Published in final edited form as:

J Nutr Educ Behav. 2002 ; 34(3): 159–165.

Which Fourth-Grade Children Participate in School Breakfast and Do Their Parents Know It?

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Abstract

Objective: To explore fourth-graders' school breakfast participation by gender and race (black, white) and examine the extent to which parents' responses to "Does this child usually eat school breakfast?" reflected their children's participation.

Design: Parents answered "yes" or "no" to the questions printed on consent forms. Observers documented which children participated in school breakfast on 26 to 51 randomly selected days per school during 24 weeks in the 1999-2000 school year.

Subjects: 357 children recruited from all 22 fourth-grade classes from 6 schools in 1 public school district.

Variables Measured: Participation rate, participation rate grouping [usually participated ($\geq 50\%$ of days observed), did not usually participate ($< 50\%$ of days observed)].

Statistical Analyses Performed: Komolgorov-Smirnov tests, McNemar's test.

Results: Median participation rate was 37.5% overall. Distribution of participation rates differed significantly by race (K-S test, $P < .001$) but not gender. There was a significant difference in the percentage of parents who said "yes" or "no" compared to children's usual participation grouping (McNemar test, $P < .001$). Of parents who said "yes," 66% of children usually participated; of parents who said "no," 92% of children did not usually participate.

Implications: Children, not parents, must be the source for learning about what children eat at school.

Keywords

children; parents; School Breakfast Program participation

INTRODUCTION

Children who start the day with breakfast consume more vitamins, minerals, and kilocalories than those who do not eat breakfast^{1,2} and have a better overall diet as measured by the Healthy Eating Index (HEI).³ In addition, children commit fewer errors on psychological tests on days

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Data collection for this analysis was supported by grant HL63189 from the National Heart, Lung, and Blood Institute of the National Institutes of Health. Suzanne Domel Baxter, PhD, RD, LD, FADA, was the principal investigator.

when they eat breakfast compared with days when they skip breakfast.⁴ The School Breakfast Program (SBP) was started to “help contribute to the adequate nutrient intake of children and to ensure that they did not begin their school day hungry.”⁵ The SBP began in 1966 as a pilot project through the Child Nutrition Act and became permanent in 1975 through amendments to the Act.⁵ Currently, the SBP is available in more than 72 000 schools nationwide.⁶ In 1975, approximately 1.8 million children participated in the SBP; by 2000, that number increased to approximately 7.5 million.⁶ Data from some studies suggest that children who participate in the SBP have increased total dietary intake⁴; improved test scores,⁴ math grades,⁷ and attendance rates^{4,7}; and decreased tardiness rates.^{4,7} According to data analyzed from the 1994-96 Continuing Survey of Food Intakes by Individuals, children in low-income households who ate school breakfast had significantly higher HEI scores than children who ate breakfast at home or elsewhere and children who did not eat breakfast.³

Participation in the SBP has increased over the decades; however, the results from the School Nutrition Dietary Assessment Study (SNDAS), based on a nationally representative sample of 1730 children from schools in which the SBP was available, found that only 19% of children reported participating in the SBP on a given day.⁸ These children were from 173 schools nationwide (personal communication, Philip Gleason, Mathematica Policy Research, August 29, 2000). The same study found that of the remaining children who reported not eating the SBP breakfast that was available, 59% reported eating breakfast at home, 6% reported eating a non-SBP breakfast at school, 5% reported eating breakfast at a restaurant or other location, and 12% reported not eating breakfast at all.⁸ The following groups in the SNDAS were more likely to eat school breakfast than their counterparts: males, younger children (6- to 10-year-old children compared with 11- to 14-year-old children and 15- to 18-year-old children), those certified for free meals, low-income children regardless of certification status, black children, and children living in rural areas.⁸

Two other studies that reported findings regarding breakfast include the Bogalusa Heart Study and the Child and Adolescent Trial for Cardiovascular Health (CATCH). In the Bogalusa Heart Study, 84% of 467 10-year-old children reported eating breakfast, with the source of breakfast as home for 49% and school for 51%; the source of breakfast as school was reported by more black than white children (58% and 32%, respectively) and by more boys than girls (49% and 37%, respectively).¹ In CATCH, 94% of 1872 third-graders reported eating breakfast, with the source of breakfast as home for 84%, school for 13%, both home and school for 3%, and elsewhere for 4%.² More black children and American Hispanic children reported the source of breakfast as school than white children (30%, 33%, and 6%, respectively).² In contrast to the Bogalusa Heart Study and the SNDAS, there was no difference in breakfast participation at school for boys and girls (13% and 12%, respectively).²

To better understand children's participation in the SBP, we analyzed data collected at 6 schools during 1 school year for a study designed to determine the accuracy and consistency of children's school breakfast and school lunch recalls (hereafter referred to as the “accuracy/consistency study”) validated with observations.⁹ The first purpose of this analysis was to explore whether gender or race (black, white) was associated with children's participation in the SBP at the 6 schools selected. The second purpose of this analysis was to examine the extent to which a parent's or guardian's written response to the question “*Does this child usually eat school breakfast?*” truly reflected the child's participation in the SBP at the 6 schools selected. Although studies have used children's self-reported breakfast participation at school (eg, SNDAS, Bogalusa, CATCH), we were not aware of any studies that used observations.

