A school nutrition education programme improved fruit, juice, and vegetable intake, related psychosocial behaviour, and knowledge


**QUESTION:** Does a school nutrition education programme based on social cognitive theory improve the fruit, juice, and vegetable intake and related psychosocial behaviour in fourth and fifth grade children?

**Design**
Randomised [allocation concealed]*, unblinded controlled trial.

**Setting**
4 schools from a major metropolitan area and 12 from a suburban area in southeastern USA.

**Participants**
Children in participating schools who were in grade 3 [age range 8–11 y]* in the winter of 1994 and those who joined them in grades 4 and 5.

**Intervention**
16 elementary schools were matched in pairs by district area, student population, number of students using a free or reduced price lunch programme, and annual student turnover; then within pairs, the schools were randomised to receive the intervention or control. Schools that received the intervention were given a grade appropriate education programme, "Gimme 5", which was developed using social cognitive theory. The intervention used a curriculum, newsletters, videotapes, point of purchase education and rewards (points were awarded for attaining dietary changes and could be exchanged for a prize) and was designed to be fun and participatory while targeting behaviour change and encouraging increased fruit, juice, and vegetable intake (aiming for a total of 5 servings/d). Education sessions were held for 6 weeks each year during January and February of grades 4 and 5 (twelve 45–55 min sessions/y).

**Main outcome measures**
7 day food records and psychosocial measures were self reported by students and parents. Teacher implementation of curriculum, school lunch menus, and point of purchase education and rewards (points were awarded for attaining dietary changes and could be exchanged for a prize) and was designed to be fun and participatory while targeting behaviour change and encouraging increased fruit, juice, and vegetable intake (aiming for a total of 5 servings/d). Education sessions were held for 6 weeks each year during January and February of grades 4 and 5 (twelve 45–55 min sessions/y).

**Main results**
At year 3, the intervention group had greater combined fruit, juice, and vegetable intake (mean number of servings 2.3 v 2.1, p = 0.038), improved asking behaviours (p = 0.017), and better fruit and vegetable knowledge (p = 0.038) than the control group. Intake of vegetables alone improved in the intervention group at year 2 (mean number of servings 1.2 v 1.0 (p = 0.004), but not at year 3 (1.1 v 1.1).

**Conclusion**
A school nutrition education programme based on social cognitive theory improved combined fruit, juice, and vegetable intake, related psychosocial behaviour, and knowledge in fourth and fifth grade children.

**COMMENTARY**

In January 2000, the US Surgeon General and the Secretary of Health and Human Services jointly announced Healthy People 2010, the US nation’s updated health agenda. Nutrition was identified as 1 of the major focus areas targeted for interventions to achieve goals toward lifestyle improvement and prevention of illness. The study by Baranowski et al is based on the idea that a child’s early experiences with food determine lifelong eating habits. This study is of particular value because it evaluates the effectiveness of an intervention that can be implemented as part of the usual school curriculum.

Although this study found differences between intervention and control group outcomes, implementation of a similar intervention should include an evaluation component to confirm effectiveness because there were a number of methodologic issues of concern identified by the authors. Firstly, the study started with 1732 children and ended with 1239, representing a substantial loss of 28% of the sample; secondly, the findings were based on self report and showed very small changes that may not be clinically significant; thirdly, final data collection occurred within 3 weeks of the end of the program and therefore, it is not known whether the improvements persisted over time.

The results of this study are relevant to school nurses and public health nurses. The investigators report that, despite a full day of inservice instruction, teachers who implemented the nutritional education programme appeared more uncomfortable presenting the behaviour change oriented programme than the traditional cognitive, knowledge directed programme. The investigators observed a low level of curriculum implementation fidelity (only 22% of activities identified as crucial to achieving behaviour change were performed). In contrast, the usual health education teaching style of public health and school nurses is directed toward behaviour change. Most public schools in the US employ a school nurse or have access to a public health nurse. Under ideal circumstances, the school nurse would implement the programme. However, in situations where that is not possible, the school nurse or public health nurse could act as a role model or mentor, and provide support for teachers to increase their skill and comfort level with a behavioural change approach to teaching. In addition, to increase family compliance with nutritional practices taught at school, the public health nurse could reinforce the information during home visits with the family.

It is important to recognise that despite the cited methodologic issues and the shortcomings of the implementation, the programme resulted in improved combined fruit, juice, and vegetable intake. This is an intervention strategy that public health and school nurses should consider implementing and evaluating.

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Source of funding: National Cancer Institute.

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