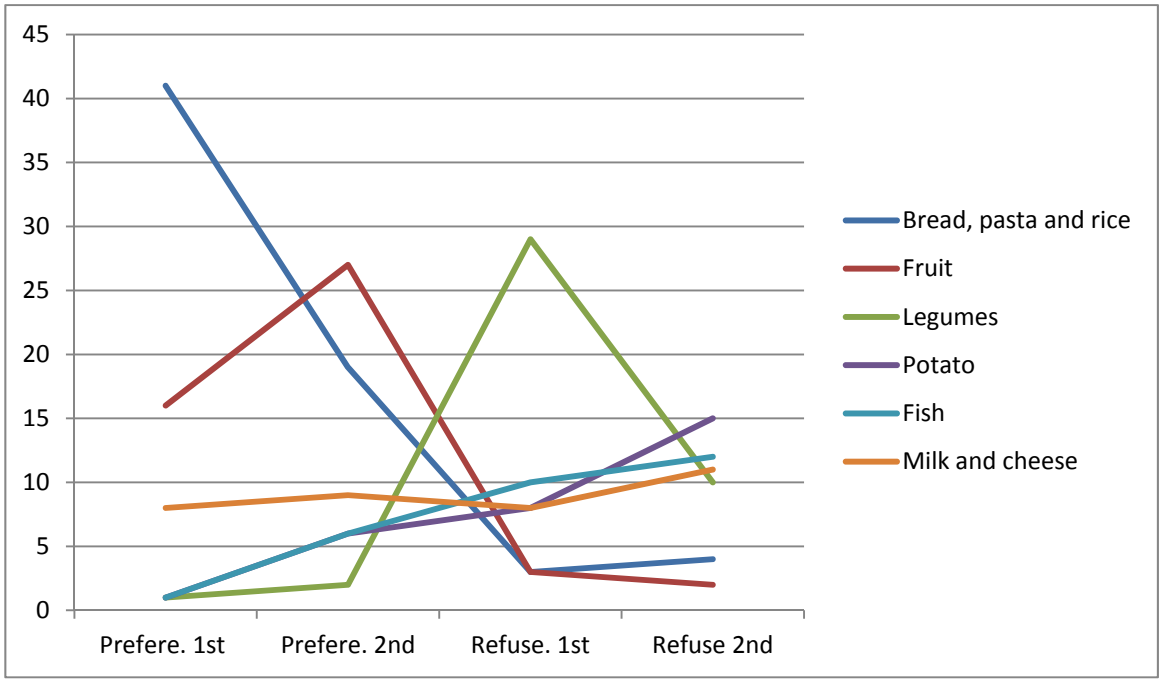


The vegetable intake from kindergarten F, were mostly consumed during the morning snack through carrot sticks and the bread intake during the afternoon snack. It was observed that the children was use to, and enjoyed very much coming to the kitchen desk between 9-10 and talk with the kitchen staff while taking the carrots from a big bowl (The carrots laid in water and was taken out by the children with a pair of tongs).

Some children (and pedagogues) refused to eat anything for lunch (and then they ate a lot during afternoon snack). Especially the pedagogues reaction was surprisingly, since they knew about the project and knew that a new menu were developed especially for this

intervention (meaning more fat, more legumes and more different vegetable, particularly dark green vegetable). One the second day, the kindergarten was approach and a meeting was held the next day to inform the pedagogues that they needed to keep their personal opinions to themselves and instead act as an intermediary between the kitchen and the children and become a role model for the children. During the last two days in that kindergarten the pedagogues were very more open and positive towards the new food. This was observed by the researches present during the lunches. Even though the children were still reluctant to try the new food, the pedagogues now tried in a positive way to make the children just taste the different food. The different attitude from the pedagogues gave the children the courage to try. Still there was no conversation at the table about the food there was served. All the information was only given by the kitchen staff when the children asked them about the food.

In kindergarten A, a conversation was observed by the researcher. To boys were discussing the taste in one of the shredded vegetable dishes (shredded carrots, beetroot apples, white cabbage, - and vanilla). One boy thought it tasted like vanilla ice cream and the other thought it tasted like a Danish summer dish with buttermilk, egg and vanilla. None of the boys could identify the vanilla sugar as being the substance the both recognised, but they both knew that the other one was taking about (both boys had been in the Sapere food workshop a few weeks before this conversation took place). The conversation between the two started a more open conversation between more children.



