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## Analysis of Weight-Related Advertisements and Nutrition Articles in Popular Women's Magazines

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ANALYSIS OF WEIGHT-RELATED ADVERTISEMENTS AND NUTRITION  
ARTICLES IN POPULAR WOMEN'S MAGAZINES

by

Jennifer C. Jacobson

A thesis submitted to the faculty of

Brigham Young University

in partial fulfillment of the requirements for the degree of

Master of Science

Department of Nutrition, Dietetics, and Food Science

Brigham Young University

December 2003

BRIGHAM YOUNG UNIVERSTIY

As chair of the candidate's graduate committee, I have read the thesis of Jennifer C. Jacobson in its final form and have found that (1) its format, citations, and bibliographical style are consistent and acceptable and fulfill university and department style requirements; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the graduate committee and is ready for submission to the university library.

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## ABSTRACT

### ANALYSIS OF WEIGHT-RELATED ADVERTISEMENTS AND NUTRITION ARTICLES IN POPULAR WOMEN'S MAGAZINES

Jennifer C. Jacobson

Department of Nutrition, Dietetics, and Food Science

Master of Science

**Objective:** The purpose of this study was to discover whether the weight-related messages and themes from food advertisements in women's magazines reinforce or contradict the messages communicated in nutrition-related articles focusing on weight control within the same magazines.

**Design:** Content analysis of 48 issues of weight-related content six popular women's magazines, 2001-2002. There were three magazines in each of two categories, "homemaking" and "health." All food and nutrition advertisements were analyzed (n=954), along with all nutrition articles (n=336). Advertisements and articles were identified as being either weight-related or non-weight-related. Type of food/product advertised, claims used to market the product, and weight-control themes present were documented for each advertisement. Type of content, major topics discussed, food/diet

recommendations, and weight-control themes were documented for all weight-related articles.

**Statistical analyses performed:** Chi-square ( $\chi^2$ ) analyses were used to test for statistical differences between frequencies of coded categories between two magazine types.

Logistic regression was used to analyze differences in the presence of the weight-related themes in both ads and articles and between magazines types.

**Results:** Articles were more likely to refer to body weight than advertisements ( $p < .0001$ ) and health magazines were more likely to have weight-related content than homemaking magazines ( $p = .044$ ). Fruits and vegetables were the most frequently promoted foods in weight-related articles, but there were no weight-related advertisements for fruits or vegetables. Recommendations to avoid or reduce certain foods in weight-related articles most frequently mentioned sweets, fats, and caloric beverages, yet fats and sweets were the most frequently advertised food category overall (18.5%). Health foods represented 49.6% of all weight-related advertisements. Advertisements were more likely than articles to suggest that weight control is important for appearance ( $p = .001$ ) and does not require avoiding favorite foods ( $p = .016$ ). Articles were likely to suggest weight control is important to health ( $p = .002$ ) and is a chronic effort ( $p = .002$ ).

**Conclusion:** There is a discrepancy in foods promoted for weight control and weight-related messages among food advertisements and nutrition articles in popular women's magazines. Messages in diet articles tend to reflect professional guidelines while those contained in advertisements may promote undesirable weight control beliefs and practices.

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## INTRODUCTION

American women today appear to face the almost impossible task of achieving both a healthy weight and body satisfaction. Unfortunately, the ultra-slim female ideal portrayed pervasively in the media is often unrealistic for most women (1). To achieve a figure resembling those in the media, many women resort to drastic dieting behaviors (2), which are difficult to maintain in an environment flooded with accessible calories.

Magazines are a common and valued source of nutrition information among women (3) as well as a medium that establishes and promotes cultural norms and values (4). Increased use of ultra-thin models; articles and ads promoting health, diet and weight loss strategies; and advertisements for low-nutrient, high-calorie foods in women's magazines have been previously documented (5-9). These trends would appear to send conflicting messages regarding nutrition and weight control to women, although more recently, accuracy in nutrition reporting has improved in popular women's magazines with a wider variety of nutrition topics addressed than just weight-loss and dieting (10). The purpose of this study, therefore, is to discover whether the weight control messages and themes from food advertisements in women's magazines reinforce or contradict the messages communicated in nutrition-related articles focusing on weight control within the same magazines. Information gained can then be used to encourage healthy and sustainable approaches toward weight control in women's magazines.

## **LITERATURE REVIEW**

### **Nutrition Information**

Interest in food and nutrition has been a growing trend among Americans (11). Concern about nutrition and weight control is one factor that affects food choice; others are food preferences, availability, cost, cultural preferences, physiology, and lifestyle. Environmental cues are also influential in the ultimate decision of what to eat and are often packaged in mass media messages (12). The American Dietetic Association's (ADA's) recent trend survey identifies the media as the primary source of health and nutrition information for consumers. Magazines are a primary media source for many Americans. Forty-seven percent of respondents in a national survey reported receiving health and nutrition information from magazines, second only to television. Of these, 87% consider magazines a reliable source for nutrition information (3).

Those most interested in nutrition information are women. According to one survey, women were found to be more knowledgeable about nutrition than men (11). As a result, nutrition professionals and scholars consider the nutrition messages contained in women's magazines to be a significant factor in food choice and dieting behavior among women (7-8,10,13-20).

## **The Weight Obsession**

Every year, Americans spend over \$30 billion on the weight loss industry, including pills, programs, foods, and books, etc. (21). Between 1973 and 1991, advertisements for diet foods and diet aids increased dramatically (22). Despite these trends, obesity is rising in the United States and is one of the nation's most critical health concerns (23). According to the National Health and Examination Survey 1999-2000, 64% of American adults are overweight or obese (24). Data indicate that women are more concerned about their weight than men. In a national survey of American adults in 1990, 52% of women considered themselves overweight, compared with 36.7% of men. The same survey revealed that nearly twice as many women as men were currently trying to lose weight (25). Data from the 2000 Behavioral Risk Factor Surveillance System (23) showed 44.8% of men to be overweight while 29.8% women are overweight, yet when participants in the survey were asked the question "are you now trying to lose weight?" more women reported trying to lose weight than men: 44.9% vs. 30.6%, respectively (26).

These statistics raise the question: why are more women trying to lose weight than men when fewer women are overweight? Research indicates women's desire for weight-loss is more likely appearance-oriented rather than health-oriented (14). Brownell and Rodin (27) describe the relationship between weight and attractiveness in the context of social learning theory or the assumption that physical beauty leads to social and psychological rewards. Because thinness among women is considered beautiful in

Western society, women may consider the same social and psychological rewards they associate with beauty to be associated with a slim figure.

Where does one look to find the standard of feminine beauty? As a broad socializing agent, the mass media has proven to be one of the most influential vehicles for defining and communicating this ideal body image (2, 28-29). Many blame mass media outlets for this weight obsession among women as the media promotes ultra-thin fashion models, with TV personalities and movie actresses as the standards of beauty (5-6, 29-30). Content analysis of popular women's magazines (such as *Vogue*, *Ladies' Home Journal*, and *Good Housekeeping*) reveals an ever-shrinking ideal body. Garner et al (5) examined the measurements of *Playboy* centerfold models and Miss America contestants, considered the standards of feminine beauty, between 1959 and 1979. They found a significant decrease in weight for height and weight for age among the models and a similar decrease in weight among pageant contestants, especially the winners.

In a follow-up to this study, Wiseman et al (6) found similar results in studying the measurements of the same figures during the period of 1979-1988. Sixty-nine percent of *Playboy* models and 60% of Miss America winners were 15% below ideal body weight, which, the authors point out, is one of the criteria for diagnosing the eating disorder anorexia nervosa (31). In the most recent update (1), measurements of the same figures and also high-fashion models from the 1920s through the 1990s were examined and compared with those of young women in general (ages 18-29). The trend of slimming media females was confirmed, with the majority of *Playboy* centerfolds, Miss

America Pageant winners, and fashion models in the 1970s and 1980s meeting the World Health Organization and National Institute of Health criterion for underweight. These numbers declined in the 1990s for the centerfolds and pageant winners, but more than half of fashion models were still considered underweight in the 1990s. Meanwhile average weights of young women in general steadily increased throughout the decades with average heights remaining basically unchanged. Results of this study document a widening gap between the "real" and "ideal" female body (1).

Silverstein et al (30) also found evidence for a thin standard of feminine beauty. In their analysis of female celebrities, the authors found that female television actresses are thinner for height than male actors, and that there was a trend of decreasing bust-to-waist ratios of female movie actresses between the 1940s through the 1970s. They also showed a similar trend in the figures of female fashion models after the 1940s.

Several others have researched the relationship between media consumption, disturbed body image, and pathogenic dieting behavior among women with substantial evidence of a positive association (16-17, 29, 32-35).

### **The Role of Women's Magazines**

Women turn to magazines as a source of food and nutrition information (3, 11, 15), and they value magazines as a reliable source for such information (3). Therefore analyzing what nutrition messages are contained in these magazines with reference to diet

and weight loss methods is relevant to nutrition educators and health professionals in determining common diet beliefs and practices among women.

According to cultivation theory, increased exposure to media messages cultivates certain attitudes, beliefs, and values reflected in these messages among media consumers (36). Therefore, the evident trend in women's magazine articles promoting weight loss and thinness likely contributes to the extreme weight expectations and preoccupations among American women. Such mental perspectives are of concern in light of their association with eating disorders and the increase in the incidence of these disorders in recent years (37). Also alarming is the way weight loss is portrayed. If diet articles and advertisements in women's magazines convince readers weight loss is achievable and maintainable through short-term diet plans as opposed to lifestyle modifications, they could be setting women up for failure.

The literature contains several studies documenting an increasing trend of articles in women's magazines dealing with food, diet, and weight-loss methods. Silverstein et al (30) found stark contrasts when they compared the diet articles and food advertisements in women's (e.g. *Cosmopolitan*, *Women's Day*, and *Glamour*) and men's magazines (e.g. *Sports Illustrated*, *Gentlemen's Quarterly*, and *Rolling Stone*). They found 63 ads for diet foods in women's magazines compared to only one in men's (n=48 issues each of women's and men's magazines). They also found significantly more articles and advertisements dealing with body size and weight in women's magazines than men's magazines. Interestingly, there were over 100 more food advertisements in the sample of

women's magazines and 23 times more articles about food. The authors concluded that the message sent to women is to be slim, but at the same time to focus on food and cooking.

In their study of female models, Garner et al (5) also analyzed the articles in six popular women's magazines and found a significant increase in the number of diet articles during the years 1959-1978. Wiseman et al (6) found a similar increase in diet articles in the same magazines in their update of the study from 1959-1988. They also found a significant increase in fitness articles in more recent years, which suggests the growing role of exercise in weight control.

