

Short Communication

Is frequency of family meals associated with parental encouragement of healthy eating among ethnically diverse eighth graders?

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Abstract

Objective: The purpose of the present study was to explore the relationship between family meals and parental encouragement of healthy eating overall and by ethnicity.

Design: Family meal frequency was measured with one item asking how many times in the past 7 d all or most of the family ate a meal together, which was then categorized to represent three levels of family meals (≤ 2 times, 3–6 times and ≥ 7 times). Parental encouragement of healthy eating assessed how often parents encouraged the student to eat fruits and vegetables, drink water, eat wholegrain bread, eat breakfast and drink low-fat milk (never to always). An overall scale of parental encouragement of healthy eating was created. Mixed-effect regression analyses were run controlling for gender, ethnicity, age and socio-economic status. Moderation by ethnicity was explored.

Setting: Middle schools.

Subjects: Participants included 2895 US eighth grade students participating in the Central Texas CATCH (Coordinated Approach To Child Health) Middle School Project (mean age 13.9 years; 24.5% White, 52.7% Hispanic, 13.0% African-American, 9.8% Other; 51.6% female).

Results: Eating more family meals was significantly associated with having parents who encouraged healthy eating behaviours (P for trend < 0.001). The number of family meals was positively associated with encouragement of each of the healthy eating behaviours (P for trend < 0.0001). There were no differences in the relationships by ethnicity of the students.

Conclusions: Families who eat together are more likely to encourage healthy eating in general. Interventions which promote family meals may include tips for parents to increase discussions about healthy eating.

Keywords
Family meals
Healthy eating
Parental encouragement
Parenting

Currently, 31.8% of children and adolescents aged 2–19 years are overweight or obese in the USA⁽¹⁾. Given the negative health effects associated with childhood overweight and obesity, a growing body of research has investigated the role of family meals and parental support for healthy meals to address these issues. Family meals, generally defined as eating with all or part of the family, have been found to offer numerous nutrition-related benefits to family members⁽²⁾. Recent work with a variety of adolescent populations has found positive associations between increased family meal frequency, overall healthy

diets and normal weight⁽²⁾. For example, increased family meal frequency has been associated with increased breakfast, lunch and dinner frequency⁽³⁾; increased vegetable, fruit, grain, Ca-rich foods and dietary fibre consumption; increased intake of several nutrients (vitamins A, C, E, B₆, folate, Ca, Mg, K, Fe and Zn)⁽⁴⁾; and decreased intake of fast food⁽³⁾ and soft drinks^(3,4). Furthermore, increased frequency of family meals has been inversely associated with BMI, overweight and obesity⁽⁵⁾. Research specifically on family dinner frequency has found positive relationships with increased breakfast frequency⁽⁸⁾; fruit, vegetable and

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dairy food consumption⁽⁶⁾; as well as higher intakes of key nutrients such as fibre, Ca, folate, Fe and vitamins B₆, B₁₂, C and E; and negative relationships with fried food and soda consumption^(6,7). Frequency of family dinner was also associated with increased availability of fresh fruits and vegetables and lower BMI. In addition to dietary benefits of family meals, recent research suggests that family meals may provide a more positive and supportive home food environment through increased parental support⁽⁹⁾ and increase adolescents' self-efficacy for fruit and vegetable consumption⁽¹⁰⁾. Given the positive effects family meals appear to have on adolescents, increasing the frequency of family meals has been suggested as a way to promote positive well-being and dietary behaviours among adolescents⁽¹¹⁾.

In addition to frequency of family meals, parental support has emerged as a target for increasing positive dietary behaviours among adolescents⁽¹²⁾, particularly parental support for healthy eating. Recently research among adolescent populations found that parental support for healthy eating was associated with increased availability of fruits and vegetables at home⁽¹³⁾, consumption of fruits and vegetables^(13–15), higher fibre intake^(16,17), decreased added sugar intake⁽¹⁷⁾ and overall healthful eating⁽¹⁸⁾. Furthermore, a recent study suggested that parental stimulation for healthy eating, a measure similar to encouragement of healthy eating, was negatively associated with increased BMI of children aged 5–7 years⁽¹⁷⁾. Qualitative work has found that high-school boys who report support from parents, teachers and friends for healthy eating are more likely to eat healthy foods⁽¹⁹⁾. Due to the positive effects on adolescent dietary patterns, parental support for healthy eating should be considered a primary determining factor in adolescent diet quality.

