



HHS Public Access

Author manuscript

Appetite. Author manuscript; available in PMC 2016 February 23.

Published in final edited form as:

Appetite. 2014 March ; 74: 44–47. doi:10.1016/j.appet.2013.10.024.

Parental perception of the nutritional quality of school meals and its association with students' school lunch participation ☆

Punam Ohri-Vachaspati

School of Nutrition and Health Promotion, Arizona State University, Phoenix, AZ 85004, United States

Abstract

This study explores the association between parental perception of the nutritional quality of school meals and whether students eat lunch served at school. We use data from five low-income cities in New Jersey that have high minority populations. Students whose parents perceive the quality of school meals to be healthy have greater odds of eating meals served at school. Recent changes in guidelines for the United States Department of Agriculture's National School Lunch Program met with resistance from several fronts. Advocates for and implementers of improved school meals may benefit from partnering with parents to increase the acceptance and utilization of improved school offerings.

Keywords

Parental perception of school meals; School meals programs

Introduction

The United States Department of Agriculture's (USDA) National School Lunch Program (NSLP) is offered in 94% of public and private schools across the country (Ralston, Newman, Clauson, Guthrie, & Buzby, 2008). According to the School Nutrition and Dietary Assessment IV reports (Fox & Condon, 2012), on an average day in 2009–10, 63% of all students in NSLP public schools participated in the program, with students eligible for free and reduced price meals participating at higher rates (79% and 73%) than those paying full price (48%). In 2012, the USDA implemented revised nutritional guidelines for school meals (USDA, 2012) based on the 2010 Healthy Hunger Free Kids Act (USDA Food and Nutrition Services, 2012). The new guidelines require schools to add more fruit, vegetables, and whole grains to school meals; to limit milk to lower-fat options only; and to reduce saturated fats, trans fats, sodium, and calorie content of the meals. These new guidelines received a mixed response from lawmakers and School Food Authorities (SFA) resulting in temporary reversal on some rulings (USDA Food and Nutrition Services (a), 2012;

☆*Acknowledgements:* This research was supported by a grant from The Robert Wood Johnson Foundation. The author is grateful to Dr. Michael Todd and Dr. Michael Yedidia for useful discussions.

pohrivac@asu.edu.

Bogardus, 2012). Student protests against new healthier meals have captured the attention of social media sites across the country (EarthTalk, 2012).

Parents have supported improving the nutritional quality of school meals (DiCamillo & Field, 2012; Goldberg et al., 2009; Harris, Milici, Sarda, & Schwartz, 2012) to improve children's diets and to reduce the prevalence of obesity. As a result, advocacy agencies see parents as effective potential partners in promoting healthier school meals (CSPI). Understanding how parental perception of the nutritional quality of food served at school affects their children's participation in school meals can be critical for achieving improvements in school meals and for increasing the acceptance of such changes.

Methods

Data were obtained from a random digit dial phone survey of 1708 household with at least one child in the 3–18 year age group living in five low-income New Jersey cities in 2009–10. These data were collected as part of the New Jersey Childhood Obesity Study conducted in Camden, New Brunswick, Newark, Trenton, and Vineland. Survey participants were offered an incentive of \$10 for completing the survey, which was conducted in English and Spanish. The respondent, an adult parent or guardian who made most of the decisions about food shopping for the household, provided information on a randomly selected 3–18 year old child in the household and on household and parent level demographics. For this paper, analyses were limited to data obtained from parents of 1220 school-going children, referred to as students, with non-missing data on variables of interest.

The questions included in the phone survey were obtained and adapted from previous research and were field tested prior to use. Data on the outcome variable for the current analyses were collected by asking the parents “On most school days, does index child have a lunch served by the school?” Responses were coded as 1 for yes, and 0 for no. This question was adapted from a similar question that asked “How many days does your child typically get lunch in the cafeteria line?” and has been shown to have good reliability (Joe, Carlson, Sallis). Parental perception about healthfulness of school meals was obtained by asking “Regardless of whether or not index child eats food provided by his/her school, how would you rate the nutritional quality of foods offered at index child's school?” Responses were obtained on a four-point Likert scale from very unhealthy coded as 1 to very healthy coded as 4. Further, parents were asked if their child was eligible for free or reduced meals served at school. Responses were coded as 1 for yes and 0 for No. Additional variables used in the analysis included parent reports on child's age, race, gender, household income, parental education level, and whether the parent was foreign born. Descriptive and bivariate analyses were used to examine the data. Multivariate logistic regression analyses were used to assess the association between students' consumption of meals served by school as the dependent variable and parental perception of the healthfulness of the school meal as an independent variable, controlling for parent and student level factors. Household income was not included in the regression analysis because it was highly correlated with student's school meal eligibility status. All analyses were conducted using complex survey procedures in Stata Version 10 SE, to adjust for clustering of the sample within the five study cities. Sampling weights were used for all statistics reported so the results were representative of

children in the five cities. All statistical tests were considered significant at $p < .05$. This study was approved by the author's institutional review board.