Another study described the difference in number of articles dealing with health, fitness, beauty, and weight loss among three categories of men's and women's magazines from 1980 to 1991. The three magazine categories were identified as traditional, fashion, and modern. There were significantly more articles with content focused on health, fitness, beauty, and weight loss in women's magazines than men's magazines (13).

While the emphasis on weight control is evidently present in women's magazines, how weight control is portrayed is also relevant to the discussion. Parham et al (14) asked a panel of judges, including those with a background in food and nutrition as well as lay people, to score randomly selected articles dealing with body size or weight control from 22 popular magazines. The authors did not specify whether magazines were targeted at women, men, or mixed audience. They found the magazines to consistently

convey the message that weight control is a person's own responsibility, that it requires chronic effort and has a high likelihood of a permanent solution. The articles also stressed the importance of will power, diet, exercise, behavior modification, and self-understanding as important to successful weight loss. Articles implied that achieving a normal weight is important to attractiveness, health, and happiness. The authors also found significant differences among magazine genres. Fashion magazines presented a more optimistic view of achieving normal weight and stressed its importance to attractiveness more than the others. Home service magazines emphasized the role of diet to weight control and the importance of ideal weight to happiness.

The literature indicates that magazines either reinforce or create the mindset of many women that they must lose weight to be beautiful, and that beauty is essential to happiness. They also emphasize the woman's personal responsibility for achieving and maintaining a slim figure. The optimistic portrayal of weight loss could be somewhat misleading because although many diets result in weight loss initially, few dieters are able to maintain their reduced body weights (38). Considering the pro-active and optimistic tone of these weight loss articles, when women diet and fail to keep the weight off, they are more likely to believe they are personally at fault for lacking the will power to stay on the diet. This is a harsh sentence, especially when the restrictive nature of many advertised diets is geared toward a "quick fix" rather than changing one's lifestyle to result in gradual, maintainable weight loss.

## **The Obesity Epidemic and the Role of Advertising**

Despite the prevalence of slimming messages, however, American women in general are gaining rather than losing weight (5). Obesity is the nation's greatest current health concern with 64.5% of Americans being overweight, and of those, 30.5% who are obese—a significant increase from a decade ago (24).

The increasing prevalence and availability of food combined with a sedentary lifestyle creates a difficult environment in which to maintain the dieting behaviors many women have internalized to be essential in maintaining an ideal body. The sheer amount of food available to Americans today contributes to the obesity epidemic. The U.S. food industry supplies enough food to provide every American with 3,800 calories a day, about 30% more energy than men need and two times more than women need to maintain their weight (39). Super-sized portions make excess calories not only accessible, but efficient and economical as well.

Food advertising also invites consumers to indulge in greater calorie consumption. In 1997, the food industry spent \$11 billion on food advertisements in magazines, newspapers, television, and radio (12). Others estimate \$33 billion a year is spent on ads and promotions for food (39). The advertising strategies used to promote their product underscore the qualities marketers perceive as most important to consumers. There is evidence that advertised attributes of a product increase the salience of those attributes to consumers (15). This phenomenon could have potentially positive or negative nutrition implications. For example, if nutrition claims are used to promote

vitamins and minerals contained in a certain product, consumers are more likely to value the nutritional components of the food and therefore consume that food based on the perceived health benefits associated with the food. Use of nutrition claims in advertising can be a powerful marketing strategy. When Kellogg's added health claims about cancer prevention and the fiber content in their cereals, sales increased 47% within the first 6 months (40). However claims emphasizing taste and other non-nutrition-related aspects of food dominate food advertising. Unfortunately, these claims are usually seen in ads for fats and sweets—promoting foods with little nutritional value (7, 9, 41-42).

In light of the recent increase in childhood obesity, the limited research on food advertising is focused primarily on television commercials for foods directed at children. Relevant to the present study, however, there are a handful of studies that examined food advertisements in women's magazines. While these studies relied on content analysis, a research method limited in cause and effect interpretations (43), they still provide information on the messages consumers receive from food advertisements. Taken together, the research indicates an advertising emphasis on low nutrient-density foods, claims promoting taste above all other aspects of food, and an emphasis on substances foods do not contain rather than on the health benefits they may provide.

The literature reveals an abundance of advertisements for low nutrient-density foods and beverages. Barr (7) performed a content analysis of a popular Canadian woman's magazine the years 1928-1986. Her purpose was to describe the trends in advertising over several decades. She found increasing trends in advertising for fats,

sugars, desserts and beverages (mainly alcohol, tea, and coffee). Pratt and Pratt (8) also found a dominance of non-nutritive food and beverage advertisements in a content analysis of women's magazines targeted for African-American (*Ebony* and *Essence*), as opposed to non-African-American readers (*Ladies' Home Journal*). In *Ebony* and *Essence*, 47% of food and beverage advertisements were for alcoholic beverages. In *Ladies' Home Journal*, there were a greater variety of foods advertised, although the most frequently advertised category was for fats and sweets. Lohmann and Kant (9) also performed a content analysis on food advertisements using six different women's magazines, two in each of three categories: food, women's, and health. Fats, oils, sweets, and beverages accounted for nearly a third of all food advertisements in the study, suggesting these are highly advertised products in such magazines.

Content analysis studies have also described the types of claims used to market particular foods. Results from Barr's (7) study revealed an increasing trend in nutrition claims in recent years, yet these claims tend to utilize statements indicating that substances had been reduced or eliminated from the product, such as fat, sodium, or calories. The author concluded this type of marketing suggests consumers are more concerned about substances foods do not contain rather than the nutritional benefits they do contain. Hickman et al (18) found a similar increase in "minimizing" nutrition claims, as well as ads with at least one claim relating to body weight and/or calories. The authors suggested, therefore, that the food industry is capitalizing on women's concerns with body weight. Other content analyses revealed similar trends (9, 19, 42).

Despite this increase in use of nutritional and weight loss claims, statements related to taste were by far the most common promotional statements used in the food ads overall, suggesting consumers value taste above nutrition, economic value, and convenience (7, 9, 18-19, 42). Not surprisingly, taste and pleasure were the most common promotional messages among foods dense in calories but low in nutrients, such as candy, desserts, and alcoholic beverages. These messages enhance the desirability of such foods, which may lead to greater consumption.

Noting that likeability and recall are the two most significant predictors of advertising success, Ewing et al (41) studied consumer's reactions to food advertisements in South African television commercials and magazine advertisements. Results showed that advertisements for fats, oils, sweets, condiments, and combination meals are significantly more liked than those for core foods such as produce, meats, grains, and dairy. They also found women both like and recall food ads better than men. The authors concluded that a marketing approach emphasizing the fun or emotional-related aspects of food is most effective; however these are least commonly used in ads for core foods.

The apparent messages documented among food advertisements seem to communicate different themes regarding foods. Foods that are healthy and conducive to weight-loss have those attributes because of unwanted substances reduced or taken out. Foods that taste good and are fun to eat tend to be those without significant nutritional value.

## **Conflicting Messages and Social Comparison Theory**

Considering the literature regarding the emphasis on dieting to achieve a thin ideal, the increased incidence of obesity in the United States, and prevailing messages to be thin *and* indulge in food, there appears to be a contradiction of media messages conveyed to American women regarding weight control. Conflicting media messages may be contributing to the concurrent problems of eating disorders and obesity present today (1). While the message to lose weight is appropriate for some individuals, the message is likely counterproductive for young women who are already normal or underweight, as this population is more likely to turn to pathologic dieting behaviors. Alternatively, women who have dieted unsuccessfully may conclude they should indulge in “fattening” foods because they can’t seem to lose weight when they restrict them.

In the context of women’s magazines, the juxtaposition of articles promoting weight loss and advertisements for foods that promote weight gain is not to be overlooked. Review of the literature reveals a greater occurrence of dieting and weight-consciousness among females and a ubiquitous media representation of the thin standard of female beauty. It is reasonable to theorize that women have a cognitive connection between what they eat and how they look. In a content analysis of latent messages in advertisements in young women’s magazines, Hertzler and Grun (44) found these ads typically imply that “women cannot be beautiful without being slim and using fashion and beauty products and supplements.” According to Martin et al (45), women tend to view their bodies as objects, whose value is determined by physical beauty as judged by

self and others. In contrast, men tend to view their bodies as vehicles of power, judged by what they can accomplish. This “object” view of their bodies with the accompanying importance of beauty, combined with the thinness ideal prevalent in Western society, results in a female mindset seeking for information on how to obtain this perfect figure.

Festinger’s (1954) theory of social comparison can be used to describe how women use magazines to learn social norms and values. This theory assumes that in human nature there exists a drive to evaluate one’s opinions and abilities. In the absence of an objective, non-social standard to compare oneself to, individuals tend to draw comparisons between self and others to define their own level of aspiration, or the “ideal” they are striving toward. The comparison one draws with this “ideal” subsequently influences one’s behavior. If the comparison drawn is a stark contrast—in other words, if the “real self” is quite inferior to the “ideal self”—dissonance is present. When such a discrepancy exists, it is natural to try to reduce it by either moving oneself closer to the ideal or changing the ideal to more closely resemble oneself. People want to see how they compare with this ideal in order to decide if actions should be taken to resolve the dissonance, or discrepancy between real and ideal. In the case of women’s magazines, the compilation of images and messages contained provide a composite “ideal” woman readers may compare themselves to. Women seek out media containing this perceived ideal in order to make upward comparisons, thus raising their level of aspiration and self-expectations. Given the popularity of women’s magazines among female readers, and given the editors’ knowledge of the readers’ intentions to make upward comparisons, it is safe to assume that the magazines strategically contain messages and images that portray

not only the image of this ideal, but the processes, actions, and products that will produce the ideal. Content analyses of women's magazines support this statement, as they reveal a prominence of ads for appearance-related products, and a frequent theme in articles of beauty and weight loss (8-9, 14-15, 19-21).

Therefore, these messages reinforce what is already internalized to be true in women's minds: that in order to be happy they must be beautiful, and in order to be beautiful they must be thin, and in order to be thin, they must take deliberate and sometimes drastic steps. These may include altering of or restricting food intake, exercising excessively, or using diet pills and products.

Social comparison serves as a theoretical background for the present study. According to Festinger (46), in situations when people recognize that they are very different from those to whom they are comparing themselves to, typically they will choose to compare themselves instead to similar people in order to reduce dissonance. Festinger (46) also notes when the attraction to a certain group is so strong that one desires to continue to compare oneself to the group despite the inability to identify with them (in this case, the perceived ideal), the dissonance will be so great that the individual experiences deep feelings of failure and inadequacy. This may be true for women who continue to compare themselves with media figures.

