

Correlations Between Family Meals and Psychosocial Well-being Among Adolescents

Marla E. Eisenberg, ScD, MPH; Rachel E. Olson, MS; Dianne Neumark-Sztainer, PhD, MPH, RD; Mary Story, PhD, RD; Linda H. Bearinger, PhD, MS

Objective: To determine the association between frequency of family meals and multiple indicators of adolescent health and well-being (tobacco, alcohol, and marijuana use; academic performance; self-esteem; depressive symptoms; and suicide involvement) after controlling for family connectedness.

Methods: Data come from a 1998-1999 school-based survey of 4746 adolescents from ethnically and socioeconomically diverse communities in the Minneapolis/St Paul, Minn, metropolitan area. Logistic regression, controlling for family connectedness and sociodemographic variables, was used to identify relationships between family meals and adolescent health behaviors.

Results: Approximately one quarter (26.8%) of respondents ate 7 or more family meals in the past week, and approximately one quarter (23.1%) ate family meals 2 times or less. Frequency of family meals was inversely associated with tobacco, alcohol, and marijuana use; low grade point average; depressive symptoms; and suicide involvement after controlling for family connectedness (odds ratios, 0.76-0.93).

Conclusions: Findings suggest that eating family meals may enhance the health and well-being of adolescents. Public education on the benefits of family mealtime is recommended.

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THE IMPORTANCE OF THE family as a key component of healthy adolescent development has been clearly demonstrated by research.¹

Eating meals together is one aspect of family life that has been demonstrated to benefit young people. Family meals offer routine and consistency² and provide an opportunity to socialize children and teach them about communication skills,³ manners, nutrition, and good eating habits.⁴

Almost 1 (30%) in 3 adolescents eats a family meal 7 times or more per week; however, a similar percentage report eating 2 or fewer family meals each week.^{5,6} Frequency of family meals, as reported by young people, varies by poverty status, race, and the child's age and sex, such that boys, younger children, and those of high socioeconomic status (SES) tend to eat more frequent family meals.^{6,7}

Young people whose families routinely eat meals together spend more time on homework and reading for pleasure.⁸ Frequent family meals have also been related to better nutritional intake and a decreased risk for unhealthy weight control

practices, substance use, sexual intercourse, and suicidal involvement.^{4,6,9,10}

Although several studies provide consistent findings suggesting the positive effect of family mealtime, the extant literature only rarely addresses the possibility that family meals may serve as a proxy measure for family connectedness.¹¹ In other words, highly connected families may be more likely to eat meals together. Family connection has been consistently related to healthy youth development and a reduced risk for emotional distress, substance use, violence involvement, unhealthy weight control, and sexual behaviors.^{1,12-14}

The present study, therefore, expanded on previous research by disaggregating family meals and family connectedness in their association with a variety of indicators of adolescent health and well-being. The hypothesis was that youth who eat more family meals engage in less substance use, perform better in school, and have better emotional health than those who eat fewer family meals. Relationships were tested controlling for family connectedness, parents' marital status, grade, race, SES, and sex.

From the Center for Adolescent Health and Development, Department of Pediatrics, Medical School (Dr Eisenberg and Ms Olson), the Division of Epidemiology, School of Public Health (Drs Eisenberg, Neumark-Sztainer, and Story), and the Center for Adolescent Nursing, School of Nursing (Ms Olson and Dr Bearinger), University of Minnesota, Minneapolis.

METHODS

SAMPLING DESIGN

Data were drawn from Project EAT (Eating Among Teens), which was designed to assess eating patterns and weight concerns among adolescents. Thirty-one public middle and senior high schools in ethnically and socioeconomically diverse communities in the urban and suburban school districts of the Minneapolis/St Paul, Minn, metropolitan area participated in the study. During the 1998-1999 school year, 1608 middle school (34.4%) and 3074 high school (65.7%) students, aged 11 to 18 years (mean, 14.9 years), participated in Project EAT. Sample characteristics are in **Table 1**. The participation rate was 81.5%; primary reasons for nonparticipation were absenteeism and failure to return consent forms.

