

Exposure to Media Coverage of Obesity and Mississippi Residents' Health Behaviors

Fei Xue

School of Mass Communication and Journalism
University of Southern Mississippi
118 College Drive, #5121
Hattiesburg, MS 39406
fei.xue@usm.edu, (601) 266-5652

Abstract

Can media coverage of obesity help residents in the most obese state in the United States, Mississippi, develop more active health behaviors? Results of a phone survey indicated Mississippi residents' exposure to obesity-related information in media was positively related to their intention to seek obesity-related information, consume healthier food, and participate in more physical activities. Residents who reported family obesity were more active in seeking obesity information and promoting obesity awareness, but made less progress in healthy food consumption or physical activity participation. Individual beliefs in causes and solutions for obesity (personal and social) were identified as moderating factors. Limitations and future research directions were discussed.

Key Words: Media, Obesity, Mississippi, Health Behaviors

Obesity is one of the most pressing health issues in America today. According to the Centers for Disease Control and Prevention (CDC)'s Behavioral Risk Factor Surveillance System (BRFSS) report, in 1990, ten of the participating states had a prevalence of obesity less than 10% and no state had prevalence equal to or greater than 15%. In 2008, however, only one state (Colorado) had a prevalence of obesity less than 20%. Thirty-two states had prevalence equal to or greater than 25%; six of these states (Alabama, Mississippi, Oklahoma, South Carolina, Tennessee, and West Virginia) had a prevalence of obesity equal to or greater than 30% (CDC, 2009). These alarming statistics represent a greatly increased risk for many health diseases and conditions, such as hypertension, Type 2 diabetes, coronary heart disease, sleep apnea, respiratory problems, as well as an increase in obesity-attributable expenditures (16% of GDP, most in the world) and other social problems (CDC, 2012).

Although it has been argued that media use encourages a sedentary lifestyle and media advertising encourages unhealthy food consumption (Mutz, Roberts, & Van Vuuren, 1993; Kaiser Family Foundation, 2004), there is also evidence that media can help promote healthy lifestyles. Many researchers believe media have the responsibility and the ability to help the public realize the severity of the obesity problem and provide information on possible solutions (e.g., Boyce, 2006; Evans, Renaud, & Kamerow, 2006; Maibach, 2007). However, most research examining the link between obesity and the media was based on children, and because of this emphasis, it tended to focus on food advertising, especially national network television commercials (e.g., Henderson & Kelly, 2005; Boyce, 2006; Harker, Harker, & Burns, 2007). Knowledge about the overall impact of obesity coverage in media is very limited. More importantly, no formal research has specifically examined the impact of media coverage of obesity in any of those "heaviest states" where research is most needed.

There are many personal, societal and cultural factors that may affect eating habits and physical activities. The present study focuses on the effects of media coverage of obesity in the state of Mississippi in the United States. According to CDC (2012), Mississippi had been the heaviest state in the nation many years in a row, with more than 34% of its current residents classified as obese. The Kaiser Family Foundation (2008) reported about 11.3% of

the adults in Mississippi had been told by a doctor that they had diabetes, compared to the national average of 8.2%. Mississippi's Cardiovascular Disease (CVD) mortality is the also highest in the nation, with a mortality rate in 2000 that was 29% higher than the U.S. as a whole. More Mississippians died each year from CVD than from all types of cancer, traffic injuries, suicides, and AIDS combined (Mississippi Department of Health, 2009). In an effort to address these health problems in Mississippi, the state government, along with corporate and non-profit organizations, has launched a series of public health campaigns in recent years. For example, former Governor Haley Barbour appointed a task force of nine organizations and departments, led by the Mississippi Department of Education's Office of Healthy Schools, to guide the Preventing Obesity with Every Resource (POWER) project. BlueCross BlueShield of Mississippi and the Mississippi State Department of Health launched "Let's Go Walkin' Mississippi" program in 2009. A similar program, "Mississippi's Walk for Diabetes," is sponsored by the Diabetes Foundation of Mississippi (www.msdiabetes.org) and endorsed by Governor Phil Bryant. Stories and public announcements about these program have been seen in local media, along with other weight-loss related media content such as "the Biggest Loser," "NFL Play 60," etc.

Researchers and policy makers hope the media coverage of obesity can help educate the public and provide solutions to the problem, but its effectiveness needs further investigation. Can media coverage raise awareness of obesity and help Mississippi residents develop more active health behaviors? What are Mississippi residents' perceptions of the obesity coverage in national media and local media? Is there difference between individuals who have obesity problems and those who do not? The goal of the current study is to conduct a survey among Mississippi residents to explore their perception of obesity-related media coverage and its impact on their health behaviors.

