

## Family Mealtime Environments of 11-12 Year-old Children in the Incheon Area

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**ABSTRACT** This study was performed to describe the perceptions of the family mealtime environment in preadolescents, and to determine the frequency of family meals and whether the mealtime environment is associated with nutrient intake. Surveys and 24-hour dietary recalls were completed by 197 children, ages 11 to 12, in elementary schools in the Incheon area. We assessed family meal frequency and the perceptions of the family meal environment with respect to priority, atmosphere, and family mealtime structure. The subject response frequencies and correlations among perceptions of the family mealtime environment, as well as the frequency of family meals and nutrient intake, were analyzed. Having a greater priority for family meals was associated with an increased frequency of family mealtimes. An enjoyable family meal environment was positively correlated with increases in nutrient intake. From the results of this study, we suggest that consideration be placed on opportunities to design nutrition promotion strategies that target families and their children, with respect to promoting family mealtimes and overcoming the barriers to having family meals.

**KEYWORDS:** *preadolescents, family meal frequency, family meal environment, nutrient intake*

### INTRODUCTION

Preadolescence is a period of preparation for the physical and emotional demands of the adolescent growth spurt. The social relationships that develop while eating meals with others build a sense of community and belonging. For many families, mealtimes are the only time of day when their members come together. These shared meals have come to symbolize family unity (1,2). The development of family unity through family meals is important during childhood (3,4), and may provide the structure and sense of unity and connectedness that young children need to feel safe and secure (5,6). Family mealtimes provide special potential for fostering development because they're a context in which children are a captive audience, at least for the few minutes it takes them to eat. Furthermore, family meals can give parents the opportunity to model, and to monitor and control behaviors; also, it is an opportunity for children to learn healthy eating habits.

Recently, family meal occasions have been negatively affected by changes in modern society, such as increases in

after-school learning activities, changes in family structure and living arrangements, and increased availability of convenience food. According to a recent report, the percentage of children attending after-school learning activities was 86.7% in middle income families. In addition, 53.5% of children from middle income families participated in after-school activities over 5 times per week, and 86.9% of responding students participated in activities more than 1 time per week (7). Higher grade elementary school students spend more time away from their home and family than they did when they were younger. Irregular eating seems to increase with the age of the child, and skipping meals occurs among adolescents (8). In addition, scheduling difficulties among family members interfere with family meals (9). One study reported that family meals are less frequent when the mother works outside the home (10).

Family mealtimes are associated with better dietary intakes and healthful behaviors among children (9), and are inversely associated with eating disturbances or unhealthful eating patterns, including skipping breakfast (11). Furthermore, family meals can facilitate family interaction, communication, and a sense of unity. But it is unknown whether elementary school children display similar irregularities in their meal patterns. There is evidence of healthier intakes among children and adolescents who consume more meals with their families (9,12). Currently there is little information that allows us to characterize children's eating behaviors within

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the family environment, nor to understand the factors influencing these food patterns.

The aim of the present study was to examine the family meal environment and its association with dietary intake among preadolescents.

## METHODS

### Subjects

A total of 220 preadolescent children aged 11~12 years and living in Incheon area were recruited to participate in the study. The participation rate was 100% and complete dietary data was obtained from 197 subjects. Data on the children's body weights and heights were measured within six months of completing the questionnaires, and were obtained from a health chart.

### Study protocol

The protocol included assessing the socio-environmental and personal correlates of dietary intake among preadolescents. The questionnaires were distributed by a registered dietitian at schools to 6<sup>th</sup> grade students. The registered dietitian verbally instructed all subjects, and provided written instructions on how to answer the questionnaires and record the details of everything they ate for 24 hours. The data were collected during December in 2006.

### Measures

The measures that were included in the questionnaire and that are reported in this paper are briefly described below:

**Profiles of respondents:** The questions sought details of parental education, employment status, occupation, as well as family structure (e.g, number, meal manager).