Following training in survey administration, Project EAT staff administered the surveys during a 90-minute classroom period or 2 50-minute periods. Consent protocol varied according to school district requirements; along with adolescent assent, either passive or active parental consent was obtained. The University of Minnesota, Minneapolis, institutional review board and the research boards of the participating school districts approved all study protocol. Additional details of the study are given elsewhere.^{15,16}

MEASURES

The independent variable, frequency of family meals, was assessed with the question, "During the past 7 days, how many times did all or most of your family living in your house eat a meal together?" Response categories were "never, 1-2 times, 3-4 times, 5-6 times, 7 times, and more than 7 times." A 4-item scale was used to measure family connectedness.¹⁷ Two separate questions asked, "How much do you feel your [mother, father] cares about you?" and 2 asked, "Do you feel you can talk to your [mother, father] about your problems?" Five response categories for all 4 questions were "not at all, a little, somewhat, quite a bit, very much." Scores from 2 items (where questions regarding a single parent were completed) or 4 items (where questions for both parents were completed) were averaged to create a connectedness score ranging from 1 to 5, with higher scores indicating greater connectedness to family (Cronbach $\alpha = .69$). One item regarding parents' relationship status was dichotomized into "married" and "other."

Academic performance was assessed with the question "Mark the 2 grades you get most often" with the choices being "A," "B," "C," "D," and "F or incomplete." Use of 3 substances was assessed with separate questions: "How often have you used [cigarettes, alcohol, marijuana] during the past year (12 months)?"¹⁷ The 5 response choices for each were: "never," "a few times," "monthly," "weekly," and "daily." The scale for self-esteem had 6 items adapted from the Rosenberg Self-esteem questionnaire¹⁸ and assessed level of agreement with statements such as "I certainly feel useless at times" and "on the whole, I am satisfied with myself." Scores ranged from 6 to 24; higher scores indicate higher self-esteem (Cronbach $\alpha = .79$). Depressive symptoms were assessed using a 7-item scale.¹⁹ Each item asked participants to rate the extent to which, in the last 12 months, they had been bothered or troubled by each of the indicators of depression. Scores ranged from 7 to 21 with a score of 7 indicating the fewest symptoms of depression (Cronbach $\alpha = .82$). Suicidal ideation and suicide attempts were each measured with a single item: "Have you ever thought about killing yourself?" and "Have you ever tried to kill yourself?", respectively.²⁰ Both items had response options: (1) "yes, during the past year," (2) "yes, more than a year ago," and (3) "no." Both

Table 1. Characteristics of the Sample: Sociodemographic Factors, Family Variables, and Health Indicators in 4734 Adolescents*

Characteristic	Girls (n = 2358 [49.8])	Boys (n = 2376 [50.2])	Total
School level			
Middle school	34.6	34.1	34.3
High school	65.4	65.9	65.7
Race			
White	45.6	51.3	48.5
African American	20.1	17.9	19.0
Hispanic	5.2	6.5	5.8
Asian American	20.6	17.8	19.2
Native American	3.9	3.2	3.5
Mixed/other	4.7	3.3	4.0
Socioeconomic status			
Low	20.4	14.5	17.4
Lower middle	19.1	18.5	18.8
Middle	25.6	27.6	26.6
Upper middle	21.5	25.3	23.4
High	13.4	14.1	13.8
Family meals eaten together/wk			
Never	15.8	12.2	14.0
1-2	19.6	18.6	19.1
3-4	19.8	23.3	21.5
5-6	17.5	19.6	18.6
7	9.3	8.3	8.8
>7	18.0	18.0	18.0
Family connectedness (range, 1-5)	3.7	3.8	3.8
Health indicators			
Cigarette use	32.7	30.6	31.6
Alcohol use	37.4	39.9	38.6
Marijuana use	19.1	24.4	21.7
Grade point average (range, 0-4)	2.9	2.7	2.8
Self-esteem (range, 6-24)†	17.3	18.7	18.0
Depression (range, 7-21)†	12.6	11.0	11.8
Suicidal ideation	32.8	18.4	25.6
Suicide attempt	12.7	6.0	9.4

*Values are expressed as percentages unless otherwise indicated.

†Higher scores indicate higher levels of self-esteem or depression.

"yes" responses were grouped together for analyses with the suicide items.

Additional sociodemographic variables were also assessed. School level was defined as middle school (grades 7-8) vs high school (grades 9-12). Race/ethnicity was assessed with a single item: "Do you think of yourself as (1) white, (2) black or African American, (3) Hispanic or Latino, (4) Asian American, (5) Hawaiian or Pacific Islander, or (6) American Indian or Native American." Respondents were grouped as white or nonwhite for multivariate analysis. Five levels of SES were based on the highest educational level completed by either parent for most respondents. Where this information was missing (n=1058), eligibility for public assistance, eligibility for free or reduced-cost school meals, and parental employment status were used to infer SES.^{21,22}