Literature Review

Media Coverage of Obesity and Health Behaviors

People learn from media. According to Bandura's (1977, 1997) Social Learning Theory, individuals can learn behaviors, attitude and culture through both imitation and identification with people and actions they observe in their environments. Many of these

people and actions exist in an individual's interpersonal network, but they can also come from news stories or advertising messages in mass media. The application of Social Learning Theory to media effects research is wide and well-supported in areas such as aggressive behavior, body dissatisfaction, as well as health behaviors (e.g., Bandura, 1994, 1997; Vaughan & Rogers, 2000).

The social learning process is reinforced by the learner's observations of the consequences of the modeled behavior. "Observers can acquire symbolic representations of behaviors, and these 'pictures' can provide information on which to base subsequent behavior" (Baran and Davis, 2006, p. 197). Behavior that results in advantages is positively reinforced for the observer, whereas behavior that results in a disadvantage is negatively reinforced for the observer (Bandura, 1994). Observation of the model by an individual thus serves as a vicarious trial-and-error of the new behavior for the observer. Current media coverage of obesity has been focusing on the negative consequences such as obesity-related health problems and social issues, as a form of punishment, to increase awareness of the issue. Several studies have proved media have the ability to increase the awareness of obesity, and persuade people to eat less junk food and devote more time to physical activities. For example, Evans, et al. (2005) conducted a survey of more than 1,000 households and reported that respondents felt childhood obesity was as serious a problem in the United States as tobacco use and violence. Furthermore, respondents supported most strategies for intervention, including media-based efforts. A study in Australia indicated that a health campaign positively influenced short-term physical activity message recall, knowledge and behavior of the targeted population, compared to the population in other regions who were not exposed to the campaign messages (Bauman, Bellew, Owen, & Vita, 2001). Another study of New Orleans residents in the United States also suggested a five-month health campaign was able to stimulate improvements in attitude towards healthy diet and walking behavior addressed in the campaign (Beaudoin, Fernandez, Wall, Farley, 2007). Einlay and Faulkner (2005) examined 17 national media campaigns promoting physical activity conducted between 1998 and 2004. These campaigns demonstrated that media advertisements could effectively increase knowledge regarding the benefits of physical activity, and increase short-term physical activity behavior among targeted audiences.

In the present study, the relationship between Mississippi residents' exposure to obesity coverage and their adoption of a healthy lifestyle was examined. The first set of the research questions (RQ1) investigated the public perception of obesity coverage in national media and Mississippi media, including their exposure to and their attitude toward such information (see Table 1). To explore the extent of the relationship between Mississippi residents' media exposure and their health behaviors, several aspects of obesity-related behaviors were examined in the second research question (RQ2). First, because media can help increase the awareness of obesity (e.g., Evans, et al., 2005; Einlay & Faulkner, 2005), the current study asked whether Mississippi residents had been more actively seeking obesity-related information and promoting obesity-awareness among family/friends and in local area. Healthy eating habits and physical activity are often cited as solutions for obesity (Serdula et al., 1999), therefore, they are included in the second research question, as well (see Table 1).

Personal Relevance and Media Effects

Many personal, societal and cultural factors could influence the effectiveness of the media coverage of obesity. One of them is personal relevance. Different audiences may interpret media messages differently based on the relationship between the audience and the message. According to Elaboration Likelihood Model (ELM), one of the most important factors affecting persuasion is whether an individual is motivated to elaborate on, or think about, a potentially persuasive message. Petty, Cacioppo and Schumann (1983) proposed two routes to persuasion that would lead to attitude change: the central route and the peripheral route. When the information is relevant to the person's current value system then the central route is taken where more attention is given to the subject. If a message is irrelevant to an individual, the peripheral route is activated and the individual instead focuses on peripheral cues like the source, imagery, music, etc. ELM has also been used to study the effectiveness of health communications (e.g., Dinoff & Kowalski, 1999; Igartua, Cheng, & Lopez, 2003). For example, Rothman and Schwarz (1998) reported that an individual who had a family history of breast cancer would be more likely to be motivated to process a message about breast cancer. Similar response is expected in the current study. Therefore, the third research question (RQ3) explored the potential impact of personal relevance on Mississippi residents' adoption of active health behaviors. Interaction effects between media exposure and family obesity were also examined to find out if obesity coverage had different effect on Mississippi residents who were concerned with obesity from those who were not (see Table 1).