Given that family meals as well as parental support for healthy eating provide adolescents with positive dietary benefits^(13,18), it is possible that through discussion at family meals parents may provide increased support and encouragement for healthy eating. However, little research has explored the relationships between these two factors. When considering previous research on determinants of family meals and dietary patterns, differences have been found across factors such as gender, school level, ethnicity, maternal employment status, parental education and socio-economic status^(4,6,20,21). While ethnicity is frequently cited as a determinant of frequency of family meals^(4,9,22), most samples lack ethnic diversity, particularly among the Hispanic population.

The purpose of the present study was to explore the relationship between family meals and parental encouragement of healthy eating in an ethnically diverse sample of eighth grade adolescents. Given that ethnicity appears to be an important factor in the frequency of family meals, the possible moderating relationship of ethnicity was explored. Based on previous research, it was hypothesized that adolescents who eat more family meals will have

parents with greater levels of encouragement of healthy eating overall and for individual dietary behaviours. Given the limited research on family meals and parental support by ethnicity, no hypotheses were proposed for the moderating effects of this variable.

Experimental methods

Participants

The current cross-sectional analysis includes baseline measures collected in spring 2009 from eighth grade students participating in the CATCH (Coordinated Approach To Child Health) Middle School Project, a school-based intervention aimed at improving physical activity levels, eating behaviours and obesity rates in thirty central Texas middle schools⁽²³⁾. Among the total sample of schools, the mean percentage of school composition of economic disadvantage was 58.69%, with a range of 18.4% to 94.8%. Economically disadvantaged was based on the percentage of students who qualified for free and reduced-price school lunch as defined by Texas Education Agency. The University of Texas Health Science Center at Houston's Institutional Review Board and participating school districts approved the study. A total of 2895 eighth grade students completed the survey. Students were on average 13.9 years old and 51.6% were female. The sample was ethnically diverse with 24.5% White, 52.7% Hispanic, 13.0% African-American and 9.8% Other. Nearly 40% of the students were overweight or obese. Overweight was defined as ≥ 85 th percentile and obese was defined as ≥ 95 th percentile. Both of these classifications were based on BMI percentiles calculated using the Centers for Disease Control and Prevention 2000 growth charts⁽²⁴⁾.

Measures

Students completed a self-report survey with items on frequency of family meals and parental encouragement of healthy eating behaviours^(4,13,25).

Family meal frequency, the exposure variable, was measured with one item asking how many times in the past 7 d all or most of the family ate a meal together. The response options included 'never', '1–2 times', '3–4 times', '5–6 times', '7 times' and 'more than 7 times'. To allow investigation of trends, a categorical variable was created to reflect three levels of family meal frequency based on approximate tertiles of the family meal frequency measure. The categories corresponded to ≤ 2 family meals in the past week (35%), 3–6 family meals in the past week (35%) and ≥ 7 family meals in the past week (31%). This measure has been previously used with similar populations⁽⁴⁾.

Parental encouragement of healthy eating behaviours, the outcome variable, was assessed using five questions which asked how often parents encouraged the student to eat fruits and vegetables, drink water, eat wholegrain

bread, eat breakfast or drink low-fat milk. The response options included ‘never’, ‘almost never’, ‘sometimes’, ‘almost always’ and ‘always’. For analysis purposes, ‘never’ was recoded equal to 0, ‘almost never’ was recoded to equal 1, ‘sometimes’ was recoded to equal 2, ‘almost always’ was recoded to equal 3 and ‘always’ was recoded to equal 4. Higher values represented higher levels of parental encouragement. Similar measures of overall parental encouragement have been previously used in similar populations⁽¹³⁾. In addition to each individual measure of parental encouragement, an overall scale of parental encouragement of healthy eating was created. The overall parental encouragement variable was created by summing response options of each individual parental encouragement item to result in one overall score. This scale had a mean of 12.97, ranged from 0 to 20, and had a Cronbach’s α of 0.85.

Covariate measures included age, gender, ethnicity and socio-economic status (SES). Age was calculated from the student’s birthday. Gender was categorized as male or female. Ethnicity was categorized into White, African-American, Hispanic and Other⁽²⁶⁾. SES was measured using a single-item individual-level measure that asks students to describe their family’s standard of living^(27,28). Family’s standard of living was determined through a question which asked students to compare their family’s financial situation with that of other families with response options that ranged from 1 (‘much worse off’) to 5 (‘much better off’)⁽²⁸⁾.

