American Television: A Source of Nutrition Education and Information

Carol Byrd-Bredbenner†

Extension Specialist in Nutrition, Rutgers University, New Brunswick, USA

ABSTRACT

Television is a powerful and persuasive teacher. It has the potential to influence perceptions, knowledge, beliefs, and behaviors, thus nutritionists need to be aware of the nutrition-related information (NRI) in television programming and the effect this information has on viewers. The purpose of this article was to review research published in peer-reviewed journals between 1988 and 2003 that examined the NRI embedded in American television programming, which is exported to over 125 nations, and its impact on nutrition knowledge, attitudes, and/or behaviors. This review revealed that, for the past 15 years, NRI was commonly included in both television advertisements and shows. Advertised foods were mainly high in fat, sodium, and/or sugar. In addition, the NRI embedded in food advertisements tended to be misleading or inaccurate. Prime-time television shows included numerous NRI containing scenes every hour, with situation comedies having the most and real-life re-enactment shows the least. Overall, low nutrient density foods accounted for approximately 40 percent or more of all food references on prime-time television shows. In television shows, foods were mostly consumed as snacks rather than meals and children often ate more nutritious foods than adults. Although relatively few studies have examined the impact of television programming on viewers, those that do exist indicate that as children watch more television, nutrition knowledge and understanding declines while misconceptions about nutrition increase. Advertising influences children’s food purchase requests and subsequent purchases by adults, with the most requested and purchased foods being high in sugar, fat, and/or salt foods. Existing research indicates that television must be acknowledged as a major source of NRI and a potentially powerful influence on dietary practices. (J Community Nutrition 5(4): 230–238, 2003)

KEY WORDS: television · nutrition · advertising.

Introduction

Television watching is a popular leisure time activity in all but the most remote areas of the world. In fact, watching television is often the most time-consuming leisure activity of people of all ages and nationalities. Those living in Japan, Russia, the Republic of Korea, United Kingdom, and United States, for example, watch approximately three hours of television each day (Anonymous 2003; Australian Children’s Television Foundation 2003; British Broadcasting Corporation 2003; International Study Center, Boston College, Lynch School of Education 1999; Japan Information Network 2003; Nielsen Media Research 1998).

In addition to its entertainment value, television also can be a powerful and persuasive teacher about any topic imaginable, including nutrition and health. As Gerbner et al point out, “television is only one of many influences in life, [but] it may well be the single most common and pervasive source of health information” (Gerbner, et al. 1981). In fact, worldwide, television is named as a primary source of health information (European Commission 2003; National Institutes of Health & National Science Foundation 1993; National Science Board 2002; Wong, et al. 2002). Also, considerable evidence exists that television is a potent influence on knowledge, attitudes, behaviors, and values and its impact may be more profound than school, religion, parents, or books (Bandura 1977; Everett, et al. 1998; Pearl, et al. 1982; Signorielli, Staples 1997; Smith, et al. 1972; Watkins 1985).

Concerns about the quality of televised information and the effect of programming are many and have been voiced by
many topics, including health behaviors. An examination of the health effects related to nutrition-related knowledge, attitudes, and behaviors in American television programming on nutrition-related knowledge, attitudes, and behaviors. The findings reported on the influence of television programming on nutrition-related knowledge, attitudes, and behaviors. The findings of the studies reporting on NRI in television shows and advertisements were used to create a description of the extent and type of NRI commonly found in American television shows.

**Methods**

A thorough search of the peer-reviewed journal literature published during the past 15 years (1988 - 2003) was conducted to identify all research studies that examined NRI embedded in American television shows and advertisements broadcast since 1986 that were published in English. (NRI was defined as visual or verbal references to nutrition or food [i.e., displays of food, food activities such as eating, purchasing food, talking about food, preparing food]). This search yielded 19 studies that reported on NRI in television advertisements, 10 that reported on NRI television shows, and 12 that reported on the influence of television programming on nutrition-related knowledge, attitudes, and behaviors. The findings of the studies reporting on NRI in television shows and advertisements were used to create a description of the extent and type of NRI commonly found in American television shows. The remaining studies were used to describe the influence of television programming.

**Results and Discussion**

1. Nutrition information presented in American television advertisements

The studies located described the foods advertised during children’s programming (primarily Saturday mornings), women’s daytime programming (i.e., weekday afternoon serials or soap operas), and prime-time (7:30 PM - 11:00 PM).

