

## Does family mealtime have a protective effect on obesity and good eating habits in young people? A 2000-2016 review

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### Abstract

*Objectives: to review the prevalence of family meals and its impact on BMI and eating habits during childhood and adolescence.*

*Methods: reviews are from Bireme / Lilacs / Scielo / Cochrane and Pubmed, between 2000-2016 with descriptors "family meal or mealtime", "behavior", "nutrition or diet or consumption or eating", and "child or children or adolescence"; performed by two independent examiners, according to the systematic steps in English and Portuguese. The articles were selected based on prevalence and/ or discussion between nutritional variables. 2,319 articles were found, which 15 were selected all in English: systematic reviews (n=2), cross-sectional studies (n=8), longitudinal studies (n=8); all related to children (n=5), adolescents (n=6) and both (n=5).*

*Results: the mean of shared meals was 1x/day, with a prevalence of 27 to 81%. Most studies (n=13) reported the beneficial impact on BMI, higher consumption of fruit and vegetables, protein, calcium and a lower consumption of sweets and sugar sweetened beverages, family union and self-regulation of appetite.*

*Conclusions: having daily family mealtime has beneficial effect on the nutritional status and children and adolescents' eating behavior.*

**Key words** Meals, Child, Adolescent, Nutrition, Eating behavior

## Introduction

Eating preferences and behaviors are strongly conditioned by the family environment especially when it is the child's first contact in socializing, where eating behaviors are learned and incorporated. Such behaviors, whether it is healthy or not, may persist during adolescence and into adulthood.<sup>1,2</sup> In this context, family mealtime (described in most studies as the act of eating simultaneously with family members) has been currently recognized as healthy eating habits.<sup>3</sup>

Recent studies show that family mealtime contributes to a higher consumption of healthy food and protects against the development of inappropriate eating habits among children and adolescents,<sup>4-6</sup> stimulating a greater availability of fruit and vegetables (FV) intake and less consumption of sweets and sugar-sweetened beverages.<sup>7</sup> There is also evidence of its impact on reducing obesity: studies with children who received intervention related to the promotion of healthy family mealtime along with responsible parents or guardians, presented a reduction in excess weight at the end of the follow-up;<sup>4,8</sup> in addition to the associations of reduced activities and the time spent in front of television.<sup>8</sup> Another important role is family mealtime to protect against psychosocial disorders, common in certain stages at childhood and especially in adolescence: the association between the habit to have family mealtime and lower occurrence of eating disorders, alcohol and drug use, depressive symptoms and risk factors for suicide between adolescents is emphasized in different studies.<sup>3</sup>

Despite these described benefits in international literature, a low prevalence of family mealtime in households with children is frequently documented. For example, American population data analysis<sup>6</sup> show a prevalence of only 49% of one daily family mealtime. The current contemporary routine favors habits that contradict family mealtime with more and faster ready-made meals.<sup>5,9</sup>

In Brazil, however, the data prevalence on family mealtime, studies in association to children and adolescents' nutritional and behavioral characteristics and intervention studies in this context are scarce. This present study tends to review this practice on the Body Mass Index (BMI) and eating habits at childhood and adolescence, as a preliminary step to the development of a study project on the prevalence and intervention in Brazilian families.

## Methods

This study is a review from BVS literature (Bireme / Lilacs / Scielo / Cochrane) and Pubmed, from 2000 to 2016. The search terms were used in association, according to Boolean operators 'and', 'or': "*family meal or mealtime*", "*behavior*", "*nutrition or diet, or consumption or eating*", "*child, childhood or children or adolescence*".

The inclusion criteria consisted of selection of studies that aimed in presenting prevalence of habits of family mealtime and/or discussing the relation between this practice and children / adolescent's development, under nutritional and behavioral aspects (at a eating point of view). Only cross-sectional or cohort studies or systematic reviews, carried out in Brazil or abroad (only in Portuguese, English or Spanish languages), with children and / or adolescents and of any sample size were included and selected. Articles with complete access that were unavailable were also excluded from the analysis. The selection process of the studies was performed by two independent examiners and according to the following steps occurred: 1) Read titles and summaries from articles found; 2) Exclusion of the articles that did not meet the selection criteria and duplicates; 3) Exclusion of incompatible research focus with the objectives and 4) Read articles completely for final selection. After this process, the articles selected by each examiner were crossed one last time for the exclusion of new duplicates and to conclude the selection of articles.