**Family meals:** The frequency of family meals was assessed with the following question: "During the past seven days, how many times did all, or most, of your family living in your house eat a meal together?" The response categories were "never, 1 or 2 time, 3 or 4 times, or 5 to 7 times at each meal." The preadolescents also responded to a series of statements in which they ranked their level of disagreement/agreement (15). The priority for family meals was assessed with three items related to the importance of family meals and barriers to family meals (see Table 2 for item descriptions). The atmosphere of the family mealtime environment was assessed with several items regarding communication and enjoyment during meals. The structure surrounding family meals was assessed with items regarding rules, manners, and watching television while eating dinner. These items were adapted from the family eating attitude and behavior scale (13).

**Dietary intake:** Dietary intake was assessed using a

single 24 hour dietary recall. For each subject, individual foods and beverages were reported during a 24 hour period, as well as a summary of daily energy and nutrient intake.

### Statistical analysis

Most of the items in the student survey had categorical response options. In the table, frequencies are provided for all of the response options; however, the response options were dichotomized for appropriate tests of significance. Thus, for the frequency of family meals, the responses were recorded as 'never', '14 times', or '5 or more time'. Means were calculated for the dietary nutrient intakes. General linear models with Duncan's multiple range tests for multiple comparisons were used to test the differences across family meal frequencies. For comparisons across categorical variables,  $\chi^2$  tests were used. Spearman correlations were calculated with the full range of response options to identify the relationships between reported family meal frequencies, perceptions of the family mealtime environment, and nutrient intake.

## RESULTS

### Perceptions of family meals

The frequencies of family breakfast meals were never at 21.8%, 1 to 4 times per week at 48.7%, and 5 or more times per week at 29.4%. The frequencies of family dinner meals were never at 4.5%, 1 to 4 times per week at 48.2%, and 5 or more times per week at 47.2%. Relatively few students reported never eating dinner with their family in the past week. The students were more likely to report eating five or more family dinners per week than family breakfasts.

Among the preadolescents in this study, 64.5% reported the importance of eating a meal together as a family, reporting a positive atmosphere during meals, high levels of communication, and the perception that family meals are a time for enjoyment. However, 31% of the subjects reported time barriers, and 24.5% had differing schedules as barriers to family meals.

Also, 40.5% of the subjects perceived they were expected to follow rules at family meals. And 22.5% of them reported that manners at the dinner table were important. Finally, 36% of them reported that watching television is not allowed while eating.

### Correlations among perceptions of the meal environment, family meal frequency, and parent education level

As shown in Table 2, higher priority for family meals, fewer time and scheduling barriers to family meals, and a more enjoyable environment, were associated with reports of more frequent family meals. However, meal structure was not related to family meal frequency. A higher education level for fathers was significantly related with less TV

**Table 1.** The family mealtime environment

<b>Frequency</b>	<b>N(%)</b>
Number of times family had a meal together for breakfast in past week	
Never	43(21.8)
1-4	96(48.7)
>5	58(29.4)
Number of times family had a meal together for dinner in past week	
Never	9(4.5)
1-4	96(48.2)
>5	94(47.2)
<b>Priority</b>	<b>N(%)</b>
It's important that our family eat a meal together	
strongly disagree	6(3)
somewhat disagree	15(7.5)
average	48(24)
somewhat agree	42(21)
strongly agree	87(43.5)
It is difficult to find time for a family meal	N(%)
strongly disagree	29(14.5)
somewhat disagree	48(24)
average	55(27.5)
somewhat agree	44(22)
strongly agree	18(9)
My schedules make it hard to eat together	N(%)
strongly disagree	
somewhat disagree	48(24)
average	72(36)
somewhat agree	41(20.5)
strongly agree	8(4)
Adult work schedules make it hard to eat together	
strongly disagree	29(14.5)
somewhat disagree	48(24)
average	72(36)
somewhat agree	41(20.5)
strongly agree	8(4)

watching while eating. The mother's education level affected the meal environment, and making mealtime a time for family communication.