DATA ANALYSIS

Simple frequencies for each variable and Pearson correlations between family meals and family connectedness were examined. Four sets of logistic regression models were used to examine the association between family meals and the dependent variables, using family meals as a 6-category continuous variable. Cigarette, alcohol, and marijuana use were each di-

Table 2. Odds of Each Dependent Variable Associated With a 1-Unit Difference in Family Meal Frequency*

	Model 1†	Model 2‡	Model 3§	Model 4
Boys				
Cigarette use	0.81 (0.76-0.86)¶	0.84 (0.79-0.89)¶	0.89 (0.84-0.95)¶	0.90 (0.83-0.98)¶
Alcohol use	0.82 (0.78-0.87)¶	0.85 (0.80-0.90)¶	0.91 (0.85-0.97)¶	0.94 (0.87-1.02)¶
Marijuana use	0.84 (0.79-0.90)¶	0.88 (0.83-0.94)¶	0.95 (0.88-1.02)	1.03 (0.94-1.13)
Low grade point average	0.88 (0.84-0.93)¶	0.95 (0.89-1.00)	0.94 (0.89-1.00)	NA
Low self-esteem	0.92 (0.84-1.01)	0.99 (0.91-1.09)	0.96 (0.87-1.06)	NA
High depressive symptoms	0.86 (0.80-0.92)¶	0.93 (0.87-0.99)¶	0.93 (0.86-1.00)¶	0.93 (0.86-1.00)
Suicidal ideation	0.89 (0.83-0.95)¶	0.96 (0.89-1.03)	0.99 (0.92-1.07)	1.00 (0.93-1.09)
Suicide attempt	0.92 (0.82-1.03)	1.06 (0.95-1.19)	1.04 (0.92-1.17)	1.06 (0.92-1.23)
Girls				
Cigarette use	0.74 (0.70-0.79)¶	0.79 (0.75-0.84)¶	0.84 (0.78-0.89)¶	0.99 (0.91-1.08)
Alcohol use	0.70 (0.67-0.75)¶	0.73 (0.69-0.77)¶	0.78 (0.73-0.83)¶	0.83 (0.77-0.90)¶
Marijuana use	0.68 (0.63-0.73)¶	0.72 (0.67-0.78)¶	0.76 (0.71-0.83)¶	0.84 (0.76-0.94)¶
Grade point average	0.89 (0.85-0.94)¶	0.93 (0.88-0.99)¶	0.92 (0.87-0.98)¶	NA
Low self-esteem	0.89 (0.84-0.95)¶	0.98 (0.91-1.05)	0.96 (0.90-1.04)	NA
High depressive symptoms	0.85 (0.81-0.90)¶	0.91 (0.86-0.96)¶	0.92 (0.87-0.98)¶	0.92 (0.86-0.98)¶
Suicidal ideation	0.84 (0.79-0.89)¶	0.90 (0.85-0.96)¶	0.93 (0.88-0.99)¶	0.96 (0.90-1.02)
Suicide attempt	0.82 (0.76-0.89)¶	0.90 (0.83-0.97)¶	0.90 (0.83-0.98)¶	0.92 (0.83-1.01)

Abbreviation: NA, not applicable.

*Values are expressed as odds ratio (95% confidence interval).

†Unadjusted.

‡Adjusted for family connectedness and parents' marital status.

§Adjusted for family connectedness, parents' marital status, school level, white race, and socioeconomic status.

||Adjusted for family connectedness, parents' marital status, school level, white race, socioeconomic status, and related outcome variable(s). (Each substance use model controls for other 2 substances; high depression symptoms model controls for low self-esteem; suicidal ideation model controls for high depressive symptoms; suicide attempt model controls for suicidal ideation. Emotional health models control for only 1 related variable to avoid problems of collinearity.)

¶Significant at $P < .05$.

chotomized into any use in the past year vs never used in the past year. Academic achievement was converted into a 4.0 grade point average and split at the median (3.0). Cutpoints for the lowest quartile of self-esteem and highest quartile of depressive symptoms were also used to categorize respondents for logistic regression. For each dependent variable, model 1 was unadjusted for covariates, model 2 was adjusted for family connectedness and parents' marital status, and model 3 was adjusted for these family variables plus sociodemographic factors (school level, white race, and SES). Because several of the dependent variables are known to be closely related to each other (eg, substance use, depression, and suicidal ideation), model 4 was adjusted for all of the previous covariates plus closely related risk behavior variable(s). Additionally, least-squares regression models using the subset of respondents who reported ever using cigarettes, alcohol, or marijuana in the past year were run using frequency of use of each substance as a continuous dependent variable. All analyses were conducted separately for boys and girls. Data were analyzed using SAS statistical software, version 8.2 (SAS Institute, Cary, NC).

