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Policy Statement—Children, Adolescents, Obesity, and the Media

COUNCIL ON COMMUNICATIONS AND MEDIA

KEY WORDS

media, obesity, overweight, screen time, junk food, television

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abstract

Obesity has become a worldwide public health problem. Considerable research has shown that the media contribute to the development of child and adolescent obesity, although the exact mechanism remains unclear. Screen time may displace more active pursuits, advertising of junk food and fast food increases children's requests for those particular foods and products, snacking increases while watching TV or movies, and late-night screen time may interfere with getting adequate amounts of sleep, which is a known risk factor for obesity. Sufficient evidence exists to warrant a ban on junk-food or fast-food advertising in children's TV programming. Pediatricians need to ask 2 questions about media use at every well-child or well-adolescent visit: (1) How much screen time is being spent per day? and (2) Is there a TV set or Internet connection in the child's bedroom? *Pediatrics* 2011;128:201–208

INTRODUCTION

Obesity represents a clear and present danger to the health of children and adolescents. Its prevalence among American youth has doubled in the past 3 decades,[1] and there are now more overweight and obese adults in the United States than adults of normal weight.[2] However, obesity is also a worldwide problem; rates are increasing in nearly every country.[3,4] It is increasingly clear that the media, particularly TV, play an important role in the etiology of obesity.[5] As a result, many countries are now establishing new regulations for advertising to children on TV, and many government health agencies are now issuing recommendations for parents regarding the amount of time children spend watching TV.[6] Unfortunately, there are currently no data relating other media to obesity.

MEDIA AND OBESITY

There are a number of ways that watching TV could be contributing to obesity: (1) increased sedentary activity and displacement of more physical pursuits; (2) unhealthy eating practices learned from both the programming and the advertisements for unhealthy foods; (3) increased snacking behavior while viewing; and (4) interference with normal sleep patterns. However, most researchers now agree that the evidence linking excessive TV-viewing and obesity is persuasive.[7–9] There have been dozens of longitudinal and correlational studies documenting a connection.[9] An increasing number of these studies hold ethnicity and socioeconomic status—known to be key factors in obesity—constant and still reveal that TV-viewing is a significant con-

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tributor to obesity.[7,10] Results of the longitudinal studies are particularly convincing. For example, a remarkable 30-year study in the United Kingdom found that a higher mean of daily hours of TV viewed on weekends predicted a higher BMI at the age of 30. For each additional hour of TV watched on weekends at age 5, the risk of adult obesity increased by 7%.[11] A group of researchers in Dunedin, New Zealand, followed 1000 subjects from birth to 26 years of age and found that average weeknight TV-viewing between the ages of 5 and 15 years was strongly predictive of adult BMI.[12] In a study of 8000 Scottish children, viewing more than 8 hours of TV per week at age 3 was associated with an increased risk of obesity at age 7.[13] Also, in 8000 Japanese children, more TV-viewing at age 3 resulted in a higher risk of being overweight at age 6.[14] Numerous American studies have had similar findings.[15–23]

The presence of a TV set in a child's bedroom seems to exacerbate the impact of TV-viewing on children's weight status.[24–28] A study of 2343 children aged 9 to 12 years revealed that having a bedroom TV set was a significant risk factor for obesity, independent of physical activity.[24] A cross-sectional study of 2761 parents with young children in New York found that 40% of the 1- to 5-year-olds had a bedroom TV, and those who did were more likely to be overweight or obese.[25] Teenagers with a bedroom TV spent more time watching TV, less time being physically active, ate fewer family meals, had greater consumption of sweetened beverages, and ate fewer vegetables than did teenagers without a bedroom TV.[26]

Recent correlational studies have also found a strong association between time spent watching TV and blood glucose level control in young people with diabetes,[29] type 2 diabetes mellitus,[30] insulin resistance,[31] metabolic syndrome,[32] hypertension,[33,34] and high cholesterol levels.[35–37] Furthermore, when TV time is diminished, so are measures of adiposity.[38,39]