The figure clearly shows that bread, pasta and rice are the children prefer food group accordingly to the parents. Within this category most children prefers pasta, then bread and last rice. The figure also shows that the second popular food group is fruit. Legumes (fresh

and dried), is the food group, that often is deselected.
Fish deselected more often than it is selected, while the food group milk and cheese are selected and deselected equally. In the last category, cheese is being deselected more often than milk.

Even though potatoes are not a food chose, that the children priorities and deselect more often than select, 74% of the parents still serve them 1-3 times a week.

50% of the parents do not serve legumes, which is in line with the children's chose, as the food group they deselect mostly.

Fish are not being served for half the children and for the other half it is served 1-3 times a week. It should be noted that if this result is compared with the children's deselect of fish, which is only 10%, when it is the parents lack to serve fish, what is the reason for the children's minor intake and not the children's own preferences.

Taste workshop

As initially described, overweight and obesity is an increasing problem. How epidemiologists previously dealt with the deficiency diseases, society today fight an affluent society with lifestyle-related diseases (Nielsen 2008). When food is so freely available, leave our taste preference, - which either speak for or against certain foods, an important role in our daily food choices (Wardle et al 2001, s.217).
Taste, as determinant of choice between different available food items, is not something new. Taste buds have for millennia helped to choose between different available food, because the taste has been an important tool in survival (Stender et al, 2005 p.83).
Modern sensory research operates with five basic tastes, as people are believed to be able to distinguish between. These are sweet, salty, sour, bitter and umami (Nielsen et al 2008).

Children's diet is mainly characterized by their sugar and fat. The reason being, why it's the sweet and rich lifestyle that appeals to us (and so positively charged expression), might be connected with the fact, that we have a predilection for the very sweet and fattening. From early days when man went for the sweet taste, (as we know it from fruit), they were capable of simultaneously steering round the sour and bitter, which could indicate that they were rotten or poisonous food (Beauchamp et al 2009, p. S2).

That food should have some recognition value for the children, does not mean that it must be trivial and should only cover the most basic food (Léon 2006). If the built-in preference for sweet and fatty foods should be nuanced and seeks diverse dietary preferences, this requires positive experiences with precisely balanced meals. When children have a little experience to frame to eat from, one must assume that they deselect a variety of foods and dishes (ibid.).
The availability of healthy food is the cornerstone in the development of healthy dietary preferences.

Studies made by Jane Wardle, Director for cancer research at UK Health Behavior Unit, Department of Epidemiology and Public Health, England has shown that parents' own intake of fruit and vegetables, as well as their control of their children's intake, has an overall impact on children's fruit and vegetable intake (Wardle et al 2005, s.227-230). Parents acting role model is an important factor, since a small or non-consumption of fruits and vegetables by them has a negative effect on children's intake of fruit and vegetables (ibid.). In addition, studies show that parents, who eat little fruit and vegetables, are more reluctant to force their children to eat (ibid.). The more parents push their children to eat (that they do not eat themselves), the lower the average intake of fruit and vegetables will become (ibid.). Furthermore, there is a risk that the child develops an aversion to certain foods. Have the child first an aversion to a particular food, this is difficult to "cure" and a rejection of that food may consist of many years (Wardle et al 2008, s.S16), even after the child as an adult, becomes aware that the aversions were due to circumstances surrounding the food and not the actual food.
Children's rejection of certain foods can result in the parents (due to concern for children's overall energy intake) gives in and only serves the food that the children prefer. By continually avoiding a specific food, the aversion enhances (Wardle et al 2008, s.S17).

Sapere method

In February 2009 one intervention-kindergarten (A) were chosen to participate in a Taste Workshop based on the Sapere-method by Jacques Puisais. For a week the children and the pedagogues, smelled, saw, tasted and made food. They used their bodies, went on treasure hunts, they talked about food and the played food-games.

The purpose with Sapere method:
- To teach his senses and his taste to know
- To develop their abilities to express themselves verbally
- To dare try new foods and dishes
- To have greater variation in the eating
- To create a conscious consumer

Due to limit of resources, we chose one kindergarten for the food workshop.
The timeframe were five days and the participants were the children in small group, two pedagogues, two kitchen staff and two researches.