DESCRIPTION OF DATA COLLECTION AND ANALYSIS

Approval to collect data was received from the institutional Human Assurance Committee. Children from all 22 fourth-grade classes at 6 schools in 1 school district were invited to participate in the accuracy/consistency study. The 6 schools were selected based on high participation rates in school breakfast and racial makeups to obtain equal proportions of blacks and whites across the final sample. Figure 1 shows the average daily participation rates in the SBP by children (kindergarten through fifth grade) (personal communication, Richmond County School Nutrition Program, March 2000), percentage of black fourth-grade children, and the total percentage of children (kindergarten through fifth grade) eligible for free or reduced-price school meals (personal communication, Richmond County School Nutrition Program, March 2000) by school for the 6 schools selected. Of the 534 children invited to participate, 73% agreed by providing signed child assent and parental consent forms. To estimate the number of children in the study who ate school breakfast, parents or guardians who provided consent for their children to participate were asked to answer the question "*Does this child usually eat school breakfast?*," which was printed at the bottom of the consent form. Answer options were either "yes" or "no." Consent forms were distributed 5 to 10 weeks after the school year began in August 1999.

Children's participation in the SBP was documented on randomly selected days for 26 to 51 days per school during 24 weeks from November 1999 through May 2000. The number of observation days conducted at each school depended on the number of children randomly selected from the school to be observed and interviewed for the accuracy/consistency study. (For that study, an individual child could be interviewed up to 3 times regarding what was eaten on the previous day.) The school breakfast and school lunch portion of each recall was compared to observations of those meals. Because a data collector could observe 2 to 3 children simultaneously, a school with 20 children to be interviewed required double the number of observation days than a school with 10 children to be interviewed. On most days that observations were made at the schools, the SBP offered a choice of cold cereal or hot entrée, along with milk, and juice or fruit. Examples of the hot entrée choices included pancakes, toasted cheese sandwiches, and sausage biscuits.

Participation in the SBP was defined as picking up a nametag and/or getting into the breakfast line on the days that data collectors were at the school to conduct observations. To identify children in the study while in the cafeteria, data collectors created nametags for these children; nametags were kept at the research office. When data collectors went to a school to observe breakfast, they would bring the nametags for that school with them and place them on a table for children to pick up as they entered the school cafeteria for breakfast. An assistant (ie, college student) reminded the children to pick up their nametags if they were going to eat school breakfast. The assistant documented which children picked up their nametags for 2 reasons: (1) to make sure that the nametag was returned after breakfast so that it could be used at lunch and for observations on future days and (2) to determine how often children ate school breakfast so that children in the study could each be observed eating school breakfast and school lunch on a maximum of 3 days, with a minimum of 4 weeks between any 2 observations for an individual child. Occasionally, an assistant or data collector noticed a child in the study getting into the breakfast line without his/her nametag and documented this as well.

Participation rate in the SBP for each child was defined as the number of days of participation in the SBP divided by the number of days breakfast observations were made at that school. Data excluded from analysis included that from 5 children of other races and from 25 children who transferred to a school that was not in the study before 10 days of observations were conducted.

To explore whether gender was associated with children's participation in the SBP, a Komolgorov-Smirnov (K-S) test was conducted on the distribution of participation rates for boys versus girls. A separate K-S test was conducted to explore whether race (black, white) was associated with children's participation in the SBP.

To examine the extent to which a parent's or guardian's written response to the question "*Does this child usually eat school breakfast?*" reflected their child's participation in the SBP, each child's participation rate was categorized into 1 of 2 groups: either $\geq 50\%$ or $< 50\%$ of the days observed. "Usual participation" was defined as participating in the SBP $\geq 50\%$ of the days observed. The McNemar test was conducted on the parent's response (yes, no) to usual participation against the grouping of the child's participation rate (usually [$\geq 50\%$], not usually [$< 50\%$]). To further examine the role that race may play in the extent of agreement between children's participation and parents' responses, a 2×2 table of parent response by usual participation grouping was constructed for each race; agreement between the 2 tables was tested using Cochran's Q statistic. (This procedure is a generalization of the McNemar test.) Analyses were conducted using SPSS, version 7.5, and SAS, version 8. Data regarding the accuracy/consistency study are reported elsewhere.⁹

DESCRIPTION OF FINDINGS

Figure 2 illustrates the skewed distribution of participation rates in the SBP for all fourth-grade children. Overall, children's ($n = 357$; 95 white boys, 106 white girls, 76 black boys, 80 black girls) median participation rate in the SBP was 37.5%. A total of 104 children (29%) never participated in the SBP on the days observed, 3 children (1%) participated in the SBP on all of the days observed, and the rest had varying participation rates ranging from 1% to 99%.