Results

As shown in Table 1 and 60% of the students were elementary school age and the rest were older. Over three quarters of the students came from household with income below 200% of the federal poverty line. The majority of the students were non-Hispanic black (44.7%) or Hispanic (41.6%), and 70% were eligible for free and reduced price meals. Figure 1 shows that, compared to children whose parents perceived the lunch to be somewhat unhealthy (71.6%), a significantly higher proportion of students whose parents perceived the school lunch as somewhat healthy (89%) or very healthy (92%) ate lunch served at school. On the other hand, as shown in Fig. 2, parents of students who participated in free and reduced price lunches were equally likely to rate the nutritional quality of the meals into any of the four categories (from very unhealthy to very healthy).

Table 2 shows the results from multivariate logistic regression. After adjusting for student and parent demographic characteristics, including participation in free and reduced price meals, parental perception of school meals was a significant predictor of the odds of a student eating lunch served at school. Compared to students whose parents perceived the meals served at school as very healthy, students whose parents perceived the meals to be very unhealthy (OR = 0.40, 95% CI: 0.15–1.03) or unhealthy (OR = 0.24, 95% CI: 0.11–0.53) had lower odds of eating lunch served at school. Among the covariates, students' eligibility for free or reduced price meals was significantly associated with higher odds of students eating lunch served by school (OR 5.59, 95% CI 3.03–10.30). In addition, non-Hispanic black students and Hispanic students had significantly higher odds for eating lunch served at school compared to non-Hispanic white students. We used an interaction term to assess the prospect that the relationship between parental perception and parent reported school meal participation may be moderated by student's eligibility for free and reduced price meals. However, this interaction was not significant (results not shown).

Discussion

Among predominantly low-income, minority students, parental perception of the nutritional quality of school meals was independently associated with whether students ate meals served at school, after adjusting for demographic factors including eligibility for free and reduced price meals. School meals play a critical role in students' overall dietary intake. Students consume up to 2 meals and a snack at school (Stallings, Suitor, & Taylor, 2009) accounting for almost half of their daily calories (Gleason & Suitor, 2001). Lower income children, eligible for free and reduced priced meals, participate in school meal programs at a higher rate than do those who are not eligible for such benefits (Fox & Condon, 2012). While a number of concerns were raised about the nutritional quality of school meals prior to the recent update of school meal guidelines (Crepinsek, Gordon, McKinney, Condon, & Wilson, 2009), studies have consistently shown that students who participate in NSLP consume more fruits, vegetables, and milk (Condon, Crepinsek, & Fox, 2009; Krebs-Smith, Guenther, Subar, Kirkpatrick, & Dodd, 2010), components of the diet that are often lacking

in the diets of school-age children (Krebs-Smith et al., 2010). The USDA implemented revised guidelines governing reimbursable school meals starting in school year 2012 (USDA, 2012). Our finding that parental perception of the nutritional quality of meals served at school is a significant predictor of whether students eat at school suggests that keeping parents informed about changes in school meals is critical to successful implementation of nutritional guidelines to ensure that more students take advantage of healthier school meals. Parents, key stakeholders in children's nutrition, have supported making improvements in school meals (DiCamillo & Field, 2012; Harris et al., 2012) and have shown interest in obtaining additional information so they can discuss meal options with their children (Bailey-Davis et al., 2013; Goldberg et al., 2009). The USDA is in the process of developing guidance for competitive foods served in schools. It is likely that these guidelines, like the school meal guidelines, will receive resistance from various quarters. Schools and health advocates may want to partner with parents to help mitigate such resistance and to improve students' access to healthier school food offerings.

It is conceivable, given our cross-sectional design, that students' exposure to the schools' meals may have influenced their parents' perceptions of nutritional quality in our analysis; regardless of the direction of the causal relationship, parent perceptions may be key to their students' sustained participation. While this study was conducted prior to the release of the new USDA school food guidelines, the result showing that parents' perception of school food offerings is a strong predictor of student school meal participation is pertinent to the discussion about implementation of the new guidelines. To our knowledge, this is the first study based on a large diverse sample that examines this relationship using quantitative techniques. Future longitudinal studies are needed to understand the direction of causality between parent perception of nutritional quality of school meals and students participation. Another limitation of the study is that the outcome variable did not distinguish between reimbursable and non-reimbursable meals. However, more than two thirds of the children in the sample were eligible for free and reduced meals, and nationally, three quarters of the children eligible for these benefits participate in school meals. Therefore, most students who ate at school likely participated in NSLP.

Conclusions

Students' participation in meals served at school was independently associated with whether their parents perceived those meals to be healthy. Parents can be key stakeholders in improving the nutritional quality of meals served at schools. As new nutritional guidelines for reimbursable and competitive foods are established, advocates for and implementers of improved school guidance may benefit from partnering with parents to increase the utilization of improved school offerings.

