

# **Organic school food policies are supportive for healthier eating behaviours – results from an observational study in Danish schools**

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## **Abstract**

**Purpose** – The purpose of this study was to examine whether organic food intervention strategies in Danish school meal systems can support the development of healthier eating patterns among pupils.

**Design/methodology/approach** – This paper investigates the interrelation between the two trends: healthy eating and organic consumption. The study was undertaken among school food coordinators through a web-based questionnaire in selected Danish public primary schools. Food strategies of “organic” schools were compared to those of “non organic” schools. The questionnaire explored the attitudes, policies/intentions and actions in relation to organic and healthy foods served in the schools.

**Findings** – Results indicate that organic food intervention strategies can be supportive for strategies to increase the healthiness of school eating patterns.

**Social implications** – The municipalities and other public bodies increasingly recognize their responsibility to support sustainable food production methods, such as organic agriculture, by choosing this kind of foods in public institutions.

**Originality/value** – This paper provides the organic food strategies in schools that may increase the availability of healthier food options and promote healthy eating habits for pupils.

**Keywords:** Organic food, eating habits, children, school food service.

**Paper type** Research paper

# 1 Introduction

The prevalence of overweight and obesity is increasing in many parts of the world and especially the growth among children and adolescents is worrying. Data show a significant increase in overweight among Danish children and adolescents from 10.9 % in 1995 to 14.4 % in 2000-2002 (Jeppe *et al.*, 2008). Only around 5 % of Danish adolescents (11-14 years) met the recommendation on consuming six pieces of fruits and vegetables per day (Sisse *et al.*, 2008). Adverse eating habits are related to nutrition related disorders and diseases such as overweight, diabetes type II and metabolic syndrome (Candace *et al.*, 2002; Christina *et al.*, 2007; Susanne, 2005).

Youth is a period where people tend to change their psychological, physical, social and health-related behaviour (Saoirse, 2004). Therefore, there is a considerable societal interest in interventions and initiatives that may help to counteract the negative trend in overweight (and obesity) among young people. The meal patterns established during adolescence tend to track into adulthood, even following generations in the future (Koivisto, 1999). Since young people stay at school approximately 32 hours a week, and consume about one-third of their energy intake during school hours, the school is an appropriate setting for policies aimed at improving the eating patterns of children (Andrea *et al.*, 2005; Hillevi, 2010). School is an arena for learning, but also for food praxis. Hence, eating patterns can be influenced both through the school food environment and through educational activities.

In western countries, schools have also increasingly become the object of sustainability strategies. In Denmark, such strategies often include organic food procurement policies. Changing the supply chain to organic foods includes a large number of changes within existing routines. Hence, such innovation processes offer opportunities for shaping the meal system to meet more ambitious demands for quality and nutrition. For instance, converting a catering system to utilise organic products may imply a redesign of the menu with less meat and more vegetables, due to relatively high premium prices on organic meat. Thus it is reasonable to assume that radical changes to a supply system may affect the meals served in a way which may also have nutritional implications. Previous research has shown that supportiveness of organic food seems to go hand in hand with an increased availability of healthy food options in work place canteens (Bent *et al.*, 2007). Practical experience from Denmark shows that the price premium of organic food forces food service managers to rethink their menus (Niels *et al.*, 2002). However, no previous studies have investigated how the healthy eating agenda and the organic food agenda in public schools might be interwoven in Denmark. This question is of special interest to study in this country, which holds a leading position in organic consumption. In 2008, 6.7 % of the total amount of food and drinks consumed in Denmark was certified organic, and this is a world record (Helga and Lukas, 2010). With such a large general interest in organic food, it is also reasonable that organic food is seriously considered in school food policies.

The aim of this study was to investigate whether Danish public schools which have adopted an organic food procurement policy also support healthy eating patterns in general to a larger extent than schools without an organic procurement policy. The paper also investigates whether the change processes introduced by changing the supply chains to organic foods have implications on the food environment including the organisational framework that regulates food availability in the schools.

This study builds on the assumption that three layers of importance can be identified in the school administration and organization related to healthy eating. The first layer is attitude (*what respondents think or feel about healthy eating*), the second is policy or intention (*what respondents*

and schools intend to do) and the third is praxis or action (what the respondents and schools are actually doing). In practice, there may be a large gap between a positive intention and the actions that are really carried out in practice. Hence, all the three levels are important to map.

The paper revolves around two important notions: 1) Public Organic food Procurement (POP) policy refers to a policy where a particular amount of specified foods are expected to be organic, practiced in public organizations offering food. 2) Food and Nutrition Policy (FNP) is a set of written and adopted principles that aim to fulfil nutritional needs of pupils and ensure availability and accessibility of healthy foods in schools (Chen and Bent, 2009).