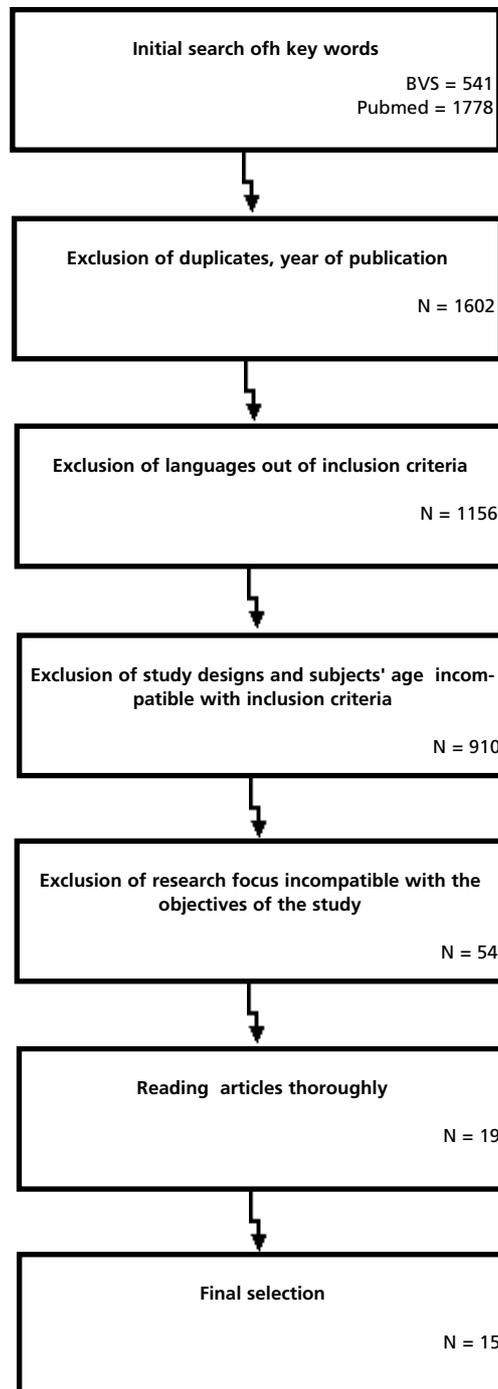
From 2,319 articles found (541 from BVS and 1,778 from Pubmed), 15 studies were selected and all of them in English, characterized by according to design and populational group: systematic reviews (n=2), cross-sectional studies (n=8), longitudinal studies (n=8). In relation to age, there were studies found that included children (n=4), adolescents (n=6) and both (n=5). The selection process of the articles is described in Figure 1.

## Results

The results regarding the prevalence of frequency in sharing meals are described in Table 1. Among the reviewed studies, the mean of sharing was one daily meal,<sup>10-15</sup> and the prevalence of sharing daily meals ranged from 27 to 81 %.<sup>3,11,12,13,14,15,16,17</sup> The association between family meals and the BMI and eating habits are described separately below.

Figure 1

Flowchart on selected articles. PENSE Institute: 2016.



### **Impact on the BMI**

Three studies included in this study assessed the association between BMI and family meals. McCurdy *et al.*<sup>18</sup> in a sample of 164 American school children and of low income, which found that one third of the children were overweight (17.1%) or obese (15.9%) and described an inverse proportion in relation between both. The maternal presence during meals was associated with low values of BMI ( $\beta=0.166$ ,  $p<0.05$ ), as well as the best financial resource management and the greater offer on balanced meals by the family (OR=0.72-0.95,  $p<0.01$ ). Boles *et al.*<sup>19</sup> assessed eating practices and parental styles in 52 obese adolescents, persistent and concluded that these young people have significantly more problems with eating practices and less family interactions during meals, especially those with difficult tempers, which suggests an impact in family interactions on BMI. Although, Kong *et al.*<sup>20</sup> did not find strong association between family meals and low risk on overweight. About 44% of the children from the sample were at risk of being overweight, and the mean of sharing family meals was once daily. Authors relate the lack of correlation to the small sample size (n=30 Hispanic, African and non-Hispanic Caucasian families with low-income), and emphasize that ethnic / racial differences may also moderate this relation.

### **Impact on the food quality**

Five studies included in this study addressed different topics related to food quality and the presence of the family at mealtime. Christian *et al.*<sup>7</sup> assessed the consumption of fruit, and vegetables (FV) of 2,383 British children enrolled in primary schools - reported a mean of 293g FV/day intake from which children's families reported "always" eating a daily meal with the family and had 125g more of FV intake than families who reported never eating together. The daily FV intake by the parents was associated to a higher intake of FV (88g, CI95%= 37-138) in children, compared to parents who rarely / never consumed FV. Cutting fruit and vegetables for the children was also associated to a greater intake of FV (44g, CI95%= 18-71) in this study.