Since the original method as well as the Swedish method have not been tried on smaller children than 11-12 years old, it was necessary to make different adjustments due to the kindergarten children’s cognitive age level. Furthermore a board sense-game was invented by two research assistants. Information letters were sent to the headmistress and the pedagogues. After that meetings were set up between the researches, head mistress, kitchen staff and the two pedagogues in charge, where details of the taste workshop were explained and a time frame were set up. After that each parent received a letter with back ground information on the important of recognizing sweet, salty, sour and bitter taste to develop a

potential food courage and that the unfamiliarity of some food could let to food aversion that will follow the children for a very long time.

Protocol for Sapere Taste workshop

Below a summary on the activities, the method and the results:

Day one:

Introducing four of the five basic tastes; sweet, sour, salt and bitter as well as colour, smell and texture.

Everything was placed in small glass bowls so the children could see colour and texture. After the session it was discussed the impotents of next time to have the whole fruit next to the bowl, for the children to recognize it, not just before tasting it, but also for later on, if they saw it in a shop.

First they tasted something sweet. This was chosen, due to the fact that most children have a preference to the sweet taste. They tasted acacia honey and artificial sweetener. All the children were very eager to try and they liked the honey very much. All had tasted honey before, but not all acacia honey, and for those, it was more difficult for them to guess that it was honey before actually tasting it. Before the children tasted the artificial sweetener, they were asked if they thought that all sweet things tasted good. They all thought so, but after tasting the artificial sweetener, they changed they minds. Some thought that it tasted sour and others thought it was too sweet. They could not understand that it could be used as a substitute for sugar.

After that the children tasted something sour; lime and Granny Smith apples. When the children smelled it, most of them could not smell anything, but some said that it smelled sour. Only one boy guessed it was lime, the others thought it was lemon. All the children liked the apples better that the lime.

The third taste was bitter; Rucula lettuce, grapefruit and radish. Surprisingly most of the children liked the lettuce. The children took the grapefruit as being orange, but when they tasted it, they knew that it was not. Only a few girls really liked the taste. All the children liked the radish, even though some of them thought it was strong.

The last taste the children tasted was salt. The reason for leaving salt as the last taste was due to the fact, that many children like the salty taste (chips) and that would end the session with a taste they were familiar with and that they liked. They tasted salt biscuits and salty peanuts. Not surprisingly all the children liked both the biscuits as well as the peanuts.

Day two:

The children taste buds were now challenge while the basic taste was now mix two and two together And they therefore had to try and recognize them from each other. The different mixed tastes were limejuice and acacia honey, grapefruit juice on small pieces of Granny

Smith apples, salt biscuits with radish, salt biscuits with strawberry jam and grapefruit with sugar.

Limejuice and acacia honey. The children could easily taste that there was something sweet in the juice, but they had problems finding out that it was honey.

Grapefruit juice on small pieces of Granny Smith apples. Everyone thought that it tasted better now than when the grapefruit was on its own. The sour apple had taken a little bit of the bitter taste away.

Salt biscuits with radish. All the children thought that the radish now tasted salty, but also a little bit stronger.

Salt biscuits with strawberry jam. Some of the children said that the jam taste of salt. They can recognize the two different tastes, but they can distinguish them from one another.

Grapefruit with sugar. This is the most difficult for the children to recognize. Some of them said it tasted sour and some said bitter, but they knew that there was another taste, but they just could not determine what the second taste was.

Day three:

This was a physical day. The children were divided into groups to go treasure hunting. But to get to the treasure they must past several post, where they either had to answer questions or do something physically.
The question asked, were about the different fruit trees and berry bushes, growing in the kindergarten. To help the children picture were shown. This, because not all the trees and bushes were carrying flowers/fruit, at the present time. The physical activity was climbing up in the play tower, go down the slide, kick a ball into a goal.
All the children liked the activity and especially the treasure, which was a carrot/squash muffin, sweetened with raisins.

Day four:

A new board game was invented and pilot tested during the intervention.

It was designed as an ordinary board game where children took turns with a dice and move their game piece the number of fields dice. Some of the fields are colored and each color belongs to a category. There are 3 categories, senses, food and movement. For each category, there are questions about food and senses. Besides the three categories there are physical cards that described an activity for the child for perform. This gives the children the opportunity to move around and show their motor skills.
The children and the pedagogues was very exciting and thought it was fun to play the game, and furthermore the pedagogues thought it was nice that they saw a whole new side of the children.