Perception of Causes and Solutions for Obesity

The heart of the obesity discussion centers upon possible causes and solutions, and the biggest question is whether researchers should focus more on individual factors or social environment. The direct cause of obesity is individual behavior, a combination of eating too many calories and low levels of physical activity (CDC, 2008; Maibach, 2007). Researchers also identified 10 different genes that might contribute to obesity (Perusse et al., 2005). Healthy eating habits and physical activity are often cited as individual solutions to obesity (Serdula et al., 1999). Medical treatments, such as surgeries or medications to restrict caloric intake, are also available for the severely obese (Fisher & Schauer, 2002). In the meantime, there are many societal factors that may facilitate or contribute to making such unhealthy decisions, such as the food industry and its marketing practices, unhealthy food choices in schools, lack of physical education, accessibility and affordability of healthy food, and limited opportunities for outdoor activities (CDC, 2008). The solutions for obesity from a societal perspective involve regulation of the food industry and its aggressive marketing (Story & French, 2004); taxing unhealthy food to reduce its consumption (Leigh, 2004); and providing healthier cafeteria foods and incorporating more physical activity programs in schools (CDC, 2012).

Although several researchers (e.g., Lawrence, 2004; Kim & Willis, 2007) found that, overall, media mentions of personal causes and solutions significantly outnumbered societal attributions of responsibility, it is eventually up to the audiences to decide what to believe. How individuals perceive the causes and solutions for

obesity could affect their health behaviors. For example, Joeng (2007) found that a prior high level of health control beliefs was a good indicator of high perceptions of controllability and responsibility regardless of the news story content. Conversely, prior low levels of health control beliefs contributed to a sense of less control where issues

of genetics and obesity were concerned. Therefore, Mississippi residents' beliefs of the causes and solutions for obesity were included in the current study as the fourth research question (RQ4). Possible moderating effects of these beliefs were investigated (see Table 1).

Table 1 Research Questions

RQ1: How do Mississippi residents perceive the current media coverage of obesity?
RQ1a: How often are Mississippi residents exposed to obesity-related information from national and local media?
RQ1b: Do Mississippi residents perceive the current media coverage of obesity as sufficient?
RQ1c: Do Mississippi residents perceive the current media coverage of obesity as trustworthy?
RQ2: What was the relationship between Mississippi residents' media exposure and their health behaviors?
RQ2a: Were Mississippi residents who had greater exposure to media coverage of obesity more active in seeking obesity-related information?
RQ2b: Were Mississippi residents who had greater exposure to media coverage of obesity more active in promoting obesity awareness?
RQ2c: Were Mississippi residents who had greater exposure to media coverage of obesity more active in healthy food consumption?
RQ2d: Were Mississippi residents who had greater exposure to media coverage of obesity more active in physical activity participation?
RQ3: How does personal relevance affect Mississippi residents' obesity-related health behavior?
RQ3a: Were Mississippi residents who reported family obesity more active in seeking obesity-related information?
RQ3b: Were Mississippi residents who reported family obesity more active in promoting obesity awareness?
RQ3c: Were Mississippi residents who reported family obesity more active in healthy food consumption?
RQ3d: Were Mississippi residents who reported family obesity more active in physical activity participation?
RQ3e: Were there any interaction effects between media exposure and family obesity on Mississippi residents' health behavior?
RQ4: Did Mississippi residents' belief in personal/social causes and solutions for obesity moderate the effects of media exposure and family obesity on Mississippi residents' health behaviors?
RQ4a: Did Mississippi residents' belief in personal causes and solutions for obesity moderate the effects of media exposure and family obesity on Mississippi residents' health behaviors?
RQ4b: Did Mississippi residents' belief in social causes and solutions for obesity moderate the effects of media exposure and family obesity on Mississippi residents' health behaviors?

Method

The study was designed to examine Mississippi residents' perceptions of media coverage of obesity and how the obesity coverage has affected their health-related behaviors. A phone survey was conducted in three largest metropolitan areas in Mississippi – Jackson, Gulfport/Biloxi and Hattiesburg (US Census Bureau, 2010).