## **2 Methods**

In a Web-Based Questionnaire (WBQ), indicators of healthy eating and the degree of school supportiveness to healthy eating, e.g. revealed by the presence of actions to support intake of fruit/vegetables, were recorded. Our informants were school food coordinators (SFCs), and the WBQ focused on the school food system at the specific school, the school food policy, the use of organic foods etc.

### **2.1 Study design**

The study was conducted in May 2007 among Danish public primary schools. The observational cohort study was designed to measure whether the amount of organic food that was used in the school food service directly or indirectly correlated with the degree of supportiveness to healthy eating. The schools were divided into "*organic schools*", having a policy to ensure a certain amount of organic ingredients in the school meals, and "*non - organic schools*" having no such organic policy, based on information given about this in the questionnaires.

179 schools were sampled and approached by e-mail on May 1, 2008. The e-mail contained information about the survey and the international research project which formed the background of the study, iPOPY (innovative Public Organic food Procurement for Youth). Our informants were school staff in charge of the school food service, hereafter referred to as SFCs. In practice this person could be anyone from the school headmaster to a school food caterer. The SFCs were invited to participate in the quantitative survey using a self-administered WBQ. In April 2008, several public schools in Copenhagen attained a meeting where the survey was presented, and were invited to participate.

### **2.2 Study sample**

93 organic schools and 86 non-organic schools were invited to participate in the survey. The selection of schools (public schools with pupils aged 6-15 years) was done in two steps. First, all organic schools were selected through assistance from the school meal officials in the municipalities of Copenhagen and Roskilde. Both these cities have established school food service systems with a high share of organic food. In addition, a few organic schools in other municipalities were selected because they had participated in research projects with the Danish National Food Institute (DNFI) and were known to serve at least some organic food.

To match the sample of organic schools, 86 schools that were not assumed to serve any organic food were selected from a list of schools that was available at the National Food Institute from a former study.

School e-mail addresses and other contact information were identified from the website of the Danish Education Ministry (<http://www.uvm.dk/>).

### **2.3 Web Based Questionnaire (WBQ)**

The WBQ was constructed to explore the attitude of the respondents towards the integration of organic food in school meals, and towards healthy eating in school, and to identify existing school food policies (intentions) and serving practices (actions). All questions in the WBQ were closed questions, with alternatives to be ticked for factual information and one option to answer with the informant's own terms. The questionnaire can be found through Organic Eprints – view term 14573: Hyperlink: [http://orgprints.org/14573/1/Thesis\\_final\\_version-Chen\\_He.pdf](http://orgprints.org/14573/1/Thesis_final_version-Chen_He.pdf)

A pilot test of the questionnaire was conducted with a few schools in Roskilde. After some modifications, the completed questionnaire was converted to a web based version and the final WBQ was made available for respondents through a web browser link. The collected data were further treated in Excel format. The questionnaire was sent out individually and directly to 179 schools. It was open for three weeks. Reminder letters were sent by e-mail one to two weeks after sending the invitation.

### **2.4 Measurements**

#### *2.4.1 Factual information*

The first part of the WBQ addressed factual information such as the position of the SFC in the school, number of pupils and classes (1-7, 1-8, 1-10 or 8-10).

#### *2.4.2 Attitudes towards organic food and healthy eating*

The second part of the WBQ mapped the attitudes of the informants towards what responsibility the school should have to promote organic foods through food serving, and through the teaching activities. Similarly, it was asked whether the school should be responsible for promoting healthy eating habits via food serving, and via education. These questions were answered by ticking one of four levels of agreement (“Very much agree”, “Partially disagree”, “Disagree” and “Do not know”) to statements that the school should promote organic food and healthy eating habits via education and school meals.

#### *2.4.3 Intentions, organic food purchase policy*

The third part of the WBQ mapped the school food policy. It was asked whether the school had a policy to purchase organic products (POP), and if so, how long that policy had existed. Further, we asked who was responsible for the decision of organic food purchase, and whether it was mandatory or not for the school to purchase organic. Finally, we asked if there were any measures available to control if organic products were in fact purchased, and how the assessment of organic food purchase was conducted.

#### *2.4.4 Intentions, healthy eating policy*

The fourth part of the WBQ initially defined the term FNP (Food and Nutrition Policy) as a set of written and implemented rules, which aim at fulfilling the nutritional demands of the pupils and ensuring that the demands are covered by healthy food items. Then the informants were asked if the school had a FNP, for how long, who was responsible for the introduction of the FNP at the school (e.g. the municipality or the school administration), if the FNP did include any pedagogical

activities, if the FNP included organic (purchase), if there was a nutritional group active at the school, and if the school had food for sale, would it be correctly composed by nutritional standards? In this part of the WBQ, it was also possible to tick for the alternative “This school offers no school food”.