A significant difference was not found in the distribution of participation rates of boys (median 39%) versus girls (35%). Forty-six boys (27%) and 58 girls (31%) never participated in the SBP on the days observed. There were no boys and only 3 girls (2%) who participated in the SBP on all of the days observed.

The distribution of participation rates in the SBP for black versus white children was significantly different (K-S test, $P < .001$). The median participation rate for blacks was 60% compared with 8% for whites. Figure 3 shows the frequency distribution of participation rates in the SBP of fourth-grade children by race. Eighteen black children (12%) never participated in the SBP on the days observed compared with 86 white children (43%). Ninety-three black children (60%) participated in the SBP on at least half of the days observed compared with only 59 white children (29%).

A significant difference was found in the percentage of parents who said "yes" and "no" to the question "*Does this child usually eat school breakfast?*" when compared with the children's usual participation grouping in the SBP ($P < .001$, McNemar test). Of the 80 cases of disagreement, there were 69 cases in which the parent said "yes" to the question, whereas the child's observed behavior reflected he or she did not usually participate in the SBP. In the other 11 cases, the child was observed usually participating in the SBP, whereas the parent responded that the child usually did not participate in the SBP. The pattern of disagreement between parent and child was not different between blacks and whites. (Twenty parents did not answer "yes" or "no" to the question; they either left the question unanswered or wrote in "*sometimes.*")

The Table shows the parent's response to the question by the child's gender and race and usual participation grouping in the SBP. Responses given by the parents of boys and girls were similar in reflecting usual participation grouping in the SBP. For example, of the parents who responded "yes," 63 boys (64%) usually participated in the SBP and 70 girls (68%) usually

participated in the SBP. The “yes” responses by parents of black and white children and usual participation in the SBP reflect the larger participation in the SBP by black children.

LESSONS LEARNED

The first purpose of this analysis, which was to explore whether gender or race was associated with children's participation in the SBP, was met. The findings from our sample of 6 schools selected for the accuracy/consistency study indicated that although participation in the SBP did not differ by gender, there was a profound difference in participation rates by race, with black children participating more often than white children. Regarding race, the findings from our sample were similar to findings from the SNDAS,⁸ the Bogalusa Heart Study,¹ and CATCH.² Regarding gender, the findings from our sample differed from the findings from the SNDAS⁸ and the Bogalusa Heart Study¹ but were similar to the findings from CATCH.²

The second purpose of this analysis, which was to examine the extent to which a parent's or guardian's written response to the question on the consent form reflected their child's participation in the SBP, was also met. One of 3 children in our sample did not usually participate in the SBP when their parents responded that they did usually participate. This is a concern because these children may be skipping breakfast entirely and thus starting the school day hungry and missing important nutrients. A parent may believe that his or her child is eating breakfast at school, but the child is ultimately in control of this behavior. In contrast, 1 of 12 children in our sample did usually participate in the SBP when parents responded that they did not usually participate. This is a concern because these children could be eating 2 breakfasts, 1 at home and 1 at school. Consuming excess kilocalories leads to becoming overweight, and the prevalence of overweight in children has increased substantially over the last 3 decades.^{10,11} We found the pattern of disagreement between parents' responses and children's usual participation grouping significantly different in that most cases of disagreement were children not participating in the SBP when the parents thought they were. The patterns of disagreement were similar in blacks and whites.

The accuracy of parents' reports regarding their children's dietary intake has been examined in previous studies. Although one study indicated that parents could accurately report what their preschool children eat at home,¹² another study indicated that when preschool children were away from home for a notable part of the day (ie, > 4.5 hours), mothers were less likely to be able to report on their child's diet.¹³ Furthermore, several studies indicate that once children begin attending school, parents cannot be expected to know what their children eat while they are at school.^{14,15} In this analysis with fourth-graders, 80 of 337 (24%) parents gave incorrect responses compared with our observation of whether their children usually participated in the SBP. Although the question on the consent form concerned participation in the SBP in general (as opposed to on a specific day), we believe that our findings contribute to the argument that parents cannot be relied on to accurately report what their children ate for breakfast at school.

