



School Breakfast Policy Is Associated with Dietary Intake of Fourth- and Fifth-Grade Students



Lorrene D. Ritchie, PhD, RD; Nila J. Rosen, MPH; Keenan Fenton, MA; Lauren E. Au, PhD, RD; Lauren H. Goldstein, PhD; Tia Shimada, MPH

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ABSTRACT

Background Breakfast skipping has been associated with obesity. Schools have adopted breakfast policies to increase breakfast participation. Recently, there have been concerns that students in schools where breakfast is served in the classroom may be eating two breakfasts—one at home and one at school—thereby increasing their risk of excessive energy intake and weight gain.

Objective The study objective was to compare the prevalence of not eating breakfast, eating breakfast at home or school only, and eating double breakfasts (home and school) by students in schools with distinct breakfast policies and evaluate the relationship of breakfast policy to energy intake and diet quality.

Design Baseline data were collected in 2011-2012 as part of a cluster randomized controlled trial to evaluate the effectiveness of a school-based intervention to promote fruit and vegetable intake and physical activity in low-resource elementary schools in California.

Participants/setting Participants were 3,944 fourth and fifth graders from 43 schools, 20 served breakfast in the cafeteria before school, 17 served breakfast in the classroom at the start of school, and 6 served “second chance” breakfast (in the cafeteria before school and again at first recess).

Statistical analysis As part of a secondary data analysis, differences in school and individual characteristics by school breakfast policy were assessed by χ^2 test of independence or analysis of variance. Associations between school breakfast policy and breakfast eating patterns were assessed. Outcomes included calorie intake at breakfast, total daily calorie intake, and diet quality as measured by the Healthy Eating Index 2010. Control variables included student race/ethnicity, grade, and language spoken at home, and clustering of students by school.

Results Breakfast in the classroom was associated with fewer students not eating breakfast ($P < 0.001$), but more eating breakfast at both home and school ($P < 0.001$). Students in the breakfast in the classroom group did not have higher mean energy intakes from breakfast or higher daily energy intakes that were higher than other breakfast policy groups. The breakfast in the classroom group had higher overall diet quality ($P = 0.01$).

Conclusions No evidence was found to support discontinuation of breakfast in the classroom policy on the basis of concerns that children will eat excess calories.

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BREAKFAST EATING AMONG CHILDREN HAS BEEN related to numerous positive short-term and long-term outcomes. Benefits of breakfast eating include improved cognitive function and academic performance in school,¹⁻⁸ improved school attendance,^{7,8} micronutrient profile,⁹⁻¹¹ and reduced body mass index.^{12,13} A 2008 review also cited additional behavioral and psychosocial

benefits from eating breakfast, including improvements in psychosocial well being, discipline, and social behavior, and less aggression and fewer suspensions.¹⁴ Despite these benefits, on any given day up to one-third of children in the United States do not eat breakfast.⁹

The federal School Breakfast Program is an important source of breakfast for children. The US Department of Agriculture's School Breakfast Program was established in 1966 as a pilot and was officially authorized in 1975 to provide breakfast at no cost to students living below 130% of the federal poverty level.¹⁵ School districts receive a federally funded, per-meal reimbursement for every breakfast served, with the highest reimbursement provided for meals served to

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the lowest-income students. Students in households with incomes between 130% and 185% of the federal poverty level are eligible for a reduced price breakfast costing no more than 30 cents per meal. Most (77%) school breakfasts are served to students eligible for free meals; 8% are served to students eligible for reduced-price meals; and the remaining are served to students eligible for full-priced meals.¹⁶ The School Breakfast Program is the third largest federal nutrition assistance program in the country in terms of number of participants. In fiscal year 2013, more than 13 million students participated on each school day.¹⁶

However, the School Breakfast Program does not reach all students who are eligible for free or reduced-price meals. While the number of schools participating in the School Breakfast Program has grown since the program's inception to nearly the number of schools participating in the National School Lunch Program, fewer than half as many students eat school breakfast compared with school lunch.¹⁶ Given that there is a large body of research linking participation in the school breakfast program and favorable dietary, health,¹⁷⁻²⁰ and educational²¹⁻²³ outcomes in children, increasing the utilization of the School Breakfast Program is a worthy goal.

