

## Type and Frequency of Food Images in Parenting Magazines: Identifying Areas for Improvement

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### Abstract

Parents and children are influenced by food advertisements, which can impact children's healthy weight. The purpose of the study was to identify the type and frequency of food images in parenting magazines. Content analysis of twelve issues from each of three parenting magazines (36) for 2010 was conducted by two researchers. The inter-rater reliability was 0.70 or above for the categories: food items, restaurants, infant feeding, feeding equipment, and supplements. From the 2445 food related images, breads and grains appeared most frequently (476), followed by the fats, oils, and sweets category (334). Few breastfeeding images (9) appeared compared to bottle (29) or formula (50) feeding images. Supplement images occurred more frequently than drink, condiment, restaurant, and infant feeding images. Knowledge of the type and frequency of food related images in magazines can be used by health professionals to provide education and information to parents that will address obesigenic behaviors and environments.

**Keywords:** Magazines; Food images; Parenting; Feeding

### Introduction

Prevalence of overweight and obesity among has been recognized as an epidemic, which has prompted health professionals to review advertising content in media as a contributor [1-3]. Television, internet, and print media frequently contain advertisements that promote food of minimal nutritional value through marketing tactics aimed to build long-term brand loyalty and 'relationships' with children [4]. Examination of Saturday morning television programming for children revealed frequent advertisement of foods high in fat and/or sugar, and low in nutritional value and children's eating of those foods increased while viewing television [5,6]. Other food advertisements use the internet as a means to encourage children's engagement with branded food and beverages through the use of free website memberships, leader boards, game advertisements, and branded downloadable content [7-9].

Food advertisements influence children and adults' interest in and consumption of food [10]. Children recognize foods and food characters in advertisements; and as a result, children are more likely to ask parents to purchase those advertised foods [11]. Food advertisements are aimed at parents with young children as well [12]. Parents serve as the gatekeepers who determine what food is available, prepared, and offered to children in the home [13].

Food advertisements are considered sources of information about nutrition; with television and magazines relied upon more often for nutritional guidance than family and friends [14]. Advertisements to parents and children through television and the internet have been examined, but limited research is available on advertisements in parenting magazines. Since the majority of food advertisements include images of the foods to be promoted and influence adult purchasing behavior, identifying the frequency and type of food images in magazines can serve to determine the possible areas of improvement. Therefore, the purpose of the study was to provide information on the type and frequency of food images in parenting magazines.

### Methods

Twelve issues from three parenting magazines (n=36) were reviewed. Parenting\*, Baby Talk\*, and Parents\* were selected from

the top ten parenting magazines for 2010 [15]. A data collection tool was developed to gather the type and frequency of food images in the parenting magazines. Two child nutrition experts reviewed the data collection tool, which was piloted using six magazines not included in the analysis.

### Food Images Coding Process

Content analysis was conducted by two trained researchers who reviewed each page in the magazines, coding every food related image. Each food or feeding related image was categorized and recorded on a sheet listing the categories: fruit, fruit drinks, vegetable, dairy, dairy drinks, grains (bread, rice, pasta, cereal), protein (meat, eggs, poultry, fish, nuts, dried beans), condiments, fats, oils and sweets [16]. When multiple food items were shown in an image, each food item was individually coded. For example, an image of a salad with carrots, tomatoes, and ranch dressing was coded as four items. Other categories included restaurants, infant feeding, feeding equipment, and supplements (Table 1). Inter-rater reliability testing between the two researchers using joint probability agreement analysis resulted in an inter-rater reliability rating of 0.70 or higher for all categories (Table 1). While the joint probability agreement does not account for chance agreement, the approach is sufficient for exploratory qualitative methodology [17]. Appropriateness of inter-rater reliability scores was determined using the following criterion: values greater than 0.80 was very good, 0.61-0.80 was good, 0.41-.060 was moderate, 0.21-0.40 was fair, and less than 0.21 was poor [18].

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Category	Count (Reliability*)
<b>Food</b>	
Fruit	282 (0.86)
Fruit Beverages	88 (0.85)
Vegetable	342 (0.90)
Dairy	63 (0.90)
Dairy Beverages	88 (0.86)
Condiments	87 (0.76)
Meat, Dried Beans, Fish, Poultry, Dried Beans, Eggs, Nuts	311 (0.92)
Fats, Oils, Sweets	334 (0.86)
Breads, Grains, Cereal, Rice, Pasta	476 (0.92)
<b>Restaurant</b>	
Images From Restaurants	15 (0.75)
<b>Infant Feeding</b>	
Bottles, Baby Food, Breastfeeding, Formula	119 (0.86)
<b>Feeding Equipment</b>	
Spoons, Bowls, Cups, Placemats, Sippy Cups	46 (0.84)
<b>Supplements</b>	
Vitamin, Mineral, Herbal	194 (0.94)
<b>Total</b>	<b>2445 (0.88)</b>

