

## Family plays an important role in promoting fruit and vegetable eating

19 February 2013

Children from families that encourage fruit and vegetable consumption are more likely to report eating fruits and vegetables each day. This association was most apparent for vegetable intakes in countries where children do not receive a free school lunch. The data come from the Pro Greens project and are reported by a team of researchers from Finland, the Netherlands, Germany, Sweden and Norway.

The provision of free school lunches that comply with nutritional recommendations contribute to children's diets, particularly higher vegetable intakes. Parents can positively influence the food choices of their children, but findings have been mixed as to which specific parental strategies are best at increasing fruit and vegetable intake. Interpretation is complicated by the use of different methods of assessment and perhaps due to cross-country differences in food culture and practices, for example school meal policies. The authors hypothesised that family environments positive towards fruits and vegetables are associated with higher fruit and vegetable intakes in children and that these factors may be more influential where schools do not provide a free lunch.

This study involved 3020 children (1485 girls, 1535 boys; average 11 years old) from four countries (Finland, Sweden, Germany, the Netherlands), a subsample of participants in the Pro Greens study conducted in 2009. Whereas Finland and Sweden provide free school lunches, Germany and the Netherlands do not. Otherwise, these countries have fairly similar food cultures and fruit and vegetable intakes.

Children self-completed questionnaires asking how often they eat fruit, salad, and raw and cooked vegetables and sixteen questions on their perception of a set of 16 factors specific to fruits and vegetables in the family environment. These 16 factors were grouped, allowing evaluation of general patterns of associations with fruit and vegetable intakes:

1. fruit and vegetable verbal encouragement (e.g. My father/mother encourages me to eat vegetables every day);
2. vegetable modelling, family routine and demand (e.g. I often eat vegetables together with my family; do your parents demand that you eat fruit every day?);
3. fruit modelling (e.g. My father/mother eats fruits every day);
4. fruit and vegetable snacking practices (e.g. Does your father/mother usually cut up fruit for you as a snack?);
5. fruit and vegetable allowing (e.g. Are you allowed to eat as many vegetables as you like?)

All analyses were adjusted for the gender and age of the child, the mother's highest level of education and

whether the school provided free lunches or not.

Overall, most of the above factors were significantly and positively associated with daily fruit and vegetable intake, as reported by the children (the only exceptions were two associations between fruit and vegetable allowing and daily fruit and cooked vegetable intake). This research is “rather unique in that it include[d] a wide range of parenting practices [...] and show[ed] consistent positive associations with intakes”. The authors highlighted that previous studies have reported no association between verbal encouragement and fruit and vegetable intake, contrary to most outcomes in this study that show an association with vegetable intake (except for cooked vegetables in Nordic countries). Comparison of results between studies was hampered by variances in terminology and methodologies used.

Most of the associations between the family environment and raw and cooked vegetable intake were stronger in Germany and the Netherlands, neither of which provided free school lunches. Since vegetables (not fruit) are always served as part of school lunches in Finland and Sweden, it was expected that the family environment would have less influence. Again, most associations supported this hypothesis.

The reported ‘vegetable modelling, family routine and demand’ was more strongly associated with intake of raw vegetables in Finland and Sweden, but more strongly associated with intake of cooked vegetables for children in Germany and the Netherlands. The authors propose that children in Nordic countries may have interpreted questions of ‘vegetable’ eating as referring to raw vegetables, since eating raw vegetables is quite common in these countries. German and Dutch children had a more frequent daily intake of fruits, probably due to frequent ‘fruit breaks’ during morning breaks in school.

Main limitations of the study are that the participant groups were not representative of their respective country and that fruit and vegetable intake data were self-reported by the children and their parents. Furthermore, the school response rate was deemed low in the Netherlands.

In conclusion, this study supports the positive role of parents and the family setting in general in motivating children’s daily intake of fruits and vegetables. The many helpful actions include verbal encouragement, allowing children to eat as much fruit and vegetables as they like, being a role model and having family routines of eating fruits and vegetables together. “[T]he associations were stronger for vegetable intakes in countries providing no free school lunches, suggesting that parental involvement is crucial when schools offer no vegetables.” The researchers nevertheless believe that healthy school meals should be provided to all children, and the family environment should be considered in nutrition interventions.

For more information, see

[Ray C, Roos E, Johannes Brug J, Behrendt I, Ehrenblad B, Yngve A and te Velde SJ. Role of free school lunch in the associations between family environmental factors and childrens fruit and vegetable intake in four European countries. Public Health Nutrition, Available on CJO 2012 doi:10.1017/S1368980012004181](#)