## **PURPOSE OF THE STUDY**

In performing a content analysis of both food advertisements and diet-related articles, I anticipate finding a discrepancy in messages regarding weight control. Articles communicating to readers that they must eat certain foods and avoid others in order to lose weight may cause women to internalize unrealistic expectations about their own diets and body weights. When a woman's aspirations for achieving an ideal body weight are too high, for example, she is likely to experience dissonance when she subsequently makes self-evaluations after following article recommendations. Taken to the extreme, she may attempt to resolve this dissonance in one of two ways: committing to an even more restrictive diet mentality in order to bring herself closer to her ideal, or ceasing to trust diets altogether and allowing herself the pleasure of "forbidden" foods. Conveniently placed food advertisements within these magazines marketing fats and sweets as highly desirable may promote the second type of reaction, especially if the reader has tried and failed at dieting previously. Consuming calorie-dense foods then may contribute to weight gain, or at least prevent weight-loss, perpetuating the dissonance and feelings of failure within the individual. Such undesirable feelings can lead to unfavorable outcomes including cycles of emotional eating and failure to achieve a healthy body weight—a weight that is likely much heavier than a woman's "ideal" may be.

While consumers continue to use the media as a primary source for health and nutrition information, they are wary of scientific findings that contradict one another and offer conflicting recommendations regarding what to eat. Scientists and nutrition

professionals are concerned with the communication of “junk science” to the lay public regarding food and nutrition research (47).

This concern inspired the American Council on Science and Health (ACSH) to evaluate the accuracy of nutrition reporting in popular magazines. Over the past 18 years of tracking, the ACSH has found that the quality of reporting has significantly improved. In the most recent survey of magazines (1997-1999), the majority of magazines surveyed were rated as “excellent” or “good” sources of nutrition information. Judges were surprised and pleased to find that in this round, magazines addressed a wide variety of topics in addition to weight loss (10).

The purpose of this study, then, is to provide an updated content analysis of articles and advertisements in dealing with weight control in women's magazines and to identify any mixed messages present. Specifically, the questions to be answered are:

1. What percentage of nutrition-related articles and food/supplement advertisements include weight control messages?
2. What types of foods are currently advertised in women’s magazines and what types of claims are used to market them?
3. What strategies and/or foods are promoted in the articles to help women with weight control?
4. Is there a significant difference between weight-loss messages contained in weight-related food advertisements and the messages contained in weight-related articles?

5. Are there differences in the weight-related content in articles and foods advertised between different categories of women's magazines (homemaking vs. health-oriented)?

## **METHODS**

### **Content Analysis**

To answer the research questions proposed in the previous section, I performed a content analysis of a sample of popular women's magazines for this study. This method is considered valuable and relevant to nutrition education (43,48). Content analysis is used to code units within communication messages to describe the nature and frequency of manifest and latent themes, patterns, and trends (43, 48). Several of the studies previously cited in this paper have used content analysis methods (5-9, 13, 18-20, 22, 42, 44). While the method cannot establish causality of behavior, it can reveal relationships and provide other descriptive statistics that form a basis for behavioral studies (43). If coding is appropriately categorized with mutually exclusive categories, data can be highly reliable and valid (43).

### **Sample and Units of Analysis**

In content analysis, the text under examination is considered the population. For this study, the sample consisted of 48 total magazine issues: 8 issues from each of 6 different women's magazines. Inclusion criteria included a consistent presence of nutrition-related articles and advertisements, a circulation of more than 1 million, and availability of past issues. Because differences between categories of magazines are also of interest in this study, two different types of women's magazines were considered.

Using these criteria as assessed using the Standard Rate and Data Service (SRDS) Consumer Magazine Advertising Source (49) and determining availability at local libraries, the magazines and categories selected are as follows:

- Homemaking: *Good Housekeeping, Woman's Day, Family Circle*
- Health/Fitness: *Health, Self, Prevention*

The units of analysis in this study were individual nutrition-related articles and advertisements. Nutrition is defined as anything related to food and nutrients, including dieting (attempts to reduce body size by limiting caloric intake), but excluding recipes. Thus, advertisements for food, beverages, supplements, and weight-loss programs and/or products were analyzed. Articles and advertisements approximately one quarter page or larger were included. Recipes were excluded for ease of coding, unless it was in connection with a nutrition or diet-focused article.

Sampling techniques traditionally used in studies involving human populations also apply in content analysis for the purpose of quantitative data analysis. Similar studies have used sample sizes ranging from 48 to 432 magazine issues (7-8, 18-19, 42). A systematic method commonly used with magazines is to analyze every third issue, or four issues per year (January, April, July, and October) to account for any seasonal changes. According to this method, I analyzed four issues per magazine per year, from 2001-2002 for a total of forty-eight magazine issues. This time period was selected to give a current representation of magazine articles and advertisements. Articles and ads

were analyzed from magazine issues in random order to prevent a potential bias based on chronological order or magazine type.

### **Coding**

Based on examination of current trends in nutrition-related articles and advertisements in women's magazines, as well as categories used in similar studies cited previously, I developed a coding sheet and key to categorize the units of analysis (See Appendices A and B). I also developed instructions describing each category and rules for consistency to promote reliability of coding (See Appendix C).

Advertisements were coded for food type and promotional messages used. Barr (7) divided foods into eight categories: milk and dairy; protein foods; breads and cereals; fruits and vegetables; desserts and foods high in fat and/or refined sugar; condiments and food ingredients; beverages other than milk and sugared beverages; and miscellaneous. Within these groups, Barr further categorized foods individually (for example, yogurt, milk, and cottage cheese within the dairy group). I followed a very similar categorization scheme, except instead of miscellaneous, I included combination foods (such as soups and frozen dinners) and "health" foods (including meal replacements, sugar substitutes, energy bars, and supplements). I coded all foods individually within categories.

I also coded promotional messages in the manner used in Barr (7), Hill and Radimer (19), and Hickman et al (18). They divided nutrition-related vs. non-nutrition-related messages into sub-categories, with specific types of messages in each category.

Nutrition-related categories were as follows: general health and nutrition claims, specific nutrient content claims, and claims about minimizing or eliminating substances from foods. Non-nutrition-related or consumer categories were claims emphasizing taste, convenience, pleasing friends and family, and other (i.e. high-quality, economical, new/different, fun/pleasurable).

Articles were coded according to type (in-depth feature, brief highlight, question and answer, personal experience, diet plan/menus, and other) and whether or not the content addressed weight control. If the article addressed weight control, I coded the type(s) of strategies promoted, as well as types of foods that were promoted and/or recommended to reduce or avoid.

Both articles and ads that dealt with weight control were also coded for whether or not specific weight control themes were present. These themes, such as "weight control is important to happiness" or "weight control is easy," were developed based on those found to be common in magazines by Parham et al (14).

### **Pilot test**

A prototype of the coding sheet and key were pilot-tested and revised prior to actual data collection. I developed the initial coding forms, and a member of my committee (SRT) and I pilot tested them using magazine issues from the years included in the study, but not the selected issues. Categories were added or revised based on

results of the pilot test, and the coding sheet and key were modified accordingly prior to actual data collection.

### **Reliability**

A member of my committee (SRT) and I coded the same three separate issues of magazines to be used in the study to establish inter-rater reliability prior to data collection. Issues were coded for both advertisements and articles. Holsti's equation was used to determine the overall inter-rater reliability of the coding scheme (48):

$$\text{Reliability} = 2M / (N1 + N2)$$

M=Number of coding events on which two coders agree

N1=Total number of coding decisions by the first coder

N2=Total number of coding decisions by the second coder

An agreement of  $\geq 0.75$  is considered a minimum for reliability (48). Our agreement was 0.89 for the advertisements, and 0.92 for the articles. Because the reliability was so high and because I completed the coding in a relatively short period of time (reducing the chance of any bias that may have resulted over time), the test was not repeated after the actual data was coded.

### **Data Collection and Statistical Analysis**

I was the primary coder for this study. I obtained magazine issues for 2001-2002 from the Harold B. Lee Library (BYU) or Provo City Library and coded them in no

specific order. I entered data into Microsoft Excel, then used the Statistical Package for the Social Sciences (SPSS) and Statistical Analysis Software (SAS) for analysis. Magazine titles were collapsed into two categories, homemaking and health, for two reasons: to simplify the data analysis and to identify potential differences in weight-control messages between the two types of magazines. It would be simpler to perform and interpret comparisons between two groups of magazines rather than six separate magazine titles. Also, the target audiences for the two types of magazine are different, therefore there is likely to be a difference between categories in the way weight-control is portrayed. It was of interest to report these differences if they were significant in order for practitioners to educate themselves on beliefs clients may have based on exposure to one type of magazine over another. Individual food items advertised were also collapsed into ten basic groups for easier discussion.

I performed descriptive statistical analyses to compare frequencies of the various categories. I also used chi-square analysis to examine the relationships between message types in articles versus advertisements, and also for differences in messages between magazine types (homemaking vs. health). Specifically, I performed an overall chi-square test of significant differences between magazine type for the frequency of foods advertised (Table 1). I also performed individual chi-square tests for differences in marketing claims between magazine types, treating each claim as a separate statistical question (Table 3). This was necessary to reduce error because one ad may have contained more than one claim. The same procedure was used for article topics (Table 5), as well as the food recommendations given in articles (Tables 6 and 7).

I used logistic regression to analyze which variables significantly predicted whether the content was weight-related or not. This model included indicator variables as follows: type of magazine (health or homemaking), type of content (ad or article), and an interaction between these two variables. I used a similar logistic regression model to predict which magazine type and/or which content type would likely contain that theme (Table 8). In both regression models, the indicator variables "health" (for magazine type) and "advertisement" (for content type) were designated as "1" and the others ("homemaking" and "article") were designated zero. Therefore a positive value for the "magazine type" coefficient indicates health magazines were more likely to predict the outcome in question than homemaking magazines, for example. Wald chi-square analysis was used to determine which variable(s) in each model were significant predictors of the theme in question. For example, advertisements were more likely than articles to contain the theme "weight control is important for appearance." Odds ratios, confidence intervals and  $r^2$  were not calculated due to the complexity of the models and the use of categorical variables.

## RESULTS

### Logistic Regression for Weight-Related Content

The study yielded a total of 954 food advertisements and 336 nutrition articles. Overall, 11.4% of the advertisements and 40.5% of the articles were weight-related. When the variables magazine type, content type (article vs. ad), and an interaction variable between the two were analyzed in a logistic regression, all three were significant predictors of weight-related content. Health magazines were more likely to refer to weight loss than home magazines ( $\beta = 0.177$ ,  $SE = .088$ , Wald  $\chi^2 = 4.057$ ,  $p = .044$ ). Articles were more likely than advertisements to reference body weight ( $\beta = -.968$ ,  $SE = .088$ , Wald  $\chi^2 = 121.97$ ,  $p < .000$ ). If the content was an advertisement in a health magazine, it was also more likely to refer to weight loss ( $\beta = .496$ ,  $SE = .088$ ,  $\chi^2 = 31.991$ ,  $p < .000$ ).