Food Advertisements During Children’s Television Programming. Children’s programming tends to occur primarily on Saturday mornings, with some programming occurring on weekdays before and after school. Studies that examined the Saturday morning time period are noted in Table 1. They revealed that during the past 15 years, advertisements on Saturday morning children’s television tended to be primarily food advertisements during all months except December when toy advertisements predominated (Condry, et al. 1988). In fact, the majority of the studies reported that food advertisements...
accounted for 57 percent or more of all advertisements during this broadcast period or between 10 and 17 advertisements per hour.

An examination of the types of foods advertised revealed that fruits, vegetables, protein-rich foods, and dairy products were rarely advertised. Foods in the breads and cereals group, particularly breakfast cereals, however, were well represented on Saturday morning children’s television (Rajecki et al. 1993). These cereals tended to be high in sugar, with the ratio of high sugar to low sugar cereals ranging from 5.5:1 to 19.5:1 (Cotugna, 1988; Kotz, Story 1994). Additionally, foods in the fats and sweets group were advertised frequently, with candy and soft drinks the most prevalent foods in this group in many studies (Byrd-Bredbenner 2002; Condry et al. 1988; Gamble, Cotugna 1999; Kunkel, Gantz 1992; Taras, Gage 1995). Over the years, the number of advertisements for fast food restaurants tended to change from 10 percent of all advertisements in 1987 (Condry et al. 1988) to 6 percent in 1991-1992 (Kotz, Story 1994) to 16 percent in 1993 (Byrd-Bredbenner 2002) to 17 percent in 1996 (Gamble, Cotugna 1999) to 22 percent in 1999 (Byrd-Bredbenner 2002).

Foods advertised on Saturday morning children’s television were mostly high in fat, sodium, and/or sugar. An analysis of the actual nutrient content of advertised foods indicated that, per serving, the foods averaged nearly 400 calories (44% of which were from fat), more than 500 mg sodium, and more than 27 grams of sugar (Kuribayashi et al. 2001). In sum, the foods advertised on Saturday morning children’s television tended to be high in fat, sodium, sugar, and generally judged to be of low nutritional value (Byrd-Bredbenner 2002; Cotugna 1988; Kuribayashi et al. 2001; Taras, Gage 1995).

An additional observation of food advertisements on Saturday morning children’s television was that food advertisements were not gender biased. That is, the overwhelming majority of food advertisements included both males and females (Ogletree, et al. 1990; Rajecki, et al. 1993). Also observed was that the primary explicit messages used to sell foods were taste and fun (Kotz, Story 1994; Kunkel, Gantz 1992). Although explicit messages related to the healthfulness or nutritional qualities of the foods were seldom used in advertising messages, nearly half of the food advertisements implied the food had healthful or nutritional qualities, likely erroneously so given the nutrient content of advertised foods (Kotz, Story 1994).

The two studies that examined public service announcements (PSAs) on Saturday morning children’s television indicated that a minority focused on nutrition. Of the PSAs that were nutrition related, they frequently focused on healthy snacking (Gamble, Cotugna 1999; Kotz, Story 1994).

In addition to Saturday morning children’s television, two of the studies listed in Table 1 also examined advertisements broadcast during children’s programming hours before and/or after school (Kotz, Story 1994; Taras, Gage 1995). These studies reported that, like Saturday morning children’s television, the foods advertised during the before and after school time period tended to be high in sugar and fat.

Food Advertisements During Women’s Television Programming. A single study was located that focused on television programming with an audience largely comprised of women aged 18 to 35 years, that is soap operas or daytime serials (Lank, et al. 1992). The findings of this study indicated that food advertisements accounted for more than one-third of all advertisements broadcast during daytime soap operas. On average, viewers saw 12 food advertisements per hour. Fruits and vegetables were almost never advertised. The most commonly advertised foods were desserts and sweets, convenience foods, and breads and cereals. The vast majority of advertised convenience foods and desserts and sweets were high in saturated fat. Convenience foods also tended to be high in cholesterol and sodium. In fact, nearly half of all advertised foods during soap operas were high in fat and/or sodium, more than two-thirds were high in saturated fat, and a quarter were high in cholesterol. Although health claims were made infrequently, approximately 1-in-10 advertisements indicated a food was low in cholesterol or ‘heart healthy’ despite the fact that at least 70 percent of these foods were high in fat (e.g., margarines, salad oils).