MECHANISMS

How might time spent with media result in obesity? Contrary to popular opinion, overweight and obesity probably result from small, incremental increases in caloric intake (or increases in sedentary activities).[40] An excess intake of 50 kcal/day (eg, an extra pat of butter) produces a weight gain of 5 lb/year. Drinking a can of soda per day produces a weight gain of 15 lb/year.[41] Nearly 40% of children's caloric intake now comes from solid fat and added sugars, and soda or fruit drinks provide nearly 10% of total calories.[42] Because obesity is caused by an imbalance between energy intake and energy expenditure, screen time may contribute in several different ways.

Displacement of More Active Pursuits

Children spend more time with media than in any other activity except for sleeping—an average of more than 7 hours/day.[43] Many studies have found that physical activity decreases as screen time increases,[44–46]but many other studies have not.[47–49] Children and teenagers who use a lot of media may tend to be more sedentary in general,[7,50] or researchers' measures of physical activity may be too imprecise.[9] Nevertheless, increasing physical activity, decreasing media time, and improving nutritional practices have been shown to prevent the onset of obesity, if not decrease existing obesity as well.[51–55] Some of the newer interactive video games may be useful in this way.[56,57] For example, a study of preteens playing *Dance Revolution* and Nintendo's *Wii Sports* found that energy expenditure was equivalent to moderate-intensity walking.[58]

Unhealthy Eating Habits and Effects of Advertising

Children and teenagers who watch more TV tend to consume more calories or eat higher-fat diets,[59–64] drink more sodas,[65] and eat fewer fruits and vegetables.[66] Some researchers have argued that the viewing of TV while eating suppresses cues of satiety, which leads to overeating.[60] Others believe that viewers are primed to choose unhealthy foods as a consequence of viewing advertisements for foods high in fat, salt, and/or sugar and low in nutritional content ("junk food").[61] On any given day, 30% of American youngsters are eating fast food and consuming an additional 187 kcal (equaling 6 lb/year).[67,68] Fast food is big business: Americans spend more than $110 billion annually on it, which is more than that spent on higher education, computers, or cars.[69] A December 2010 study examined 3039 possible meal combinations at a dozen restaurant chains and found only 12 meals that met nutrition criteria for preschoolers. The same study found that 84% of parents had purchased fast food for their children in the previous week.[70] More than 80% of all advertisements in children's programming are for fast foods or snacks,[71–73] and for every hour that children watch TV, they see an estimated 11 food advertisements.[74] Although exposure to food ads has decreased in the past few years for young children,[73] it has increased for adolescents.[75]

In 2009, the fast-food industry alone spent $4.2 billion on advertising in all media.[70] A study of 50 000 ads from 2003–2004 on 170 top-rated shows found that 98% of food ads seen by children aged 2 to 11 years and nearly 90% of food ads seen by teenagers are for products that are high in fat, sugar, and/or sodium and low in nutritional content (junk food).[76] A newer study of 1638 hours of TV and nearly 9000 food

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ads found that young people see an average of 12 to 21 food ads per day, for a total of 4400 to 7600 ads per year, yet they see fewer than 165 ads that promote fitness or good nutrition.[77] In 1 study, black children viewed 37% more ads than other youth.[78] New technology is enabling advertisers to reach young children and teenagers with a variety of online interactive techniques.[79–82] A study of the top 5 brands in 8 different food and beverage categories found that all of them had Internet Web sites: 63% had advergames (games used to advertise the product), 50% had cartoon characters, and 58% had a designated children's area.[79] Half of the Web sites urged children to ask their parents to buy the products, yet only 17% contained any nutritional information.[79] Teenagers' cell phones can be targeted by fast-food companies that can offer teenagers a discount on fast food as they walk by a particular restaurant.[81]