Procedure and Samples

Prior to its implementation, the survey protocol was reviewed and approved by the Institutional Review Board at a southern university in the United States, where the researcher was employed. A representative sample of 210 Mississippi residents (70 in each area) was interviewed via telephone. Interviews were conducted by trained callers. Each interview was approximately 10 minutes in length. Respondents were identified using a random sampling method. A set of random numbers was generated and used to draw phone numbers in the Yellow Pages from Jackson, Gulfport/Biloxi and Hattiesburg. Every 5th number on the first page was called. When finished or declined, the 5th number on the next page was then called. If not enough surveys were obtained in the first round, a second round would begin. In this round, every 12th number on each page was called. Every 36th and 58th number was used in third and fourth rounds, when necessary. Only the head of the household was interviewed. A chance to win a Wal-Mart gift card (\$25 in value) was used as incentive to participate in the survey. Telephone numbers of respondents who were interested were entered for the prize draw.

Measures

The respondents in the survey were asked to answer questions regarding their exposure to, and perceptions of, media coverage of obesity, beliefs of causes and solutions for obesity, and obesity-related health behaviors in the past year. Descriptive analyses and Multivariate analysis of covariance (MANCOVA) were run using SPSS, with media exposure and family obesity as two independent variables.

Exposure to Media Coverage of Obesity. The respondents were asked to indicate the frequency with which they are exposed to obesity-related messages (television news, newspaper/magazine articles, and advertisements) in national and local media (five-point scales from "never" to "everyday"). Cronbach's Alpha reliability was .89 for this scale.

Perceptions of Media Coverage of Obesity. The respondents were also asked to rate the appropriateness of media's emphasis on obesity (five-point scales from "under-emphasized" to "over-emphasized"), and how much they trusted obesity-related information in national and local media (seven-point scale from "not at all" to "very much").

Beliefs of Causes and Solutions for Obesity. The respondents were asked to provide opinions based on a seven-point Likert scale (from "not at all" to "very much") regarding their belief of the causes and solutions for obesity. Measurements developed by previous researchers (e.g., Kim & Willis, 2007; Reilly et. al, 2005) were adopted and revised. The causes for obesity included personal causes (biological causes, unhealthy

diet and lack of exercise) and societal causes (socioeconomics factors, schools/education system, and food industry). Correspondingly, the solutions for obesity also included personal aspects (medical solutions, healthy diet, and more exercise) and societal aspects (socioeconomics factors, better schools/education system, effort from the food industry, and effective health promotion in media). Cronbach's Alpha reliability was .81 for personal factors, and .88 for social factors.

Health Behaviors. Items used to measure this variable were developed by the researchers based on previous measurements. The respondents were asked to indicate, on seven-point Likert scales (from "not at all" to "very much"), whether they had been more actively involved in seeking obesity-related information in media, promoting obesity awareness among friends and in local events, and whether they had consumed more healthy food, less junk food, and participated in more physical activities in the previous year.

Personal Relevance of Obesity. Respondents were asked to indicate if they considered obesity as a problem in their family ("Yes" or "No").

Results

A total sample of 201 usable surveys was analyzed in the present study. They were from Jackson (n = 68), Gulfport/Biloxi (n = 70), and Hattiesburg area (n = 63). First, descriptive data of Mississippi residents' perception of obesity coverage were reported. Descriptive analysis indicated a normal distribution of reported exposure to media coverage of obesity on a five-point scale (M = 2.50, SD = 1.01), so a median split method was used to divide the respondents into two groups, higher-exposure group (N = 103) and lower-exposure group (N = 98). A new variable was generated to measure respondents' overall media exposure. Using media exposure and family obesity as two independent variables, Multivariate analysis of covariance (MANCOVA) was run to test the differences in health behavior change. Because the researchers suspected personal beliefs of causes and solutions for obesity might have affected participants' health behaviors, these two factors (personal responsibility or social responsibility) were included as covariates in the analysis to test their possible moderating effects (see Table 2).