Food Advertisements During Prime-Time Television Programming. Prime-time television programming is the most heavily viewed time period for all age groups. The studies that examined advertising during prime-time (Table 1) indicated that food advertisements accounted for approximately one-quarter of all advertisements broadcast during this time period and tended to be the largest category of advertisements. Viewers saw six to seven food advertisements every hour of prime-time programming (Byrd-Bredbenner, Grasso 2000a; Kotz, Story 1994; Kuribayashi et al. 2001; Story, Faulkner, 1990; Tirodkar, Jain 2003). In fact, a study that examined a ‘typical’ day of television programming reported that the average...
The types of foods advertised during prime-time shows may vary somewhat with the target audience. For instance, a comparison of the types of foods advertised on top prime-time African American shows with those advertised on shows intended for general audiences revealed that alcohol advertisements were not aired on sampled African American shows but accounted for nearly one-fifth of the advertisements on general audience shows. In contrast, soft drinks and chocolate candy were advertised much more frequently on African American shows than general audience shows. Advertisements for fast food restaurants, however, seem to be equally represented on both types of show, accounting for nearly one-third of the food advertisements (Tirodkar, Jain 2003). Regardless of the differences in the frequency with which food types are advertised to different target audiences, the limited evidence available indicates that the nutritional quality of foods advertised during prime-time tended to be high in fat and/or sugar.

### 2. Nutrition information presented in American television shows

Like television advertisements, American television shows convey substantial amounts of NRI. This section describes the nutrition information found in Saturday morning children’s shows and prime-time shows (Table 2).

#### Nutrition Information During Saturday Morning Children’s Television Shows

One study examined the foods portrayed during Saturday morning children’s television shows (Warnke, Albrecht 1994). During this time period, the most commonly portrayed foods were fruits, protein-rich foods, and sweets. Fruits were frequently seen because they were depicted in candy, beverage, and cereal advertisements to inform the viewer about the food’s flavor. Vegetables were seldom shown, however when they were, French fries and tater tots were most common. Foods were primarily shown in a positive context that is, one that positively described the food’s qualities or encouraged one to try the food (Warnke, Albrecht 1994).
Nutrition Information During Prime-Time Television Shows. Scenes containing NRI were frequently included in prime-time shows with researchers reporting that every hour between 9 and 17 NRI containing scenes were broadcast (Byrd-Bredbenner, In press; Byrd-Bredbenner, et al. 2001; Larson 1991; Story, Faulkner 1990). An examination of prime-time programming by genre indicated that situation comedies had the most NRI containing scenes (nearly 20 per hour) and real-life re-enactment shows had the least (approximately 8 per hour) (Avery, et al. 1997; Byrd-Bredbenner et al. 2001).

Foods in NRI containing scenes were referenced verbally, shown (but not eaten), and/or eaten. Beverages tended to be the most common food reference in prime-time shows with the most frequently referenced beverages being low nutrient density (e.g., coffee, soft drinks, and alcohol) (Avery et al. 1997; Byrd-Bredbenner, In press; Byrd-Bredbenner et al. 2001; Story, Faulkner 1990). Three studies reported that alcoholic beverages accounted for 15 to 30 percent of all beverage references (Byrd-Bredbenner, In press; Byrd-Bredbenner et al. 2001; Story, Faulkner 1990). One-third of all meals included alcoholic beverages (Story, Faulkner 1990).

Low nutrient density foods tend to represent about 40 percent or more of all food references on prime-time television shows (Byrd-Bredbenner, In press; Byrd-Bredbenner et al. 2001; Larson 1991; Story, Faulkner 1990). Adults tended to eat less nutritious foods than children did. For instance, children on prime-time television shows ate nearly twice as many nutritious foods as less nutritious foods. They also ate more healthy snacks than unhealthy snacks. In contrast, adults ate three times as many unhealthy snacks as healthy ones (Larson 1991). In addition to differences in age, racial differences were also noted. In specific, African-American characters were much more likely to eat nutritious foods than white characters (Avery et al. 1997).

On prime-time shows, foods were mostly consumed as snacks rather than meals (Byrd-Bredbenner, In press; Larson 1991; Story, Faulkner 1990), with the most common snacks being sweets or salty snacks (e.g., chips) (Story, Faulkner 1990). Foods portrayed as snacks were less nutrient dense than those portrayed in meals (Avery et al. 1997). When meals were shown, breakfasts were evenly divided between those offering nutritious foods (e.g., cereal and toast) and less nutrient dense foods (e.g., sweet rolls and donuts). One-third of the lunch or dinner meals referenced included only dessert and beverage (i.e., coffee or wine) (Story, Faulkner 1990).