Day five

The last day the children baked bread with the stakeholders in the kitchen. All the children were very eager to participate. Due to colour and smell, it was chosen, that they could make foccacia with red peppers, squash and freshly chopped herbs.
Everyone participated in making the bread, chopping the herbs, peppers and squash. But most importantly, the children took great pride in making the bread that all the children in the kindergarten should eat in the afternoon.

Children's food preference and pedagogues as role-models

Both meal and meal-pattern has undergone a radical transformation. The availability of manufacture and semi-manufacture food increases the compositions complexity. At the same time we lose household knowledge, insight and skills in cooking (Holm et al 1997, p.41). The lack of involvement of children also increases the risk that the remaining information is lost from one generation to the next (DVFA 2009, kap.5). This can lead to children being "culinary illiterates where food is somewhat abstract, they may feel estranged from" (ibid.).
"Children´s food preferences are important determinants of their food intake and as such are of interest to researchers and practitioners alike." – (Wardle et al 2008 s. S18).
The knowledge of food is the base for its acceptance. The priori refuse of a specific food, especially in pediatric age, is generally determined by the lack of knowledge and familiarity with that particularly food. To initiate children to a complete knowledge of different food means to lay the foundation of a future acceptance.

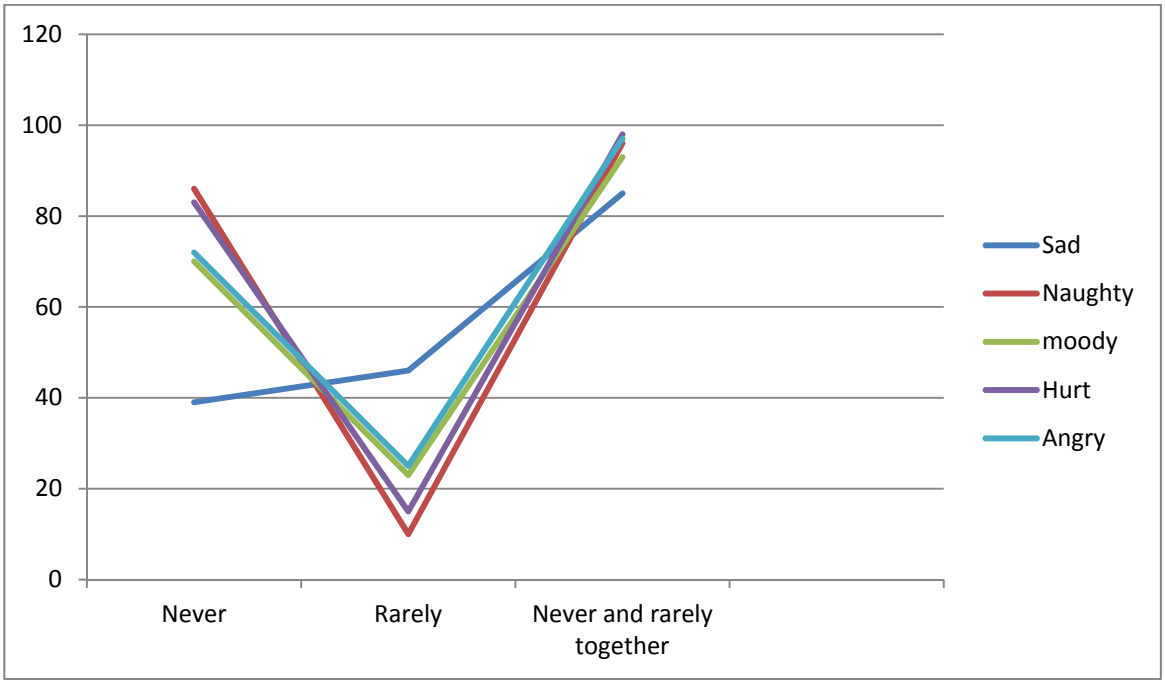
Observation and interviews

In April 2009, after the food intervention two of the four food-intervention kindergartens (A and C) were chosen for a food preference analyzes, using video-observation during the lunch situation and interviews. The observations took place over four days, two in each of the two kindergartens and one day where the interviews were conducted. Five pedagogues were interviewed in total, three from the baseline kindergarten and two from the other.
Before hand all parents had received an information letter, so they knew that their children would be observed and videotaped during the lunch situation. The pedagogues were told, prior the observation that the researches would observe the lunch situation two days in a road and that they could be interview one on one a few days later. The questions asked during the interviews were about whether or not the pedagogues saw themselves as role models for the children during the meal situation, whether they had or had had an influence on the Food & Meal Policy in the kindergarten and if they believed that the policy had an effect in their behavior during the meal situation.