Wit *et al.*<sup>21</sup> also found a better self-regulation of appetite and healthier eating habits among adolescents aged 10 to 17-year-olds who have family meals more frequently, thus, the mean of sharing in general was two daily meals (breakfast and dinner) for at least 3 days during the week. Larson's *et al.*,<sup>12</sup> study found that adolescents who shared meals more frequently continue to consume more FV and dairy

products until 10 years after the initial assessment. Similarly, Burgess-Champoux *et al.*,<sup>17</sup> described higher prevalence of shared meals associated the double intakes of vegetables and nutrients, as well as a 50% reduction in the consumption of fast food, contributing to promotion healthy eating habits up to five years later.

Flattum *et al.*<sup>8</sup> developed a program called Healthy Home Offerings via the Mealtime Environment (HOME Plus), to prevent obesity, applied in 81 American families (children aged 8 to 12 years old and their parents) in a ten 2h-sessions, and five motivational phone calls to promote healthy eating habits and to increase family mealtime. After the interventions of HOME program, 87% of the parents reported that their children were more receptive in trying new food, 52% of the children ate more FV, and 86% of the parents reported that their children were more aware of the portion sizes. Additionally, parents and children have reported that cooking with family members is a pleasant experience, which facilitates the learning of eating healthier.

### **Discussion**

Among the studies included in this review, thirteen demonstrated beneficial effects of family mealtime in preventing behavioral and nutritional changes in children and adolescents. According to these studies, a family mealtime surpasses the field of sensory experiences with food and in favor of a normal BMI and healthy eating habits (greater intake of FV, proteins, sources of calcium and lower consumption of sweets and sugar-sweetened beverages), family bonding and self-regulation of the appetite.<sup>8,21,18,7,20,19,12,17</sup>

### **Frequency of family mealtime**

In the present study, a family mealtime occurred, in a mean, once a day, with a wide variety in the prevalence of sharing (27 to 81%).<sup>3,16,10,11,12,14,13,17,15</sup> In comparison to the Brazilian data, Pesquisa Nacional de Saúde do Escolar - PeNSE in 2012<sup>22</sup> (National Research on School Health) showed that 66.4% of the students had one daily meal with their families. The highest prevalence (71.1%) was reported in the South Region in Brazil, while the lowest was in the Southeast Region (64.6%). In relation to the cities, Florianópolis had the highest prevalence of family meals (71.5%); while Salvador was described as the lowest (47%). Additionally, a study data with 439 mothers in São Paulo State<sup>23</sup> reported an 83.6%

**Table 1**  
Frequency of sharing meals according to the selected studies. PENSE Institute: 2016.

Author, year, country	Objectives	Study design	Sample	Family meals frequency
Harrison <i>et al.</i> , <sup>3</sup> 2015 Canada	The effects on family meal frequency on psychosocial outcomes in children and adolescents	Systematic review	- 14 studies	- Frequency of sharing one meal a day ranged from 32.9 to 60.6%; - There was an increase in the family meals frequency as the participants' increased age ( $p < 0.05$ ); - 5).
Christian <i>et al.</i> , <sup>7</sup> 2013 United Kingdom	To investigate how the domestic eating environment and the parents' attitudes and values affect the children's fruit and vegetables intake	Cohort	- 2,383 children - Mean age of 8.3 years - Both sexes	- 50.7% of the parents reported they share meals at the table sometimes, 43.3% always, and 6% never;
Nuvoli <i>et al.</i> , <sup>16</sup> 2015 Italy	To examine the family meals frequency and the weight control as a protective factor throughout life	Cross-sectional	- 522 participants (children, adults and elderly) - Both sexes	- Family meals frequency (daily) between children ranged according to the kind of meal: breakfast (71%), morning snack (44.4%), lunch (23.5%) and dinner (81%); - There was an increase in the family meals frequency as the participants' age increased ( $p < 0.05$ );
Wit <i>et al.</i> , <sup>21</sup> 2014 Netherlands, Poland, Portugal and United Kingdom	To know the domestic eating environment and the family's eating behavior and how food culture influences in eating healthy	Cross-sectional	- 2,764 adolescents - Aged 10 to 17 years, recruited from 24 schools - Both sexes	- Mean frequency of family meals was 4 days per week (dinner).
McCurdy <i>et al.</i> , <sup>18</sup> 2014 United States	To evaluate why low-income children are at greater risk of being overweight and obese than the those with higher income	Cross-sectional	- 164 pre-school children and their mothers - Both sexes - Low-income families - (55%) of the sample were hispanic	- Presence of the mother during mealtime: mean of 16% (from 4 to 20%);
Lora <i>et al.</i> , <sup>10</sup> 2014 United States	To examine the relationship between family meals frequency and the children's social behavior	Cross-sectional	- 24,167 children aged from 6 to 11 years old	- The mean number of the family had 5,3 family meals weekly

