In-Home Eating and Sharing Meals

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In-home and shared meals have been hypothesized to have positive effects. This narrative review examines research on the influence of in-home eating on diet quality, health outcomes, and family relationships.

in-home eating shared meals

1. Introduction

Evidence suggests that there have been shifts in dietary practices over the past few decades, with less time devoted to food shopping, cooking, and in-home eating despite the potential benefits of in-home food preparation and eating ^[1]. Paralleling this decrease in time spent preparing food in the home and changes in diet is the worldwide increase in diet-related health concerns such as obesity and diabetes ^{[2][3]}.

In light of these trends, health experts are seeking effective strategies to combat the obesity epidemic, including the possible role of in-home and family-shared meals. Some research suggests a potential protective effect of home meals on child health, psychosocial outcomes, and family relationships ^[4]. For example, dining together in the home has been proposed to foster self-esteem, promote academic achievement, and protect against substance abuse in adolescents ^{[5][6][7]}. To date, however, there is no available review of current evidence for benefits of in-home meals on diet quality and meal patterns, health outcomes, psychosocial factors, and family relationships.

The purpose of this narrative literature review is to examine the evidence regarding the effects of in-home eating and shared meals. Specifically, the review examines the scientific literature on: (1) factors associated with in-home eating (e.g., lifestyle habits, family demographics); (2) the impact of in-home eating on the nutritional quality of meals; (3) the relationship between in-home eating and child and adolescent health outcomes; and (4) the influence of in-home eating on family relationships.

2. Narrative Literature Review

Primary data-based articles and review articles were included in this literature review, which was initially conducted between January and April 2016. Search terms used included: "Home Meals", "Meals Served in the Home", "Family Mealtimes", "Diet Quality", "Dietary Patterns", "Health Outcomes", "Health Behaviors", "Family Relationships", and "Psychosocial Outcomes". A combination search approach was used that included a search of the PubMed database, backward searches of previous published reviews on the topic, and studies the authors were familiar

with based on their combined 25 years of research in the area. In the initial literature search, 112 publications were identified and of these, 48 original studies and 11 additional review publications were considered suitable to include in this review. Publications were excluded if they did not report on original data or a systematic review on this topic, or if they were found to be tangential to the main review question. An updated search in May 2018 yielded six additional relevant primary research articles. Analysis of the literature was completed in 2018–2020 (See Figure 1).



Figure 1. Flow Diagram.

Studies were organized into categories based on the review questions. Most of the studies were conducted in the U.S., but we have noted non-U.S. study locations in the Results tables where applicable. A preliminary scan revealed the literature is comprised of mostly cross-sectional studies, a variety of methods and measures, and few randomized controlled trials. This limited the ability to apply formal statistical comparisons to the body of literature, so a narrative review approach was chosen, whereby the review team members would each examine studies within outcome categories, summarize their observations, and discuss the findings with the team until consensus was reached. Narrative reviews are preferred when the body of research cannot be summarized quantitatively due to the heterogeneity of research methods and statistical analyses ^{[8][9]}.

3. Diet Quality and Meal Patterns

We examined the available studies to summarize whether in-home eating and meal sharing are associated with energy intake, fruit and vegetable intake, nutrient intake, dietary patterns, and overall diet quality in children and adolescents. The majority of the studies to date have been cross-sectional (16), and a smaller number are longitudinal (4). In addition, four systematic reviews have been published. Overall findings suggest a positive association between the frequency of family meals and favorable dietary outcomes (<u>Table 1</u>). Table 1. Summary of Diet Quality and Meal Patterns.

Author(s) and Year	Reference Number	Sample	Main Outcomes	Study Design
Diet Quality	& Meal Patte	rns		_
Ayala et al. (2007)	[<u>10]</u>	167 Mexican American children, 8– 18 years old and their mothers	Number of family meals positively associated with fiber intake.	Cross- Sectional
Burgess- Champoux et al. (2009)	[<u>11]</u>	677 adolescents, Project EAT	Five or more family meals per week associated with increased sodium intake for females, but not males. Five or more family meals per week during the first wave of the study was associated with frequency of breakfast, lunch, and dinner meals for males, and only breakfast and dinner for females five year later.	Longitudinal
Burke et al. (2007)	[<u>12</u>]	594 Irish children, 5– 12 years	Reported fiber and micronutrient intake were higher during eating occasions inside the home compared to outside of the home.	Cross- Sectional
Chu et al. (2014)	[<u>13]</u>	3398 Canadian children, 10–11 years	Higher frequency of involvement in home meal preparation was associated with higher diet quality index scores. Children who were involved in meal preparation daily ate 1 more serving/day of vegetables and fruit compared with children who never helped.	Cross- Sectional
Fink et al. (2014)	[<u>14]</u>	1992 children (age 0 to 19 years)	Five or more family meals per week associated with less sugar-sweetened beverage intake among younger and older children, greater vegetable intake among older children and adolescents, and greater fruit intake among adolescents.	Cross- Sectional