RESULTS

DESCRIPTION OF STUDY POPULATION

The distribution of key study variables is shown in Table 1. Roughly one fourth (26.8%) of respondents reported eating 7 or more meals with their family in the past week, and almost one third (33.1%) reported eating family meals only 1 to 2 times per week or never. Students reported fairly high levels of family connectedness, with a mean (SD) of 3.8 (0.86). The distribution of family connectedness was approximately symmetrical, with some negative skew. Family connectedness was moderately associated with family meal frequency ($r = 0.27$; $P < .001$).

FAMILY MEALS AND ADOLESCENT HEALTH INDICATORS

Bivariate relationships between family meals and each dependent variable are shown in model 1 of **Table 2**. Greater frequency of family meals was associated with significantly lower odds of the following variables: cigarette, alcohol, and marijuana use; low grade point average; high depressive symptoms and suicidal ideation (among boys and girls); and poor self-esteem and suicide attempts among girls (odds ratios [ORs], 0.68-0.89). To determine if family meals were acting as a proxy for family connectedness, model 2 examined the previous relationships, controlling for family connectedness and parents' marital status. For boys, ORs for all 3 substance use variables and for high depressive symptoms were attenuated but remained statistically significant at the $P < .05$ level (ORs, 0.84-0.93), as shown in Table 2. Thus, for example, boys at each frequency level of family meals were only 84% as likely to report having smoked cigarettes in the past year as those at the next lower frequency of family meals (eg, 5-6 meals per week vs 3-4 meals per week or 3-4 vs 1-2). To compare those at high and low ends of the spectrum, boys reporting more than 7 family meals per week had an OR for smoking cigarettes of 0.42 compared with those reporting no family meals. For girls, all relationships, except between family meals and self-esteem, remained statistically significant after controlling for family connectedness (ORs, 0.72-0.93). For example, girls at each frequency level of family meals were 90% as likely to report a suicide attempt as those at the next lower level of meal frequency (OR, 0.90). Thus, girls reporting more than 7 family meals per week were al-

most half as likely to report a suicide attempt compared with girls eating no family meals (OR, 0.58). After controlling for additional sociodemographic characteristics (model 3), family meals remained significantly associated with cigarette and alcohol use and depressive symptoms for boys (ORs, 0.89-0.93) and for all dependent variables except self-esteem for girls (ORs, 0.76-0.93). Family meals remained significantly associated with boys' smoking (OR, 0.90) after further controlling for alcohol and marijuana use (model 4). For girls, family meals remained significantly associated with alcohol and marijuana use (ORs, 0.83-0.84) after controlling for cigarette smoking, and with high depressive symptoms after controlling for low self-esteem (OR, 0.92).

To determine if family meal frequency was associated with frequency of cigarette, alcohol, and marijuana use in addition to ever use, linear regression models corresponding to logistic models 1, 2, and 3 (described earlier) were calculated for respondents reporting any use in the past year. Results showed no significant associations between frequency of family meals and frequency of substance use for boys. However, for girls, family meal frequency had a weak inverse relationship with frequency of cigarette use ($\beta = -0.09$; SE, 0.03; $P < .05$), alcohol use ($\beta = -0.08$; SE, 0.02; $P < .001$), and marijuana use ($\beta = -0.10$; SE, 0.04; $P < .01$), after controlling for family and sociodemographic variables (model 3).

COMMENT

This study explored the association between frequency of family meals and substance use, academic performance, self-esteem, depressive symptoms, suicidal ideation, and suicide attempts. We found family mealtime to be a potentially protective factor in the lives of adolescents for nearly all of these variables, particularly among adolescent girls. These associations held even after controlling for family connectedness, which provides additional evidence suggesting that eating meals as a family has benefits for young people above and beyond their general sense of connection to family members and that these benefits may apply to a broad range of health domains.

Previous literature in several disciplines has described numerous advantages of family meals, such as eating healthier foods^{3-6,23}, providing family identity, order, and consistency²; and promoting family communication.^{24,25} Findings from the present study are consistent with past research, even around specific behaviors such as cigarette smoking and alcohol consumption, where family meals correlated negatively with use of these substances.¹⁰ Family meals may operate in a number of ways in their associations with the adolescent health indicators examined here. Associations with lower likelihood and frequency of substance use, for example, may reflect a greater proportion of supervised time and therefore less opportunity to engage in behaviors that typically occur without a parent present. Family meals may also provide a formal or informal "check-in" time during which parents can tune in to the emotional well-being of their teens, particularly girls. Likewise, family

mealtimes may serve as a marker for young people spending more time at home and away from negative peer influences or youth culture more generally. Regular family meals may also be a proxy in this study for other elements of family connectedness that are not captured in the measures used here.

