

Changing Perceptions of the Childhood Obesity Epidemic

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Objectives: To examine changes in public attitudes about childhood obesity and support for prevention. **Methods:** RTI surveyed US households (N = 1047 and N = 1139) about perceived severity, causes, and support for specific obesity interventions. Logistic regressions examined differences in obesity attitudes and support for prevention. **Results:** Perceived health threat of childhood obesity increased between the 2 surveys. Support increased for interven-

tions such as regulation of restaurant portions and fast food advertising. Logistic regressions revealed differences among sociodemographic groups. **Conclusions:** Public support for childhood obesity prevention is increasing. Policy makers can use these findings to develop appropriate prevention strategies.

Key words: childhood obesity, prevention, attitudes, public policy

Am J Health Behav. 2006;30(2):167-176

The United States and nations around the world are experiencing epidemic-level increases in overweight and obesity. As reported elsewhere,^{1,2} obesity is a leading cause of preventable death in the United States, and it costs over \$93 billion in medical expenditures among adults per year, or about 9% of the total amount. Poor diet and physical inactivity, the primary modifiable contributors to obesity, have led to a 33% obesity rate (defined as BMI \geq 30) and 67% rate of overweight (BMI \geq 25) among US adults.³ Although there has recently been debate about the number of deaths attributable

to obesity,⁴ it remains a rapidly rising public health threat; and there is a pressing need to conduct prevention research, educate the public, and increase prevention and control efforts.

The obesity epidemic is especially alarming among children and adolescents. Today, 15% of children and adolescents combined are overweight.³ Increasing rates of child and adolescent overweight can be traced to the 1980s. In the time interval between the second National Health and Nutrition Examination Survey (NHANES II; completed in 1980) and fourth survey (NHANES III; completed in 2000), the prevalence of obesity increased from an estimated 7% to 16% among children aged 6 to 11 years and from 5% to 16% among adolescents aged 12 to 19 years.³ This trend suggests that a new generation of Americans will enter adulthood already obese or at risk for obesity. They will already have or be at risk for multiple related health conditions, such as diabetes and cardiovascular disease, unless actions are taken to reverse the epidemic.^{3,5,6}

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This paper reports on results of the second in a series of nationally representative surveys of US adult opinions and attitudes about obesity in general, and support for interventions to prevent childhood obesity in particular. The objectives of this study are to examine changes in public attitudes about obesity in the context of a changing social and policy environment around the issue. The US public is increasingly aware of the public health threat from rising obesity rates.⁶ Public attitudes toward the obesity epidemic among adults and children are evolving as the public becomes more aware of obesity health risks and the need to combat them. There are a number of social influences on public attitudes toward obesity that have the potential to change social norms and promote support for interventions.⁷ These include major public and private programs in schools and communities, policy and legislative initiatives, advertising and promotion of healthy foods and active lifestyles, and news media coverage.

In response to the obesity epidemic, governmental and nongovernmental public health organizations are funding a number of major prevention initiatives. The Centers for Disease Control and Prevention (CDC) have funded the Well-integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) program, which is aimed at increasing knowledge and skills of women in the 40-64 age range to improve diet and physical activity to prevent and control chronic disease.⁸ CDC has also funded obesity prevention programs in 28 states and has plans to fund all 50. The Department of Health and Human Services (DHHS) has launched Steps to a Healthier US to address obesity, diabetes, asthma, and their modifiable risk factors—poor nutrition, physical inactivity, and tobacco use.⁹

Social marketing is increasingly aimed at promoting healthy lifestyles.¹⁰ In nutrition, the longstanding 5-A-Day for Better Health Campaign, funded by the National Institutes of Health, aims to increase awareness of the health benefits and reductions in health risks from consuming 5 or more-preferably 9 or more-servings of fruits and vegetables per day.¹¹

Recently, DHHS has also launched the Small Steps public service announcement (PSA) campaign, which includes over 100 video advertisements aimed at

encouraging improved nutrition and increased physical activity.¹² The CDC's Verb, It's What You Do, campaign aimed at "tweens" - youth aged 9 to 13 - seeks to brand physical activity as popular and cool and to promote it over sedentary behaviors such as television viewing.¹³⁻¹⁵ Like previous initiatives in cardiovascular disease and tobacco control,^{16,17} these social marketing campaigns all seek to promote healthy behaviors and lifestyle choices.

