



Cardiff Institute of Society and Health  
Athrofa y Gymdeithas ac Iechyd Caerdydd

## Are fruit tuck shops in primary schools effective in increasing pupils' fruit consumption? A randomised controlled trial

### Research Team

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**Start date:** October 1998

**End date:** October 2000

**Funder:** Food Standards Agency

### The Study

Forty-three primary schools in South Wales and South-West England participated in this study, which aimed to identify the feasibility of setting up fruit tuck shops in primary schools, and to identify the impact of such tuck shops on pupils' consumption of fruit and other snacks. Twenty-three schools were randomly allocated to the intervention group, and each of them set up a fruit tuck shop in the autumn term, 1999. Tuck shops sold fruit at 15p per item, and were operated by the schools with no additional funding, and with limited support from the research team. Fruit was supplied to schools by wholesale greengrocers, fruit retailers, or by teachers buying fruit from supermarkets. The other twenty schools agreed not to set up a fruit tuck shop in the academic year 1999/2000.

Before the intervention period, in the summer term 1999, 1902 pupils in Years 5 and 6 (aged 9-11) in all 43 schools completed a computerised questionnaire that aimed to measure the pupils' intake of fruit and snacks using a 24-hour recall questionnaire. The computerised questionnaire was developed specially for this study since no validated measurement method was available that could feasibly be used within such a large study to identify the fruit and snack consumption of this age group. The computerised questionnaire was tested for validity and reliability, and while there was clearly substantial measurement error, the instrument did provide measures that correlated positively with measures obtained from a record prompted 24-hour recall interview, and appeared to be reliable in test-retest measures obtained after seven days. The baseline measures also demonstrated content validity, since differences were detected in fruit and snack consumption between schools, which were statistically significantly associated with schools' policy on snacks brought into school.

All twenty three intervention schools successfully set up fruit tuck shops, and many schools were very positive about them. In particular, schools identified numerous positive spin-offs from the tuck shops, including benefits for the curriculum, social benefits, community links and litter reduction. In all schools, fruit sales were high in the first few weeks of operation, but then declined at varying rates over the intervention year. It is estimated that 70,000 fruits were sold in the 23 intervention schools over the year, but this equates to only 0.046 fruits per pupil per day. Four schools had ceased to operate their tuck shops by the end of the intervention year.

At the end of the year, 1924 pupils completed computerised questionnaires, and 1976 pupils completed a brief paper questionnaire. Data from the computerised questionnaires indicated that there was no significant difference between pupils in intervention and control schools in their intake of fruit or other snacks. However, responses to two questions on the paper questionnaire indicated statistically significant differences in the proportion of pupils reporting

that they would use a tuck shop at their school ( $p=0.002$ ), and in the proportion of pupils reporting that they eat fruit as a snack at school 'often' or 'sometimes' ( $p=0.005$ ).

The following recommendations are made for research and policy :

- Future studies to assess the effectiveness of interventions to promote fruit and vegetable consumption should consider the use of experimental research designs to obtain unbiased estimates of the intervention effect.
- Such randomised studies should include a substantial component of process evaluation so that best practice in the design and implementation of an intervention can be identified.
- A major research requirement is the development of methods to measure dietary intake. Methods that can provide valid and reliable data at a group level, and that can be completed by the majority of subjects (particularly children) within a research study to reduce measurement selection bias, require further development.
- Further research is required on how schools can increase the popularity of the tuck shops, and/or sustain the initial high levels of demand that most of the tuck shops experienced in the early period of operation.
- The baseline data collected in this study have demonstrated the important impact on children's snacking behaviour that can be achieved by the schools' policy on snacks brought to school by children.

Fruit tuck shops on their own will not have a substantial impact on the fruit intake of pupils. However, they are likely to be a valuable component of any comprehensive plan to increase children's fruit consumption. Within schools, a comprehensive school policy on snacks brought to school supplemented by a school fruit tuck shop (and, in England, by National School Fruit Scheme fruit provided to younger infants) may achieve a more substantial impact.

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