Analysis

Cross-sectional mixed-effect regression analyses, using the statistical software package SAS version 9.2, were conducted to determine the relationship between the three levels of family meal frequency and parental encouragement of healthy eating for each individual measure of parental encouragement, as well as the newly created overall measure of parental encouragement for healthy eating. Mixed-effect regression models are appropriate here because student outcomes may be clustered within schools^(29,30) and the effects of school are considered to be a randomly distributed variable. All models controlled for student gender, ethnicity, age and SES. Interactions were explored by ethnicity. The percentage of variance in family meals explained by the final full model was estimated using the procedures presented in Snijders and Bosker⁽³¹⁾.

For the family meal frequency variable, 550 students had missing data (19% of the sample). A significantly greater percentage of male, Latino, Other ethnicity and a lower percentage of White students had missing data on this variable ($P < 0.05$). These students also had lower parental encouragement scores ($P < 0.05$). Students with missing data on the family meal frequency variable were excluded from analyses, leaving 2345 participants with valid data who served as the analysis sample for the present study. Missing data for this sample ranged from 0.2% for gender to 3.5% for the encouragement of healthy eating scale.

Table 1 Descriptive statistics of family meals and parental encouragement of healthy eating, overall and by race/ethnicity: middle-school students (n 2345) participating in the Central Texas CATCH (Coordinated Approach To Child Health) Middle School Project, spring 2009

Scales	Overall (n 2345)		White (n 697)		African-American (n 368)		Hispanic (n 1498)		Other (n 278)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Family meals	4.2	2.8	4.4	2.7	3.7	2.9	4.2	2.8	4.1	2.9
Overall encouragement of healthy eating	13.0	5.5	13.9	5.3	12.4	5.7	12.5	5.4	14.1	5.3
	Never (%)	Always (%)	Never (%)	Always (%)	Never (%)	Always (%)	Never (%)	Always (%)	Never (%)	Always (%)
Encouragement of healthy eating	6.2	46.2	4.3	52.8	8.5	43.0	7.0	41.6	5.1	55.5
Eat fruits and vegetables	7.0	51.2	6.1	51.3	8.2	52.8	7.2	49.4	6.4	58.9
Drink water	18.1	35.4	15.4	43.7	25.4	35.4	18.5	29.4	14.0	42.8
Eat wholegrain bread	11.7	48.4	8.6	57.1	14.5	45.6	13.2	43.1	8.4	56.7
Drink breakfast every morning	36.0	26.4	35.4	32.8	44.6	23.6	35.0	22.2	32.1	33.8
Drink low-fat, skimmed or non-fat milk										

Results

On average, students had 4.2 family meals in the past 7 d with all or most of their family (Table 1). On average, White youth had 4.4 family meals in the past week, while Hispanic youth had 4.2 and African-American had 3.7 family meals in the past week. Youth in the Other ethnic group (including Asian, American-Indian and others) had 4.1 family meals during the past week. Parental encouragement of healthy eating was a mean score of 13.0 out of 20 for the total sample (see Table 1). Youth from the Other category for ethnicity reported the highest overall mean encouragement score of 14.1, while African-American youth reported the lowest overall encouragement score of 12.4. When exploring each of the types of encouragement of healthy eating, only 26.4% of students reported that their parents always encouraged them to drink low-fat, skimmed or non-fat milk, while 51.2% reported their parents always encouraged them to drink water (see Table 1).

Family meal frequency was significantly associated with encouragement of healthy eating. Higher levels of family meal frequency were associated with significantly greater levels of encouragement of healthy eating behaviours (*P* for trend <0.0001; see Table 2). Additionally, greater family meal frequency was independently associated with greater encouragement of each of the healthy eating behaviours: fruit and vegetable consumption, drinking water instead of soda, eating wholegrain bread instead of white bread, eating breakfast every morning, and drinking low-fat, skimmed or non-fat milk (*P* for trend <0.0001). In models that tested the moderation effects of ethnicity on the relationship between family meal frequency and encouragement of healthy eating, none of the models were significant (data not shown).