Table 2 Multiple Analysis of Covariance for Media Exposure and Family Obesity

Factor	Measures	df	F	η ²	P
Personal Responsibility	Seeking Information	1	7.46	.03	.01*
	Promoting Awareness	1	12.84	.06	.00**
	Healthy Diet	1	1.00	.00	.32
	Physical Activities	1	10.27	.05	.00**
Social Responsibility	Seeking Information	1	2.56	.01	.11
	Promoting Awareness	1	10.78	.05	.00**
	Healthy Diet	1	17.68	.08	.00**
	Physical Activities	1	6.78	.03	.01*
Media Exposure (E)	Seeking Information	1	6.63	.03	.01*
	Promoting Awareness	1	.09	.00	.76
	Healthy Diet	1	9.22	.04	.00**
	Physical Activities	1	15.72	.07	.00**
Family Obesity (O)	Seeking Information	1	12.12	.06	.00**
	Promoting Awareness	1	12.06	.06	.00**
	Healthy Diet	1	4.92	.02	.03*
	Physical Activities	1	8.74	.04	.01*
E × O	Seeking Information	1	.93	.00	.34
	Promoting Awareness	1	.36	.00	.55
	Healthy Diet	1	.43	.00	.51
	Physical Activities	1	.87	.00	.35
Within-Group Error	Seeking Information	185	(2.15)		
	Promoting Awareness	185	(1.95)		
	Healthy Diet	185	(3.16)		
	Physical Activities	185	(3.45)		

Note: * p < .05 ** p < .01

Perception of Media Coverage of Obesity

The first set of research questions (RQ1) in the present study asked how Mississippi residents perceived news coverage of obesity in local and national media. Respondents reported how often they were exposed to obesity-related messages in media, whether they thought the amount of media coverage was appropriate, and how much they trusted obesity-related information from media. Most of the respondents reported seeing or hearing obesity-related coverage less than once a week in both national media (38.3%) and local media (41.3%), followed by approximately once a week in national media (22.9%) and local media (21.9%). Most of the respondents believed there was about the right amount of coverage of obesity in both national media (50.2%) and local media (43.3%). However, many others believed the obesity issue was under-emphasized in national media (22.4%) and local

media (35.8%). Respondents were asked to rate the sources from which they received obesity-related information on a seven-point Likert scale. In general, respondents trusted obesity-related information they received from national media (M = 4.84, SD = 1.58) and local media (M = 5.10, SD = 1.59), which was below doctors (M = 6.27, SD = 1.29) but above friends/family (M = 4.27, SD = 1.88).

Media Exposure and Health Behaviors

The second set of the research questions (RQ2) in the current study explored the correlations between media exposure and respondents' health behaviors. Results indicated that those who were exposed to more media coverage of obesity (M = 3.63, SD = 1.45) had been more active in seeking obesity-related information in the past year than those who had less exposure to such

coverage ($M = 2.96$, $SD = 1.65$), $F(1, 185) = 6.63$, $p < .05$. Those who were exposed to more media coverage of obesity ($M = 5.02$, $SD = 1.65$) had adopted a healthier diet in the past year than those who had less exposure to such coverage ($M = 4.34$, $SD = 2.03$), $F(1, 185) = 9.22$, $p < .01$. Those who were exposed to more media coverage of obesity ($M = 5.07$, $SD = 1.83$) had also engaged in more

physical activities in the past year than those who had less exposure to such coverage ($M = 4.11$, $SD = 2.04$), $F(1, 185) = 15.72$, $p < .01$. In general, the more often the respondents were exposed to media coverage of obesity, the more likely they would have adopted a more active lifestyle (see Table 3).

Table 3 Mean Scores of Responses by Media Exposure

Dependent Measures		High Media Exposure ($N = 103$)	Low Media Exposure ($N = 98$)
Seeking Information*	<i>M</i>	3.63	2.96
	(<i>SD</i>)	(1.45)	(1.65)
Promoting Awareness	<i>M</i>	2.43	2.25
	(<i>SD</i>)	(1.53)	(1.54)
Healthy Diet**	<i>M</i>	5.02	4.34
	(<i>SD</i>)	(1.65)	(2.03)
Physical Activities**	<i>M</i>	5.07	4.11
	(<i>SD</i>)	(1.83)	(2.04)

Note: * $p < .05$ ** $p < .01$

Personal Relevance and Health Behaviors

The third set of the research questions (RQ3) in the current study examined the correlations between personal relevance and respondents' health behaviors. Results indicated that those who reported family obesity ($M = 3.78$, $SD = 1.75$) had been more active in seeking obesity-related information in the past year than those who did not report family obesity ($M = 2.82$, $SD = 1.28$), $F(1, 185) = 12.12$, $p < .01$. Respondents who reported family obesity ($M = 2.80$, $SD = 1.62$) had also been more active in promoting obesity awareness in the past year than those who did not report family obesity ($M = 1.92$, $SD = 1.32$), $F(1, 185) = 12.06$, $p < .01$. However, respondents who

reported family obesity ($M = 4.46$, $SD = 1.97$) had made less progress in adopting a healthier diet in the past year than those who did not report family obesity ($M = 4.84$, $SD = 1.80$), $F(1, 185) = 4.92$, $p < .05$; and respondents who reported family obesity ($M = 4.32$, $SD = 2.16$) had also made less progress in physical activity participation in the past year than those who did not report family obesity ($M = 4.77$, $SD = 1.83$), $F(1, 185) = 8.74$, $p < .05$ (see Table 4). No interaction effects between media exposure and family obesity were found, which means personal relevance did not influence the effect of exposure to obesity coverage on Mississippi residents.