Scenes containing NRI occurred most commonly at dining room or kitchen tables, outside, in restaurants, and in living rooms (Avery et al. 1997; Byrd-Bredbenner et al. 2001). NRI in prime-time television shows was seldom integral to the main point of the scene. Rather, it was primarily associated with background activity (e.g., the scene occurred in a restaurant or kitchen but the dialogue and action were unrelated to nutrition) or was a set garnish (e.g., bowl of fruit on a table, wine glass in the hand of a character who did not verbally mention or drink the beverage) (Byrd-Bredbenner et al. 2001; Larson, 1991).

When the action in NRI containing scenes was judged in terms of whether it depicted a behavior that was a positive and recommended by nutrition professionals, negative and non-recommended, or neutral, researchers reported that the majority NRI containing scenes were neutral (e.g., serving food, setting the table). Approximately one-fifth of the NRI containing scenes promoted positive, recommended behaviors such as eating fruit for a snack or drinking juice to restore blood glucose levels. But, about 15 to 25 percent of the NRI containing scenes promoted negative, non-recommended behaviors including equating weight loss with starvation and using alcoholic beverages to rehydrate (Byrd-Bredbenner, In press; Byrd-Bredbenner et al. 2001).

The amount of food consumed tended to be very small-a few bites or sips at most. However, heavy males were shown eating more than normal or thin ones (Byrd-Bredbenner, In press; Greenberg, et al. 2003). Interestingly, though, overweight characters were less likely to be shown with high calorie or sugary foods than average weight characters (Avery et al. 1997).

An examination of body types portrayed in prime-time programming revealed that few men and women on television are overweight or obese and substantial numbers are far more likely to be underweight than their real life counterparts (Fouts, Burggraf 2000; Fouts, Vaughan 2002; Greenberg et al. 2003). However, African Americans tended to have larger body types than whites (Greenberg et al. 2003). In fact, the incidence of overweight characters was four times more frequent on prime-time shows targeted to an African-American population than shows aimed at general audiences (Tirodkar, Jain 2003).

3. Nutrition information presented in American television news shows
A single study investigated the child health news broadcast
on American television news shows (Prabhu, Duffy, Stapleton 1996). The findings of this study indicated that one-fifth of the national medical news stories focused on pediatric issues, and of these stories, nearly a third concentrated on nutrition.

4. Impact of television advertisements on nutrition-related knowledge, attitudes, and behaviors

Research studies published in the past 15 years documenting the impact of television advertisements on nutrition-related knowledge, attitudes, and behaviors are listed in Table 3. These studies indicated that increasing exposure to advertisements on Saturday morning children’s television was positively correlated with lower nutrition knowledge and lower understanding of nutrition phraseology commonly used in television advertisements (e.g., “part of a nutritious breakfast”) (Wiman, Newman 1989). The study authors hypothesized that repeated exposure to highly persuasive advertising messages may confuse children about the nutritional value of foods (Wiman, Newman 1989).

In terms of attitudes, Riecken and Yavas (1990) found that children aged 8 to 12 years had negative attitudes toward television advertisements in general (e.g., they believed that television advertisements don’t tell the truth, tell only good things about a product, make people buy things they don’t really need, don’t always promote the best products, etc.). However, children in this age group did not apply their negative feelings to advertisements in general that is, they assessed advertisements individually. For example, when asked to evaluate advertisements for three cereal brands, one was rated more positively than the other two.

Television advertising also has the potential to shape nutrition-related behaviors (Dawson, et al. 1988; Goldberg 1990). These behaviors generally focus on two main areas: purchase requests and actual purchases. Brief exposures to advertisements for low-nutrient density foods can influence young children to select those foods. And, the more often a food is advertised, the more likely it is to be requested by children and purchased by adults (Borzekowski, Robinson 2001; Taras, et al. 2000). Children frequently requested foods advertised on television and asked to visit restaurants advertised (Borzekowski, Robinson 2001; Isler, et al. 1987; Taras, et al. 1989; Taras et al. 2000). The more time children spent watching television, the more likely they were to request foods that were advertised (Isler et al. 1987). The most frequently requested and subsequently purchased foods tended to be high in sugar (e.g., presweetened cereals, fruit rollups, soft drinks) followed by high fat (e.g., fast foods) and high salt foods (Baxter 1991; Isler et al. 1987; Taras et al. 1989). In comparison to younger children, older children tended to make fewer food purchase requests. Interestingly, teens reported that seeing a food advertisement generally did not make them want to get something to eat (Carruth, et al. 1991).