Children may choose not to participate in the SBP for a variety of reasons, including the earlier arrival at school and the extra time that the SBP requires.¹⁶ Although our study was not designed to assess why children did not participate in the SBP, anecdotal reports from our data collectors and assistants indicated that many children did not enter the breakfast line even though they arrived at school in plenty of time to do so. For example, at 3 (Schools 1, 3, and 6 [see Figure 1]) of the 6 schools, children were required to enter school through the cafeteria each morning; at 1 (School 3) of these 3 schools, children were required to stay in the cafeteria until school started even if they did not eat school breakfast. Staff at several other schools appeared to be pressured to move children out of the cafeteria as soon as possible, perhaps because of the limited time allowed for breakfast for the entire school (from 20 to 40 minutes across the 6 schools) or because children and school staff needed to get to class on time. Finally,

some children did not interact with children sitting by them from other classes and grades during breakfast, whereas during lunch, when children sat with their class, they did interact with children sitting around them. To overcome these obstacles from anecdotal reports and perhaps increase participation in the SBP, one option may be for schools to consider scheduling the SBP so that it is part of the school day, just as the School Lunch Program is part of the school day. This suggestion was made recently by the Food and Research Action Center.¹⁷

A strength of this analysis is that participation in the SBP was determined through observation rather than self-report by the child; however, it is important to note some limitations. First, we did not account for absences on the days that observations were made at the schools. As a result, participation rates in the SBP are somewhat underestimated. However, information provided by the school board indicated that average absentee rates were typically 5%, so participation rates in the SBP should not be sharply underestimated. Second, we did not account for the amount eaten at school breakfast; we examined a child's behavior of getting into the breakfast line and/or picking up a nametag, not whether the child actually ate his or her food. This was because the data collectors could observe actual consumption during school breakfast for only 2 to 3 children simultaneously, and the flow of children through the cafeteria limited further observations by the data collectors. Third, parents responded to the question on the consent form in late September to early November, and observations were made from mid-November 1999 through May 2000. It is possible that a child's participation in the SBP may have changed with the permission and/or knowledge of his or her parent as the school year progressed. Fourth, we defined "usual participation" by children as participating on 50% or more of the days observed to provide a median split of participation for analysis with the dichotomous response by parents to the question "*Does this child usually eat school breakfast?*" The distribution of participation rates was highly skewed and very different for blacks compared with whites. In light of these differences, we felt that a median split provided a valid and useful technique for examining the association of the child's usual participation to the parent's response. Finally, schools in which data were collected were selected based on high rates of school breakfast participation and with racial makeups to obtain equal proportions of blacks and whites across the final sample for the accuracy/consistency study. In spite of these limitations, our findings provide new insight into which fourth-grade children participate in the SBP and whether their parents know it.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Areas for future research regarding school breakfast participation include (1) studies designed to determine why children do not participate in the SBP and whether reasons given differ by children and parents, gender, and race and (2) studies regarding the impact of environment (eg, menu choices) and breakfast schedule on participation in the SBP. Children are ultimately in control of whether or not they eat school breakfast regardless of what the parent thinks or says; therefore, children, instead of parents, must be the source for nutrition professionals to learn whether children eat at school.

ACKNOWLEDGMENT

Data collection for this analysis was supported by grant HL63189 from the National Heart, Lung, and Blood Institute of the National Institutes of Health. The authors express appreciation to the children and staff of Goshen, Hephzibah, McBean, Monte Sano, Rollins, and Southside Elementary Schools and to the Richmond County Board of Education in Georgia for allowing data to be collected.

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Figure 1.

Average daily participation rates in the School Breakfast Program by children (kindergarten through fifth grade), percentage of black fourth-grade children, and the total percentage of children (kindergarten through fifth grade) eligible for free or reduced-price school meals by school.

Figure 2.

Frequency distribution of participation rates in the School Breakfast Program for all fourth-grade children (n = 357).

Figure 3. Frequency distribution of participation rates in the School Breakfast Program of fourth-grade children by race.

Table

Usual Participation Grouping in the School Breakfast Program (SBP) by Parent's Response to the Question "Does This Child Usually Eat School Breakfast?" by Child's Gender and Race

	Number of Children Participating in the SBP	
	Usually ($\geq 50\%$)	Not Usually ($< 50\%$)
Parents who said "yes" (n = 202)		
Child's gender		
Boy (n = 99)	63	36
Girl (n = 103)	70	33
Child's race		
Black (n = 115)	82	33
White (n = 87)	51	36
Parents who said "no" (n = 135)		
Child's gender		
Boy (n = 60)	5	55
Girl (n = 75)	6	69
Child's race		
Black (n = 30)	5	25
White (n = 105)	6	99