Table 4 Mean Scores of Responses by Family Obesity

Dependent Measures		Family Obesity - No ($N = 120$)	Family Obesity - Yes ($N = 81$)
Seeking Information**	<i>M</i>	2.82	3.78
	(<i>SD</i>)	(1.28)	(1.75)
Promoting Awareness**	<i>M</i>	1.92	2.80
	(<i>SD</i>)	(1.32)	(1.62)
Healthy Diet*	<i>M</i>	4.84	4.46
	(<i>SD</i>)	(1.80)	(1.97)
Physical Activities*	<i>M</i>	4.77	4.32
	(<i>SD</i>)	(1.83)	(2.16)

Note: * $p < .05$ ** $p < .01$

Moderating Effects of Personal Beliefs

The last two research questions (RQ4a and RQ4b) investigated possible moderating effects of two variables – beliefs in personal responsibility and beliefs in social responsibility. In general, participants believed both individuals ($M = 6.48$, $SD = .82$) and the society ($M = 5.15$, $SD = 1.32$) are responsible for the causes and solutions for obesity. The MANCOVA analysis indicated that beliefs in personal responsibility did affect the respondents' intention to seek obesity-related information, $F(1, 185) = 7.46$, $p < .05$; promote obesity awareness, $F(1, 185) = 12.84$, $p < .01$; and participate in physical activities, $F(1, 185) = 10.27$, $p < .01$. Respondents' beliefs in social responsibility also seemed to have affected their intention to promote obesity awareness, $F(1, 185) = 10.78$, $p < .01$; adopt a

healthier diet, $F(1, 185) = 17.68$, $p < .01$; and participate in physical activities, $F(1, 185) = 15.72$, $P < .01$. To further explore the relationships between personal belief and health behaviors, a correlation was run and the results suggested belief in personal responsibility was positively related to Mississippi residents' behavior change in seeking obesity-related information, $r(200) = .25$, $p < .01$; promoting obesity awareness, $r(200) = .29$, $p < .01$; and participating in physical activities, $r(200) = .18$, $p < .05$. Respondents' belief in social responsibility was found negatively related to their behavior change in promoting obesity awareness, $r(200) = -.19$, $p < .05$; but positively related to diet change, $r(200) = .26$, $p < .01$; and physical activities, $r(200) = .15$, $p < .05$ (Table 5).

Table 5 Intercorrelations between Personal Beliefs and Health Behaviors

Subscale	1	2	3	4	5	6
1. Personal Responsibility	—	.2	.25**	.29**	.05	.18*
2. Social Responsibility		—	-.07	-.19*	.26**	.15*
3. Seeking Information			—	.65**	.37**	.46**
4. Promoting Awareness				—	.24**	.35**
5. Healthy Diet					—	.77**
6. Physical Activities						—

Note: * $p < .05$ ** $p < .01$

Discussions and Implications

How effective is the current media coverage of obesity in the United State? Can the obesity coverage help residents in the most obese state develop more active health behaviors? These were the questions the researchers attempted to answer in the current study.

Obesity Coverage and Behavior Changes

Overall, the findings in the current study were positive. Although most Mississippi residents reported seeing obesity-related coverage less than once a week in both national media (38.3%) and local media (41.3%), they generally believed the amount of coverage of obesity was appropriate in both national media (50.2%) and local media (43.3%). They also seem to somewhat trust obesity-related information they received from media ($M = 4.97$, $SD = 1.55$, on seven-point scale). More importantly, Mississippi residents' exposure to obesity coverage was positively related to their behavior change in seeking obesity-related information, consuming healthy food, and participating in physical activities. During the survey, many respondents were able to recall an obesity-related newspaper article, television news story or commercial/PSA they had seen in the previous week, such as a story in local newspaper about school nutrition program, newspaper editorials about obesity-related health problems, childhood obesity stories on local and national television news programs, and commercials promoting physical activities and healthy diet. An additional question in the survey asked respondents to report how often they used newspaper and television on a five-point Likert scale. A positive correlation was found between respondents' exposure to obesity coverage and their overall media usage, $r(200) = .36$, $p < .01$. This means, the more the respondents used newspaper and television, the more likely they were exposed to obesity coverage. This is encouraging news for the mass media and media researchers. Media can actually make a difference in helping people combat obesity. This means the effort the mass media has put into covering obesity is not going without notice, and it needs to be continued. This also calls for more research on the effects of various types of obesity-related information in media, not just health promotion campaigns.