#### *2.4.5 Intentions/actions, other health issues*

The fifth part of the WBQ mapped to which degree the informants defined their school as health promoting, according to the WHO definition (a school that continuously aims at promoting a healthy lifestyle for pupils and parents). Specific questions addressed cycling to school, school playgrounds and promotion of physical activity in breaks and in education additional to gymnastics. It was also asked whether the school participated in the Green Flag-program.

#### *2.4.6 Actions, The school food system*

The sixth part of the WBQ addressed the school food system in practice. The informants were asked to tick whether the schools offered a fruit tuck shop or a school fruit subscription system, a milk subscription scheme, school tuck shop with food items or simple dishes for sale but no dining hall, or a school canteen with dining hall. For fruit and milk, it was asked whether these items were offered for free or for sale, and how large the organic share was. Within the milk scheme it was asked about the distribution of various milk types (fat reduced, cocoa etc). For the tuck shop it was asked whether offered dishes were prepared at school or elsewhere, how large the organic share was, what kind of food items were offered, the duration of lunch breaks, if the school had posed any restrictions on the type of food to be offered, if a competing food seller was available nearby and if the school restricted the access of this competing arena for the pupils. For the canteen, it was asked whether offered dishes were prepared at school or elsewhere, how large the organic share was, if the menu complied to public standards for nutrition, if the menus were adapted to the pupils' demands, if the menu was fixed or several options were available, if the school guided the pupils about healthy eating, duration of the lunch break and availability of competing food sellers.

The final section was a detailed mapping of how food offered in school had changed in recent years, e.g. if more or less fresh vegetables were offered now as compared to five years ago. The main reasons for such changes were also asked for, e.g. to cut costs or meet nutritional demands. The very last question asked whether such changes in the school food offers could be related to organic procurement. The informants were also invited to give additional personal comments if required.

## **2.5 Data analysis**

The quantitative data were analyzed using the Statistic Package for the Social Science software package version 17.0 (SPSS® inc., Chicago, IL, USA) and Microsoft Office Excel 2007. Descriptive statistics were used to characterize the study sample of schools. All P-values reported were two-tailed. The level of statistical significance was set at  $P \leq 0.05$ . Descriptive data are not normal distributed so the Mann-Whitney test was used to test the differences between the two types of schools. The main aim of the statistical analysis was to assess if significant differences were found between organic and non-organic schools. Correlations between organic food policy and other variables were calculated using Spearman's rho test.

### 3 Results

In this chapter, the intentions (policies) are presented before the attitudes, because they were used to group the schools into the main two categories, organic and non-organic.

#### 3.1 Intentions

##### 3.1.1 School Public Organic food Procurement (POP) policy

Table 1. Number of schools with a policy to procure organic school food (POP) and no such policy, and completely or partially filled in WBQs.

	Complete WBQ	Partially complete WBQ	Not responding	Distributed
Organic schools (n=20)	19	1	87	179
Non organic schools (n=63)	59	4		
Not informed about whether the school has a POP (n=3)	3	0		
No answers about whether the school has a POP (n=6)	0	6		
Total (n=92)	81	11		

Twenty schools reported to have a policy of serving organic food (POP) and were labelled as organic, whereas 63 schools reported not to have any policy to serve organic food and were thus labelled as non-organic (Table 1). Only three out of totally 92 informants reported not to know their status on whether the school had a policy to purchase organic food (POP). This shows that our informants were well informed about the school's praxis in relation to organic food procurement policy. In the further text, if nothing else is mentioned the term organic schools refers to a number of 20, and non organic schools to a number of 63.

81 out of 179 schools delivered completely filled in WBQs; 19 organic and 59 non-organic. In addition, 11 delivered partially filled in WBQs, one organic and four non-organic. The partially filled in WBQs have been included in the study where possible, since the size of sample was small. The response rate was very high for non-organic schools (73 %), but very low for the organic schools (22 %).

Organic policy (POP) was reflected in organic food praxis, but not as clear-cut as one could expect: Only 70 % of the schools with an organic policy reported to have organic food for sale. This means that 30 % (6 schools) reported to have an organic policy, but no organic food. When organic food is as easily available as in Denmark, this is a rather surprising result. On the other side, 27 % of the schools having no organic policy reported to have organic foods for sale. This shows that the distinction between organic and non-organic schools is not so easy to draw as might be expected, and it also shows that some organic food items (e.g. school milk) are so common in Denmark that they are found in schools with no dedicated organic food policy. 49 % of the school milk consumed in Denmark is organic by 2010 ([http://www.foodculture.dk/2010/14/Ugens\\_graf.aspx](http://www.foodculture.dk/2010/14/Ugens_graf.aspx)).

Most organic schools (n=12) reported to have had a POP policy for two to three years. Five schools had the POP policy since more than five years, and three schools had such a policy since less than one year. Seven organic schools reported that the municipality was responsible for the introduction of the POP policy, whereas nine schools reported that the school administration was responsible.

