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# **Does organic food intervention in the Danish schools lead to change dietary patterns?**

*- results of a web based questionnaire survey among Danish school food coordinators*

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## Abstract

Now, more than ever, there are serious health concerns for the growing prevalence of obese and overweight children. Schools are well suited setting for the learning of children and young people, and this influence has the potential to play an important role in preventing children from becoming obese and overweight. The school at the same time is the focus of public organic food supply strategies as well as the focus of innovation strategies that can increase the availability of healthier food options. These strategies in some cases go hand in hand. The purpose of this research was to examine whether organic food intervention strategies in school meal system could support the development of healthier eating patterns among children and adolescents. An important precondition for this is that the food environment becomes supportive for such eating. In the current study this was determined through the comparisons between the food strategies of "organic" school to that of "non organic" schools in Denmark. Provision of meals in Danish schools is not compulsory and function as a "value adding service" that schools and municipalities can decide on locally. Therefore the study was undertaken among school food coordinators in selected Danish primary schools that were known to provide school meals. The study was conducted by means of a web-based questionnaire. The data shows the relations regarding the school food service between different types of schools, and also based on the ways and methods of food provision. Results indicate that organic food intervention strategies can be supportive for strategies that increase the healthiness of school eating environments. This eventually might play a positive role in the efforts done to counteract the development of obesity and overweight issues among the children in these selected Danish schools.

Keywords: Organic food, school, healthy eating, POP, FNP, POPY.

## 1. Introduction

Obesity and overweight rates among children and young people is increasing throughout Europe (Mu, 2008), and this tendency is a real challenge for European countries. The school meals program is one of the strategies to promote better, healthier food and eating habits for the youth. This study is concerned food interventions in school meals and their interrelation with organic strategies. Previous research has shown that supportiveness of organic food procurement is associated with an increase availability of health food items in work place canteens (Mikkelsen et al 2007). The purpose of this research study is to explore the relationship public organic food procurement strategies and food nutrition strategies in relation to food service in public school settings. Public Organic food Procurement policy (POP) refers to a policy, in which a particular amount of specified foods are expected to be organic, which are practiced in public organizations offering food. (Mikkelsen et al 2008). Food & Nutrition Policy (FNP) is a set of written and adopted principles that aims to fulfill nutritional needs of pupils at schools, and ensure availability and accessibility of healthy foods (Mikkelsen et al 2008). The survey was undertaken in public primary schools (grade 1-9) in Denmark through a web-based questionnaire (WBQ). In addition to the possible indications of associations between organic food strategies and healthy eating strategies the outcome of the questionnaire will be a detailed mapping of school food environments, the current "praxis" including serving practices in relation to healthy eating and the attitudes and practices of organic food procurement and policies.

## 2. Methods

A quantitative survey using a Web based questionnaire (WBQ) was performed in Denmark among school food coordinators (Surveyxact, 2008). Both the organic schools - the schools which base the provision on a certain amount of organic food provision - as well as non-organic schools which base the provision on conventional food supply were asked to answer the WBQ. The potential participants weren't only school food coordinators but could also be the school headmaster or school food caterer, etc (see Table 1). The pre-test was carried out in 2 Danish schools, one organic school and the other a non organic school. Finally, a total number of 93 organic schools and 86 non organic schools were selected and expected to complete the questionnaire. The sampling were done based on a previously developed database on the school food praxis (Landbrugsrådet, 2007) combined with the authors knowledge on existing organic and non organic school meal systems. The web link to the WBQ and the invitation letter to the participants were sent to the developed e-mail list.

**Table 1. Informant inventory, the possible participants for answering the WBQ.**

Informants	Responsibility
School headmaster	The principal of the school.
School coordinator	The coordinator between the municipality and the school environment, and also determine entities to operate the school meal system.
School kitchen operators	The person who is responsible for preparing school food and carry out serving practices, etc.
School food caterer	The person to ensure the quality and variety of school meals, and cooperate with food suppliers or catering company.
Teachers	They involved as school kitchen operators.

Since non-respondents might have different views and practices and thus introduce a risk of bias, dropout rate is a critical issue in surveys.