National and local news media have also focused on obesity as a major public health issue. In June 2004, Time Magazine and ABC News cosponsored a summit on obesity in Williamsburg, VA. Anchor Peter Jennings broadcast the national nightly news from the conference and focused the program on the obesity epidemic.¹⁸ Obesity-related stories have become common in health reporting in newspapers and on television and the Internet. Major publications such as National Geographic have put obesity on their covers and devoted extensive coverage to the topic.¹⁹

Americans also report that news coverage of obesity has reached high levels. Evans et al⁶ reported that over 65% of US adults reported seeing or hearing a news story on obesity at least once in the previous week, and fewer than 11% had never seen or heard a story on obesity.⁶ As discussed below, these self-reported rates of exposure to news coverage have continued to increase, suggesting that the issue is highly visible and the public is increasingly aware of it.

Given the increased amount of obesity-related programs, marketing, and news coverage, we hypothesized that public perceptions of the severity of the obesity epidemic would increase and support for preventive interventions would also rise. To better understand the changing social environment around this issue, we asked the following research questions:

- How have public perceptions of childhood obesity changed over a 9-month period of intensive news coverage and public debate?
- Has public support for specific childhood obesity interventions changed during this 9-month period?
- What sociodemographic factors are associated with support for childhood obesity interventions? Do these factors persist over time?

METHODS

As reported elsewhere,⁶ in the fall of 2003, we developed an instrument designed to capture attitudes and opinions on the seriousness of childhood overweight and obesity compared with other youth issues; support for specific interventions; and potential barriers to support, such as negative consequences and increased taxes; and adult obesity.

The questions on support for specific interventions were grouped into 3 domains: schools, media, and communities. These domains were selected not only because they represent areas in which promising interventions have already been developed and implemented in some communities, but also because they are likely targets for future government and private funding. Within each domain, we created scales to rank possible interventions by degree of intensity or restrictiveness. The scales were designed to be ordinal, based on intensity of the intervention.

In the summer of 2004, we revised the instrument to include additional questions on specific topics, such as advertising and media; obesity-related health care, intentions, and behavior; and worksite and other adult prevention interventions. Some questions from the first instrument were deleted, such as those that achieved extremely high levels of agreement (and were therefore subject to ceiling effects for potential change). We retained all questions on specific childhood obesity prevention interventions and most of those on other obesity attitudes and opinions.

The Odom Survey Research Institute at the University of North Carolina conducted the second data collection on behalf of Research Triangle Institute (RTI). The study protocol received institutional review board approval in August 2004, and the survey was administered between September 12 and October 31, 2004.

A total of 1139 interviews were completed with respondents in all 50 states and the District of Columbia. The survey achieved a relatively low response rate of 28%. This rate is consistent with our first survey, which achieved a response rate of 30%, and recent results obtained for similar health-related surveys (eg, the Behavioral Risk Factor Surveillance System [BRFSS] survey).³

Response rates for telephone-based

surveys have generally been declining in recent years due to factors such as cell phone use, prevalence of call screening using caller ID, Internet use, and related social and technological changes. Given that surveillance surveys are achieving consistently lower response rates due to these secular trends, there is an ongoing debate about the effects of lower telephone-survey response rates on data quality.²⁰

Recruitment and sampling methods were identical to the first survey, as reported elsewhere.⁶ Survey respondents were recruited using random-digit-dialing (RDD) methodology. The sample frame consisted of the set of all telephone exchanges that met residential telephone exchange geographic criteria. The sample was nationally representative according to American Association of Public Opinion Research standards.²¹ Advanced letters encouraging participation were sent to potential respondents identified for the sample. This procedure was not used in the first survey.

As part of a methodological experiment, the introductory script for half of the households (randomly assigned) stated that the interviewer was calling on behalf of RTI; the script for the other half stated that the interviewer was calling from the University of North Carolina (the organization that conducted data collection). In all cases, a participant who asked for additional information or clarification about the study was informed of the roles of both organizations. The results of the methodological experiment will be reported elsewhere.

