

Food environment at junior high schools in Tomohon city, Indonesia

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ABSTRACT

Our objective for this study was to examine the feasibility of instituting environmental changes during a 6-week pilot in school foodservice programs, with long-term goals of improving dietary quality and preventing obesity and type 2 diabetes in youth. Participants included students and staff from six middle schools in three states. Formative assessment with students and school staff was conducted in the spring of 2003 to inform the development of school foodservice policy changes. Thirteen potential policy goals were delineated. These formed the basis for the environmental change pilot intervention implemented during the winter/spring of 2004. Questionnaires were used to assess the extent to which the 13 foodservice goals were achieved. Success was defined as achieving 75% of goals not met at baseline. Daily data were collected on goal achievement using the schools' daily food production and sales records. Qualitative data were also collected after the pilot study to obtain feedback from students and staff. Formative research with staff and students identified potential environmental changes. Most schools made substantial changes in the National School Lunch Program meal and snack bar/a la carte offerings. Vending goals were least likely to be achieved. Only one school did not meet the 75% goal achievement objective. Based on the objective data as well as qualitative feedback from student focus groups and interviews with students and school staff, healthful school foodservice changes in the cafeteria and snack bar can be implemented and were acceptable to the staff and students. Implementing longer-term and more ambitious changes and assessing cost issues and the potential enduring impact of these changes on student dietary change and disease risk reduction merits investigation.

Background

Research studies have clearly shown that adolescents' dietary intakes are not consistent with national recommendations. Areas of concern include high intakes of saturated fat, total fat, and soft drinks, and low intakes of fruits, vegetables, fiber, and calcium-rich foods. These dietary patterns are of concern because of their potential for increasing risk for developing obesity, heart disease, osteoporosis, dental caries, and various types of cancer. Adolescent eating patterns are influenced by factors proximal to the adolescent such as individual food preferences, family meal patterns, and parental role modeling. However, it is increasingly becoming clearer that adolescent eating patterns are also influenced by more distal factors such as media messages and social norms. Since adolescents spend a large amount of time in school, an important question – is to what extent does the school food environment influence adolescent eating patterns. In Bronfenbrenner's ecological model, which shows concentric spheres of influences on the individual ranging from proximal factors to distal factors, the school lies in the middle.

Although there are federal regulations regarding the types of foods that can be served in the United States Department of Agriculture reimbursable school meals, few regulations are in place for alternative foods, such as those served a la carte in the cafeteria or in snack bars, and in vending machines. A study of 55 high schools revealed that school environments do not always foster healthful eating practices consistent with national dietary guidelines. In a statewide survey of food policies in 336 Minnesota high schools, two-thirds of the principals indicated that only healthy food choices should

be provided to students at school, yet only one-third reported that their school had an overall policy about nutrition and food. Even fewer reported the presence of specific policies about the types of foods and beverages sold in vending machines, school stores, or at school functions. School vending machines were prevalent and 77% of the principals reported that their school or district had a contract with a soft drink company. Vending machine hours were limited in some way in 81% of the schools, but only about a third of the schools limited the vending machine hours to before and after school only or after all lunch periods were completed. While it is important to respect adolescents increasing autonomy and decision-making skills, research clearly shows that food availability is one of the strongest correlates of food choices in adolescents. Schools provide a setting in which it is possible to increase the availability and attractiveness of a range of healthy food options from which students can make choices, and restrict the availability of foods that are low in nutrients and high in fats and sugars.

Methods:

Data on adolescent school lunch patterns and vending machine practices were collected at baseline, prior to the beginning of the first year of the intervention with surveys that were mailed to the homes of a random sample of 75 students from each of the 20 participating schools. The University of Minnesota's Institutional Review Board Human Subjects Committee and the research review committees of the participating school districts approved all study protocols. A parental passive consent letter was included with the survey, as part of the cover letter; if the parent agreed

to have their child participate they were asked to give the survey to their child. Students received ten dollars for completing the survey. The response rate for survey completion was 75%. Data on school food policies were collected with surveys that were mailed to principals and food service directors at each of the 20 participating schools at the end of the first intervention year. In one school, neither principal nor food service director responded, while in another school the principal did not respond but the food service director did, resulting in data from 19 schools from either the principal or the food service director. Questions on these surveys assessed school food-related policies and practices during the previous school year. The survey instrument was developed, based on previously published surveys about the school food environment. Data on vending machine availability and hours of operation were collected – through site visits by trained research staff. Vending machines were included if they were in locations that were accessible to students.

Discussion:

This study examined associations between school food policies and student lunch practices and vending machine purchases. Study findings have implications for schools and suggest steps that schools could take to encourage healthier eating practices among students. A closed campus policy during the lunch hour was associated with fewer lunch purchases from fast food restaurants and convenience stores by students. The existence of school policies regarding the types of foods that can be sold in vending machines was associated with fewer student snack food purchases from vending machines. Student snack food purchases from vending machines were also associated with the number of snack food vending machines at school. Finally, limited hours of operation of soft drink vending machines was associated with fewer student purchases of soft drinks from vending machines. While previous studies have found

associations between the food school environment and student eating behaviors, to the best of our knowledge, this is the first study that has examined and observed associations between school food policies and student eating behaviors.

Conclusion:

Fat and sugar rich foods and beverages are available and share greatest daily sales in Tomohon junior high schools. Thus, we must consider the way to cope possible loss of income faced by food shop owners when it is necessary to replace these foods with healthier food choices. Further investigations on effectiveness of feasible food environment regulation to reduce student calorie intake at schools is also required. In conclusion, school food policies that decrease access to foods high in fats and sugars are associated with less frequent purchase of these items among high school students. Based upon these findings, it is recommended that schools examine their food-related policies and consider policies to decrease access to foods and beverages that are low in nutrients and high in fats and sugars. Strategies suggested by our data include having closed campus policies during the lunch hour, having policies regarding the types of food that can be sold in vending machines, keeping soft drink machines turned off during the lunch hour, and limiting the number of snack food vending machines. Schools should also consider strategies for making healthier alternatives more accessible and attractive to students in terms of appearance, taste, and cost. Clearly factors other than eating practices at school are associated with the overall quality of dietary intake and health outcomes of youth; nevertheless, since 35–40% of calories are consumed at school, eating practices at school are likely to be making a significant contribution. As educational institutions, schools have a crucial role to play in providing youth with healthy eating opportunities.