However, around 50% of the schools took part in the research, thus half of schools didn't respond to the WBQ. There are several possible reasons for survey dropout: 1) some of the school respondents replied that they weren't willing to participate in the research, 2) some of the school respondents answered that they were too busy to fill out the questionnaire, 3) some of the schools didn't have a food coordinator or someone responsible for answering the questionnaire, 4) for a certain amount of schools, their e-mail address no longer existed.

### **3. Analysis**

In this section, the gathered data of the WBQ is presented and the results are analyzed respectively based on parts of the attitude of school food coordinators, existing policies, and serving practices. Data shows, there were 92 out of 179 Danish schools that responded to the WBQ. 20 of these respondent schools have a POP policy and rest 70 schools have no POP policy.

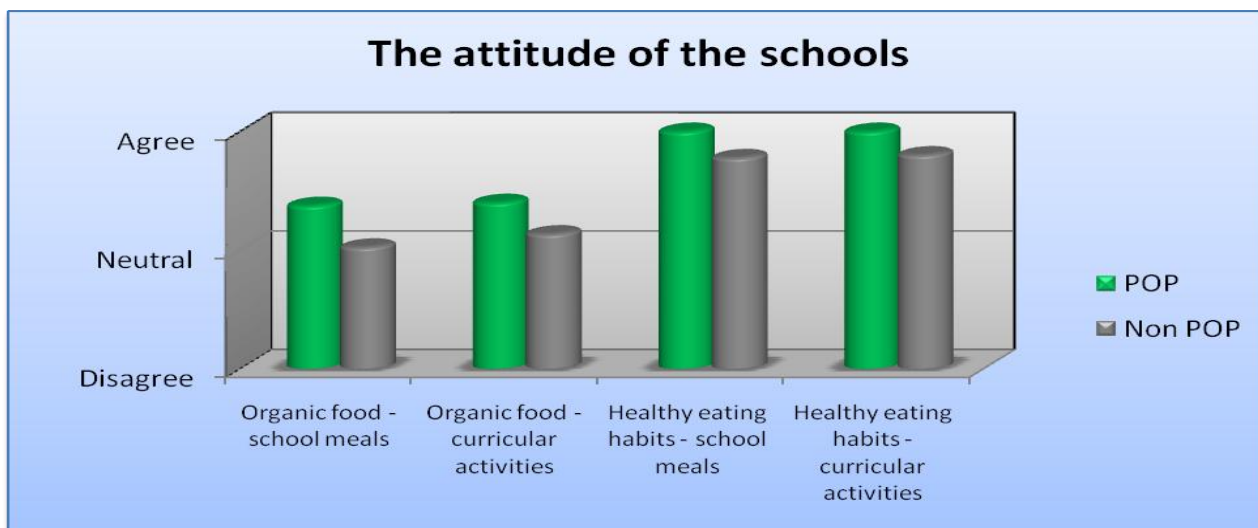
#### **3.1 Attitude of school food coordinators**

In order to draw a clear figure, the schools were categorized based on whether they have a POP policy or not. The schools which have a POP policy are named POP schools. On the contrary, the schools which don't have a POP policy are named non POP schools.

As figure (see Figure 1) shows respondents from POP schools and non POP schools have a positive attitude towards the four questions, regarding the espoused responsibilities of the schools. As could be expected the respondents from POP schools have more positive attitudes on the aspect of having a responsibility to promote organic foods through school meal provision than the respondents from non POP schools. The respondents from POP schools also have more positive attitudes on the aspect of having a responsibility to promote organic foods through curricular and educational activities than the respondents from non POP schools.