Prior to analysis, Odum Institute and RTI analysts conducted extensive logic checks, data cleaning, and validation to ensure data quality. SAS version 8 for Windows software (SAS Institute, Cary, NC) was used for all data management and analysis.

To explore whether support for each of the 18 childhood overweight and obesity interventions varied systematically by specific sociodemographic characteristics, we conducted a series of logistic regression analyses. The dependent variable for each regression was coded as 0 for oppose or strongly oppose and 1 for favor or strongly favor. Independent variables included education (0 = less than high school, high school degree, or GED; and 1 = some college, 2-year college degree, 4-year col-

Table 1
Sample Characteristics:
Comparison of First and
Second Surveys

Demographic Group	2004 Percent	
	Jan-Mar (n=1047)	Sept-Oct (n=1139)
Overall	100.00	100.00
Age Group		
Ages 18 to 24	7.13	5.09
Ages 25 to 34	13.37	12.73
Ages 35 to 49	31.98	27.74
Ages 50 to 64	26.73	27.57
Ages 65+	18.12	21.07
Refused/don't know	2.67	5.80
Gender		
Female	59.01	65.21
Male	40.99	34.79
Race/Ethnicity		
Asian	0.86	1.49
American Indian	0.86	0.97
Black/African American	11.37	10.54
Hispanic/Latino	6.40	4.48
White/Caucasian	72.78	74.36
Multiracial	2.48	2.55
Other	0.86	0.61
Refused/don't know	4.39	5.00
Education		
Less than a high school degree	7.62	6.23
High school graduate or GED	30.59	27.30
Some college or 2-year college degree	26.53	26.78
4-year college degree	19.70	18.09
Postgraduate study	14.65	17.38
Refused/don't know	0.91	4.22
Income		
Less than \$25,000	16.14	17.65
\$25,000 - \$49,999	26.44	25.51
\$50,000 - \$74,999	17.43	18.53
\$75,000 - \$99,999	11.09	10.71
\$100,000 - \$124,999	3.76	5.36
\$125,000 - \$149,000	1.88	2.11
\$150,000 or more	4.55	4.04
Refused/don't know	18.71	16.09
Employment Status		
Employed	67.23	60.67
Not employed	32.18	35.21
Refused/don't know	0.59	4.12
Marital Status		
Married	53.07	54.87
Separated or not		
Currently married	46.14	40.83
Refused/don't know	0.79	4.30
Has Overweight or Obese Child		
Yes	4.49	5.97
No	33.62	28.36

Table 2
Perceived Seriousness of
Childhood Obesity - Comparison
of 1st & 2nd Surveys

Issue	Percent Responding That It Is a Very Serious Problem (n)	
	2004 Percent	
	Jan-Mar (n=1047)	Sept-Oct (n=1139)
Underage drinking	47.78 (496)	48.10 (544)
Underage smoking	42.98 (444)	43.10* (487)
Teen sex	45.18 (464)	44.93 (505)
Childhood obesity	41.54** (432)	47.40 (537)
Drug abuse among adolescents	55.38 (571)	59.25** (666)
Youth violence	50.97 (528)	53.51** (602)

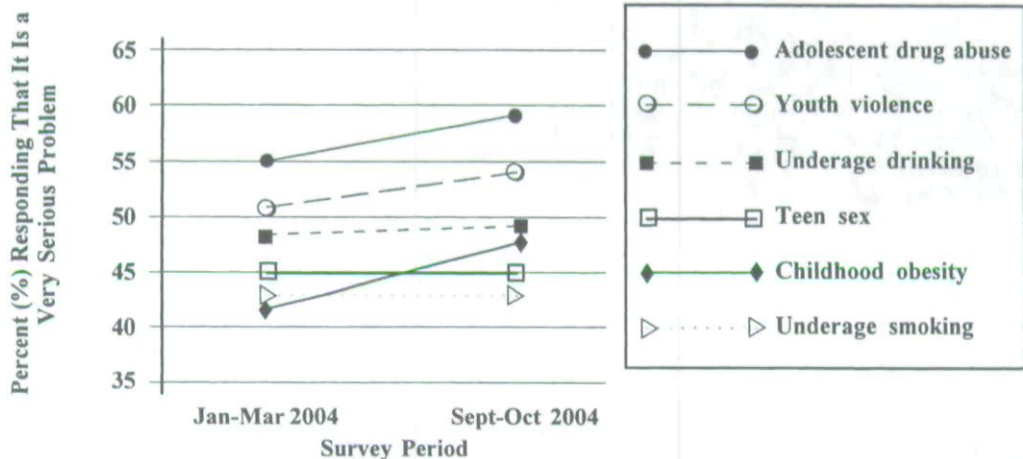
Note.
 Significant differences in percentage responding that it is a serious problem between Jan-Mar 2004 and Sept-Oct 2004 are shown in bold. Significant differences between obesity and other issues for Sept-Oct 2004 are italicized.
 ** P<0.01
 * P<0.05

