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Peer leaders and adolescents participating in a multicomponent school based nutrition intervention had dietary improvements

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QUESTION: In adolescents, are varying levels of exposure to a multicomponent, school based nutrition intervention associated with varying dietary outcomes?

Design

Randomised {allocation concealed}*, unblinded, controlled trial with follow up of 1 school year.

Setting

16 schools in the metropolitan area of Minneapolis and St Paul, Minnesota, USA.

Participants

Students {mean age 12.8 y}* in middle or junior high school. Schools were eligible if they had $\geq 20\%$ of students approved for the free and reduced price lunch programme and ≥ 30 students in each of the seventh and eighth grades. 3878 students completed the baseline survey in fall 1998, and 3503 (90%) completed the year end survey in spring 1999 (51% boys, 69% white).

Intervention

The 16 schools were pair matched; 8 schools (1748 students) were allocated to the intervention, and 8 schools (1755 students) were allocated to a control condition. Students in intervention schools were exposed for 1 school year to varying levels of a multicomponent nutrition programme called Teens Eating for Energy and Nutrition at School (TEENS): environment interventions only, which included school promotion of fruits, vegetables, and lower fat foods ($n=845$); classroom plus environment interventions ($n=677$); and training as peer leaders (to lead small group activities and discussions) and classroom plus environment interventions ($n=226$, peer leader group).

The classroom intervention component consisted of 10 behaviourally based sessions (based on social cognitive theory) that used nutrition themes, involved self assessment and goal setting, and included family education and activities.

Main outcome measures

Student self report of fruit and vegetable consumption, and usual food choices scores (higher scores reflect a greater tendency to choose lower fat foods).

Main results

Over the 1 year follow up, differences between the groups (3 intervention groups and 1 control group) were seen for fruit and vegetable consumption ($p=0.023$). Students in the peer leader group consumed a greater number of daily servings of fruits and vegetables at the end of the school year (mean 5.80 servings) than at baseline (mean 4.88 servings, $p<0.05$); the other intervention groups and the control group showed no changes in fruit and vegetable consumption. Differences between the groups were also seen for the usual food choices scores ($p=0.01$). Students in the peer leader group and students who received classroom plus environment interventions showed improvements from baseline in their usual food choices scores (ie, a greater tendency to choose lower fat foods) ($p<0.01$); students who received the environment intervention only and those in the control group showed no changes in their usual food choices scores.

Conclusion

In adolescents, a peer leader and classroom plus environment school based nutrition intervention led to increased fruit and vegetable consumption and a greater tendency for choosing lower fat foods.

Commentary

The study by Birnbaum *et al* was carefully designed using a randomised controlled trial, evaluating a theoretically based intervention, using outcome measures that were reasonably valid and reliable, and doing analyses that accounted for variance related to schools. The study evaluated a 2 year intervention, although this report includes only first year results.

Birnbaum *et al* found that peer leaders increased their fruit and vegetable consumption by nearly a full serving compared with a half serving increase among students exposed to all 3 intervention components (classroom,

family, and school environment). The study findings are important in that many interventions use peer leaders, but neither the effects of peer models on intervention outcomes, nor the effects on peer leaders have been systematically examined. In this study, peer leaders were chosen by classmates, received a full day of training about the intervention and problem solving in small groups, and helped teachers deliver the classroom intervention by leading small group activities and discussions. It would be interesting to examine how different peer leader selection criteria might affect results (eg, peer leader's stage of change).

The study incorporated a mixed model analysis, whereby individual students were nested in schools, and schools were nested in condition; this is appropriate for a school based study. The authors did not discuss variance that may have been attributable to classes within schools. This would be important to evaluate in a teacher delivered intervention because teachers may have implemented the intervention differently, and students may have had varying relationships with their classroom teachers.¹

Interestingly, there was a trend toward decreased fruit and vegetable intake among students exposed to school environment interventions only (ie, promoting fruits and vegetables as part of the school lunch and healthy snacks in school a la carte lines and vending machines). Interpreting this finding requires process evaluation data that were not collected. The authors suggest that selection bias may account for this unexpected finding, given that those in the environment only component were in the same schools as classroom component students, but not in the class where the latter component was delivered. This presents a design challenge for subsequent research such that intervention components may need to be delivered in separate schools.

References

1. Brown RL, Baumann LJ, Cameron L. Single-level analysis of intervention studies with hierarchically structured data: a cautionary note. *Nurs Res* 1996;**45**:359–62.