Discussion

Similar to previous research on US adolescents^(4,32), the present study found that students reported eating with all or most of their family just over four times per week. We also found that adolescents who reported having more meals with their family were more likely to have parents who encouraged overall healthy eating. This confirms previous research that suggests families who eat together often support healthy eating^(10,15). In addition, this research supports previous findings that family meals and parental encouragement have the ability to positively impact individual eating behaviours, such as fruit and vegetable consumption⁽¹⁵⁾. Our research expands this literature base by identifying a positive association between family meal frequency and parental support not only for fruit and vegetable consumption, but also for a range of healthy eating behaviours that include drinking water, eating whole grains, eating breakfast and drinking milk. Given that previous research has documented the relationship between

Table 2 Relationship between frequency of family meals and parental encouragement among middle-school students (*n* 2345) participating in the Central Texas CATCH (Coordinated Approach To Child Health) Middle School Project, spring 2009*

Frequency of family meals per week	Overall encouragement of healthy eating		Mean parental encouragement						
	Mean	SE	Eat fruits and vegetables	Drink water	Eat wholegrain bread	Eat breakfast every morning	Drink low-fat, skimmed or non-fat milk	Mean	SE
≤2 times (rarely)	11.5	0.22	2.6	2.8	2.1	2.5	1.5	0.07	0.07
3–6 times (sometimes)	13.6	0.22	3.1	3.1	2.5	2.9	1.9	0.07	0.07
≥7 times (always)	14.9	0.23	3.4	3.4	2.8	3.3	2.1	0.06	0.07
<i>P</i> value for trend	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
<i>R</i> ²	11.5%		11.8%	6.7%	6.5%	8.8%	4.6%		

*Based on mixed-effects regression models adjusting for school as a random effect and student gender, age, socio-economic status and race/ethnicity as covariates.

family meals and healthy eating^(3,4,6,7), the present study suggests parental support for healthy eating may be one of the factors behind those results. Currently, little research has explored specific methods of how to support parents to encourage healthy eating during mealtimes; therefore, interventions that aim to promote family meals may also want to include information and tips for parents on how to encourage healthy eating during family meals. Additionally, qualitative research should be conducted with parents to help understand motivation and practice behind encouragement for healthy eating, as this may provide context as to why and how some parents encourage healthy eating while others do not.

While previous research has found ethnicity is a factor associated with family meals^(4,9,22), the present study did not find significant interactions between the relationship of family meals and encouragement of healthy eating. This may be due to differences in sample characteristics. For example, previous studies that found ethnicity as a factor associated with family meals had samples which comprised less than 10% of Hispanic participants or did not include Hispanic participants, while our study had greater than 50%. Nevertheless, this is important because it suggests that regardless of ethnicity, youth who eat more meals with their family are more likely to be encouraged to engage in healthy eating.

Limitations of the present study include the cross-sectional nature of the data, the potential for social desirability bias with the self-reported measures, and the lack of measurement of the direct relationship between parental encouragement for healthy eating and actual consumption. Additionally, almost 20% of the sample was missing data on the family meal frequency variable and those students were more likely to have lower parental encouragement scores. However, their exclusion may have resulted in weaker relationships, given that greater family meal frequency was associated greater parental encouragement. Finally, the percentage variance explained in parental encouragement of healthy eating ranged from 4.6% to 11.8%, suggesting that there are likely other variables which should be explored in future research to better understand this construct. Despite these limitations, the present study provides valuable information that may be used to promote healthy eating among an ethnically diverse group of adolescents. While the study confirmed that family meal frequency was positively associated with encouragement of healthy eating, future research is needed to understand if encouragement of healthy eating is the mechanism through which family meals has been found to be associated with positive dietary behaviours. If the influence of family meals works through parental encouragement, this would provide insight into the possible reasons why family meals are associated with a variety of healthful behaviours. Furthermore, research should consider the levels of encouragement of healthy eating across a variety of age groups. This is important as previous research has

shown that both family meals and encouragement of healthy eating decrease with age^(9,18). Alternative mechanisms future research should consider include the impact of parenting style and food availability on the relationship between family meals and encouragement of healthy eating, as they have been found to positively influence frequency of family meals and consumption^(13,17,33). For example, recent research suggests that children of authoritative parents are more likely to have increased family meal frequency compared with children of neglectful parents⁽³³⁾, but this has been unexplored in regard to encouragement of healthy eating. Additionally, availability of fresh fruits and vegetables has been highly associated with intake; however, family meal frequency only had a small effect on availability and support for healthy eating had a moderate effect⁽²⁵⁾. This may suggest that support or encouragement may be a more influential factor in fresh food availability, a strong predictor of consumption. Further research is needed which continues to explore these possible mechanisms.

Conclusion

The present study found that increased family meal frequency is associated with increased parental encouragement of healthy eating overall and for individual dietary behaviours (e.g. encouragement of fruit and vegetable consumption) and that these relationships do not vary by ethnicity. This suggests that regardless of ethnic differences, parental encouragement may provide the link between family meals and positive dietary benefits for youth.

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