### Advertisements

Table 1 presents the percent of total ads for each of ten food categories by magazine type. Supplements (i.e. vitamins, minerals, and herbal products) were the most frequently advertised among all categories, comprising 15% of all ads. This category was excluded for analysis, however, because it was not included in previous studies and the primary focus of the present study was on foods. This exclusion resulted in a total of 813 advertisements analyzed. Chi-square analysis revealed a significant difference in the

**Table 1****Percentage of Advertisements for Ten Food Categories**

<b>Food</b>	<b>Homemaking Magazines<sup>a</sup></b> (n=484) %	<b>Health Magazines<sup>b</sup></b> (n=329) %	<b>Total (all ads)</b> (n=813) %
Beverages	4.3	10.6	6.9
Combination	11.2	4.9	8.6
Condiments	10.1	4.3	7.8
Fats and sweets	26.7	6.4	18.5
Fruits and vegetables	8.1	5.8	7.1
Grains	16.7	17.9	17.2
Health foods	3.5	17.9	9.4
Milk and dairy	8.3	14.3	10.7
Miscellaneous	1.5	0.9	1.2
Protein	9.7	17.0	12.7
$\chi^2$	133.135 <sup>c</sup>		
<i>df</i>	9		
<i>p</i>	<0.0001		

<sup>a</sup>Homemaking magazines: *Good Housekeeping*, *Woman's Day*, and *Family Circle*

<sup>b</sup>Health magazines: *Health*, *Prevention*, and *Self*

<sup>c</sup>Chi-square analysis used to determine difference in frequency of food groups between magazine types

types of foods advertised by magazine type—health by homemaking ( $\chi^2=133.135$ ,  $df=9$ ,  $p<.000$ ). For homemaking magazines, the most frequently advertised foods were in the fats and sweets category, accounting for 26.7% of all the ads. Grains were the second most common group at 16.7%, and combination foods were third at 11.2%. The fruits and vegetables category and milk/dairy category each represented about 8% of ads. In health magazines, results revealed a nearly even occurrence of health foods (including meal replacements, energy bars, and sugar substitutes), grains, and protein foods, accounting for 17.9%, 17.9%, and 17% of ads, respectively. Milk/dairy ads were fourth at 14.3%. Fats and sweets accounted for only 6.4% of the ads in health magazines, while fruits and vegetables remained low at 5.8%. It was interesting to see a dominant presence of ads for soy foods in these magazines; these products accounted for 37% of all ads for protein foods, more than any other type of food within the category. Although not presented in the table, the "grains" category was also broken down into "whole grains" and "refined grains" for analysis. Overall, whole grains made up 6.8% of all ads and refined grains represented 10.5%. When separated between magazine categories, whole grains comprised 9.4% of ads in health magazines and 5% of ads in homemaking magazines. Refined grains made up 8.5% of total ads in health magazines and 11.8% in homemaking magazines. These results show that refined grains are advertised more often than whole grains overall but especially in homemaking magazines.

Table 2 presents the percent of weight-related and non-weight-related ads for the food categories by magazine type. Health foods represented about half the weight-related

**Table 2****Percentage of Advertisements for Ten Food Categories by Magazine Type and Weight-related Emphasis**

<b>Food</b>	<b>Homemaking Magazines<sup>a</sup></b>		<b>Health Magazines<sup>b</sup></b>	
	<i>Weight-loss</i> (n=20) %	<i>Not Weight-loss</i> (n=464) %	<i>Weight-loss</i> (n=61) %	<i>Not Weight-loss</i> (n=268) %
Beverages	15.0	3.9	13.1	10.1
Combination	10.0	11.2	6.6	4.5
Condiments	0.0	10.6	0.0	5.2
Fats & sweets	20.0	26.9	13.1	4.9
Fruits & vegetables	0.0	8.4	0.0	7.1
Grains	5.0	17.2	11.5	19.4
Health foods	50.0	1.5	49.2	10.8
Milk & dairy	0.0	8.6	0.0	17.5
Miscellaneous	0.0	1.5	0.0	0.8
Protein	0.0	10.1	5.4	19.8

<sup>a</sup>Homemaking magazines: *Good Housekeeping*, *Woman's Day*, and *Family Circle*

<sup>b</sup>Health magazines: *Health*, *Prevention*, and *Self*

advertisements in both magazine categories. Fats and sweets was the second most common category for homemaking magazines at 20%, and beverages were equal with fats and sweets for second in the health magazines at 13%. There were no weight-related ads for fruits and vegetables, condiments, or milk/dairy in either magazine category. There were also no weight-related ads for miscellaneous or protein foods in the homemaking magazines. When the "grains" category was separated into "whole" and "refined" grains, there were no significant differences in the frequencies of whole grain ads between weight- and non-weight-related ads for either magazine type. Weight-related ads for grains occurred more often for whole grains (8.2% in health, 5.0% in homemaking) than refined grains (3.3% in health, 0% in homemaking) in both magazine categories, although these differences were not statistically significant categories (data not shown in table).

Tables 3 and 4 summarize the frequencies of marketing claims. In Table 3, overall frequencies are presented with p-values for chi-square comparisons between magazine type. Health magazines contained significantly more health-related claims, while homemaking magazines contained significantly more consumer-related claims. Claims referring to taste occurred most often in both magazine categories, between 60 and 70% of the time. In homemaking magazines, the second and third most common claims were for convenience and general health; these claims were each used about 20% of the time. General health claims were nearly as frequent as taste claims in health magazines at 55%. In both magazine categories, claims indicating the product contained

**Table 3**

**Percentage of Advertisements that Contained Marketing Claims by Magazine Type**

<b>Claim</b>	<b>Homemaking Magazines<sup>a</sup></b> (n=484) %	<b>Health Magazines<sup>b</sup></b> (n=329) %	<b>p-value<sup>c</sup></b>
Contains specific nutrients	15.3	45.0	<.0001
Convenience/easy	20.9	11.6	.0005
General health/nutrition	19.6	55.3	<.0001
Helps to control weight	3.1	13.7	<.0001
Minimizes or eliminates specific substances	13.8	35.0	<.0001
Pleases others	10.7	0.9	<.0001
Taste	67.4	60.5	.0444
Other	16.9	11.3	.0048

<sup>a</sup>Homemaking magazines: *Good Housekeeping*, *Woman's Day*, and *Family Circle*

<sup>b</sup>Health magazines: *Health*, *Prevention*, and *Self*

<sup>c</sup>p-values determined by chi-square analysis for presence or absence of individual claims within advertisements

**Table 4****Percentage of Advertisements that Contained Marketing Claims by Magazine Type and Weight-related Emphasis**

<b>Claim</b>	<b>Homemaking Magazines<sup>a</sup></b>		<b>Health Magazines<sup>b</sup></b>	
	<i>Weight-loss</i> (n=20) %	<i>Not Weight-loss</i> (n=464) %	<i>Weight-loss</i> (n=61) %	<i>Not Weight-loss</i> (n=268) %
Contains specific nutrients	39.3	46.3	15.0	15.3
Convenience/easy	11.5	11.6	5.0	21.6
General health/nutrition	52.5	56.0	15.0	19.8
Helps to control weight	72.1	0.4	75.0	0.0
Minimizes or eliminates specific substances	52.5	31.0	35.0	12.9
Pleases others	1.6	0.8	0.0	11.2
Taste	65.6	59.3	55.0	67.9
Other	1.6	13.4	0.0	17.7

<sup>a</sup>Homemaking magazines: *Good Housekeeping*, *Woman's Day*, and *Family Circle*

<sup>b</sup>Health magazines: *Health*, *Prevention*, and *Self*

specific nutrients (i.e. vitamins, minerals) were used more frequently than those stating the product had reduced amounts or eliminated certain substances (i.e. fat, sugar, etc.). Results differed when data were separated into weight-related and non-weight-related categories (Table 4). Not surprisingly, about three-quarters of all weight-related ads contained the claim "product helps to control weight" (72.1% in homemaking magazines, 75% in health magazines). Also, minimizing-health claims were more common than the specific-nutrient health claims in both magazine types (52.5% vs. 39.3% in health, 35.0% vs. 15.0% in homemaking). Taste was another very common claim among weight-related ads (55% in health, 65.6% in homemaking). Many ads contained both taste and health-related claims.

### **Articles**

Table 5 presents the topics or advice described in the weight-related articles. The most common advice given overall was a recommendation for what foods to eat (54.1% in homemaking magazines, 44.9% in health magazines). The second most common advice was for what foods to avoid or reduce (32.4% of homemaking magazines, 24.6% of health magazines). Other popular topics (present in at least 20% of articles) included discussion of specific popular diet plans (i.e. Weight Watchers or the Atkins diet), portion control, hunger/satiety, references to published research, and the general recommendation to eat low-calorie foods. Chi-square analysis revealed a few significant differences in content between magazine types. Homemaking magazine articles were more likely to offer specific calorie recommendations for weight-control ( $p=.001$ ), provide structured

Table 5

**Percentage of Weight-related Articles that Contained Content in One or More of Nineteen Categories by Magazine Type**

Topic	Homemaking Magazines <sup>a</sup>	Health Magazines <sup>b</sup>
	(n=37) %	(n=98) %
Alternative therapies (i.e. fasting, surgery, etc.)	5.4	5.1
Avoid/reduce specific substance/food	32.4	29.6
Eat regular meals (don't skip)	18.9	9.2
Eating low-calorie foods (general)	29.7	16.3
Eating out*	13.5	4.1
Emotional eating	2.7	5.1
Goal-setting	5.4	2.0
Hunger/satiety	27.0	13.3
Keep food diary	16.2	5.1
Metabolism	18.9	17.4
Plan meals/shopping	5.4	4.1
Portion control**	35.1	12.2
Refers to research	29.0	24.5
Specific calorie recommendations***	24.3	5.1
Specific food/food group recommended	54.1	44.9
Specific product/diet plan (i.e. Weight Watchers)	21.6	19.4
Structured meal plan/menus**	18.9	4.1
Other	21.1	18.4

<sup>a</sup>Homemaking magazines: *Good Housekeeping*, *Woman's Day*, and *Family Circle*

<sup>b</sup>Health magazines: *Health*, *Prevention*, and *Self*

\* Chi-square analysis for presence or absence of topic significant at  $p \leq .05$

\*\* Chi-square analysis for presence or absence of topic significant at  $p \leq .01$

\*\*\* Chi-square analysis for presence or absence of each topic significant at  $p \leq .001$

meal plans and/or menus ( $p=.005$ ), discuss portion control ( $p=.002$ ), or eating out ( $p=.05$ ).

