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« FRUIT & VEGETABLES AND FAMILY MEALS »

Editorial

Fruit and Vegetables consumption – Social foodscapes makes a difference

A large number of studies over the past decade have proved that environment plays an important role in raising intake of fruit and vegetables (F&V). Availability in particular has been shown to be an important determinant in many studies. A growing number of studies are now beginning to look beyond availability – to look at the issues and the causes behind availability. Here social norms, values and attitudes play an important role and many years of campaigning and awareness raising in the area of five a day seems to show its first results.

The important message seems to be: Social environment matters. Peers, family and other intermediaries all play an important role in staging what researchers are beginning to refer to as foodscapes. This is not only in creating physical foodscapes in which F&V are available in the settings where we live, work and study, but also in creating the mental and social foodscapes that recognizes F&V intake as a part of a balanced lifestyle.

The research presented in this issue stems from family environments but has important implications also for public food environments such as schools and kindergartens. It underlines the fact that school fruit programs are not only about making the supply chain work. Without social normsetting and creation of a school ethos that favours increased fruit intake, the full health promoting potential of school fruit schemes is not going to be realized. Fortunately the EU scheme offers the idea of accompanying measures – a broad category of activities that holds the potential to create learning and social environment that favours increased uptake of F&V. These environments include measures such as cooking and taste education, farm to school links, urban gardening, edible school yards and school gardens. Hopefully the new research interest in foodscape studies and behavioral nutrition will start looking into the potential positive effects of such measures.

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Adolescents who eat regular meals eat more fruit and vegetables

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It is important for children and adolescents to eat fruit and vegetables (F&V) every day. Some studies show that regular meals may contribute to a higher intake of F&V[1] while others studies disagree[2]. Further, the situation may be different for boys and girls in different age groups. Therefore, we aimed to study the association between the regular consumption of breakfast, lunch and evening meals, and the intake of F&V among boys and girls in different age groups.

3,913 Danish students aged 11, 13 and 15

The present questionnaire study included adolescents age 11, 13 and 15 years from a random sample of schools in Denmark. The data collection constituted the Danish contribution to the international Health Behaviour in School-aged Children study in 2002[3]. The sample included 3,913 students. F&V intake were measured separately by a food frequency questionnaire. The participants also answered questions about frequency of breakfast, lunch and evening meals during a regular week. We defined irregular breakfast and lunch as consuming the meal on less than four weekdays per week and irregular evening meals as less than five weekdays per week. The associations with F&V, respectively, were analysed for each meal type separately by using multiple logistic regression analyses, stratified by gender and age.

Adolescents who take irregular meals have a lower consumption of F & V

Overall we found that adolescents with irregular consumption of breakfast, lunch and evening meal had low frequency of F&V intake. Only for irregular evening meal consumption we found no association. Analyses conducted for boys and girls separately showed that the associations between irregular breakfast consumption and both F&V intake remained statistically significant only among girls. Irregular lunch consumption was strongly associated with both F&V intake among both boys and girls. Analyses conducted in the different age groups separately revealed different patterns. In general terms, irregular meal consumption seemed to be more strongly associated with low frequency of F&V intake among older students compared to younger students. This was especially evident for irregular breakfast consumption. For irregular lunch and evening meal consumption, more varying patterns were observed by age.

Age and family influence on F&V consumption

The varying patterns observed between the different age groups indicate that irregular meals seems to be a less serious risk factor for low F&V intake among younger adolescents compared to older adolescents. A possible explanation could be that younger children and adolescents, despite having irregular meal consumption, are still offered F&V on other occasions and in varying settings and that parental influence and control over what they eat, still exists. As children grow older, they become increasingly independent of their parents, and the family influences on eating behaviour diminish.

Nordic children have a healthier diet

The observation that regular meals may be a general indicator of a healthy diet may reflect typical Nordic eating patterns. From previous studies we know that Nordic children have a higher consumption of raw vegetables compared to other European children[4]. The present study indicates that in Denmark vegetables are often eaten by adolescents at lunch - a finding that is consistent with previous descriptions of Danish adolescents' meal habits[5].

Regular meal consumption should be promoted among adolescents

From a public health perspective, the results of the present study indicate the relevance of promoting regular meal consumption as part of an overall strategy for healthy nutritional habits among adolescents. The results of the present study also point to the relevance of ensuring that initiatives to promote regular meal consumption among adolescents are tailored towards boys and girls and consciously taking into account the relevance of age.

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Serving larger portions of fruits and vegetables together at dinner promotes intake of both foods among young children

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The Effects of Portion Size on Food Intake

One potential method to promote fruit and vegetable (F&V) intake is to increase the portion size served at meals. While seemingly obvious, portion size effects can best be explained through an example. For instance, if a child normally eats 60g of a 75g portion, one might expect that child to eat the same amount even if the portion was doubled because the child was satisfied after eating 60g; however, a portion size effect is observed when that child eats 90g of the 150g portion. This intake promoting effect is well documented with energy dense entrées, but little is known about the potential of using larger portions to promote F&V intake.

Incorporating more vegetables into the main entrée[1] (pureed broccoli and cauliflower mixed into a tomato/cheese pasta sauce), or offering increased amounts of vegetables with a side of Ranch dressing prior to the meal[2] are potential methods to promote vegetable intake among preschool-aged children. In addition, doubling the portion sizes of applesauce, cooked plain broccoli, and carrot side dishes served along with a pasta entrée increased applesauce intake by 43% among 5- to 6-year-old children[3].