lege degree, or postgraduate study), gender (0 = male and 1 = female), income (0 = \$50,000 or more and 1 = less than \$50,000), and children under the age of 18 living in the household (0 none and 1 = one or more). Table 4 reports odds ratios (ORs) and 95% confidence intervals (CIs) showing the relationship between each of these variables and support for specific interventions.

RESULTS
Sample Characteristics

Table 1 presents sociodemographic characteristics of respondents and shows that the 2 samples are comparable in most respects. Nearly 60% of respondents in the first survey, and 65% in the second survey, were female. Approxi-

Figure 1
Perceived Seriousness of Childhood Obesity Relative to Other Youth Issues



mately 62% of respondents in the first survey and 66% of respondents in the second survey had attended at least some college. Approximately 57% of respondents in both surveys reported incomes of \$50,000 or more. Nearly 40% of respondents in both the first survey and the second survey reported having at least one child at home. The distributions of age and race/ethnicity were very similar between the 2 surveys.

It is important to note that 18.7% of respondents in the first survey, and 15.1% of respondents in the second survey either refused to report or did not know their household income. Cross-tabulation analyses were conducted to examine potential associations between demographic characteristics (ie, race/ethnicity, gender, and education) and those who reported their income versus those who did not report their income. No significant associations were found. Thus, the subsample of respondents who did not report their income was no different demographically from the larger sample of respondents who did report their income.

Perceptions of Childhood Obesity

In the first survey, over 41% of Americans perceived childhood overweight and obesity to be a very serious problem, simi-

lar to tobacco use (42%) but not as serious as drug abuse (55%, $P < 0.05$). In the second survey, over 47% of Americans perceived childhood overweight and obesity to be a very serious problem. This represents a statistically significant increase ($P < .01$) compared to the first survey. No other youth health threat increased significantly between the 2 surveys. In the second survey, respondents considered childhood obesity to be more serious than underage smoking, statistically equal to underage drinking and teen sex, but not as serious as drug abuse and youth violence (Table 2). Difference-in-difference regressions further supported these findings. Controlling for the overall change in the other youth issues, the increase in the perceived seriousness of childhood obesity remained significant, $\beta = -.06$, $t = -2.95$, $P < .01$ (Figure 1). Comparing the change in the perceived seriousness of childhood obesity to the changes in perceived seriousness of each of the other youth issues independently revealed a significant increase for childhood obesity in comparison to teen sex, $\beta = .06$, $t = 2.02$, $P < .05$. All other comparisons were not significant.

Childhood Obesity Interventions

Public support for specific childhood

Table 3
Support for Childhood Obesity
Prevention Intervention
Strategies - Comparison of
1st & 2nd Surveys

Intervention	Percent (%) Favor (N)	
	Jan-Mar (n=1047)	Sept-Oct (n=1139)
School Vending Machines		
Increasing promotion and marketing of healthy foods and drinks in school vending machines	85.39 (894)	86.57 (986)
Increasing cost of less healthy foods and drinks in school vending machines	45.32 (474)	45.22 (515)
Allowing only the sale of healthy foods and drinks in school vending machines	70.89 (738)	72.17 (822)
Removing all vending machines from schools	35.92 (374)	35.29 (402)
School Cafeterias		
Increasing the cost of less healthy foods and drinks in school cafeterias	44.00 (455)	42.84 (488)
Restricting the availability of less healthy foods and drinks in school cafeterias	74.51 (769)	73.75 (840)
Allowing only the sale of healthy foods and drinks in school cafeterias	67.44 (696)	70.85 (807)
School Curriculum		
Requiring more physical education classes in school	82.30 (846)	84.20 (959)
Requiring schools to teach students healthy eating and exercise habits	93.86 (963)	93.85 (1069)
Evaluating Children's Weight in Schools		
Recording students' weight on a regular basis	49.51 (508)	52.33 (596)