continue

continuation

Author, year, country	Objectives	Study design	Sample	Family meals frequency
Woodruff e Kirby <sup>11</sup> 2013 Canada	To describe the frequency of family meals by the frequency of meal preparation, self-efficacy for cooking, and techniques for food preparation	Cross-sectional	- 145 adolescents - Aged 10 to 14 years old - Both sexes	- 59% reported daily family meals (dinner)
Kong et al., <sup>20</sup> 2013 United States	To observe the environment and the interactions between parents and their children during family dinners to determine if there are ethnic and racial differences	Cross-sectional	- 30 families with pre-school children (aged 48 to 60 months) - Both sexes - Multi-ethnic sample of low-income families	- There was at least one adult present during the daily meals
Larson et al., <sup>12</sup> 2013 United States	To describe patterns of shared meals and their associations with food consumption	Cohort	- 2,052 participants - Aged 20 to 31 years old - Both sexes	- Among young adults, the frequency of shared meals during the previous week was: never (9.9%), one or two times (24.7%), three to six times (39.1%) e and seven or more times (26. 3%); - Frequent family meals during the adolescence were associated to higher frequency of shared meals during adulthood as well as other relevant socio-demographic factors such as household composition and family situation
Wyse et al., <sup>13</sup> 2011 Australia	To identify if the characteristics of the family environment are associated to high consumption of fruit and vegetables	Cross-sectional	- 396 parents - Children aged from 3 to 5 years - Both sexes - 30 pre-school	- A mean of, families ate together 5.6 days a week (57% eating together 7 days a week)

continue

conclusion

Author, year, country	Objectives	Study design	Sample	Family meals frequency
White e Halliwell <sup>14</sup> 2010 United Kingdom	To investigate the degree to which family meals were associated with changes in alcohol and tobacco use over time in early adolescents	Cross-sectional	- 550 adolescents - Aged 11 to 16 years - Both sexes	- Approximately 33% of the sample (29.9% of the boys and 35.9% of the girls) reported five or more family meals a week
Burgess- Champoux <i>et al.</i> , <sup>17</sup> 2009 United States	To examine the associations of regular family meals (> or = 5 meals/week) with feeding habits and food consumption during adolescence	Cohort	- 677 high school adolescents - Mean age between 12.8 and 17. 2 years - Both sexes	- Frequency of daily family meals before and after intervention: 32 and 38%, respectively
Eisenberg <i>et al.</i> , <sup>15</sup> 2004 United States	To determine the association between frequency of family meals and multiple indicators of the adolescent's health and well-being	Cross-sectional	- 4,746 adolescents - During the school years of 1998-1999, 1,608 high school students (34.4%) and 3,074 high school students (65.7%) aged between 11 to 18 years old (mean 14.9%) - Both sexes - Public school	- Almost one fourth (26.8%) of interviewees reported eating 7 or more meals with their family in the past week; - Almost one third (33.1%) reported eating family meals only 1 to 2 times per week or never

prevalence of at least one daily mealtime (regardless to which mealtime). In this study, the increase in maternal age and low schooling levels were associated to the reduction in the frequency of family mealtime. In the ERICA Study,<sup>24</sup> sampled with 74,589 adolescents aged 12 to 17 years old in 124 Brazilian cities, 68.0% reported "always or quiet often" having family meals. Similar in a study carried out in São Paulo, there was a higher prevalence of family mealtime among adolescents whose mothers had higher schooling levels, studied in private schools and live in the South and Midwest Regions. Therefore, the Brazilian data seem to be in agreement with the prevalence described in international literatures.

Although, there is no consensus on the number of times recommended for weekly family meals in providing health benefits, some authors indicate four or more mealtime per week is the ideal amount.<sup>25</sup> In an international meta-analysis of 17 studies, in a sample total of 182,836 children and adolescents, described the association of normal BMI and healthy eating habits occurred when the family mealtime was at least three times a week.<sup>26</sup> Other studies suggest that at least one daily family meal was beneficially associated to eating disorders in older children,<sup>27,28</sup> and the healthy eating habits and normal BMI in children and adolescents.<sup>29</sup> In Brazil, the official recommendation from the Ministry of Health is that family mealtime should be as much as possible, without, however, an explicit recommendation of the ideal amount of food during the meals.<sup>30</sup>