Frequencies of foods promoted and foods to reduce or avoid in weight-related nutrition articles are summarized in Tables 6 and 7, respectively. There were no significant differences in foods recommended or foods to avoid between magazine types. Articles frequently promoted fruits and vegetables (25.9% and 25.2%, respectively) and 22% of articles recommended whole grains. The third most common category of foods promoted was protein at 14%. The most common foods readers were advised to reduce or eliminate were for sugars/sweets (14.8%), followed by caloric beverages (11.9%), and then non-specific fats (9.6%).

### **Weight-related Themes**

Table 8 presents the results of individual logistic regression on each theme. Estimates were the coefficients of indicator variables for magazine type, whether the content was an ad or an article, and an interaction between the two variables (estimates for the interaction are not shown in table). Although frequencies of these themes will be discussed below, they are not reported in the table. The most common theme in the ads was "eating specific/promoted food helps in weight control" with 76.1% of weight-related ads containing this theme. The theme was significantly more common in the ads than in the articles, with only 19.4% of articles promoting a specific food as helping to control weight. According to the regression, ads were significantly more likely to contain

the theme than articles ( $p < .0001$ ) Advertisements were also significant predictors of the theme "weight control does not require giving up foods you love" ( $p = .016$ ). The theme was present in 27.5% of ads vs. 12.9% of articles. The theme "weight control is important for appearance" was also significantly more likely to appear in ads than articles ( $p = .001$ ). This theme appeared in 32.1% of ads and only 7.9% of articles. Twenty percent of articles regarded weight control as being important to health, while only 5.5% of ads did; ads were also found to be significant predictors of this theme ( $p = .0023$ ). Articles were significantly more likely than ads to portray weight control as a chronic effort ( $p = .0016$ ), with 18.0% of articles containing the message, compared with 3.7% of ads. While the theme "weight control is difficult" was present in both ads and articles to similar extent, the theme "weight control is easy" was more frequent in the ads, though the difference did not reach statistical significance. Magazine type was a significant predictor for only one of the themes, "weight control is important to happiness" ( $p = .0115$ ), with homemaking magazines more likely to contain this theme than health magazines. Interactions between magazine type and content type did not reach statistical significance.

**Table 6**  
**Percentage of Weight-related Articles that Promoted Specific Foods**

<b>Food Promoted</b>	<b>Homemaking Magazines<sup>a</sup></b> (n=37) %	<b>Health Magazines<sup>b</sup></b> (n=98) %	<b>Total</b> (n=135) %
Fats (non-specific)	2.7	4.1	3.7
Fats (specific)	8.1	9.2	8.9
Fish	8.1	4.1	5.2
Fortified foods	0.0	4.1	3.0
Fruit	32.4	23.5	25.9
Herbal supplements	2.7	1.0	1.5
Legumes	10.8	4.1	5.9
Milk/dairy	13.5	10.2	11.1
Protein	13.5	14.3	14.1
Nuts	2.7	7.1	5.9
Reduced-fat/fat-free	5.4	11.2	9.6
Soy	0.0	2.0	1.5
Vegetables	32.4	22.5	25.2
Water	13.5	7.1	8.9
Whole grains	27.0	20.4	22.2
Other	13.5	10.2	11.1

<sup>a</sup>Homemaking magazines: *Good Housekeeping*, *Woman's Day*, and *Family Circle*

<sup>b</sup>Health magazines: *Health*, *Prevention*, and *Self*

Table 7

## Percentage of Weight-related Articles that Advised Readers to Avoid or Reduce Substances or Foods

Food to Avoid or Reduce	Homemaking Magazines <sup>a</sup>	Health Magazines <sup>b</sup>	Total
	(n=37) %	(n=98) %	(n=135) %
Caloric beverages (i.e. soda, alcohol)	13.5	11.2	11.9
Carbohydrates (non-specific)	2.7	1.0	1.5
Carbohydrates (specific)	2.7	6.1	5.2
Cholesterol	0.0	0.0	0.0
Fats (non-specific)	13.5	8.2	9.6
Fats (specific)	8.1	8.2	8.2
Fried foods	8.1	2.0	3.7
Herbal supplements	2.7	3.1	3.0
Quick-fix diet products	16.2	3.1	6.7
Sugar/sweets	18.9	13.3	14.8
Other	5.4	5.1	5.2

<sup>a</sup>Homemaking magazines: *Good Housekeeping*, *Woman's Day*, and *Family Circle*

<sup>b</sup>Health magazines: *Health*, *Prevention*, and *Self*

**Table 8**

**Logistic Regressions<sup>a</sup> for Weight-control Themes by Magazine Type and Content Type**

<b>Theme</b>	<b>Magazine Type<sup>b</sup></b> Coefficient (SE)	<b>Advertisement or Article<sup>c</sup></b> Coefficient (SE)
Weight control is difficult	0.18 (0.25)	-0.15 (0.25)
Weight control is easy	-3.22 (99.22)	4.25 (99.22)
Weight control requires giving up foods you love	2.55 (96.73)	3.39 (96.73)
Weight control does not require giving up foods you love	-0.32 (0.18)	0.42 (0.18)*
Weight control is a chronic effort	-0.25 (0.32)	-1.00 (0.32)*
Weight control is only a temporary effort	-0.55 (0.36)	0.64 (0.36)
Weight control is important for health	-0.19 (0.25)	-0.76 (0.25)*
Weight control is important for appearance	-0.10 (0.21)	0.91 (0.21)**
Weight control is important for happiness	-0.70 (0.28)*	0.43 (0.28)
Promoted food/product helps with weight loss	0.06 (0.17)	1.28 (0.17)**
Food is associated with guilt	-0.52 (0.28)	0.48 (0.28)
Other <sup>d</sup>	0.29 (0.31)	-1.27 (0.31)**

<sup>a</sup>Each line represents a separate regression model

<sup>b</sup>Positive value indicates health magazines are more likely to contain the theme than homemaking magazines. Negative value indicates the converse.

<sup>c</sup>Positive value indicates advertisements are more likely to contain the theme than articles. Negative value indicates the converse.

<sup>d</sup>"Other" was coded when either no specific weight-loss theme was present or the theme was different from one of the other coding categories.

\* Wald chi-square analysis for variable significant at  $p \leq .05$

\*\* Wald chi-square analysis for variable significant at  $p \leq .001$

## **DISCUSSION**

### **Weight-related Content**

The results of this study reveal much about the content of popular women's magazines regarding control of body weight and dieting. The articles predominantly emphasized weight, while the majority of food and beverage advertisements did not mention weight at all. That difference in and of itself communicates a discrepancy of nutrition content within magazines. Articles would suggest that concern for food and nutrition is of value mainly to control body weight, while the majority of advertisements would have the reader consider foods based on the pleasurable aspect of taste as well as general health.

### **Frequencies of Foods Advertised**

It was interesting to compare the frequencies in advertising for food categories with previous studies. Pratt and Pratt (8) found fats and sweets to represent 20% of all ads, followed by grains with 16%, then milk and dairy at 13.6%. Lohmann and Kant (9) found miscellaneous foods (including combination foods, condiments, and foods that did not fit in other groups) to be the most commonly advertised in general women's magazines at 31%, followed by fats and sweets at 28%, and grains at 14%. Both of these studies showed a relatively low frequency of advertising for fruits and vegetables, less than 10% of all ads. While neither of the previously cited studies included a specific

category for health foods as in the present study, these were included in the category “miscellaneous.” Neither of these analyses included advertisements for nutritional supplements. With supplements excluded, results from the present study were fairly consistent with the cited studies for homemaking magazines. Fats and sweets were still a highly advertised food category (26.7%), while grains remained the second-most commonly advertised category (16.7%). Of the total grain advertisements, 39% were specifically for whole grain products. Advertising for fruits and vegetables remained low at 8%.

The frequencies of food advertisements in women’s homemaking magazines contradict current recommendations provided in the USDA’s Dietary Guidelines for Americans for achieving a healthy weight. These guidelines advise consumers to make fruits, vegetables, and grain products (with an emphasis on whole grains) the basis of a healthy diet, with only moderate intakes of fats and sugars (50). Frequencies of food advertisements in homemaking magazines, however, favor fats, sweets, and refined grains over the recommended emphasis on whole grains, fruits, and vegetables.

One reason for the relatively low frequency of ads for fruits and vegetables may be that in many cases these products are not associated with any particular brand. This is especially true for fresh produce, where a particular farmer would not see a direct benefit from advertising dollars. Consumers are generally unaware of who supplies produce to the local grocer, and so advertising for produce may benefit a farmer's competitor rather than himself. In addition, the small profit margin of fresh produce compared to that of

processed fruits and vegetables likely limits advertising dollars. Some ads by produce marketing boards (e.g. California Prunes, Florida Citrus, etc.) were observed in this study, however most ads for fruits and vegetables were for those canned, frozen or juiced products in which brand names are easily recognized.

Advertising in women's health magazines appears to have changed since Lohmann and Kant's (9) analysis of these magazines in 1997. They found grains to be the most popular at 29%, followed by fats and sweets at 18%, and meat at 17%. The present study revealed an apparent increase in advertising for health foods (17.9% of ads) with corresponding decreases in the fats and sweets (6.4% of ads) and grains (17.9% of ads) categories. These changes may reflect a consumer trend toward processed health foods as well as a current diet trend of lowering carbohydrate intake for weight control. In accordance with dietary guidelines, more weight-related ads for grains featured whole grain products (8.2%) than enriched grain products (3.3%).

In the discussion of the health food category, it is essential to address the weight-related marketing of these products. Comprised primarily of meal replacement bars and shakes, this category represented half of all weight-related ads in both magazine categories. Before excluding nutritional supplements (pills), the health food category made up over 60% of all weight-related ads. This is not very surprising considering the "magic bullet" image of such products. Many of these ads featured a slim, attractive model, accompanied by a testimonial of how use of the product helped her to achieve her ideal weight with ease. The sports nutrition and weight loss segments are the fastest

growing among the supplement industry, including weight loss pills, energy drinks, liquid meal replacements, and energy bars (51). Sales of energy bars increased by 20% in the last year. Industry reports declare products designed for women are the greatest trend among the energy bar sector (52). Unfortunately, the growth in sales among these products reflects investment in packaging, marketing and advertising rather than in scientific research for product development, limiting the validity of the portrayals (51).

Results from this study confirm that the marketing emphasis of these products is most often weight control, whether the message is explicit or implicit. The claims and themes used in these ads support this conclusion. Of all the weight-related ads, the bulk of which were for health foods, over 75% contained the theme "promoted food/product helps in weight loss." No other single food category held a majority for any other marketing claim. The observed increase in advertising in women's magazines and corresponding increase in sales of such products suggests female consumers are responsive to the marketing of products as functional in weight control. For those who use meal replacements as intended and are willing to commit to the products over the long-term, liquid meal replacements have been shown in one study to be more effective than reduced calorie diets in weight loss of 7-8% of body weight (53). For many women, such a loss—though it may result in health benefits—may not be sufficient to match their perceived ideal body image (54). There is little scientific research supporting other types of products in the health food category, such as energy or protein bars. The absence of evidence suggests actual outcomes are not as promising as the advertisements portray.