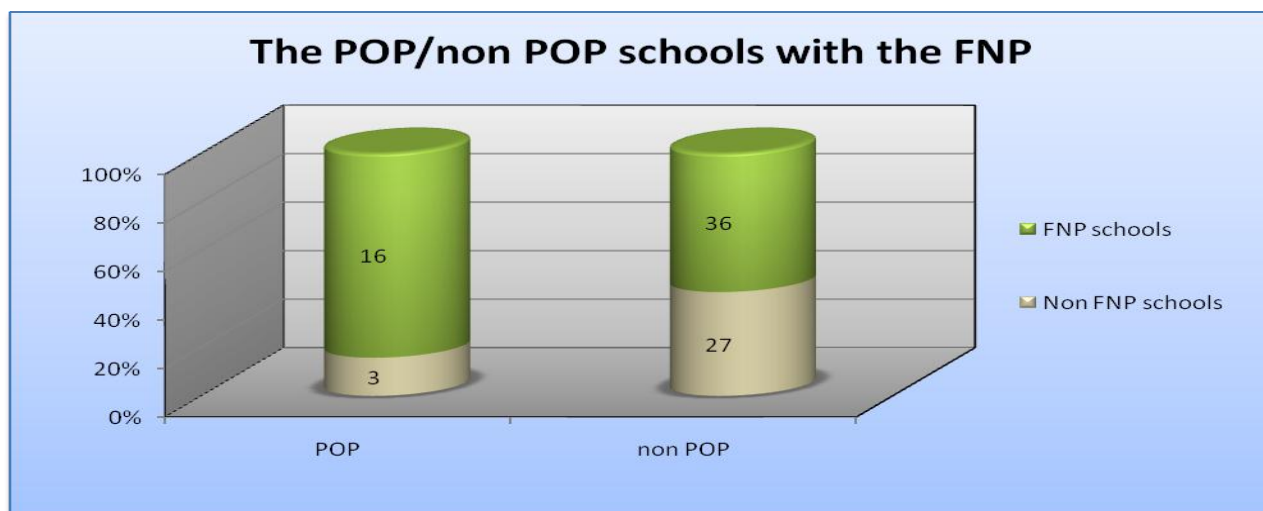
But in addition and as the right hand side of the figure shows, the POP schools also feel more responsibility for promoting healthy eating habits through school food service. The POP schools also feel more responsibility for promoting healthy eating through educational and curricular activities.

The data also allows for comparison of the organic supply with the healthy eating issue. It seems that both the POP and non POP school respondents agree more with the point that the schools are willing to build a healthy eating habit through the school education and food service, than to promote organic foods through school environment. This indicates that the healthy eating issue seems to be higher on the agenda among school food coordinators.



**Figure 1. Attitudes of POP and non-POP respondents to organic and healthy eating strategies. The figure shows the extent to which respondents agree/disagree to be positive towards organic food strategies (far left), positive towards curricular organic food strategies (middle left), positive towards healthy eating strategies (middle right) and curricular healthy eating strategies (far right).**