(continued next column)

Table 3 (continued)

Intervention	Percent (%) Favor (N)	
	Jan-Mar (n=1047)	Sept-Oct (n=1139)
Sending parents a health report card of their children's weight on a regular basis	57.11 (586)	58.30 (664)
Providing students who are obese with weight-loss and exercise programs in school	72.90*** (748)	79.81*** (909)
Promotion of Fast Food and Other Less Healthy Food Marketed to Children		
Increasing the tax on fast food and less healthy foods marketed to children	39.10 (400)	36.79 (419)
Restricting the amount of fast food and less healthy food advertisements during children's television programs	75.27 (770)	77.17 (879)
Prohibiting the advertising and promotion of fast food and less healthy foods marketed to children	47.89** (490)	52.77** (601)
Restaurant Policies		
Placing health ratings on restaurant menus to indicate healthy choices	82.04 (859)	85.60 (975)
Requiring restaurant menus to list nutrition information about food products, similar to the Nutrition Facts panel on food packaging	67.34 (705)	75.17 (787)
Requiring standardized food portions in restaurants	42.31** (443)	48.90** (557)

Note.

Significant differences in percentage favor between Jan-Mar 2004 and Sept-Oct 2004 are shown in bold.

*** P < 0.001

** P < 0.01

* P < 0.05

interventions is presented in Table 3. The Percentage Favor column includes those who either strongly support or support the intervention. We observed very similar levels of support between the 2 surveys, with 3 exceptions. First, support for providing students who are obese with weight-loss and exercise programs in school increased significantly ($P < .05$) from nearly 73% to nearly 80%. Second, support for prohibiting the advertising and promotion of fast food and less healthy foods marketed to children increased significantly ($P < .001$) from nearly 48% to nearly 53%, thus representing majority support. Third, support for requiring standardized food portions in restaurants increased significantly ($P < .01$) from approximately 42% to 49%.

Interventions based on increasing the cost of unhealthy foods were not well supported and often opposed in both surveys. However, the significant increases in support for advertising prohibitions and standardized food portions represent increased support for regulation. Regulatory strategies continued to have mixed support in the second survey, but the consistent pattern of weak support or opposition observed in the first survey clearly changed. The previously observed pattern of opposition to cost and regulatory strategies has been discussed in detail elsewhere.⁶

Logistic Regression Analyses

For 5 of the 15 specific interventions in the second survey, logistic regressions revealed that support was statistically greater among more educated respondents. These results are similar to the findings for the first survey, in which 8 of 18 specific interventions revealed greater support among more educated participants. None of the regressions for the second survey revealed significantly lower support among the more educated. Results of the first survey, however, did reveal that more educated respondents were significantly less likely to support weight evaluation in schools. In the second survey, more educated respondents had higher observed levels of support for at least some interventions in every area except weight evaluation, although none of these differences were significant.

Similar to the first survey, women were more likely to support school vending,

school cafeteria, and marketing interventions than were men, but were less likely to support weight evaluation. For 6 of the 15 regressions, the odds ratios were positive and statistically significant for women, ranging from 1.29 (prohibit less healthy food ads during children's television programs) to 1.79 (allow only sale of healthy foods in vending machines). In the first survey, there were no cases in which women were significantly less likely to support an intervention than men were. In the second survey, however, women were significantly less likely than men to support recording students' weight on a regular basis and sending parents a health report card of their children's weight on a regular basis.

Having a higher income was associated with higher support for 5 of the 15 interventions and with lower support for 3 of the 15. Similar to the first survey, there was no consistent pattern within the income analysis by category of intervention. However, findings for income were directly correlated with those for education: higher income respondents had higher levels of support for the same 5 intervention strategies supported by more educated respondents. This is also consistent with the first survey.