Available research results clearly indicate that advertising is effective in getting younger children to request more high-fat/low-nutrition food (junk food) and to attempt to influence their parents.[5,9,83–85] For example, a 2006 study of 827 third-grade children followed for 20 months found that total TV time and total screen media time predicted future requests for advertised foods and drinks.[86] Even brief exposures to TV food ads can influence children as young as preschool age in their food choices.[87] In 1 recent experiment, children consumed 45% more snacks when exposed to food advertising while watching cartoons than advertising for other products.[64] Similarly, children who played an online advergame that marketed healthy foods were more likely to eat healthy snacks than those who played an online advergame that advertised junk food.[82] Perhaps the most convincing study about the impact of advertising involved 63 children who tasted 5 pairs of identical foods (eg, French fries) and beverages (eg, milk) from unbranded packaging versus branded packaging. The results of the experiment revealed that the children strongly preferred the branded food and drinks to the unbranded foods.[88]

To illustrate the power of marketing, compare the commitment of the Robert Wood Johnson Foundation to spend $100 million per year to try to decrease childhood obesity with the fact that the food industry spends more than that every month marketing primarily junk food and fast food to young people.[84,89]

Food is also unhealthily portrayed in most TV programming and movies.[9,84,90,91] A study of the 30 highest-rated programs among 2- to 5-year-olds found that an average child would see more than 500 food references per week, half of which were to empty-calorie or high-fat/sugar/salt foods (D. L. G. Borzekowski, EdD, "Watching What They Eat: A Content Analysis of Televised Food References Reaching Preschool Children," unpublished manuscript, 2001). In an analysis of 100 films from 1991 through 2000, fats and sweets were the most common foods depicted.[91] Hollywood product placements are also being used to influence the food preferences and purchasing patterns of children and adolescents.[92,93] In the 200 movies examined from 1996 to 2005, a total of 1180 brand placements were identified. Candy (26%) and salty snacks (21%) were the most prevalent food brands, sugar-sweetened beverages (76%) were the most prevalent beverage brands, and fast food composed two-thirds of the food retail establishment brand placements.[93]

Effect of Media on Sleep Habits

TV and other media are known to displace or disturb young people's sleep patterns.[5,94,95] A longitudinal study of adolescents in New York found that viewing 3 or more hours/day of TV doubled the risk of difficulty falling asleep compared with adolescents who watch less than 1 hour/day.[96] There is also now evidence that later bedtimes and less sleep may be associated with a greater risk of obesity.[97–101] The mechanism may be that sleep loss leads to increased snacking and consumption of less healthy foods to maintain energy,[102,103] that sleep deprivation leads to fatigue and therefore greater sedentary behavior,[104] or that children who do not get enough sleep have metabolic changes as well.[105]

Stress may also play a role, although there are only a handful of studies that have studied this subject so far. For example, a Scottish study of nearly 1500 4- to 12-year-olds found that heavier TV use produced greater psychological stress in children and that this effect was independent of, but exacerbated by, decreases in exercise.[106]

CONCLUSIONS

Media clearly play an important role in the current epidemic of childhood and adolescent obesity. The sheer number of advertisements that children and adolescents see for junk food and fast food have an effect. So, too, does the shift away from good nutritional practices that increased media screen time seems to create. Any success in dealing with the current epidemic will require a major change in society's recognition of media exposure as a major risk factor for obesity and in young people's media habits and the advertisements to which they are exposed.[107,108]

RECOMMENDATIONS

1. Pediatricians should ask parents and patients 2 key questions about media use: (1) How much time per day does the child or teenager spend with screen media? and (2) Is there a TV set or unrestricted,

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unmonitored Internet connection throughout the house, including in the child's bedroom?[109] This recommendation should be incorporated into every well-child visit, as outlined in *Bright Futures*.[110]