### 3.2 Existing policies

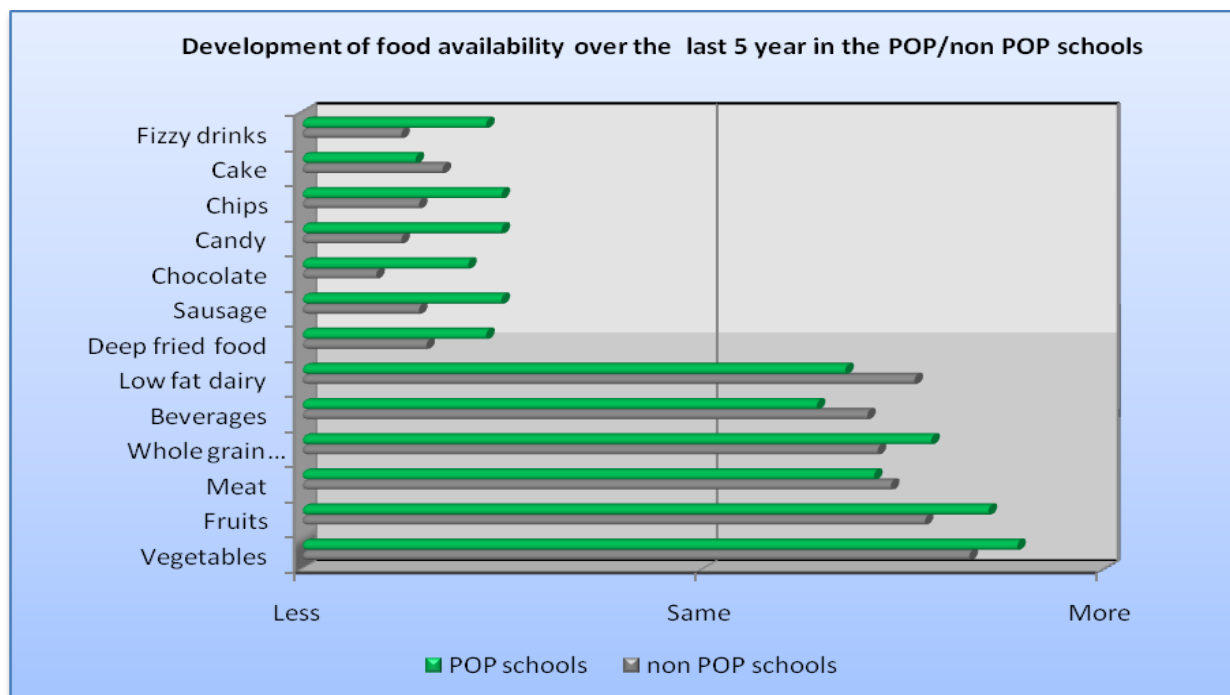


**Figure 2 the number of POP/non POP schools with the FNP.**

The analysis asks question about the possible association between having an organic policy and a healthy eating policy. According to the school respondents there were 20 Danish schools which have POP policies relating to the school food. Most of the other schools answered that they don't have a POP policy, and a small number of the respondents didn't know whether the school had a POP policy or not. Since the WBQ also asked the respondents about prevalence of food and nutrition policy surveys in the schools, it is possible to link these to types of information.

Although the content of policies varies depending on the schools, an existing FNP can be expected to be a good indicator of healthy eating. A FNP can contain routine on how to procure, prepare and make healthy school foods available, but also procedures on how to get pupils involved in the educational activities. As the results indicate, there were more schools with the FNP than the schools which have the POP policy. There were 52 Danish schools in the survey have a FNP. The number of FNP schools (the schools have a FNP for pupils) was 23% more than the number of non FNP schools (the schools don't have a FNP for pupils). This indicates that POP schools more frequently adopt and maintain a FNP than non POP schools. Few of the respondents failed to give the information on whether the school has a FNP policy.

### 3.3 Serving practices



**Figure 3 Trends in healthy eating practices in POP versus non POS schools. The figure shows a comparison between the POP/non POP schools on the development of food items over the last five years.**

The serving practices are probably the most direct way to find out the trend of food offered in schools. 13 food items were provided in both POP and non POP schools over the last five years. The values in the diagram (see Figure 3) show, that both types of schools served healthier food items and reduced the amount of less healthy foods.

Firstly, for healthier low-fat, cholesterol-free food options, the POP schools have increased more on most items than the conventional schools. Apart from low fat dairy and beverages, the non POP schools have promoted more than the organic schools. Secondly, for the less healthy food items except for cake the organic schools were lower than the conventional schools, while the others were opposite. Moreover, candy, chips and sausages items in POP schools were served much more than in the conventional schools. This outcome is only half of the anticipated result, because the organic procurement schools were expected to offer less high sugar/fat/calorie content food than conventional schools. It can therefore be explained that the POP schools have endeavored to promote healthier food to pupils over the last five years. Meanwhile, these schools didn't pay enough attention to reducing less healthy food like the non POP schools.

These results demonstrate that there is a positive relationship between serving practices for healthy eating and the organic procurement policies at schools. It shows the consumption of healthy food is proportional to the organic procurement policies. Therefore, the POP schools seem to consider healthy issues more for children than the conventional schools.

### 4. Conclusion

Data from the WBQ survey seems to indicate that there are differences in the attitudes, the strategies and the practices of school that base their supply on organic foods and schools that don't. Despite the fact that organic school food supply in many cases seems to be decided in the background by civil servants and politicians (Andersen et al, 2009), 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.

Data also shows that POP schools seem to be more actively involved in adopting and maintaining FNP's than the conventional schools. Since a FNP has shown to be associated with more healthy eating practices at school (Vereecken et al 2005), the POP school might very well provide better environments for healthy eating and thus increase the likelihood of healthy eating.

As data shows also the practices of POP schools seem to have developed more rapidly in favor of healthy eating than does the practices of non POP schools.

In general this research indicates that organic food strategies at school seem to fit very well with the 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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