Eight schools had monitoring steps or evaluation parameters for the actual use of organic food in school meals. Five out of eight schools reported the monitoring steps to be based on internal control by the kitchen employees. On two schools the control was based on external resources and one school reported that the school administration controlled this.

### 3.1.2 School Food and Nutrition Policy (FNP)

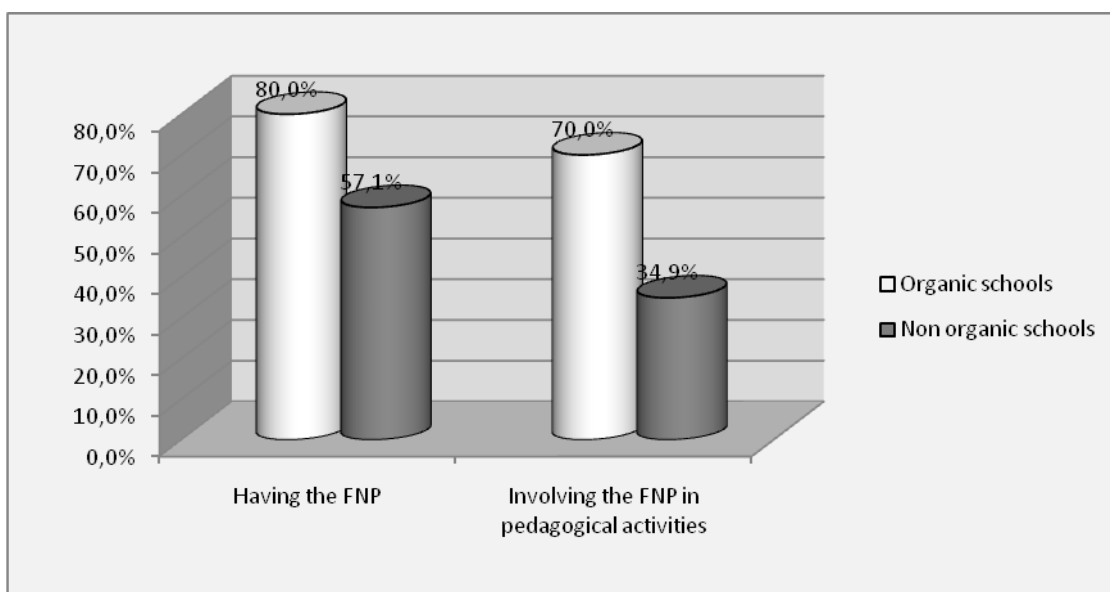
Table 2. Number of schools with a food and nutrition policy (FNP) and no such policy, and completely or partially filled in WBQs.

	Complete WBQ	Partially complete WBQ	No responding	Distributed
FNP schools (n=52)	49	3	87	179
Non FNP schools (n=32)	31	1		
Not informed about whether the school has a FNP (n=1)	1	0		
No answers about whether the school has a FNP (n=7)	0	7		
Total (n=92)	81	11		

When the same WBQs were distributed among schools having, and not having a food and nutrition policy (FNP), 52 schools responded to have adopted a FNP and 32 schools reported to have no such policy (Table 2). Only one informant reported not to know whether the school had a FNP.

Most FNP schools (n=17) informed that their FNP was established more than five years ago, whereas five FNP schools had this policy since four years, 15 schools since three years, nine schools since two years and six schools less than one year. More than half of the FNP schools (n=35) reported that the schools were responsible for the adopting the policy, whereas ten schools reported that the municipalities were responsible. Besides, three schools reported to adopt the food and nutrition policy for the sake of state, and four schools due to the parents. 27 FNP schools reported to have established a nutrition board/group/committee regarding school meals, while 25 had no nutrition groups.