The reason being for choosing the two different kindergartens was to observe any different in the pedagogues behavior towards the food and the food situation during lunch, knowing that one of the kindergarten had participated in the new menu intervention and the other "only" as a baseline kindergarten.

Role-models

Good role models are important for reduction rejections (Wardle et al 2003a, s.342; Wardle et al 2008, s.S16-18), due to two reasons: First, observing others who eat food (being parents, educators, peers, etc.), can be a direct cause of dietary imitation. This is also called "modeling". Secondly, this intake (exposure) will in itself promote the preference, as explained above. The common meal has a built-in teaching function through being with others. Social intercourse provides an opportunity to overstep ones boundaries and individual taste preferences.



The figure shows that most parents never use food as an emotional stabilizer, except if the child is sad. Here only 39% states that they do not use food as an emotional stabilizer. But when “never” and “rarely” are combined, the distance narrows down and the total score of parents never or rarely using food as an emotional stabilizer in situations where the children are unhappy, naughty, hurt, moody or angry is then 94%.

45% would never promise a dessert to make the child eat their dinner, while 35% rarely would use this method. With the total amount of 82% it is concluded that parents use one kind of food (dessert) to make the child eat another kind of food (dinner), but not as a reward or punishment for good/bad behavior.

Observations during lunch (4 weeks during baseline, 2 weeks during intervention and 2 days with focus on the pedagogues and the role as modeling) showed that children were interested in, for example vegetable dish, if the pedagogue offered the food, ate it themselves and

physically pasted the dish to the children. The pedagogues were very conscious on socialization issues, such as; that they ate the food, that were served and that they showed an interest in the food. Conversely, there was no reflection on how the food was processed. For example, pedagogues sat squeezed in between or behind the children; eating with the plates on their laps; did not begin eating before long after the children had begun; gave common messages while the food was warm at the table; talking on the phone during the meal; left the table while the children were still eating and gave confusing information on how and whether the children could leave the table when they were finished, etc. Focus on the role model function was in other words limited, to the food itself, but did not include the frame of the meal.

The above observations are significant, because there is a strong correlation between dietary preferences and the context of which the food is included in (Léon 2006). The emotional reaction to food, ranging from rejection to indifference or pleasure, associated with the experience of a given type of food, is very much something personal (ibid.). Culture and the people the children are surrounded by, are therefore important factors according to which food the child prefers, because it is the surroundings, what introduce food to the child (ibid.).

In several sociological studies, meal responsible women says, that it is difficult to prioritize nutrition in everyday cooking. One goal is to economize both time and financial resources and create a healthy meal for the family. And another goal is to do it, in a way that secured the family's recognition and gratitude, which means a confirmation of the loving relationships within the family (Holm 2003, p.23). Desire to benefit the nutrition is present, but is offend refrain from this in order not to create conflicts. Thus says one interviewee (meal responsible woman): "I give them what they love, instead of what's good" (Holm 2003, p.23-24).

It is therefore not only the enjoyment of food there is at stake, but also a "symbolic form of food because the carefully prepared food expresses care for them the food is made for" (Holm et al 1999, 58). The above is confirmed in the study that “Danish Diets” published by the Food Directorate. This featured 73% of families with children that the essentials choice of meals were that the family liked the food. The examples show that previously elucidated that the food first and foremost embedded in culturally-rooted notions of what “real” food is. To serve the wrong (but nutritious) right food, could result in the guilty conscience of the meal responsible (Jensen 2003, p.77).