Finally, respondents with children at home were less supportive of all forms of weight evaluation in schools than were those without children at home, similar to the first survey. The only intervention in the second survey supported more by those with children compared to those without was increased promotion of healthy foods in vending machines.

DISCUSSION

This study confirms that there is strong and growing public support for interventions aimed at reducing overweight and obesity among children and adolescents. Public support evolved in the 9 months between the first and second RTI surveys. Perceived severity of the childhood obesity health threat increased. At the same time, the public increasingly supports regulatory strategies to prevent childhood obesity.

Overall, the US public appears increasingly concerned about childhood obesity and wants action by governmental and other public health organizations to combat it. These data are likely to be of great interest to policy makers considering spe-

Table 4
Support for Childhood-Obesity Prevention Interventions
(Odds Ratios and Confidence Intervals From Logistic Regression
Analyses) - Second Survey

Intervention	Demographics			
	Education (No college vs at least some college)	Gender (Female vs Male)	Income (<\$50,000 vs \$50,000+)	Children under 18 (None vs One or more)
School Vending Machines				
Increase promotion of healthy foods	0.42* (0.29, 0.62)	1.64* (1.12, 2.40)	0.23* (0.14, 0.38)	0.58* (0.38, 0.89)
Increase cost of less healthy foods	0.62* (0.48, 0.80)	1.18 (0.92, 1.52)	0.61* (0.47, 0.79)	0.82 (0.64, 1.06)
Allow only the sale of healthy foods	0.90 (0.68, 1.20)	1.79* (1.36, 2.37)	1.01 (0.75, 1.35)	0.84 (0.63, 1.12)
Remove all vending machines from schools	0.82 (0.63, 1.07)	1.16 (0.90, 1.51)	1.24 (0.95, 1.61)	1.11 (0.86, 1.44)
School Cafeterias				
Increase cost of less healthy foods	0.82 (0.63, 1.06)	0.95 (0.74, 1.23)	0.94 (0.73, 1.22)	0.89 (0.69, 1.14)
Restrict availability of less healthy food	0.44* (0.34, 0.59)	1.42* (1.07, 1.88)	0.53* (0.39, 0.72)	0.75 (0.55, 1.01)
Allow only the sale of healthy foods	0.90 (0.68, 1.19)	1.58* (1.21, 2.07)	1.03 (0.78, 1.37)	1.18 (0.90, 1.55)
School Curriculum				
Require more physical education	0.85 (0.58, 1.23)	0.98 (0.67, 1.43)	0.77 (0.51, 1.14)	0.90 (0.61, 1.32)
Require teaching of healthy eating & exercise	0.44* (0.26, 0.77)	0.78 (0.43, 1.42)	0.40* (0.20, 0.78)	1.08 (0.61, 1.92)
Weight Evaluation in Schools				
Recording weight on regular basis	0.86 (0.66, 1.10)	0.72* (0.56, 0.93)	1.19 (0.92, 1.54)	1.44* (1.12, 1.85)
Send parents a health report card of children's weight on regular basis	1.11 (0.86, 1.43)	0.70* (0.54, 0.91)	1.44* (1.11, 1.88)	1.64* (1.27, 2.11)
Provide obese students with weight-loss & exercise programs	1.21 (0.87, 1.70)	0.90 (0.64, 1.25)	1.44* (1.02, 2.03)	1.43* (1.03, 1.96)
Marketing of Less Healthy Foods				
Increase tax on less healthy foods marketed to kids	1.16 (0.90, 1.50)	1.29 (0.99, 1.67)	1.37* (1.05, 1.78)	0.93 (0.72, 1.20)
Restrict less healthy food ads during kid's TV programs	0.60* (0.45, 0.81)	1.60* (1.19, 2.16)	0.71* (0.52, 0.98)	0.91 (0.67, 1.23)
Prohibit less healthy food ads marketed to kids	1.17 (0.91, 1.51)	1.29* (1.01, 1.66)	1.27 (0.98, 1.64)	0.99 (0.77, 1.27)

Note.