Family Obesity and Health Behaviors

The good news is Mississippi residents who reported family obesity had become more active in seeking obesity information and promoting obesity awareness in the past year than those who did not report family obesity. However, they made less progress in adopting a healthier diet (4.46 on a 7-point scale) or physical activity participation (4.32 on a 7-point scale) in the past year, compared to those who did not report family obesity. This might be because "old habits die hard." Although those respondents were aware of the problem, it might take a long time for them to change their health behaviors. An additional question in the survey asked respondents whether they were aware that Mississippi was the heaviest

state in the nation and what he/she thought contributed to it. The majority of the respondents (86%) were aware of that fact and the most mentioned cause for this problem was unhealthy eating habits in the South (other causes included low income, poor education, and fast food industry). So this is not just a personal issue, it is also related to the local culture, which makes it even harder to change. Policy makers and health workers should realize the effect of media coverage, while important as this study indicates, is only one segment of the solution. To promote healthier behaviors, especially among individuals who are dealing with obesity, more organizations should be involved.

Personal and Social Responsibility for Obesity

Mississippi residents generally believed that, more or less, both individuals (6.48 on a 7-point scale) and the society (5.15 on a 7-point scale) should be responsible for the causes and solutions for obesity. Both variables had positive effect on Mississippi residents' health behavior change. Respondents' belief in personal responsibility was positively related to Mississippi residents' behavior change in seeking obesity-related information, promoting obesity awareness, and physical activities; and their belief in social responsibility was positively related to diet change and physical activities. Although two scales were not significantly correlated, $r(200) = .02$, $p > .10$, about half of the respondents ($N = 91$) reported high scores (above mean score) on both scales. It is possible that the positive correlations detected in the study might come from the joint effects of both variables. Respondents' belief in social responsibility was found negatively related to their behavior change in promoting obesity awareness. It might be because those who believed in social solutions expected the government, food industry or other organizations to promote health behaviors, instead of individuals. Nevertheless, the current study suggested individuals' belief in personal or social responsibility is an important variable in obesity research and it needs to be further studied in the future.

Limitations and Future Research

This study is one of the few studies to measure the overall impact of media coverage of obesity, not just advertising campaigns, on the audiences, and the first one to be done in the most obese state in the United States. Several limitations should be noted when evaluating the findings of this research, such as survey samples, moderating variables and research procedure. The survey samples were drawn from three areas in Mississippi. Although they are the most populous areas in the state, they only represent a certain portion of the state population. A large scale project in the future should include more areas in the state of Mississippi and other states. Studies comparing different states might also be helpful in understanding the impact of obesity coverage on different target audiences. Two audience-related

variables – beliefs in personal and social responsibility for obesity, were included in the present study as two moderating variables. Other sources-related (e.g., media type, information source) and message-related (e.g., message appeals, visuals) variables may also have impact on audiences' health behaviors. Studies specifically designed to examine those variables should be considered

in the future. Finally, because the current research was based on self-reported data, we could only assume the respondents were honest with their answers. Different research approaches, such as experiments, interviews or field studies, and more qualitative research may offer a more comprehensive understanding of this issue.