5. Impact of television shows on nutrition-related knowledge, attitudes, and behaviors

Little research has focused on the impact of shows themselves on any type of health-related knowledge, attitudes, and behaviors, including that related to nutrition. In fact, only two studies documenting the impact of American television shows on nutrition-related knowledge, attitudes, and eating behaviors that were published in the last 15 years could be located with both reporting on the effects of the same show (Chew, et al. 1995, 1998). These two studies found that a television show could increase adult’s nutrition knowledge levels (Chew et al. 1995) as well as motivate these viewers to practice healthy dietary behaviors, increase concern about food and fitness, and raise self-confidence in their nutrition knowledge base (Chew et al. 1998).

Several studies have examined total television viewing time, without parsing the effects of advertisements and shows. In general, as children’s television viewing time increased, so did the rate of poor eating habits, inaccurate knowledge about nutrition, and unhealthy conceptions about food (e.g., what constitutes a healthy breakfast, belief that fast foods are as nutritious as food prepared at home) (Signorielli, Lears 1992). In addition, there was a positive correlation between time spent watching television and children’s preferences for and con-

Table 3. Studies reporting impact of television programming

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<th>Studies/Authors</th>
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<tr>
<td>Borzekowski, Robinson</td>
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<td>Carruth, Goldberg, Skinner</td>
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<td>Chew, Palmer, Kim</td>
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<td>Dawson, Jeffrey, Walsh</td>
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<td>Isler, Popper, Ward</td>
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<td>Reicken, Yavas</td>
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<td>Signorielli, Lears</td>
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<td>Taras, Sallis, Patterson, Nader, Nelson</td>
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<td>Taras, Zive, Nader, Berry, Hoy</td>
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<td>Wiman, Newman</td>
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1. Impact of television advertisements
2. Impact of television shows
3. Impact of total time spent watching television
sumption of unhealthy foods (Signorielli, Lears 1992). Also, as viewing time increased, so did the child’s misperception that an unhealthy food choice is healthier than it actually is.

Conclusions

Overall, this study’s findings reveal that television viewers in the U.S. and countries that import American television shows are bombarded with nutrition messages, a substantial portion of which promote unhealthy behaviors. While providing health information via any means does not necessarily influence consumer dietary behavior, both social learning theory and cultivation theory indicate that television must be recognized as a major source of health and nutrition information and a potentially powerful influence on nutrition and health practices (Bandura 1977) Gerbner et al. 1981).

Social learning theory provides a theoretical basis for explaining how media transmits ideals many behaviors are acquired through observational learning (i.e., modeling) of other people in the environment including those on television (Bandura 1977) Jeffrey, McLeLam, Fox 1982). Cultivation theory helps explain why viewers may choose to engage in behaviors observed on television programming shapes or ‘cultivates’ viewers’ perceptions of what they consider to be normal, common, or acceptable behavior (Gerbner et al. 1981) Shrum 1999) Signorielli, Staples 1997). Considerable research evidence suggests that those Americans who watch relatively more television tend to emulate observed television behaviors because they perceive that the real world is much like that portrayed on television (Gerbner et al. 1981) Shrum 1999).

And, as exposure to television increases, emulation of the behaviors portrayed often becomes increasingly desirable. Studies with foreign audiences indicate that those who watch relatively more American television programming may have different perceptions of American cultural values and social stereotypes than those watching less (Kang, Morgan 1988) Tan, Suachavart 1988) Zaharopolous 1997). Thus, frequent portrayals of health behaviors may send erroneous messages to viewers of all nationalities about what is considered acceptable behavior for maintaining health and may encourage modeling of non-recommended diet and health behaviors (Avery et al. 1997) Diener 1993) Parsons, et al. 1999). Consequently, community nutritionists should not underestimate the potential for viewers, especially youth, to embrace negative, non-recommended diet and health messages (Parsons et al. 1999).

Community nutritionists also need to be cognizant of the potential for American television programming as well as television programming exported from elsewhere or created domestically to influence behavior.

Clearly, television plays an important role in the daily lives of millions of people worldwide. Television’s critics argue that television programming creates reality while its defenders assert that is merely reflects reality (Belk, Pollay 1985). Although it is not clear whether it creates or reflects reality, it is important to note that if television mirrors reality, it is reinforcing and strengthening less than optimal nutrition behaviors.

On the other hand, if it is creating reality, it frequently demonstrates and cultivates behaviors that are not recommended by nutrition professionals. Regardless of whether it is creating or reflecting reality, television is replete with NRIs and must be acknowledged as a potentially powerful influence on diet and health. Because it, too, is a competing nutrition educator, community nutritionists must remain aware of the nutrition instruction occurring via television and recognize the potential effects it may have on viewers’ nutrition knowledge, attitudes, and behaviors and the impact it may have on community nutrition interventions.

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