Some differences emerged between boys and girls regarding the importance of family meals. After adjusting for family and personal covariates, only 2 substance use behaviors and depressive symptoms remained significantly associated with family meals for boys. By contrast, all dependent variables except self-esteem remained significantly associated with family meals for girls after adjusting for family and personal covariates. Similar sex differences have been found in previous analyses using Project EAT data, where stronger associations between family meal characteristics and disordered eating behaviors were found for girls.¹¹ Girls may be particularly sensitive to the nuances of family interactions, and the frequency of family meals may therefore be more important to their behavioral and emotional health. Further research is warranted to identify the different mechanisms through which family meals and connectedness may function for girls and boys in these domains.

In examining relationships between family meals and dependent variables controlling for related risk behaviors, we found that family meals were protective against some substance use even when use of other substances may have already been initiated. We did not find that family meals continued to be protective in the area of emotional health; however, this may be because of the progressive, causal relationship among these variables. This may preclude finding significant relationships with more distal factors.

LIMITATIONS AND STRENGTHS

This study has several strengths that improve on previous reports of the benefits of family meals. The high response rate (81.5%) and large, ethnically and socioeconomically diverse sample improve the generalizability of the findings. Second, this study controlled for the potential confounding effect of family connectedness on the relationships between family meals and adolescent health and well-being.

These findings must also be viewed in light of several limitations. All data were self-reported, thus responses may be affected by social desirability, recall bias, or response bias. In an effort to minimize the social desirability and response biases, all participants were told that the data were confidential. In addition, the study's cross-sectional design means the results do not imply a causal relationship between eating family meals together and adolescent health behaviors. For example, youth who engage in substance use or perform poorly in school may avoid eating meals with family members to avoid discussion of "problem" behavior. Finally, no data are available on the 18.5% of eligible students who did not participate in the study. It is possible that these students differed systematically from participants, and the extent to which selection bias may affect these findings is unknown.

What This Study Adds

Several recent studies have demonstrated the benefits for adolescents of eating family meals, including better nutritional intake, decreased risk of unhealthy weight control practices, and decreased risk of substance use, engaging in sexual intercourse, and suicidal involvement. Existing literature, however, has not addressed the possibility that family meals may serve as a proxy measure for family connectedness, which has previously been shown to be protective in a variety of adolescent health domains.

The present study demonstrated that frequency of family meals was inversely associated with tobacco, alcohol, and marijuana use; low grade point average; depressive symptoms; and suicide involvement, particularly among adolescent girls. These associations held even after controlling for family connectedness, suggesting that eating meals as a family has benefits for young people above and beyond their general sense of connection to family members.

RECOMMENDATIONS AND IMPLICATIONS

Future research on family mealtime should identify the mechanisms underlying the protectiveness of family mealtime in the lives of adolescents. Possible areas for exploration include the role of increased communication, increased time together, role modeling by parents (in behaviors such as positive coping skills), or sharing a family ritual. The primary construct used in this study, frequency of family meals, should also be explored further to identify possible differences in the importance of eating breakfast, lunch, or dinner as a family. In addition, in 2-parent families, the importance of both parents being present for meals (vs only 1) has not been explored. Such research could have implications for families whose conflicting schedules may preclude family dinners. In addition, longitudinal studies and experimental research are needed to demonstrate time ordering and causality.

These findings, and those of previous studies, suggest that eating family meals may enhance the health and well-being of adolescents. Although many families certainly do not have the choice to be home together at mealtimes—in light of late work schedules, for example—for many, the lack of family mealtime reflects priority given to other optional activities. Public education on the benefits of family mealtime is recommended. Health professionals and social service professionals working with adolescents and their families should be informed of the benefits of family meals in order to educate their clients. These professionals should also be cognizant of barriers faced by families and work toward a gradual increase where necessary. Changes in policy (such as requiring after-school activities to end by 6 PM) or in social norms (such as the expectation of 9-to-5 workers in some sectors to consistently work late) may allow more parents and students to be home together in the evenings and facilitate regular family meals.

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Correspondence: Marla E. Eisenberg, ScD, MPH, Division of Epidemiology, 1300 S 2nd St, Suite 300, Minneapolis, MN 55454 (eisen012@umn.edu).

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