Intervention items were coded 0 = oppose and 1 = support. Demographic characteristics were coded as follows: Education: 0 = some college, 2-year college degree, 4-year college degree, or postgraduate study and 1 = less than high school, high school degree, or GED; Gender: 0 = Male and 1 = Female; Income: 0 = \$50,000+ and 1 = less than \$50,000; and Children under 18: 0 = none and 1 = one or more. Thus, the odds ratios can be interpreted as the characteristic coded as 1 (the denominator) as compared to the characteristic coded as 0 (the numerator).

*Odds ratio significantly different from 1 (P<0.05).

cific interventions.

In terms of regulation, compared to the first survey, significantly higher percentages of respondents in the second survey supported "prohibiting the advertising and promotion of fast food and less healthy foods marketed to children" and "requiring standardized food portions in restaurants." These changes suggest that increased public attention to obesity-which could be fostered by factors such as increased news coverage of the topic, promotion and marketing of specialized diet programs (eg, Atkins), government warnings about rising obesity rates, and debate about potential solutions-may be raising public concern and therefore willingness to attempt to solve the problem through government regulation. These observed trends deserve further investigation as they have potential to influence the policy debate on obesity prevention.

The consistency in levels of support for and opposition to specific childhood-obesity interventions suggests that policy makers should take the public's support for obesity prevention seriously. However, the observed increases in support for prohibiting advertising of less healthy foods and regulating portion sizes in restaurants have additional policy implications. The increase in support for these strategies, both of which would require significant governmental regulation, suggests that increasing public attention to childhood obesity may be heightening the desire for strong and decisive action and an increased public willingness to limit personal choice (for children in the form of television choice and for everyone in regard to restaurant food choice).

At the same time, support for tax-based interventions to increase the price of less healthy foods (eg, fat tax) remained consistently low. So although increased public attention to childhood obesity may affect the public's intervention priorities, strategies that involve taxation remain largely unsupported.

Policy Implications

The public clearly wants to reduce unhealthy, and increase healthy, food consumption among children and adolescents. They support reducing the availability of low nutrient density/high calorie (ie, junk or fast food) independently and in relation to healthier foods. The most consistently supported venue in

which to improve food consumption is school. However, they are wary about accomplishing these goals through price controls or taxation. Interventions that have been implemented on a local level, such as restricting vending-machine access or decreasing the number of unhealthy food choices available in schools, continue to enjoy broad public support and should be further considered for implementation.

Other more invasive approaches, such as prohibiting advertising and promotion to adolescents, enjoy growing support. Although support for intensive regulatory strategies in general is mixed, it appears to be increasing. Based on findings from a period of heightened visibility for childhood obesity, the public appears increasingly supportive of strong measures to combat it.

Support for weight-loss and exercise programs in schools, which would most likely be accomplished through physical education classes and intramural activities, increased between our 2 surveys. At the same time, as noted above, previous research has showed that the public is not willing to sacrifice basic education. Given this finding, school policy makers may need to explore alternative strategies, such as decreasing elective time or combining health and physical education classes, to find time for increased physical and health education without decreasing time for standard subjects.

Policy makers should also recognize the importance of nutrition and fitness in children's educational progress and achievement.^{22,23} Education and health are not only compatible, but mutually reinforcing and essential to child and adolescent development.

This survey examined public support for specific interventions aimed at reducing childhood overweight and obesity and changes in support during a time of heightened intervention activity and public attention. It showed that public concern and support for strong, in some cases highly invasive, action is growing. It provided information concerning which interventions might be feasible from a public policy perspective and showed that there are both consistent patterns of support and some clear trends in which interventions are most supported. This information will be valuable for policy makers as they set their programmatic and

funding agendas in the near future.

However, as noted in several recent studies, relatively little scientific information exists on which of these interventions are effective in actual school, community, and media settings.²⁴ As called for in the recent Institute of Medicine (IOM) report Preventing Childhood Obesity: Health in the Balance, more research on interventions and the basic psychosocial processes underlying them and their policy implications is needed. One implication is the need for policy makers, researchers, and practitioners to collaborate in developing shared and integrated policy, programmatic, and research agendas to fund, develop, test, implement, and evaluate evidence-based interventions to prevent childhood obesity.

Acknowledgments

This research was supported by an internal grant from Research Triangle Institute International. ■

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