\*Inter-rater reliability scores  $\geq 0.70$

**Table 1:** Categories of Food and Feeding Images in Parenting Magazines.

## Results

A total of 2445 food and feeding related images were coded into categories (Table 1). In the bread and grains category, bread, pasta, and cereal were most frequently shown 25% (117), 16% (75), 6% (27), respectively. The second most frequently shown food category, fats, oils, and sweets, had cookies 16% (55), cake 14% (46), and frozen treats 13% (42) as the most frequently shown foods. Salad 11% (37) and carrots 11% (36) were the two most often shown vegetables, and apples were the most frequently shown fruit 17% (47), followed by strawberries 13% (37). Orange juice (30%, 26), followed by non-100% fruit juice (16%, 14) were most frequently coded items in the fruit juice category. The most common non-beverage dairy choices were cheese 63% (40) and yogurt 33% (21), and the most common dairy beverage, was milk 86% (76) compared to chocolate milk 7% (6). In the protein category, nuts were most frequently shown 20% (62) followed by chicken 14% (44). Supplements accounted for 10% (194) of the food images, with the multi-vitamin most frequently shown 20% (39).

Images for restaurants, formula feeding, bottle feeding, breast feeding, and feeding equipment appeared less often than the food categories. Three restaurant images appeared, and they comprised less than 1% (15) of the total images, with McDonalds® having the most images 67% (10) than Burger King® or Wendys®. A greater number of images appeared for formula use 42% (50) and bottle feeding 24% (29) than breastfeeding 8% (9). In the feeding equipment category, sippy cups were most frequently shown 54% (25).

## Discussion

Food and feeding images frequently appeared in the 36 magazines, adding to the literature on the prevalence of food images and food advertisements in the media, such as television [8]. The breads and grains category was the most frequently shown food category, which may be related to children's preference for foods in the breads and grains group [19,20].

Food of minimal nutritional value categorized as "sweet foods"

were second to the breads group in the frequency of food images shown. Foods of minimal nutritional value tend to be preferred by young children due to their preference for sweet flavors [19,20]. Other media sources, such as television, consistently have been shown to advertise foods of minimal nutritional value to children [8].

Children's consumption of certain beverages, such as fruit juice and flavored milk, has spurred debate as contributors to childhood obesity. The number of beverage images from fruit drinks and dairy drinks were comparable. While orange juice was the most often reported fruit drink, it was closely followed by non-100% fruit juices. Greater attention has been given to children's consumption of non-100% fruit juices in relation to childhood obesity risk [21]. Some concern has been presented on the consumption of flavored milk even though flavored milk has not shown to be associated with increased weight [22]. In the present study, flavored milk was less frequently shown than white milk.

Greater attention and support for the initiation and continuation of breastfeeding as a means to support children's healthy weight has been emphasized, however media support to encourage mothers to initiate and continue breastfeeding is limited [23]. In this study, images for formula and bottle feeding occurred eight times more than images for breastfeeding. Future research is needed to determine whether the discrepancy of formula to breastfeeding images influence breastfeeding initiation and duration.

Consumption of food from restaurants that offer high calorie foods and beverages has been linked to obesity [24]. Parents serve as the gatekeeper to children's food environment [13]. While a relatively small number of images from restaurants were identified, the images were of fast food restaurants. Future research should examine how might the fast food restaurant images impact adults offering of fast food to their children.

Offering nutrient dense foods to children can support children's healthy weight, however many of the nutrient dense food images, such as salad, uncooked carrots and nuts, showed pictures of foods in sizes and shapes larger than the ¼ inch diameter and ½ inch diameter. Food with these dimensions are considered choking hazards for young children between the ages of one to three and four to six years, respectively [25]. Further study is needed to determine whether adults will offer food in shapes and sizes that are choking hazards to young children after viewing images of those foods in lay literature.

Parents with young children use supplements [26]. While the percentage of supplement images was small relative to the total food number of food images, the total number of supplement images was comparable to the number of images in the fruit, vegetable, and protein food group categories. Research is needed to identify whether supplement images encourage parents to use supplements rather than food to meet children's nutrient intake.

A number of limitations are evident in this study. Only three magazines were reviewed; however, all 12 issues from the three magazines were included in the study. This study did not identify the impact of magazine images on parents food purchasing and feeding practices, and therefore whether parental exposure to the food images directly merits food behaviors merits further research. Specifically, future research should examine the impact of the type and frequency of parental exposure to food images impacts parental food purchasing practices, parental food offering practices, and parental feeding practices with young children. While a variety of food image categories were reviewed, the images were not distinguished by whether they

were processed, whole grain, or refined. Future research may include additional categories to address these emerging areas of interest.

Food images in parenting magazines may have implications on the foods purchased and offered to children. In this study, areas for improvement, such as the high number of “sweet food” images, the limited number of “fruit” and “vegetable” images, and the limited number of “breastfeeding” images, have been identified and can be used to reinforce positive marketing and food advertisement practices to support children’s health and possibly prevent obesity.

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