References

- Bandura, A. (1977). *Social Learning Theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1994). Social cognitive theory of mass communication. In J. Bryant & D. Zillman (Eds.), *Media Effects: Advances in Theory and Research*. Mahwah, NJ: Erlbaum.
- Bandura, A. (1997). *Self-efficacy: The Exercise of Control*. New York: Freeman.
- Baran, S. J. & Davis, D. K. (2006). *Mass Communication Theory: Foundations, Ferment, and Future*. Belmont, CA: Wadsworth Publishing.
- Bauman, A. E., Bellew, B., Owen, N. & Vita, P. (2001). Impact of an Australian mass media campaign targeting physical activity in 1998. *American Journal of Preventive Medicine*, 21(1), 41-47.
- Beaudoin, C. E., Fernandez, C., Wall, J. L., & Farley, T. A. (2007). Promoting healthy eating and the physical activity: Short-term effects of a mass media campaign. *American Journal of Preventive Medicine*, 32(3), 217-223.
- Boyce, T. (2006). The media and obesity. *Obesity Review*, 8, 201-205.
- Centers for Disease Control and Prevention. (2012). Obesity prevalence in 2011 varies across states and regions. Retrieved on July 26, 2012, from: <http://www.cdc.gov/obesity/data/adult.html/>
- Centers for Disease Control and Prevention (2009). Obesity trends 1985 – 2008. Retrieved on August 5, 2012, from: <http://www.cdc.gov/obesity/data/trends.html>.
- Dinoff, B. L., & Kowalski, R. M. (1999). Reducing AIDS risk behavior: The combined efficacy of protection motivation theory and the Elaboration Likelihood Model. *Journal of Social and Clinical Psychology*, 18(2), 223-239.
- Einlay S. J. & Faulkner, G. (2005). Physical activity promotion through the mass media: Inception, production, transmission and consumption. *Preventive Medicine*, 40 (2), 121-130.
- Evans, W. D., Renaud, J. M. & Kamerow, D. B. (2006). News media coverage, body mass index, and public attitudes about obesity. *Social Marketing Quarterly*, 12, 19-33.
- Goldsmith, R. E., Lafferty, B. A. & Newell, S. J. (2000). The impact of corporate credibility and celebrity credibility on consumer reaction to advertisements and brands. *Journal of Advertising*, 24 (3), 43-54.
- Harker, D., Harker, M., & Burns, R. (2007). Tackling obesity: Developing a research agenda for advertising researchers. *Journal of Current Issues and Research in Advertising*, 29(2), 39-51.
- Henderson, V. R. & Kelly, B. (2005). Food Advertising in the age of obesity: Content analysis of food advertising on general market and African American television. *Journal of Nutrition Education & Behavior*, 37, 191-196.
- Igartua, J. J., Cheng, L., & Lopes, O. (2003). To think or not to think: Two pathways towards persuasion by short films on Aids prevention. *Journal of Health Communication*, 8(6), 513-528.
- Kaiser Family Foundation (2004). The role of media in childhood obesity. Retrieved on August 2, 2012, from: <http://www.kff.org/entmedia/upload/The-Role-Of-Media-in-Childhood-Obesity.pdf>
- Kaiser Family Foundation (2008). State health facts. Retrieved on November 12, 2009, from <http://www.statehealthfacts.org/profileind.jsp?ind=70&cat=2&rqn=26>
- Maibach, E. (2007). The influence of the media environment on physical activity: Looking for the big picture. *American Journal of Health Promotion*, 21 (4, supplement), 353-362.
- Mississippi Department of Health (2009). Chronic disease fact sheet. Retrieved on November 3, 2011, from <http://www.msdh.ms.gov/msdhsite/ static/43.1160.91.214.html>
- Mutz, D. C., Roberts, D. F., Van Vuuren, D. P. (1993). Reconsidering the displacement hypothesis: Television's influence on children's use of time. *Communication Research*, 20, 51-75.
- Petty, R. E., Cacioppo, J. T., & Schumann, D. (1983). Central and peripheral routes to advertising effectiveness: The moderating role of involvement. *Journal of Consumer Research*, 10 (September), 135-146.
- Rothman, A.J., & Schwarz, N. (1998). Constructing perceptions of vulnerability: Personal relevance and the use of experiential information in health judgments. *Personality and Social Psychology Bulletin*, 24, 1053-1064.
- Serdula, M. K., Mokdad, A. H., Williamson, D. F., Galuska, D. A., Mendlein, J. M., & Heath, G. W. (1999). Prevalence of attempting weight loss and strategies for controlling weight. *Journal of American Medical Association*, 282, 1353-1358.
- Sternthal, B., Phillips, L.W. & Dholakia, R. (1978). The persuasive effect of source credibility. *Public Opinion Quarterly*, 42, 285-314.
- Tokuda, Y., Fujii, S., Jimba, M. & Inoguchi, T. (2009). The relationship between trust in media and the healthcare system and individual health: Evidence from AsiaBarometer Survey. *BMC Medicine*, 7(4), 1-10.
- U.S. Census Bureau (2010). *State and county quick facts*. Retrieved on March 8, 2013, from: <http://quickfacts.census.gov/qfd/states/28000.html>
- Vaughan, P., & Rogers, E. (2000). A staged model of communication effects: Evidence from an entertainment-education radio soap opera in Tanzania. *Journal of Health Communication*, 5, 203-227.