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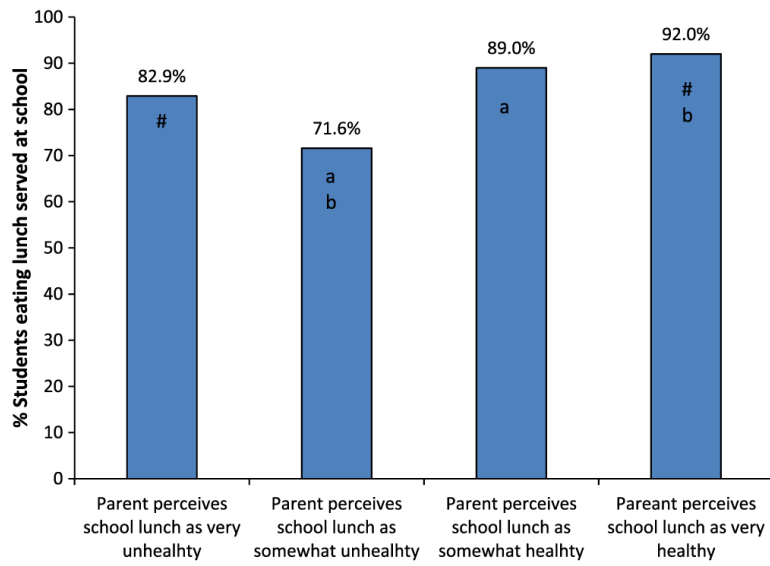
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Significant differences are indicated by same letters for $p < .05$ and # for $p < .1$.

Fig. 1. Percentage of students eating lunch served at school by parents' perception of the healthfulness of the lunch served.

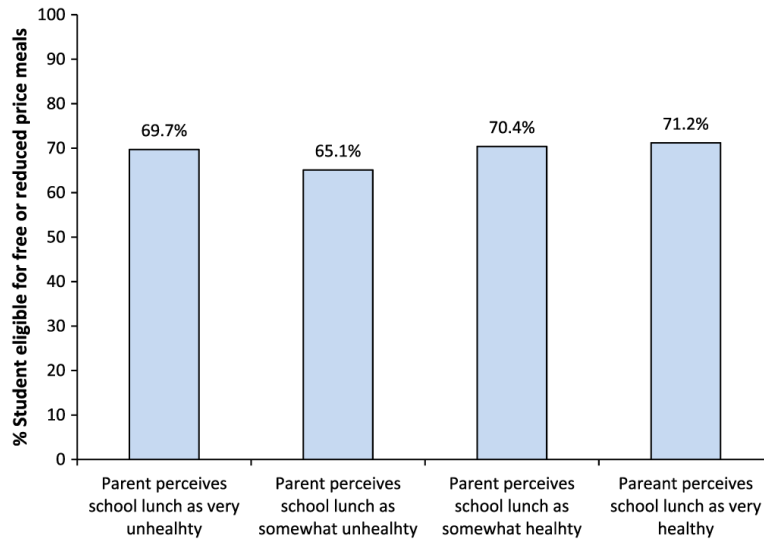


Fig. 2. Percentage of students eligible for free and reduced price meals by parents' perception of the healthfulness of the lunch served.

Table 1Demographic characteristics of the sample ($n = 1220$).

	% Sample ^a
<i>Gender</i>	
Male	50.6
Female	49.4
<i>Age</i>	
5–11	60
12–18	40
<i>Race</i>	
Non-Hispanic white	9.4
Non-Hispanic black	44.7
Hispanic	41.6
Other	4.2
<i>Eligible for free or reduced price meal at school</i>	
No	30
Yes	70
<i>Household poverty category</i>	
200% of the FPL	75.8
>200% of the FPL	24.2
<i>Mother's education</i>	
High school	61.1
Some college	21.6
College graduate	17.4
<i>Parent foreign born</i>	
No	72.6
Yes	27.3
<i>Parents perceive meals served at school are healthy</i>	
Very healthy	7.7
Somewhat healthy	13.7
Somewhat unhealthy	47.5
Very unhealthy	31.1
<i>Student eats lunch at school</i>	
No	12.8
Yes	87.2

^aSample weighted.

Table 2

Results of multivariate logistic regression analysis of association of a student's odds of eating lunch served at school with child and parent level variable ($n = 1220$).

	Odds ratio	95% CI	<i>p</i> -Value
<i>Gender</i>			
Male	Referent		
Female	0.63	0.36–1.12	0.118
<i>Age</i>			
5–11	Referent		
12–18	0.92	0.53–1.62	0.786
<i>Race</i>			
Non-Hispanic white	Referent		
Non-Hispanic black	3.50	1.75–6.99	<.001
Hispanic	2.43	1.32–4.49	0.005
Other	0.79	0.31–2.04	0.633
<i>Eligible for free or reduced price meal at school</i>			
No	Referent		
Yes	5.59	3.03–10.30	<.001
<i>Mother's education</i>			
High school	Referent		
Some college	1.28	0.69–2.37	0.435
College graduate	1.11	0.58–2.13	0.744
<i>Parent foreign born</i>			
No	Referent		
Yes	1.36	0.71–2.61	0.357
<i>Parents perceive meals served at school are healthy</i>			
Very healthy	Referent		
Somewhat healthy	0.82	0.40–1.68	0.589
Somewhat unhealthy	0.24	0.11–0.53	<.001
Very unhealthy	0.40	0.15–1.03	0.057

Sample weighted and SE adjusted for complex survey design.