Among the reasons that could explain the lack of family meals, it can be described that the main factor is the current family routines, characterized by parents who arrive home late from work, and whose children eat earlier at school or with the caregivers. Even in the studies included in this review there are reports that dinner is the most shared meal with the family (81%), followed by breakfast (71%) and lunch (23%),<sup>16,11,17</sup> illustrating the possible logistical difficulties that accompany families' current work routines. The current family structure, which is increasingly composed by relationships which brings children together from other marital unions, or single-parent families can lead to overload the role in maintaining functions and also impacting on the frequency of family mealtime.<sup>31,32</sup> Nuvoli *et al.*<sup>16</sup> and Harrison's *et al.*<sup>3</sup> studies also show positive correlations between older children's age and the increased frequency of family mealtime, which could be explained by the adjustment of routines and schedules, tending to adult patterns as they get older.

In the Brazilian data mentioned previously,<sup>22,23,24</sup> the prevalence of family mealtime is described only as 'lunch or dinner', which makes it difficult to compare which type of meal,. Anyway, a daily family mealtime (probably dinner) seems to be the only opportunity that the child and / or adolescent has to experience this moment of interacting with the family.

### **Impact on the BMI and food quality**

Although the results of frequency are in accordance with the international literature, none of the Brazilian studies included in this study seek for associations between family meal frequency and markers on the participants' nutritional status, which limits the comparisons related to its impact on the BMI.

According to international data, continuous investments to promote this practice in family meals (especially in vulnerable socioeconomic groups) becomes extremely relevant when considering its benefits on maintaining a healthy BMI<sup>18,20,19</sup> and the increase in the FV intake<sup>7,8,12,17</sup> In Brazil, the current obesity rates are up to 15% and 20% among children and adolescents (respectively), the prevalence is among the highest rates in Latin America.<sup>33</sup> Moreover, the data on the consumption of FV in the country indicate generalized inadequacy, with only about 30 to 50% of adequate intake among the young population.<sup>34</sup> Thus, the interventions that aim to reduce obesity, for example, can and should use strategies that include family mealtime.

A few available studies try to perform interventions aiming to promote family meals in Brazil, and there is no consensus in the literatures about the best method to be adopted. Kharofa *et al.*<sup>35</sup> propose a guide for such interventions with subsidize steps to guide appropriate practices at mealtime. Since family mealtime, is dependent of parental behavioral pattern and socioeconomic conditions, they become the main focus of the interventions and not the children.<sup>9,36</sup> Although there is no methodological consensus, the interventions were already undertaken to meet these mentioned assumptions, as included in this review<sup>8</sup> and described by Adamson *et al.*<sup>37</sup> and Berge *et al.*<sup>38</sup> for example, described positive results in increasing the children's exposure to food and improving their relationship with the feeding processes after stimulating family mealtime, although they evidenced the parents' behavior and style during the meals there is an impact also on the difficulties of

eating the most common food at childhood. Burgess *et al.*,<sup>17</sup> also described an increase of 6% in the frequency of family meals after the intervention period. Woodruff and Kurby<sup>11</sup> demonstrated that including children / adolescents in the cooking processes of meals may also be an effective strategy to increase the frequency of family meals (OR=1.15;  $p=0.02$ ).

### Methodological limitations

Despite the positive impact on the BMI and eating habits, most studies present some methodological limitations for analyzes and comparisons: they focus mainly on the prevalence of shared meals, –however, without describing manners and environment when the meal will occur; considering and analyzing the main meal differently (some authors consider lunch / dinner, while others consider breakfast); they are mainly based on school children and adolescents, with a scarce of work in early childhood (when eating patterns are formed); Do not thoroughly investigate reasons why families do not share meals as often as recommended; and do not discuss a possible consensus on the recommended number of weekly meals needed to provide health protection.<sup>39</sup> Such information is relevant to formulate the strategic action plans and their respective assessments.

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Further studies could focus on the interventions that facilitate the practice of family mealtime in groups that present greater barriers in home routines, such as both working parents, with extended working hours or lack of regular mealtimes, unbalanced family structure and inadequate eating habits.<sup>5,40</sup>

### Conclusions

The habit of having family meals was associated to maintain a normal BMI and good eating habits for children and adolescents at international level. The mean of shared meals in the studies was close to a daily meal, and among these factors that hamper this practice, highlight on the family routine and structure. Low socioeconomic condition and schooling levels were also associated to reduce the prevalence of shared meals. There is no consensus on the minimum recommendation of shared meals, but at least one daily meal is suggested; with adequacy of practicing this behavior. There is a gap of information that constitutes the opportunity to research and development new approaches that stimulate the practice of family mealtime in different populations.

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