Schools have adopted several types of breakfast policy to increase breakfast participation. When the School Breakfast Program was first introduced, schools typically served breakfast in the cafeteria before school began. One disadvantage to this policy is that students must arrive at school early to eat breakfast. Bus schedules, transportation time, and other factors can make early arrival a challenge for students. Several studies have shown that it is possible to increase breakfast participation by making breakfast free to all students, so-called "universal" breakfast.^{24,25} Others have reported that although providing universal breakfast offers nutritional advantages because school breakfasts tend to be more nutrient-dense than breakfasts eaten at home, universal breakfast before school does not necessarily reduce breakfast skipping.^{25,26}

In an attempt to increase student participation, some schools have moved the service of universal breakfast from the cafeteria before the start of school to the classroom after school begins.²⁷ Other schools have adopted alternative breakfast policies, including "grab 'n' go" breakfast, breakfast on the bus, and "second chance" breakfast.²⁷ With grab 'n' go breakfasts, all the components of school breakfast are conveniently packaged so students can grab a reimbursable meal quickly, either from the cafeteria line or from carts on school grounds. Students can eat in the cafeteria, the classroom, or the playground. In some districts where students have lengthy bus commutes, schools serve breakfast on the bus ride to school. Second chance breakfast involves serving breakfast in the cafeteria before the start of school, as well as serving it again later in the morning to students who missed the first offering.²⁷ Some schools offer second chance breakfast during the first recess, while other schools offer it during a "nutrition break" or between class periods. Although all of these strategies are designed to increase breakfast participation, few studies have compared the dietary impacts of these varying breakfast policies.

Recently, there have been concerns about whether the potential harms of breakfast in the classroom outweigh the benefits.²⁸ Results from a few studies suggest that moving breakfast into the classroom might lead to an increased

percentage of students eating two breakfasts (one at home before the one at school), increased breakfast energy intake, and, ultimately, the potential for excessive weight gain.^{29,30} Given that more than one-third of children aged 6 to 19 years old in the United States are overweight or obese,³¹ identifying the most effective school breakfast policy that does not contribute to obesity is a national priority.

The objectives of the study were twofold: to compare the prevalence of not eating breakfast, eating breakfast at home or school only, and eating breakfast at home and school among elementary school students attending schools with one of three distinct breakfast policies: breakfast in the cafeteria before the start of school, breakfast in the classroom at the start of the school day, and second chance breakfast; and to evaluate the relationship of breakfast policy with daily energy intake and diet quality of students.

METHODS

Study Design and Setting

Data were collected in 2011–2012 at baseline of a cluster randomized controlled trial to evaluate the effectiveness of a school-based intervention to promote fruit and vegetable intake and physical activity among fourth- and fifth-grade students in low-resource elementary schools in San Diego and Imperial Counties in California.³² No changes were made to the school breakfast schedule or food offerings. All study protocols were reviewed and approved by the Institutional Review Board at the Public Health Institute, an independent nonprofit organization focusing on health promotion, which spearheaded the original study. Parents were sent an information letter about the study and an opt-out consent form. Students were read a verbal assent by research staff before the food diary was completed.

Participants

Participants are 3,944 fourth- and fifth-grade students from 43 elementary schools in five school districts. Schools were excluded based on having no fourth- or fifth-grade classes; <30 students per grade; <50% of the student body qualifying for free or reduced price meals; received the planned intervention or a similar intervention or other strong wellness activities in the year prior; and characteristics that would limit the generalizability of findings (eg, location bordering Mexico or being a juvenile detention school). From an initial list of 221 elementary schools, 131 were eligible for participation based on these criteria and 45 were recruited by research staff. Recruitment was discontinued once the desired sample size of schools was achieved. Subsequently, one school dropped out of the study due to a campus fire. For this study, one school was excluded because it differed from all other schools in that it did not provide school breakfast. A student participation rate of 78.2% was achieved in the intervention study.

Procedure

The exposure of interest, breakfast service policy, was determined by research staff querying school foodservice staff. School-level characteristics that might impact a student's breakfast participation were also queried by research staff and included percent of students eligible for free or reduced-price meals, and whether or not a school had

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