### **Correlations between perceptions of the meal environment and nutrient intake**

The correlations between the perceptions of family meals and nutrient intake were examined. A higher priority for family meals was associated with total fat intake. The intakes of total protein, vitamin A, phosphorus, and vitamin B<sub>6</sub>, were significantly increased in an enjoyable family meal environment. More notably, the analyses revealed that the family structure as controlled by the parents was significantly associated with the respondents' nutrient intakes. A positive association was found between family structure and the

intakes of total protein, Ca, Fe, vitamin A, vitamin B<sub>2</sub>, vitamin B<sub>6</sub>, folate vitamin E, phosphorus, and dietary fiber. The beneficial effect of family meals increased with enjoyable environment and desirable structure.

## **DISCUSSION**

The findings from this study indicate there is a wide variability in family meal patterns. Family meals are clearly not extinct; a relatively high percentage of children reported frequent family meals. Nevertheless, 48.7% of the respondents reported eating dinner with their family less than 4 times during the previous week. The findings also demonstrate strong associations between family meal priority and the frequency of family meals. The respondents had positive

**Table 1.** The family mealtime environment (Continued)

<b>Atmosphere</b>	N(%)
dinner is about more than food: we all talk	
strongly disagree	5(2.5)
somewhat disagree	13(6.5)
average	51(25.5)
somewhat agree	80(40)
strongly agree	48(24)
Mealtime is a time for talking with family	
strongly disagree	6(3)
somewhat disagree	30(15)
average	59(29.5)
somewhat agree	59(29.5)
strongly agree	44(22)
Eating family meals brings people together in an enjoyable way	
strongly disagree	5(2.5)
somewhat disagree	7(3.5)
average	63(31.5)
somewhat agree	65(32.5)
strongly agree	58(29)
<b>Structure</b>	N(%)
We are expected to follow rules to eat foods even though we don't like at meal time	
strongly disagree	19(19.5)
somewhat disagree	26(13)
average	72(36)
somewhat agree	61(30.5)
strongly agree	20(10)
Manners are important at the dining table	
strongly disagree	32(16)
somewhat disagree	51(25.5)
average	70(35)
somewhat agree	38(19)
strongly agree	7(3.5)
We watch TV while eating	
strongly disagree	46(23)
somewhat disagree	26(13)
average	53(26.5)
somewhat agree	37(18.5)
strongly agree	36(18)

expectations about eating meals with their families and seem to believe family meals are important. There was a negative association between time or scheduling barriers to family meals and the frequency of family meals; however, the association between positive family meal atmosphere and family meal frequency was generally significant.

Family meals may be a useful mechanism for enhancing family togetherness and communication, and for role modeling behaviors that parents would like their children to exhibit. In the present study, the respondents who enjoyed eating meals with their families seemed more likely to have more

frequent family meals. And there were positive relationships between enjoyable family meal environment, desirable structure, and family meal frequency. A more enjoyable family meal environment resulted in more frequent family meals. Thus, promoting a positive meal atmosphere that is free of conflict may enhance the frequency of eating meals together. In addition, the mother's education level was significantly associated with the family meal environment. Previous studies have reported the influence of specific parental activities on eating habits during childhood (10). The eating patterns of children are established through a

**Table 2.** Correlations among frequency of family meals and perception of family mealtime environment for preadolescents.

	Father's education level	Mother's education level	Frequency of family meals
<b>Priority</b>			
It's important that our family eat a meal together at least once a day.	0.061	0.006	0.427***
It is difficult to find time for a family meal	-0.037	-0.008	-0.379***
Different schedules make it hard to eat together	0.083	0.037	-0.315***
<b>Atmosphere</b>			
Dinner is about more than food; we all talk	0.013	0.124	0.091
Mealtime is a time for talking with family	0.106	0.238***	0.073
Eating family meals brings people together in an enjoyable way	0.053	0.072	0.226***
<b>Structure</b>			
We are expected to follow rules to eat foods even though we don't like at mealtime	0.015	0.023	0.001
Manners are important at the dinner table	0.072	0.010	0.059
We watch TV while eating	-0.142**	0.020	-0.017

<sup>1)</sup>Spearman correlations between priority, atmosphere, and structure of family meals and the intakes of nutrient were conducted.