### 3.1.3 Organic/non organic schools with a FNP

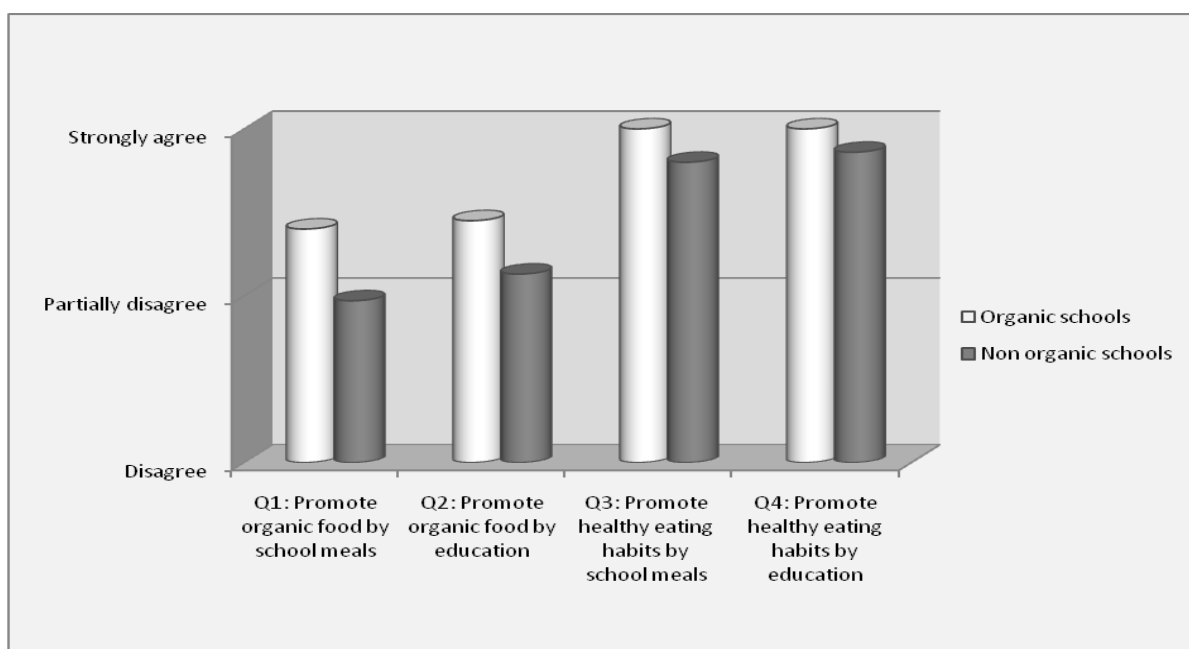


**Figure 1.** The share of organic and non organic schools with a food and nutrition policy (FNP) and involving the FNP issues in the pedagogical activities.

A majority of organic schools, 80 % reported to have adopted a food and nutrition policy (FNP), whereas only 57 % of non-organic schools reported such a policy (Fig. 1). The difference between the organic and non organic schools concerning FNP was statistically significant ( $P=0.033$ ), and a significant relation was found between a school policy to purchase organic food (POP) and having a FNP (Spearman’s  $\rho=0.325$ ,  $P=0.002$ ).

Organic schools were also more active to integrate the FNP in pedagogical activities (Fig. 1). Almost 70 % of the organic schools with a FNP reported that their FNP involved pedagogical activities, whereas only about 35 % of the non-organic schools with a FNP reported this. This difference between organic schools and non organic schools was close to statistically significant ( $P=0.057$ ), with a close to significant relation between having an organic food policy and involving healthy issues in pedagogical activities (Spearman’s  $\rho=0.266$ ,  $P=0.056$ ).

### 3.2 Attitudes towards organic food and healthy eating in school meals and education



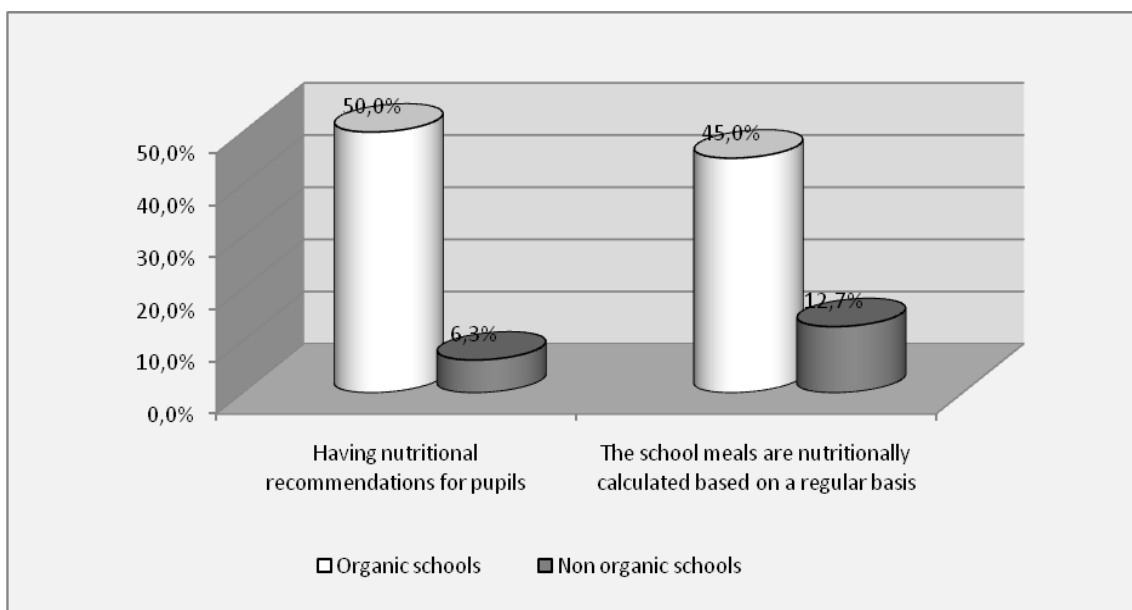
**Figure 2.** Attitudes of organic and non-organic school respondents towards promotion of organic food and healthy eating in school. The figure shows the extent to which respondents agree/disagree that the school should promote organic food via school meals and ( $p=0.062$ ) education ( $p=0.154$ ), and promote healthy eating via school meals ( $p=0.076$ ) and education ( $p=0.096$ ).