Food and meal policies

Food and meal policies (FMP) is a set of common goals on food and meals. The policy covers both what is eaten, and the framework for the meal, such as furnishings, location, incl. time a day and its length. The purpose of a food and meal policy is to make demands and attitudes towards food and meals visible (DVFA 2008).
Studies have highlighted that food and food policies are a means to clarify mutual expectations, both internally (between manager, kitchen staff and pedagogues) and externally (between parents and kindergarten) and can provide a framework for anchoring, continued

dialogue and exchange of experience (Lissau 2006).
In the interviews it is therefore asked, how the pedagogues experience the food and meal policy in Kindergarten.
These showed that pedagogues agreed that, the food as well as the meals is an important part of the institution's life. Meals for the kindergarten in which the interviews took place is relatively new, since it was first introduced for 1 ½ years ago. The decision to introduce canteen in kindergarten was backed up not only of employees, but also of the very active parents committee.
None of the three pedagogues that were interviewed had been introduced to the MMP and had not been part of the development. The knowledge of the contents of the MMP was limited to ecology, variability and that the menu was divided into weekday. For the same reason all three pedagogues say that the current MMP play no role in the educational work.

Management has shown no interest in following up on policy and two pedagogues highlighted that they feel alienated from the MMP, because they have not been part of the context.
Throughout the interviews and observation, it was clear that the pedagogues had very different perceptions of their roles in the meal situation.
One pedagogue did not approve of rules and believed lunch first and foremost should be a fun experience. Another pedagogue was very careful to teach the children social skills, such as table manners. A third pedagogue did not want to interfere and believed that the lunch-brake needed to be an activity where the children had "time of" from rules, due to the fact that there were so many other structured activities thought out the day.
All three pedagogues agreed on the need of guidelines to establish a framework around the meal situation and that this would provide focus and a framework for daily implementation.

The pedagogues seemed dedicated, but lacked vision and concrete action experience on what would strengthen the children's food and eating knowledge and habits. It is therefore considered to require an effort to strengthen pedagogues' competence to act, if meal pedagogy is to have a solid foundation on good food manners and culture, as a prime target.

Learning plan

Curricula in kindergartens

The learning plan is a pedagogic tool that every kindergarten have to write down as guideline for the topics the kindergarten has chosen to work with and it must include six compulsory subjects, but can in addition, add other topics - depending on what is desirable and appropriate in each kindergarten. Results from the taste workshop and the role-models observations have been included in the learning plan below:

Implementation of Sapere taste-workshop in the learning plan

1. Personal development.
   Children must be able to:
   • Take part in important social and cultural experiences
   • Unfold as strong and versatile individuals
   • Experience themselves as valuable participants in a social and cultural community

   Through play, children can learn the cultural community which surrounds cooking and eating food together. In addition they may be more versatile in their food language - and preferences, and feel pride when they have tasted something they may not have dared before.

2. Social skills
   Children must:
   • Be recognizes and respects
   • Experience the comfort and confidence in their relation to both children and adults
   • Be involved and encouraged to become active participants in democratic processes

   Learning about food and healthy eating habits is, like learning in general, a social interaction. Furthermore it is a social process to eat with others, cooking, etc.

3. Language development:
   Children must:
   • Be able to develop their language in all daily activities
   • Be challenger to linguistic activity
   • Have support to develop their curiosity for the characters and symbols
   • Have access to communication tools

   One objective of Sapere is to develop children's language, so they are better able to verbalize their experiences and feelings about food - and hereby develop language skills in other areas also

4. Body and Movement:
   Children must:
   • Experience the joy of their bodies and by being in motion
   • Be able to strengthen their physical health
   • Be able to actively explore and assimilate the world through all senses
   • Know the body functions and develop respect for self and others' physicality

   Body and food belong together, and children also learn best when they are in motion.

5. Nature and natural phenomena:
   Children should be allowed:

• To experience the joy of being in nature and develop respect for nature and environment
• To learn as natural spaces for play and imagination
• To get different experiences with nature and natural phenomena, and experience nature as a space for exploration of the world

Food comes from nature, not from the supermarket and the refrigerator at home. Giving children food experiences in the wild: picking fruits and berries, bake bread over the fire, make a small vegetable garden where they can see the vegetables sprout and grow and harvest them themselves.