The frequency of fats and sweets as the second most commonly advertised category in weight-related ads was also surprising. Claims used to market these products and weight-related themes present in the ads may help to explain their relatively large presence. Nearly 18% of each of the explicit claims, "minimizes or eliminates certain substances" and "taste," were present in ads for fats and sweets. The implicit theme "weight control does not require giving up foods you love" often accompanied these claims. It would appear producers of these products are aware of women's anxiety over their own body weight and belief that efforts to lose weight will compel them to eliminate pleasurable foods from their diet. By using such claims to market these products, advertisers are essentially telling women they can "have their cake and eat it too." This type of guilt-free indulgence may be counterproductive, however, if the "license to eat" results in intake that exceeds energy needs, thus promoting weight gain.

While the prominence of weight-related ads for processed health foods, fats and sweets is of interest, perhaps even more intriguing is the relative absence of weight-related ads for low-calorie, nutrient-dense fruits, vegetables, dairy products, grains, and protein foods. These results are particularly salient when compared with the recommendations in weight-related articles. Articles promoted fruits and vegetables above all other food groups for weight-loss. Core foods such as low-fat dairy products, whole grains, legumes, and lean meats, poultry, and fish were also among those foods most highly recommended. In addition to advocating specific food groups, many articles included the general suggestion to eat low-calorie foods. Such counsel, while in accordance with current obesity research, contradicts messages present in adjacent

advertisements that would lead readers to believe that using "designer" diet products will lead to greater weight loss than consuming ordinary foods.

The differences observed in advertising between magazine types are fairly intuitive. It is not surprising that more ads for health foods, protein foods, and dairy products were present in health magazines, along with health-oriented marketing claims, than in the homemaking magazines. In the minds of advertisers, health-oriented readers would likely be more conscious of health issues surrounding foods. One would also expect to find more weight-related advertisements in health magazines because readers plausibly seek out such magazines for information on weight control and diet. Readers of homemaking magazines, however, may be more focused on food in the context of their families. With the primary concern of providing pleasing meals to family members, it is reasonable for advertisers to assume that women make purchasing decisions with regard to taste, convenience, and acceptability to others.

### **Claims Present in Food Advertisements**

There were many similarities in the frequencies of claims observed in this study and previous studies. Lohmann and Kant's (9) study of 1997 magazines was the only analysis that compared magazine types; the other studies relied on magazines that would be considered "homemaking" in the present study. For the most part, results in homemaking magazines were comparable to these analyses. Taste was still the dominant claim (67.4%). The major differences in the present study were the increase in use of claims highlighting specific nutrients (15.3%) with the concurrent decrease in minimizing

claims (13.8%) compared to homemaking magazines observed by Lohmann and Kant in 1997 (5% and 26%, respectively). The differences observed may be attributed to the different magazine titles used in their sample, although one magazine, *Good Housekeeping*, was the same. In the health magazine category, the magazine titles of the present study matched those of Lohmann and Kant (with the addition of *Self*), yet there was still an increase in presence of the claim "contains specific nutrients" (45% vs. 8%) while the frequency of minimizing claims was about the same (35% vs. 37%). Present results therefore, may represent a genuine trend in advertising to highlight the healthy nutrients present in foods rather than undesirable components that have been reduced or eliminated.

Consideration of the foods associated with these claims may also provide an explanation. Results indicate that nearly 40% of all specific nutrient claims were present in the health foods and grain categories (data not shown). Health foods such as meal replacements and energy bars are often fortified to increase nutrient density while reducing energy density. Breakfast cereals and snack bars in the grain category are also commonly fortified with vitamins and minerals. The recent addition of folic acid to enriched flour in 1998 may also account for increased use of the claim. Another possible explanation is that consumer confidence in health claims has increased since the National Labeling and Education Act of 1990, which allows claims stating the relationship between certain nutrients and health conditions (55). According to a 2000 survey of consumer attitudes toward functional foods (56), 74% of Americans believe that food and nutrition play a large role in maintaining or improving overall health, and 93% believe

that certain foods have health benefits that go beyond basic nutrition and may reduce the risk of disease or other health concerns. The survey also revealed a 13% increase in the number of Americans who were eating up to three foods for their functional health benefits between 1998 and 2000 (56). Food advertisers may capitalize on this trend by touting the nutritional value of their products with specific nutrient claims.

If advertising claims reflect consumer concerns regarding food, then the present results suggest that taste is still the most important aspect of food to consider in making purchasing decisions. Among health magazine readers, health and nutrition claims were nearly as frequent, suggesting the relative value of those aspects to a particular audience. It would appear that the increased use of claims regarding specific nutrients reflects a consumer interest in the contributions these nutrients provide to overall health.

### **Nutrition Content in Articles**

Content in weight-related nutrition articles was encouraging. Many articles addressed pertinent issues surrounding weight control, including metabolism, hunger and satiety, portion control, popular diets, and eating out. One quarter of all weight-related articles included a specific reference to a scientific study, increasing the credibility of the recommendations provided. Homemaking magazines seemed to take a more controlling approach to dieting than health magazines because they were more likely to provide specific calorie recommendations and structured meal plans or menus. Health magazines tended to provide recommendations for foods to include and avoid in an overall diet

without placing them in the rigid context of a calorie-controlled meal pattern. It is reasonable to assume that readers of health-oriented magazines are already aware of nutrition issues and apply healthy principles in their lives. Therefore they are capable of implementing suggestions into their own lifestyles without the explicit structure and guidance that readers of homemaking magazines may appreciate.

Topics and advice observed in weight-related articles generally paralleled sound nutrition principles. While there is a large body of literature on weight loss, most experts agree that lifestyle modification involving sustainable diet and exercise behaviors is the tried and true path to achieving and maintaining a healthy weight (54). Weight loss requires the existence of an energy deficit through diet, exercise, or, ideally, a combination of the two. Meal replacement products may contribute to such a deficit by providing calorie-controlled meal options. These products may be useful for individuals who prefer an easy, convenient meal that requires little planning, but research suggests weight loss on these types of plans produces only small sustainable losses of 3.2% to 8.4% over four years (57). Limited variety in these diets may lead to reduced compliance over the long-term. Several popular diet programs also exist and have received much media attention. While such programs may result in weight loss, they do so primarily by excluding many foods or entire food groups, thus reducing calories at the expense of many nutrients. Therefore the weight loss is not achieved through any particular metabolic advantage but through a reduction in total energy intake (54). There are virtually no well-designed, randomized, long-term studies of such diet plans that demonstrate maintenance of weight lost on these diets (58). A more sustainable and

balanced dietary approach is to consume a variety of high-volume, nutrient-dense, low-calorie foods in order to optimize nutrient intake and minimize feelings of deprivation, while following internal cues of hunger and satiety (54).

The recommendations and presentation of research included in many of the weight-related articles in women's magazines in this analysis were consistent with this approach. Foods most often recommended were fruits, vegetables, and whole grains, while reducing intake of calorie-dense, nutrient poor foods like those high in refined sugar, fat, and caloric beverages. Menus, when included, generally combined a well-balanced variety of familiar foods. References to specific scientific studies often supported discussions of metabolism, hunger and satiety. These favorable observations of weight-control content in women's magazines are consistent with a similar study from 1982 (14).

### **Weight-related Themes in Advertisements and Articles**

While the frequencies of containing weight-related themes in articles and advertisements were not particularly high, the differences between ads and articles were quite revealing. Results suggest that advertisements present undesirable and perhaps unrealistic views of weight control more often than articles do.

Producers of health food products seem to capitalize on the pressure many women feel to achieve a slim figure. In contrast, authors of articles often discussed the importance of achieving a healthy weight to reduce the risk of chronic diseases. Parham,

Frigo, and Perkins (14) discussed health as a motivator for weight control in the context of the Health Belief Model. According to the model, if health is to be a sufficient motivation for behavior change, three criteria must be met: a genuine threat to health must be perceived, the consequences must be serious, and the behavior change must result in successfully avoiding those consequences. In their analysis of weight-loss articles in popular magazines, they found that while articles frequently communicated the importance of weight control to health, generally only the last criterion was met—a tone of optimism for likelihood of a permanent solution to a weight problem. They found the message relating weight-loss to attractiveness to be delivered more effectively. In the present analysis, the connection between weight control and health conditions—such as diabetes and heart disease—was presented in 20.0% of weight-related articles, while the theme of appearance was only present in 7.9% of weight-related articles. It appears that diet articles in recent issues of women’s magazines are more effectively communicating the message that weight control is important to health than was previously documented. While this achievement is positive, one can only speculate from this research how productive the message is in actually changing behavior, especially when accompanying advertisements are still marketing the appearance-related aspects of weight loss, along with calorie-dense foods, to female readers.

Advertisements were also more likely than articles to imply that weight control does not require one to eliminate pleasurable foods. Although technically true, this message can be misleading if taken to the extreme. It is possible to fit enticing—and often energy-dense—foods into a nutritionally balanced diet while controlling body

weight. The problem is the difficulty many women have in limiting their intake of favorite foods in order to maintain energy balance. Such statements as “guilt-free” and “treat yourself” that effectively give permission for consumers to indulge in desirable foods that have been altered to reduce fat or sugar are deceptive in that individuals may consume excess calories by allowing themselves larger portion sizes. This theme is closely related to the message found to be more common in ads that “weight control is easy.” If a woman perceives the idea she is able to consume her favorite foods and still lose weight, weight control would seem easy indeed.

Articles were significantly more likely than advertisements to present weight control as a chronic effort. According to the Position of the American Dietetic Association on weight management (54), “successful weight management to improve overall health for adults requires a lifelong commitment to healthful lifestyle behaviors emphasizing sustainable and enjoyable eating practices and daily physical activity” (p.1145). It is commendable that magazine articles tend to promote this message that achieving and maintaining one’s idea body weight is a long-term commitment.

### **Limitations to the Study**

There were some limitations to this study. The differences in purpose and format between ads and articles made statistical comparison difficult. While ads are designed to sell a single, specific product in a few short seconds, articles tend to promote or advise against multiple foods in more general terms, with discussion that requires higher cognitive processing. Because of this, the foods advertised were coded differently than

the foods mentioned in the articles, so the categories did not lend themselves to direct statistical comparison. Another limitation was the qualitative nature of many of the categories. While inter-rater reliability was high, there is still the possibility of bias on the part of the coder, who may have interpreted magazine content differently than another coder would have. The specific coding scheme, which included decisions of how to code certain items agreed upon in advance, served to reduce individual bias and enhance reliability of the results. Because the study relied on a sample of six different women's magazines during a two-year period, the results cannot be generalized to all women's magazines.