Not surprisingly, respondents from organic schools to a larger extent agreed that organic food should be promoted via school meals service. Interestingly, non organic school respondents on average did not agree to this (Fig 2). With respect to promoting organic food via the education/teaching (WBQ: undervisning), the organic school respondents were again more positive than the non-organic. In the case of promoting healthy eating habits through school meals service and teaching, no differences were found between the type of schools, and the respondents generally strongly agreed that this was important. The differences between the organic and non organic schools concerning these four questions were not statistically significant.



### 3.3 Actions

#### 3.3.1 Nutritional considerations



**Figure 3.** Nutritional recommendations and nutritionally calculated school meals in organic vs. non organic schools

A range of food items and dishes may be offered in school canteens, and food items chosen by the pupils may be very different. Nutritional recommendations to choose the healthiest food items may be helpful. 50 % of the organic schools recommended their pupils to eat healthier, e.g. by putting a poster in the canteen, whereas only 6.3 % of the non-organic schools recommended children to eat healthier. The difference was statistically significant ( $P=0.014$ ) and a strong and positive relation was found between having nutritional recommendations and an organic policy (Spearman's  $\rho=0.504$ ,  $P=0.003$ ).

Similarly, many more organic schools than non-organic schools reported to calculate their menus nutritionally (Fig. 3). The difference was statistically significant ( $P=0.000$ ) and there was a positive relation between having an organic school policy and nutritionally calculated school food (Spearman's  $\rho=0.309$ ,  $P=0.004$ ).

#### 3.3.2 Type of school food service

Table 3. Distribution of type of school food service in the schools participating in the study, based on completely and partly filled in questionnaires ( $n=92$ ).

	School fruit scheme	School milk scheme	School tuck shop	School canteen
Organic schools ( $n=20$ )	4 (20 %)	10 (50 %)	5 (25 %)	14 (70 %)
Non-organic schools ( $n=63$ )	21 (36 %)	51 (86 %)	33 (56 %)	19 (32 %)

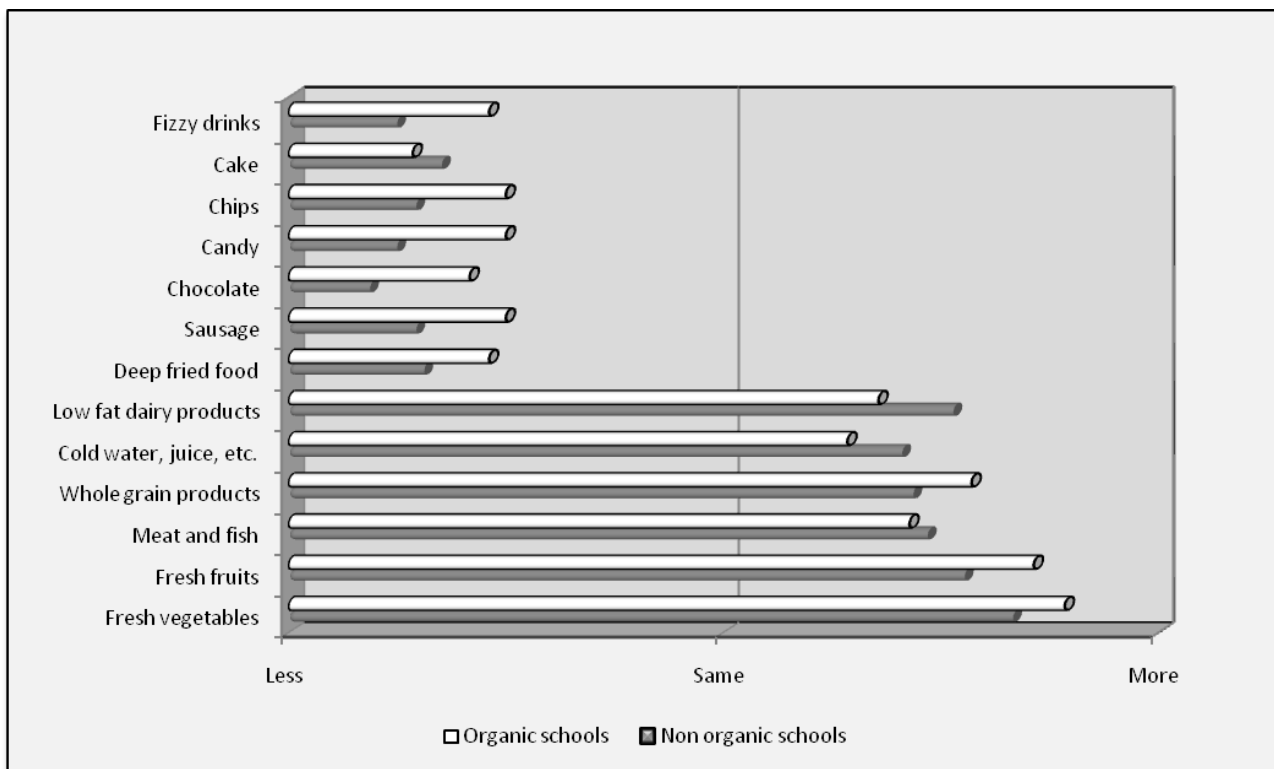
Most organic schools had school canteens, defined as a food serving with facilities to sit down and with a separate kitchen, whereas only 32 % of the non-organic schools had canteens. Less milk and fruit subscription schemes at the organic schools may be due to that these food items are sold in the canteen. If we summarize the shares of tuck shops (with no possibility to take a seat) and