6. Cultural expressions and values:
Children must:
• Meet adults who communicate cultural and supports them to experience various forms of expression
• Have access to materials, tools and modern media
• Participate in local cultural traditions and artistic offer

Food is culture and it has great cultural tradition. Children can learn about their own, as well as other cultural through food

In addition the above all day care centers must offer children a healthy lunch meal last from 1st of January 2010. (It is possible to get dispensation till 1st of January 2011).
Meals must be healthy and live up to the official recommendations of the Food Agency sets. Law on the lunch meal in the day care is part of the budget agreement for 2008. This Act shall come into force on 1 January 2011, but municipalities can already 1 January emphasize parental payment from the current 25% to a maximum of 30% of the budgeted gross operating expenses if the municipality offers a lunch meal to all children in municipal day care. The background to this law include the increase in overweight and obesity among children and adolescents, as it was highlighted in the introduction.

Foodtales

The foodtales were given the intervention kindergartens before the summer. Only two kindergartens have responded the questions. The results of both kindergartens were the same. Not of the pedagogues felt that the children were interested in the stories, they could not relate to the story and the characters in the stories as being more than just figures in a story. They saw no connection to the fruit and vegetable that they could eat.
Due to the fact that this part of the project were done without observation from the researches, it is not possible to conclude whether more or less engagement would have made a different efficacy. Due to the fact that only half the kindergartens responded to the questions,

it is likely to believe that the engagement and feasibility from the pedagogues not have been very consistently.

Physical Activity book

Most of the games are naturally being done already in the Danish kindergartens. Due to the fact that most of the Danish kindergarten children are outside, being physical active playing between 2-5 hours a day, it is our opinion that the efficacy would be difficult to measure (whether or not there was been a time different in the physical activity before or after). Instead, due to the results from the observation and focus group, we have chosen to focus on the girls, since they needed more encouragement from the pedagogues to play physically instead of standing or sitting down playing. The feasibility has not been optimal. Accordingly to the pedagogues the girls did not find the games interesting enough. They rather wanted to play the games they already played or use the play facilities in the kindergarten. Like the foodtales, this part of the project were done without observation from the researches, it is not possible to conclude whether more or less engagement would have made a different efficacy. Due to the fact that only half the kindergartens responded to the questions, it is likely to believe that the engagement and feasibility from the pedagogues not have been very consistently.

Litterateur

• Andersen & Kjærulff, 2003: "What can children respond? - On children as respondents in the quantitative surveys. Copenhagen, Institute of Social Research 03: 07
• BUPL capital: "Pedagogical Perspective Plan"
Source: http://www.bupl-hovedstaden.dk/FAF/2003/2003.08.11%20p%C3%A6dgogiske%20persp%20ny%20version.pdf
Last visit date: 02/05/2009.
• Broström, S. (2004): "Education curricula - to work with didactics for kids." 1.edition, 1.oplag. Systime Academic.
• Statistics Denmark 2006: "Almost all 3-5 year are in institutes" News from Statistics
Source: http://www.dst.dk/pukora/epub/Nyt/2006/NR005.pdf
Last visit date: 05.05 2009
• Grønfeldt, V. et al (2007) "How healthy is the Danish kindergartens? Results from the questionnaire survey among day care for 3 to 6 year olds. " 1. Issue. Food Institute, DTU
http://www.google.dk/search?hl=da&q=Hvor+sunde+er+de+danske+b%C3%B8rnehaver%3F+Resultater+fra+sp%C3%B8rgeskemaunders%C3%B8gelse+blandt+dagtilbud+til+3+%E2%80%93+6+%C3%A5rige&meta=
Last visit date. 06.05.2009
• Heary & Hennessy, 2002: "The Use of Focus Group Interviews in Pediatric Health Care Research." Journal of Pediatric Psychology, Vol. 27, No. 1, pp 47 - 57th
• Holm, L et al (1999): "Meals as family-building and liberation". Kristensen, S.T. Food and drink. Journal Anthropology No 39 Metabolism, Copenhagen
• Holm, L. (2003): "Food, people and meals - social science perspectives." 1.edition, 2.printing. Munksgaard
• Jensen, KO (2003): "What is 'real food'?" Holm, L.. Food, people and meals - social science perspectives. 1.edition, 2.printing. Munksgaard
• Leon, F. (2006): "Children, Food and pleasure". Children in Europe, p.18-19. BUPL.
• Lissau, I. et al (2006): "Food and physical activity in nurseries, schools and school / school services - Development of food and meals in schools and school / school clubs from 1999 to 2004", National Institute of Public Health, Copenhagen
• Rønholt, H. et al. 2003: "Video In educational research - the body and expression in movement." Publisher mainland.