Author(s) and Year	Reference Number	Sample	Main Outcomes	Study Design		
Diet Quality & Meal Patterns						
Fitzpatrick et al. (2007)	[15]	1336 parents of children aged 1–4 participating in WIC	Number of days per week the family ate dinner together was positively associated with serving fruit and serving vegetables.	Cross- Sectional		
Flores et al. (2005)	[<u>16]</u>	2608 parents of children ages 4–35 months	Minority children less likely than whites to have consistent mealtimes, and more likely to never eat lunch or dinner with their families. The analyses also addressed home safety practices for young children, and found disparities with fewer practices in minority homes.	Cross- sectional		
Fulkerson et al. (2009)	[<u>17]</u>	Racially diverse sample of 145 adolescents who attended alternative high school	Family dinner frequency was positively associated with breakfast consumption and fruit intake.	Cross- Sectional		
Fulkerson et al. (2014)	[<u>18]</u>	Child, adolescent, or adult samples with findings related to family meals or commensal eating	Studies included in review found associations between family meal frequency and intake of fruits and vegetables, micronutrients, and breakfast, and decreased intake of soda, higher-fat foods, unhealthy snacks and cakes, fried foods, and fast food.	Systematic Review		
Gillman et al. (2000)	[<u>19]</u>	16,202 youth aged 9– 14	Eating family dinner was associated with consuming more fruits and vegetables, less fried food and soda, less saturated and trans-fat, lower glycemic load, more fiber and micronutrients from food, and no material differences in red meat or snack foods.	Cross- Sectional		
Haapalahti et al. (2003)	[20]	404 Finnish children aged 10–11	Children who ate family dinner regularly consumed less fast food and sweets but more juice than children who did not have regular family dinners.	Cross- Sectional		
Hammons and Fiese (2011)	[21]	182,836 children and adolescents across 17 studies	Children and adolescents who ate meals with family 3 or more times per week had healthier dietary patterns than those who ate fewer than 3 meals with family per week.	Meta- Analysis		

Author(s) and Year Diet Quality &	Reference Number & Meal Patte	Sample	Main Outcomes	Study Design
Larson et al. (2006)	[22]	1710 young adults aged 18–23, Project EAT	Young adults who reported frequent food preparation reported less frequent fast-food use and were more likely to meet dietary objectives for fat, calcium, fruit, vegetable, and whole-grain consumption.	Cross- Sectional
Larson et al. (2007)	[23]	1710 young adults aged 18–23, Project EAT	Family meal frequency during adolescence predicted higher intakes of fruit, vegetables, dark-green and orange vegetables, and key nutrients and lower intakes of soft drinks during young adulthood.	Longitudinal
Martin- Biggers et al. (2014)	[24]	Families (with children)	More frequent family meals are associated with greater consumption of healthy foods in children, adolescents, and adults. Adolescents and children who consume fewer family meals consume more unhealthy food.	Literature Review
Naska et al. (2015)	[25]	23,162 middle-aged European adults	Those who ate more foods outside of the home consumed more sweet and savoury bakery items, soft drinks, juices and other non-alcoholic beverages than those who ate more at home	Cross- Sectional
Neumark- Sztainer et al. (2003)	[<u>26]</u>	4746 adolescents, Project EAT	Frequency of family meals was positively associated with intake of fruits, vegetables, grains, and calcium- rich foods and negatively associated with soft drink intake. Frequency of family meals was associated with consumption of energy, protein, calcium, iron, folate, fiber, and vitamins A, C, E, and B6.	Cross- Sectional
O'Dwyer et al. (2005)	[27]	958 Irish adults aged 18–64	Intakes of fiber, micronutrients, calories, protein, fat and carbohydrates were greater at home than away from home.	Cross- Sectional
Patrick and Nicklas (2005)	[28]	Families (with children)	Children who eat meals with their families generally consume more healthy foods and nutrients. Eating out is associated with higher intake of fat and calories than eating at home.	Literature Review