## IMPLICATIONS FOR RESEARCH AND PRACTICE

There are many questions raised from the present study. Further research on the frequency of nutrition topics other than weight-control would be of interest, considering the increase of ads that promote specific nutrients based on their relevance to health. It did appear that in both ads and articles, there was a trend to discuss foods as containers of “magic bullets” to enhance health and prevent disease, rather than to demonize them according to their waist-expanding, artery-clogging fat, as was the trend in the 1980s and 90s. Such a perspective could be responsible for the increased production of “functional foods” and current discussion regarding “whole” foods (56). It would be interesting to study effects of diet articles framed in a manner that encourage eating for health rather than weight control. American women may indeed fare better in the battle of the bulge if they took a more positive approach by eating foods for health, rather than identifying foods as “fattening” or not. Such a view could ameliorate the guilt associated with labeling foods as “good” or “bad,” thus eliminating a common antecedent to binge eating (54).

Effects of the apparent discrepancy between weight-control messages and foods promoted by ads and articles also warrant further research. Bold, focused, visually-stimulating advertisements communicate messages that are easily discerned. The reader is able to receive and process the message rapidly, requiring little cognitive processing. In contrast, messages embedded in article text may be easily skipped over. Even if articles are read, recommendations are seldom black and white, but are often surrounded by controversial or preliminary research results the reader must evaluate in order to arrive

at the conclusive message. This requires a higher level of central processing, which may lead to a greater trust in articles; yet the high ratio of ads to articles may counteract this achievement. It could be that magazines containing diet and fitness articles advising women to lose weight along with advertisements for tempting, energy-dense foods implicated in weight gain may contribute to feelings of despair in readers. These feelings may result in emotional overeating which perpetuates the cycle of “yo-yo dieting” and thus weight cycling. A well-designed study involving subjects' reactions to women's magazines could shed some light on the implications of mixed messages.

The results of this study have implications for professionals in light of social comparison theory. If the practitioner's goals for weight management are based on health recommendations, these may conflict with client expectations, who often base their ideal body weight on appearance and assume their goal is realistic because of weight-related messages in magazines. In their study of weight loss expectations of obese women, Foster et al (59) found appearance to be the most important factor for subjects in selecting their goal weight, which averaged a 32% reduction of initial body weight. Yet after 48 weeks of weight loss intervention, nearly half of the subjects (n=54) did not even reach their "disappointed" weight, the weight at which they determined at baseline they "could not view as successful in any way." The authors concluded that, consistent with social comparison theory, such a discrepancy between realistic and idealistic weight loss may cause considerable weight dissatisfaction that may or may not have clinical significance for obese women (59).

In addition, the mixed messages between ads and articles in homemaking magazines may be particularly misleading, as the ads and articles appear to communicate two conflicting "ideals" for women to compare themselves to. The most commonly advertised food category was fats and sweets, and frequently used marketing claims emphasized taste and pleasing others. Messages in these ads would appear to exert a mild pressure on women as homemakers to provide tasteful meals for their families, often involving calorie-dense foods. Articles, in contrast, tended to provide diet recommendations for women to lose weight, often using structured menus. It would seem that these two ideals are mutually exclusive, and that readers would experience perhaps greater dissonance if they try to achieve the composite ideal of a gourmet cook on a diet. It would be interesting to study how real these ideals are to female readers, the level of dissonance they feel, and what actions they take to resolve these feelings.

Nutrition and health professionals would find the results of this study valuable in understanding consumer perceptions that are shaped by media sources including women's magazines. Nutrition and diet articles may contribute to the perception of weight control as a chronic effort that contributes to overall health, best approached by consuming nutrient-dense, low-calorie foods. Advertisements, in contrast, may reinforce beliefs that weight control is a temporary effort and easily achieved with use of meal replacements, pills, and other products marketed for weight-loss. Whichever attitude regarding body shape and weight control prevails in a particular client's mind, the health professional must be prepared to address the client's beliefs. Further, knowledge of advice women may be accustomed to reading from magazines allows nutrition professionals to

communicate truths regarding weight management in a context familiar to the clientele. They could also use actual magazine articles and/or advertisements as topics for discussion in group settings to teach women to successfully evaluate messages conveyed in popular magazines.

## CONCLUSION

Because women continue to turn toward popular magazines for information on diet and nutrition, it is worthwhile to examine the messages women's magazines contain regarding weight control both in food advertisements and nutrition articles. Both may influence women's expectations and strategies for achieving ideal body weight. Results of this study suggest that nutrition articles generally paralleled current research findings and professional recommendations for weight management, emphasizing a high intake of fruits, vegetables, whole grains, and low-fat protein foods while minimizing intakes of fats and refined carbohydrates. Articles also tended to portray the importance of weight control in terms of a healthy lifestyle that incorporates sustainable dietary habits. Food advertisements, however, appeared to send conflicting messages. The majority of ads in homemaking magazines were for fats and sweets, while ads in health magazines frequently promoted "diet" foods. Neither magazine type promoted fruits, vegetables, or whole grains as frequently as these foods were recommended in weight-related articles. Messages in food advertisements also may perpetuate the tendency for women to desire weight loss to improve appearance and to regard the effort as temporary, facilitated by use of meal replacement shakes and bars. It appears then that the undesirable messages from food advertisements may limit the improvements in accuracy of nutrition content in weight-related articles. It is hoped that further research will extend the implications of the discrepancy between food advertisements and nutrition articles observed in this analysis.

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## **APPENDIX A**

### **Advertisement Product Categories**

## Advertisement Food Categories

### **Fruits and Vegetables**

1. Fresh
2. Dried fruit
3. Juices
4. Canned
5. Tomato sauce
6. Frozen
7. Other

### **Grains**

34. Baking mixes
35. Sugar-sweetened cereal
36. Whole grain cereal
37. White bread
38. Whole grain bread
39. Granola/snack bars
40. Crackers
41. Chips
42. Pasta/rice
43. Other

### **Fats, oils, sweets**

8. Cookies
9. Dessert/cake mixes
10. Candy
11. Pudding
12. Margarine
13. Shortening
14. Butter
15. Baking chips
16. Cream cheese
17. Ice cream/Popsicles
18. Olives
19. Oil
20. Mayonnaise
21. Sugared drinks
22. Nuts
23. Other

### **Protein**

44. Nuts
45. Meat
46. Poultry
47. Fish
48. Beans
49. Soy
490. Eggs/egg substitutes

### **Milk/Dairy**

24. Cottage cheese
25. Yogurt
26. Milk
27. Cheese
28. Other

### **Combinations**

50. Instant soups (canned, dehydrated)
51. Frozen meals
52. Packaged dinners (mac & cheese, etc.)

### **Health Foods**

53. Sugar substitutes
54. Meal replacements
55. Energy bars
56. Supplements

### **Miscellaneous**

57. Other

### **Condiments**

29. Seasonings
30. Broth
31. Sauces
32. Salad Dressings
33. Other

### **Beverages (other than milk, juice and sugared)**

58. Bottled water
59. Coffee and tea
60. Alcohol
61. Diet drinks
62. Other

## **APPENDIX B**

### **Magazine Coding Key**

## Magazine Coding

### Articles: Type of nutrition content (check one)

1. Diet plan/menus
2. In-depth article
3. Personal experiences
4. Exercise
5. Letters/Q&A
6. News briefs
7. Other

### Topic

1. Does the article deal with weight control? Y or N
2. If yes, what is the nature of the content? (check all that apply)
  1. Specific calorie recommendations
  2. Goal-setting
  3. Emotional eating
  4. Keep food diary
  5. Plan meals/shopping
  6. Eating low-calorie foods
  7. Structured plan/menus
  8. Refers to research
  9. Metabolism
  10. Hunger/satiety
  11. Eat regular meals
  12. Alternative therapies/surgery
  13. Portion control
  14. Specific product/diet plan
  15. Recipe modification
  16. Eating out
  17. Specific food/food group recommended
  18. Avoid/reduce substance/food
  19. Other

2a) If a specific food/food group is recommended, check all that apply:

1. Fruits
2. Vegetables
3. Fortified foods
4. Milk/dairy
5. Protein (meat, eggs, poultry)
6. Whole grains
7. Herbal supplements
8. Fish
9. Nuts
10. Legumes
11. Soy
12. Fats (specific)
13. Fats (non-specific)
14. Other
15. Water
16. Reduced fat/fat-free

2b) If a food/substance is suggested to be avoided or reduced, check all that apply:

1. Quick fix diet products
2. Herbal supplements
3. Sugar/sweets
4. Carbohydrates (specific)
5. Carbohydrates (non-specific)
6. Fats (specific)
7. Fats (non-specific)
8. Cholesterol
9. Fried foods
10. Caloric beverages
11. Other

Concepts/themes--articles

Check all messages that apply (may be overt or implied)

- Eating specific food helps in weight control
- Weight control is difficult
- Weight control is easy
- Weight control requires giving up foods you love
- Weight control does not require giving up foods you love
- Being thin is important for health
- Being thin is important for appearance
- Being thin is important for happiness
- Food is associated with guilt
- Weight control is only a temporary effort
- Weight control is a chronic effort

### Advertisements

1. Does the ad deal with weight control? Y or N
2. What food/product is the ad promoting? (see list)
3. What types of claims are used to promote the food/product? (Check all that apply)
  1. General health/nutrition
  2. Contains specific nutrients
  3. Minimizes or eliminates specific substances
  4. Helps to control weight
  5. Taste
  6. Convenience/easy
  7. Pleases others
  8. Other

### Concepts/themes--articles

Check all messages that apply (may be overt or implied)

1. Eating specific food helps in weight control
2. Weight control is difficult
3. Weight control is easy
4. Weight control requires giving up foods you love
5. Weight control does not require giving up foods you love
6. Being thin is important for health
7. Being thin is important for appearance
8. Being thin is important for happiness
9. Food is associated with guilt
10. Weight control is only a temporary effort
11. Weight control is a chronic effort
12. Other

## **APPENDIX C**

### **Guidelines for Magazine Coding**

## GUIDELINES FOR ADVERTISEMENT CODING

### 1. What is to be coded:

All advertisements at least one-quarter page in size or larger for:

- foods
- nutritional supplements (including vitamins, minerals, and herbal products)
- weight loss products (pills, powders, shakes, bars, etc. but not devices, such as vibrators)
- beverages (including coffee, tea, and alcoholic)

If more than one product is advertised in the same ad, (i.e. pudding and whipped topping), code the advertisement twice; once for each product. If the same ad is observed in multiple magazines, code it each time it appears.

2. Assign the ad a "1" if the ad includes references to weight control or weight loss, either in explicit text or implicit text or images, or on an image of the product itself. Otherwise, assign the ad a "0" for weight control.