The influence of the quantity of fruit served on the consumption of vegetables

Increasing the broccoli portion size was only effective in promoting intake among children who preferred the broccoli over all other foods served at the meal. Though F&V are often served together at meals, it is well known that young children accept fruits more readily than vegetables. Based on these observations, the primary aim of this research was to determine if the amount of fruit served influences the effect of portion size on vegetable intake. A secondary aim was to determine if the amount a child increased their intake when larger portions were served was dependent on how much a child liked a particular fruit or vegetable.

Participants were 30 children (4-6 years of age) and their primary caregivers living in the greater metropolitan area of Philadelphia, PA. Once a week for four weeks, children ate dinner in groups of two to three children in a laboratory setting. The meal consisted of steamed broccoli with butter, and drained canned peaches that were served with fixed portions of pasta with sauce, a side dish of light Ranch dressing, and 2% milk. The amounts of broccoli and peaches were varied both separately and jointly between a reference portion (75g) and a large portion (150g) resulting in four conditions: (75g F; 75g V), (150g F; 75g V), (75g F; 150g V) and (150g F; 150g V). The order that the four meals were presented to each group of children was randomized. A trained staff member sat at the table during the meal and the children were given 20 minutes to eat dinner. To minimize visual comparisons of portion sizes, all children in the same group were served the same meal.

Increasing portion size, increased F&V intake

Children consumed 41g or 70% more fruit in the large portion conditions than in the reference conditions (59g vs. 101g) and 12g or 37% more of the vegetable side dish in the large portion conditions than in the reference conditions (32g vs. 44g). Increasing the portion size of fruit did not affect vegetable intake and vice versa. In addition, doubling the vegetable portion size increased vegetable intake even when larger portions of fruit were served.

A larger vegetable portion size effect was observed among children who rated the vegetable as tasting "yummy," indicating that the degree of liking a vegetable influences the amount children will increase their intake when portion size is increased. Finally, given the concerns of the childhood obesity epidemic, total caloric intake at meals did not increase when F&V portion sizes were doubled.

Prerequisite: increase familiarity and acceptance of F&L

This study provides new evidence that increasing the portion sizes of F&V separately or jointly at meals can increase children's intake of both types of healthful foods. Children who dislike F&V will be unlikely to increase their intake when served larger portions without being exposed to feeding environments and methods that increase their familiarity and acceptance of F&V. To the extent that such techniques are successful in promoting acceptance, serving larger F&V portions is one potential strategy to promote healthy eating habits in children.

BASED ON: Mathias KC, Rolls BJ, Birch LL, Kral TV, Hanna EL, Davey A, Fisher JO. Serving larger portions of fruits and vegetables together at dinner promotes intake of both foods among young children. J Acad Nutr Diet. 2012 Feb;112(2)266-70.

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Involvement in home meal preparation is associated with food preference and self-efficacy among Canadian children

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Given the rising prevalence of childhood obesity, an understanding of the influences driving food choices in children is essential. There is evidence in the literature to suggest that **involving children in food-related activities can promote the development of healthier dietary habits**. Incorporating a hands-on approach in health promotion offers an opportunity for children to try, and enjoy a variety of foods while fostering increased self-efficacy in the selection of healthier food options.

Currently, the complex mechanism behind the association of participation in meal preparation activities and dietary intake is not well described. As higher fruit and vegetable (F&V) preference and self-efficacy have previously been shown to be associated with higher F&V intake in children, these factors can be potential mediators in the relationship between involvement in meal preparation activities and F&V intake.

A survey conducted in Canada in a population of children in Grade 5

Raising healthy Eating and Active Living Kids in Alberta (REAL Kids Alberta) is a population-based survey of Grade 5 children (age 10-11 years). The REAL Kids Alberta evaluation aims to assess the impact of the provincial government's Healthy Weights Initiative and to measure behavioral and health outcomes among Albertan children. We used data collected as a part of the survey in this analysis, where the purpose is to determine the associations between frequency of involvement in home meal preparation and 1) F&V preference, and 2) self-efficacy for selecting healthy foods. A total of 3,398 children participated in the survey.

An assessment of preferences for F&L and autonomy

F&V preferences were determined using aggregate scores calculated based on responses to a question where children were asked how much they liked a variety of F&V. Similarly, a self-efficacy score was calculated based on child responses to questions asking them how confident they were in selecting healthy foods in various situations. Multilevel regression models were used to test for associations between frequency of involvement in home meal preparation, F&V preference, and self-efficacy.

Strong involvement in the preparation of meals is associated with a strong preference for F&L

Among surveyed children, 30% reported helping with home meal preparation at least once daily, while 12.4% never helped. Higher frequency of helping with home meal preparation was associated with higher preferences for both F&V. This positive influence on F&V preference can lead to a subsequent increase in F&V intake. In addition, meal preparation activities allow for family interaction, and can present an important opportunity for healthy eating patterns and food preferences to be modeled and developed.

A Child involved in home meal preparation is more likely to select healthy foods

Children who reported higher frequency of involvement also had higher self-efficacy for selecting healthier foods. This finding is consistent with previous research indicating that involving children in food-related tasks could lead to skill building while increasing a child's confidence in their ability to perform these tasks.

To increase the confidence and independence

The results of this analysis suggest that encouraging children to be involved in food preparation activities could be a viable approach in health promotion programs where such activities can be used to enhance the effectiveness of nutrition education. For example, providing parents with practical advice on ways to involve their children in meal preparation activities could be included as a part of efforts to promote healthy dietary behaviors at home.

BASED ON: Chu YL, Farmer A, Fung C, Kuhle S, Storey KE and Veugelers PJ. Involvement in home meal preparation is associated with food preference and self-efficacy among Canadian children. Public Health Nutrition 2012 May 11:1-5 [epub ahead of print]