Author(s) and Year	Reference Number	Sample	Main Outcomes	Study Design	
Diet Quality & Meal Patterns					
Poti and Popkin (2011)	[<u>29]</u>	29,217 children aged 2–18 (national sample)	Between 1977 and 2006, children had an overall increase in energy intake corresponding with a decrease in frequency of eating at home (compared to outside of the home).	Longitudinal	
Surjadi et al. (2017)	[<u>30]</u>	6503 children were followed from kindergarten–eighth grade	Family meals in kindergarten and increase in family meal frequency over time both predicted healthier dietary intake in eighth grade among White and Black adolescents, but not among Hispanic or Asian adolescents.	Longitudinal	
Sweetman et al. (2011)	[<u>31]</u>	434 children aged 2– 5	Frequency of family mealtimes was unrelated to vegetable consumption or liking.	Cross- Sectional	
Utter et al. (2008)	[<u>32]</u>	3245 adolescents (national sample)	Frequency of family meals was associated with consuming five fruits and vegetables per day, eating breakfast, and bringing lunch from home.	Cross- Sectional	
Videon and Manning (2003)	[<u>33]</u>	18,177 adolescents (national sample)	Parental presence at family meals was associated with greater consumption of fruits, vegetables, dairy foods, and breakfast.	Cross- Sectional	
Woodruff and Hanning (2008)	[<u>34]</u>	Families (with adolescent children)	Family meals were generally associated with improved dietary intake.	Systematic Review	
Woodruff & Hanning (2009)	[<u>35]</u>	3223 Canadian middle school students	Frequency of family meals was associated with breakfast consumption and decreased consumption of soft drinks.	Cross- Sectional	

Project EAT, a longitudinal study conducted in the U.S. Midwest, has contributed substantially to the literature regarding the influences of family meals on the dietary outcomes of adolescents ^{[26][11][22][23]}. In our review, five empirical research reports drew from the Project EAT dataset and all four systematic reviews included Project EAT findings. It is noteworthy that most studies used intakes of specific food groups, typically fruit and vegetable consumption, as a proxy for diet quality; and only one used a validated measure of overall diet quality (the Diet Quality Index–International) ^[13]. Additionally, while most of the research was conducted in the U.S., a portion of the literature is based on studies in Europe and other nations outside of the U.S. ^{[27][13][20][12][31][25]}. The conclusions mostly apply to the U.S. cultural context and food environment.Family meal frequency is positively associated with fruit and vegetable and dairy intakes and breakfast eating; and negatively associated with fried foods, unhealthy

snacks and cakes, and sugar-sweetened beverage intake [18][26][17][23][20][19][21][28][32][33][34][35][36]. The impact of family meals on specific foods may differ by age. In a cross-sectional study of 1992 children (age 0 to 19 years), five or more family meals per week was associated with lower sugar-sweetened beverage intake among both younger and older children, greater vegetable intake among older children and adolescents, and greater fruit intake among adolescents [14]. However, one U.K.-based study found that the frequency of family mealtimes was unrelated to vegetable consumption or liking among children ages 2 to 5 years old [31]. Family meal frequency has been shown to be positively associated with increased intakes of calcium, fiber, magnesium, potassium, iron, zinc, folate, thiamin, riboflavin, B12, B6, and vitamins A, C, and E [18][26][15][10][23][12][24][28][34]. The evidence regarding caloric intake is inconsistent. Neumark-Sztainer, Hannan et al. ^[26] found a positive association between frequency of home meals and energy intake in a study of 4746 adolescents. However, a longitudinal nationally representative sample of 29,217 children in the U.S. found that between 1977 and 2006, there was an overall increase in energy intakes and a corresponding decrease in frequency of eating at home ^[29]. The influence of family meals on dietary outcomes may also differ by sex. Burgess-Champoux, Larson et al. [11] found that regular family meals had a positive association with increased sodium intake for females, but not males. Finally, there may be different outcomes by race/ethnicity. A recent study found a positive association between an increase in family meal frequency over time and fruit and vegetable consumption in the eighth grade among white and black adolescents, but not among Hispanic or Asian adolescents^[30].

4. Conclusions

Despite what is increasingly becoming "common wisdom," the evidence that in-home, shared meals, per se, have direct positive effects on diet quality, health outcomes, psychosocial outcomes, and family relationships is greatly limited by research designs and measurement of the hypothesized independent variable. Measures should include how food is prepared and served in the home, not merely whether children and parents eat together, as well as the quality of meals. There is a need for more longitudinal studies that track changes in mealtime frequency and family dynamics over time to predict changes in diet quality, health outcomes, psychosocial outcomes, and family relationships; while incorporating appropriate controls for other factors that may predict key outcomes as well as meal-sharing. More adequately powered intervention studies and randomized trials are needed. Intervention studies that avoid "ceiling effects" by including mainly those who already share meals frequently are also needed. Further, there is a need to pay more attention to family diversity in terms of race/ethnicity, socioeconomic status, household composition, and parenting roles.

The emerging results suggest that shared meals and in-home eating may have protective effects against child and adolescent overweight/obesity. However, much more research, with stronger designs and more rigorous measurement of predictors, is warranted.

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