3. Use the coding key to assign the proper number to the advertised food.

Definitions of foods:

- Fruits and vegetables: includes fresh, dried, juices, canned, frozen, tomato-based sauces, and any other. Categories are numbered for each form of fruit/veg.
- Fats, oils, sweets: categories are listed. "Dessert mixes" include mixes or doughs for desserts that require preparation and/or baking. "Ice cream/popsicles" includes all frozen novelty treats, including frozen yogurt, sorbets, sherbets, ice cream bars, etc. "Sugared drinks" includes all fruit drinks that are not 100% fruit or vegetable juice, flavored milks, and soft drinks.
- Milk/dairy: categories are listed. Milks other than dairy (i.e. soymilk) are included in the protein group. Other dairy products, including butter, sour cream, ice cream and cream cheese, would be listed in the "fats, oils, and sweets" group. Flavored milks should be categorized as "sugared drinks."
- Condiments: seasonings include herb and spice blends, and salt. Broth includes canned and concentrated bouillon. Sauces include all bottled or prepared sauces (except tomato-based sauces). Salad dressings includes all bottled dressings and dressing mixes.
- Grains: "baking mixes/refrigerated dough" refers to those that are not dessert or muffin type mixes (these would be coded as "dessert mixes"). Examples are pancake or biscuit mix or frozen bread dough. "Sugar-sweetened cereal" includes those ready-to-eat or instant cereals that are flavored/sweetened and that are not whole grain. "Whole grain/unsweetened cereals" include those that are whole grain or not sweetened. In cases where the cereal is whole grain and sweetened, such as raisin bran, code the cereal as "whole grain." Snack foods that are not categories themselves may be coded as "other" (i.e. popcorn, Chex mix).
- Protein: categories are fairly clear; all soy foods will be categorized under "soy", including veggie burgers, soy milk, etc. "Meat" includes all products made with beef

or pork. "Poultry" includes those from chicken or turkey. "Fish" includes fresh fish as well as canned tuna and breaded fish products.

- Combinations: "instant soups" includes both dehydrated, frozen, and canned soups. "Frozen meals" include both meals that are to be reheated and meal-starter type products. "Packaged dinners" includes meal-type pasta or rice mixes (such as macaroni & cheese).
- Health foods: includes sugar substitutes, meal replacements (shakes, powders, bars, etc. to be used in place of a meal), energy bars (i.e. Powerbar) that suggest energy or to improve athletic performance, and supplements (vitamins, herbs, minerals).
- Beverages: includes all those that are not categorized in another group, including bottled water, coffee, tea, diet soft drinks (sweetened with artificial sweetener), and alcoholic beverages.
- Miscellaneous: Products that do not obviously fit in any other group, i.e. chewing gum.

4. Claims used to market the product are to be coded as follows:

- General health/nutrition: text or images (including product label) suggests the product is healthy or helps promote some aspect of health, reduce a particular ailment (such as joint pain) is nutritious or "good for you."
- Contains specific nutrients: text or product label lists specific nutrients contained in the product, either vitamins, minerals, herbs, protein, monounsaturated fat, etc.
- Minimizes or eliminates specific substances: text or product label states the product does not contain or has reduce amounts of substances such as sodium, sugar, fat, calories, or carbohydrate.
- Helps to control weight: explicit text or implicit text ("Now you can eat chocolate without guilt") or implicit image (i.e. woman admiring self in mirror) indicating that use of the product helps to control or lose weight
- Taste: Explicit or implicit text suggesting product is palatable and/or pleasurable to the taste.
- Convenience/easy: Text suggesting the product is convenient, easy to prepare, and/or easy to open.
- Pleases others: Text or implicit images (such as smiling children) suggesting the use of the product is pleasing to significant others.
- Other: claims other than those above, such as donation to charity, good for the environment, or specific packaging characteristics.

Code "1" if present and "0" if absent.

5. Weight loss concepts/themes: (only apply to those ads that are weight-loss related)

- Eating specific/promoted food or product helps in weight control: message may be explicitly stated or implicitly suggested.
- Weight control is difficult: Ad states or suggests that weight control is not easy.
- Weight control is easy: use of product makes weight loss easy, requires hardly any effort except product use.
- Weight control requires giving up foods you love: suggests certain desirable foods are "not allowed" if individual is trying to control weight.

- Weight control does not require giving up foods you love: suggests one is trying to control weight does not need to restrict pleasurable foods.
- Weight control is important for health: suggests achieving ideal weight is important for health reasons, such as reducing risk of chronic disease
- Weight control is important for appearance: suggests achieving ideal weight is important to improve one's appearance
- Weight control is important for happiness: suggests achieving ideal weight is important to quality of life
- Food is associated with guilt: suggests pleasurable foods may or may not be associated with feelings of guilt if ingested. Examples: "I could eat whatever I wanted without worrying about it" or "heart-attack on a plate." May also suggest that diet foods are "guilt-free"
- Weight control is only a temporary effort: suggests an individual need only use the product for a limited time to achieve and maintain desired results
- Weight control is a chronic effort: suggests an individual must always use the promoted product to achieve and maintain desired results
- Other: check if none of the above claims were present.

Mark a "1" for all themes that are present and a "0" for those that aren't.

## GUIDELINES FOR ARTICLE CODING

1. What is to be coded:

All nutrition-related content including weight-loss (as it relates to diet or food information but not exercise), nutrition-related diseases, nutrition content of foods, vitamins, minerals, herbs, supplements, and nutrition research updates at least one quarter page or larger. Do not code recipe content or culinary suggestions/instructions, unless there is nutrition-related text accompanying it (example—an article describing the cancer-preventing benefits of berries and a recipe for a berry dish). Type of nutrition content is to be coded as follows:

- Diet plan/menus: promotes and outlines a specific diet regimen to follow, and may or may not include menus, calorie recommendations, or recipes
- In-depth article: a feature greater than one page in length
- Personal experience: an article or brief in which the content is based on someone's personal experience with a nutrition-related topic
- Q&A: a nutrition-related question and answer
- Brief: a feature one page or less in length
- Other: any other type of nutrition-related content

2. Assign the content a "1" if it includes references to weight control or weight loss. Otherwise, assign the ad a "0" for weight control.

3. If the article does deal with weight control, assign a "1" to all the topics that are mentioned from the following list (and a "0" to those that aren't):

- Recommends a specific number of calories per day to consume
- Recommends setting goals for weight loss or weight-control behaviors
- Emotional eating: addresses eating for reasons other than for physiological need
- Food diary: recommends keeping a record of all food ingested
- Plan meals/shopping: recommends planning healthy meals ahead of time and/or addresses grocery shopping
- Low-calorie foods: recommends eating low-calorie foods in place of high-calorie foods
- Structured plan/menus: if a specific daily diet guide or outline is included, with or without specific menus
- Refers to research: if a specific published study is mentioned
- Metabolism: if the content describes how weight-loss strategies affect metabolism of energy, calorie-burning, or storage
- Hunger/satiety: if the article addresses hunger and satiety, explains mechanisms, and/or describes strategies to control hunger or promote satiety
- Eat regular meals: recommends eating regular meals and/or snacks (including breakfast), and not skipping meals or fasting
- Alternative therapies: discusses non-traditional weight loss strategies, such as surgeries, fasting, restrictive diets, herbs, hypnosis, etc.
- Portion control: addresses/recommends serving sizes of foods

- Specific product/diet plan: describes specific popular diet plans, i.e. Weight Watchers or the Atkins diet
- Recipe modification: recommends modifying recipes to reduce calories
- Eating out: provides recommendations for what to order when eating out
- Specific food/food group recommended: if a specific food or food group is recommended in the text, that food/group must be coded. If a food is included in a menu but not explicitly recommended in the text, do not code it.
- Avoid/reduce food: if the text recommends avoiding or reducing intake of particular foods or food groups, these must be coded.
- Other: any other content that doesn't fit in the above categories

3a). Foods recommended (mark a "1" for all that apply):

- Fruits
- Vegetables
- Fortified foods: foods that have been fortified with specific substances that do not occur in the food naturally
- Milk/dairy: includes the same dairy products listed in the category for the ads
- Protein: includes either meat, eggs, poultry or just the general nutrient of protein
- Whole grains (as opposed to "refined" or "simple carbohydrates)
- Herbal supplements (pills)
- Fish
- Nuts and nut butters
- Legumes
- Soy: includes all soy foods (milk, meat analogs, soybeans, etc.)
- Fats (specific): if the type of fat is specified—saturated, polyunsaturated, monounsaturated, omega-3, etc.
- Fats (non-specific): if the type of fat is not specified
- Other
- Water
- Reduced-fat or fat-free foods: foods that are not fat-free naturally

3b). Foods/substances to be avoided or reduced (mark a "1" for all the apply):

- "Quick fix" diet products/pills: those marketed as an easy, no-effort strategy for weight loss
- Herbal supplements (pills)
- Sugar/sweets: sugar and foods sweetened with sugar
- Carbohydrates (specific): if a specific type of carbohydrate should be avoided (usually "refined" or "white flour" or "sugar")
- Carbohydrates (non-specific): if the general macronutrient of carbohydrate should be reduced or avoided
- Fats (specific): if a specific type of fat should be reduced, such as trans-fatty acids
- Fats (non-specific): if the type of fat is not specified
- Cholesterol: foods high in cholesterol
- Fried foods

- Caloric beverages: includes soft drinks, alcoholic drinks, sweetened teas or coffees, etc.
  - Other
4. If the content deals with weight loss, mark a "1" for all the following messages or themes that apply:
- Eating specific/promoted food or product helps in weight control: message must be explicitly stated
  - Weight control is difficult: content states or suggests that weight control is not easy, requires considerable effort
  - Weight control is easy: content suggests weight loss easy, requires hardly any effort, or is easy if particular strategy is followed
  - Weight control requires giving up foods you love: suggests certain desirable foods are "not allowed" if individual is trying to control weight.
  - Weight control does not require giving up foods you love: suggests one is trying to control weight does not need to restrict pleasurable foods.
  - Weight control is important for health: suggests achieving ideal weight is important for health reasons, such as reducing risk of chronic disease
  - Weight control is important for appearance: suggests achieving ideal weight is important to improve one's appearance
  - Weight control is important for happiness: suggests achieving ideal weight is important to quality of life
  - Food is associated with guilt: suggests pleasurable foods may or may not be associated with feelings of guilt if ingested. Examples: "I could eat whatever I wanted without worrying about it" or "heart-attack on a plate." May also suggest that diet foods are "guilt-free"
  - Weight control is only a temporary effort: suggests an individual need only use the product, diet, or strategy for a limited time to achieve and maintain desired results
  - Weight control is a chronic effort: suggests an individual must continuously exert effort and follow strategies to control weight.
  - Other: check if none of the above claims were present.