canteens, we see that almost all schools had some kind of food sale for the pupils; 95 % of the organic and 88 % of the non-organic schools.

### 3.3.3 Actual use of organic fruit and milk

More organic schools provided organic milk than fruit. Only three organic schools provided organic fruit, with less than 50 %. Nine out of 20 organic schools provided organic milk. On two schools the share of organic milk was less than 25 %, three schools had 25 % - 50 %, two had 50 % - 75 % and two had more than 75 %. As organic milk is easily available for schools all over Denmark, and the average consumption level is half of the total school milk consumption, it is surprising that only half of the schools with a policy to procure organic school food offer this to their pupils. With respect to fruit, organic products are not yet as easily available as milk products.

### 3.3.4 Availability of more and less healthy school food



**Figure 4.** Changes in the availability of less and more healthy food items in schools during the last five years in organic and non-organic schools.

To map to which extent the school was active to impact a healthy eating among the pupils, the respondents were asked to describe whether selected food items, ranging from not healthy (cakes, fizzy drinks) to healthy (fresh vegetables) had become more or less available in their school food service during the last five years. Thirteen food items were selected and used as indicators concerning the development of serving practices. Both groups of schools reported that they now served healthier food items and less amounts of unhealthy foods than five years ago (Fig. 4). The organic schools reported a somewhat larger increase in the availability of vegetables, fruits and whole grain products, whereas the non-organic schools reported a larger decrease for the less healthy food items.

The difference between two types of schools on 13 food items were not statistically significant (Fresh vegetables: P=0.465, Fresh fruits: P=0.365, Meat and fish: P=0.931, Whole grain products: P=0.217, Cold water, juice, etc: P=0.901, Low fat dairy products: P=0.768, Deep fried food: P=0.378, Sausage: P=0.164, Chocolate: P=0.426, Candy: P=0.393, Chips: P=0.667, Cake: P=0.963, Fizzy drink: P=0.239 ).

Ten organic and 14 non-organic schools reported that the changes of serving practices were due to meet nutritional guidelines. Besides, a quarter of the organic schools reported that the changes were associated with the organic food procurement policy.

## **4 Discussion**

### **4.1 Dropout rate**

Since non-respondents might have different views and practices than respondents, dropout rate is a critical issue in surveys. Especially for the organic schools, the dropout rate was very high in this study (78%), whereas the response rate for non-organic schools was satisfactory. There are several reasons why schools are a difficult institution to ask for information. We searched for school food coordinators, but had no lists of e-mail addresses for those people. Hence, we were dependent that the person opening the e-mail on behalf of the school forwarded it to the right person, which did not always happen. Further, school food coordinators may not spend much of their working day in front of a computer, and school staff is generally very busy, not least towards the end of a school year. Some of the school e-mail addresses also proved to be invalid.

Even if the sample was small, especially for the organic schools, the WBQs we received provided very interesting material, as shown by the referred results. It is possible that the organic schools answering our WBQ were the most dedicated to food in general among the 93 selected organic schools. The fact that 70 % of them had a canteen and not only a tuck shop may indicate this. Hence, this study may be interpreted as a study of how schools with a dedicated organic food policy also develop a policy in other areas related to nutrition and health, as compared to a sample of average non-organic schools.