\*\* $p < 0.01$ .

\*\*\* $p < 0.001$ .

**Table 3.** Correlations between nutrients intake and perception of family mealtime environment for preadolescents<sup>1)</sup>

	Family priority	Family meal atmosphere	Family structure
Energy	.111	.139	.134
Protein	.128	.143*	.17*
Fat	.167*	.108	.103
Vit A	.067	.192**	.182*
Vit B <sub>1</sub>	.111	.071	.109
Vit B <sub>2</sub>	.102	.066	.154*
Vit C	-.02	.126	.136
Vitamin B <sub>6</sub>	.072	.141*	.153*
Folate	.032	.134	.219**
Vit E	.008	.087	.176*
Ca	.053	.096	.204**
Phosphorus	.088	.143*	.214**
Fe	.037	.093	.21**
Dietary Fiber	.042	.110	.243**

<sup>1)</sup>Spearman correlations between priority, atmosphere, and structure of family meals and the intakes of nutrient were conducted.

\* $p < 0.05$ .

\*\* $p < 0.01$ .

complex process involving internal and external factors such as food preferences and availability, body weight perception, and parental and peer influences (14,15).

In the present study, nutrient intake was not associated with family meal frequency. However, the findings provide clear evidence of strong positive associations among an enjoyable family meal environment and desirable family structure and nutrient intake. We cannot be sure that family meals lead to improved dietary intake, or rather, that other

common factors within the family environment lead to both increased family meals and better nutrient intake. This may be due to the fact that most of the respondents had family meals quite often in the present study, where the majority ate dinner at home with their family. Another interpretation is in the mother becoming a distinct stimulus for an enjoyable family meal environment. The findings are important in light of the psychosocial development of our youth. Family meals may contribute to the development of regular eating patterns as well as positive psychosocial development. Therefore, it should be noted that the strong associations between the family meal patterns and nutrient intake might be reflective of a generally healthier home environment. The family meal environment likely represents an important opportunity for exposure to healthful eating patterns.

Having more enjoyable family meals and a more desirable structure during childhood increased the frequency of family meals. In some families, the family meal environment, in particular, facilitates a child's social, cognitive, emotional, and nutritional intake. Teens that eat more meals with their families show healthier eating patterns. Teens in families that make eating meals together a priority, provide rules and structure at mealtimes, and maintain an enjoyable mealtime atmosphere, are less likely to engage in unhealthy eating and dieting behaviors (16). The findings suggest the importance of improving the atmosphere at family meals, and striving to increase the frequency of family meals in the homes of teens.

In previous studies, it was reported that poor eating patterns may result in nutritional problems that can impair growth and development in children. Furthermore, the eating habits formed in childhood continue into adulthood; consequently, poor dietary patterns have important implications

for health and well-being in adulthood (17,18). Larson *et al.* reported that the family meal frequency of 10 and 11 year-old children predicted less eating of sweets and fast foods, and lowered total child behavior problem checklist scores.

The tendency to eat together as a family was associated with healthy food choices among schoolchildren (19). Based on these studies, the family food environment plays an important role in a child's nutrient intake. The present study extends the previous research on family mealtimes by examining family meal frequency and the family mealtime environment from the perspectives of preadolescent children. However, a large decrease in the frequency of family meals has been found as children progress from elementary school to middle school, and from middle school to high school, probably due to their increased participation in after school learning activities. Therefore, it is necessary to help children make the most of family meals, and to encourage families to make family mealtimes a priority and to have as many family meals as possible.

## CONCLUSION

There is a great need for research on how the home meal environment impacts a child's nutrient intake. The results of the present study revealed that higher priority for family meals was associated with increased family mealtimes. The benefit of an enjoyable family meal environment was positively correlated with increases in nutrient intake. Therefore, it is necessary to consider opportunities for designing nutrition promotion strategies that target families and their children, with respect to promoting family mealtimes and overcoming barriers to having family meals.

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