2. Pediatricians should encourage parents to discuss food advertising with their children as they monitor children's TV-viewing and teach their children about appropriate nutrition.[111–113]
3. Pediatricians should continue to counsel parents to limit total noneducational screen time to no more than 2 hours/day, to avoid putting TV sets and Internet connections in children's bedrooms, to coview with their children, to limit nighttime screen media use to improve children's sleep, and to try strongly to avoid screen exposure for infants under the age of 2 years. In a recent study of 709 7- to 12-year-olds, children who did not adhere to the American Academy of Pediatrics guidelines of less than 2 hours/day of screen time[114] and 11 000 to 13 000 pedometer steps per day were 3 to 4 times more likely to be overweight.[115] Conversely, preschool-aged children who ate dinner with their parents, got adequate sleep, and had limited screen-time hours had a 40% lower prevalence of obesity than those exposed to none of these routines.[116]
4. Pediatricians should work with community groups and schools to implement media education programs in child care centers, schools, and community-based programs such as the YMCA. Such programs that teach children how to understand and interpret advertisements may have the potential to immunize young people against harmful media effects.[117] In addition, programs that educate parents about limiting media use in general have already been shown to be highly effective.[8,38,39,118,119] Pediatricians should work with their state chapters, the AAP, parent and public health groups, and the White House[120] to do the following:

- Ask Congress, the Federal Trade Commission, and the Federal Communications Commission to implement a ban on junk-food advertising during programming that is viewed predominantly by young children.[84,121,122] Currently, several European countries restrict food advertising aimed at young children.[123] Several food manufacturers have already indicated a willingness to implement such a ban voluntarily,[124,125] but it remains to be seen whether they will follow through.[126–128] For example, children's cereals remain considerably unhealthier than adult cereals; they contain 85% more sugar, 65% less fiber, and 60% more sodium.[129] One-quarter of all food and beverage advertising originates from companies that do not participate in the initiative, and two-thirds of all advertising by companies that do participate is still for food and beverages of low nutritional value.[85] In addition, the food and beverage industry remains steadfastly opposed to any regulation. For example, in 2007, 1 soft drink company spent more than $1.7 million to lobby against marketing restrictions and school nutrition legislation.[130] Two recent studies showed that a ban on fast-food ads would reduce the number of overweight children and adolescents in the United States by an estimated 14% to 18%.[131,132] Just eliminating federal tax deductions for fast-food ads that target children would reduce childhood obesity by 5% to 7%.[131] On the other hand, advertisements and public service announcements for health foods and healthy nutritional practices should be encouraged. One recent experiment showed that children exposed to attractive advertisements for healthy foods develop significantly more positive attitudes than children shown junk-food ads.[133]
- Ask Congress and the Federal Communications Commission to prohibit interactive advertising involving junk food or fast food to children via digital TV, cell phones, and other media[79–81,121] and to ban payments for product placement in movies. Restoring power to the Federal Trade Commission to more tightly regulate children's advertising could be another way of accomplishing this goal.[84,134,135]
- Ask Congress to fund media research (eg, the Children Media Research and Advancement Act [CAMRA]). More research is specifically needed to determine (1) how heavy media use in children reflects or contributes to psychosocial elements of the child's life, such as stress in the home, (2) how new media technologies may be playing a role in exacerbating exposure to ads or encouraging more sedentary behavior, and (3) which of the above-mentioned mechanisms is most responsible for contributing to obesity and how such mechanisms can be ameliorated.[83,134]
- Encourage the production of more counteradvertising and more prosocial video games[136,137] and Web sites that encourage

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children to choose healthy foods.[82]

6. Pediatricians should be aware that children with high levels of screen time have higher levels of childhood stress, which puts them at risk not only for obesity but also for a number of stress-associated morbidities (eg, mood disorders, substance abuse, diabetes, cardiovascular disease, asthma).[138] Consequently, displacing screen time with more prosocial or resilience-building activities (eg, exercise, imaginative or social play) is an important approach to addressing a wide array of societal ills including obesity.[139]

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