### **4.2 Attitude**

In the WBQ, a short section undertook to ask about the attitude of the respondents concerning to which extent the school should be responsible to promote organic food and healthy eating habits via teaching and school food. Not surprisingly, organic school respondents were more positive towards to promote organic foods, but the differences between schools were not statistically significant. More interestingly, the organic school respondents much more agreed to the promotion of healthy eating habits than to the promotion of organic food. Almost all respondents strongly agreed that the school is responsible to promote healthy eating habits, via teaching and food serving. This may not be surprising – who would say that a school should promote unhealthy eating? – but in a time when school staff complain about overloading of tasks, it is still very positive to see that nearly all respondents agree that healthy eating is something the school should be responsible for. Seen in light of the Danish debate about school food, where many have raised their voice to defend the right of parents to decide about their children's food consumption so that the public should not develop advanced school food systems, it is encouraging to see that the school sector in general seems to be positive towards healthy eating actions (Stine *et al.*, 2008). If organic food can be regarded as an option to increase the healthiness of school food, the attitudes towards actions to promote organic food in school may also become more positive.

### 4.3 Intentions and policies

More organic schools than non-organic schools had developed a dedicated food and nutrition policy. Developing and adopting a school food policy has shown to be a good way to provide a healthy food environment at school (Carine *et al.*, 2005). Hence, a FNP can be assessed as a good indicator of healthy eating patterns in school. Such policies may imply routines and knowledge on how to purchase prepare and make healthy school foods available, but also ideas on how to get pupils involved in the activities.

It should be noted that during the process of adopting the school food policies, schools are not always the decision maker. Decision may also be made by the municipalities, or influenced by governmental decisions or parents' opinions. When the municipalities take the main decision, the schools might feel less responsible for implementation, arrangement and operation of school food service. When decisions come from above, it may be challenging to develop a motivation for the schools to promote the school meals. Low use of ambitious school meal systems with a high share of organic products have been a problem e.g. in Copenhagen (Chen and Bent, 2009), and the problem seems to continue as only 7 % of the pupils in Copenhagen reported to buy their school lunch from the EAT food service system (Marie, 2010). This number is very low compared to the amount of funding, work and other resources invested in this project. The school is not only a participant for providing the school food, but a crucial actor to encourage children to consume the food and establish proper dietary patterns.

### 4.4 Actions

As our results have shown, more organic schools have integrated the FNP in pedagogical activities. This may help the children to see relationships between health, diet and sustainability. The school is a well suited platform to spread nutritional knowledge, since children attend every school day and consume at least one meal on school grounds. Integrating the focus on healthy food in the curriculum may influence eating patterns of the individual.

As more organic schools had nutritional recommendations and nutritionally calculated school meals, this proves that such schools do not only have positive attitudes and policies, but also take actions to encourage the pupils to consume healthier foods. Since pupils are massively influence by cues to eat unhealthy, the active role of schools in enforcing recommendations is much required.

A school canteen may comprise a better eating environment for pupils during lunch break than a packed lunch consumed in the class room. More organic schools had canteens, and there may be a link between having a canteen with kitchen and a place to eat the food, and developing a school FNP and actions to implement it. School canteens are not merely an eating place, but also a site for learning and practice of health and nutrition. This provides opportunities for schools to promote health and wellbeing, e.g. to meet nutritional guidelines. Involving pupils in assisting or operating in the canteen might be efficient to promote healthy eating habits and nutritional knowledge. The combined effects of the school food policies, the school food service, and pedagogical activities will likely influence eating behaviour of children, their confidences in choosing foods and their perceived support to consume healthier foods. The study shows that implementation of organic policies slowly induces changes of the way which the school food service is performed, as shown by the larger increase in availability of vegetables in organic schools. Also the study shows that the organic schools have praxis and provide an organisational environment such as adopting the food policies, having nutritional recommendations and nutritionally calculated menus for pupils, which is more supportive for healthier eating than the non organic counterparts.

## 5 Conclusions

This study of Danish primary schools has shown a relation between having organic procurement policies and practices for improving the health and wellness of the pupils. The results revealed some interesting differences between organic and non-organic schools. The differences were not so much in the actual use of organic food items as in the attitudes of the school food coordinators to utilise the school food to promote organic food, and especially to take care of the pupils' health by recommendations and calculation the menus nutritionally. Organic schools were more actively involved in adopting and maintaining FNP than the conventional schools. Hence, since a FNP has shown to be associated with healthier eating practices (Carine *et al.*, 2005); the organic schools way provide better environments for healthy eating and thus also increase the likelihood of healthy eating among the pupils.

Despite the fact that organic school food supply in many cases seems to be decided in the background by civil servants and politicians, it seems that stakeholders at the school - in the foreground – have attitudes, policies and practices that comply to a certain extent with the background strategies (Stine *et al.*, 2009).

In general this study indicates that organic food policies at school seem to fit very well with healthy eating strategies. It appears that the issues of health and organic food are moving in the same direction, in other words, it might be an ideal way to combine both agendas in order to create a healthy school.

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