The Willingness to Prevent Obesity via Text Messaging among Low-Income African Americans Living in Single-Family Homes

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Abstract

Background and Purpose: Racial and ethnic minority populations are disproportionally affected by obesity. Text messaging is a major feature of mobile phones and is popular because it allows people to receive information effectively, unobtrusively, and privately. However, the willingness to exercise and eat healthy to prevent obesity by receiving text messages is unclear. The purpose of this study is to examine low-income African Americans' willingness to prevent obesity by receiving mobile phone text messaging. Methods: We conducted focus group interviews to allow participants to share their own perceptions of their experiences using text messages. Researchers conducted five focus groups consisting of 30 participants. Focus group participants were recruited from the local Cincinnati Recreational Center where they were part of a 10-week sustainable obesity modification program. Participants were low-income African American adults between the ages of 31 and 34 years of age living in single family homes. Results: Low-income African American families were receptive to the idea of receiving text messages and willing to show some self-efficacy to prevent obesity. Conclusion: Since we live in a digital age where millions of people rely on their cell phones for information and send text messages daily, it is critical that we allow people the self-efficacy to make healthy decisions and have a positive healthy lifestyle. Text messaging has the potential of expanding the reach of obesity prevention in that cell phones are increasingly inexpensive, convenient, and accessible to low-income Africana Americans.

Introduction

Long term effects of obesity, are estimated to cost billions of dollars worldwide (Finkelstein, Trogar, Cohen, & Diets 2009). In the United States the prevalence of obesity over the last four decades have risen especially for adults 25 to 45 years of age (Young, Ferreira, & Colson, 2016). The number of people who are obese in the United States has been observed in all racial, ethnic, gender, and age groups. However, racial and ethnic minority populations are disproportionally affected by obesity and at greater risk for many serious diseases (Centers for Disease Control, 2009). According to The Obesity Society (2010), 69% of U.S. population is overweight [BMI of 25.0-29.9] and 31% of this group are obese [BMI of 30.0 or above]. African American women are disproportionately affected by obesity and this remains consistent throughout older adulthood (Office of Minority Health, 2015). In fact, a greater proportion of African American women (53.9%) are obese compared with European women (49.9%) of the same age (Bowen, Eaves, Vance, & Moneyham, 2015). These statistics exemplify a clear health disparity for African Americans, and that an effective intervention for overweight or obese people of color still remains a challenge.

Over the past decade the Pew Research Center (2016) has documented a variety of ways in which Americans have used social media to seek information and communicate with others. According to a recent study in 2016, the usage of social media by adults has increased by 7 percent compared with a survey conducted at a similar point in 2015 (Pew Research Center, 2016). Furthermore, women continue to use social media at somewhat higher rates than men; 83% of internet users are females and while 75% are males (Martí & Sánchez, 2015). Facebook use appears to be on the rise thanks in part to a growing number of older adults who use the site (Chen, 2014). In 2016, a national survey of 1,520 adults, found that nearly eight-in-ten online Americans (79%) use Facebook, (24%) use Twitter, (31%) use Pinterest, (32%) use Instagram and (29%) use LinkedIn (Pew Research Center, 2016). In addition, 76% of Americans reported that they visit their social media site on a daily basis, this is up from 70% in 2015 (Fu-Yuan & Su-Lin, 2016).

Social media sites are not the only venue where people can connect with others and receive information (Rokicki, Cohen, Salomon, & Fink, 2017). Today android and Smartphone owners use text messaging to keep in touch with family and friends, and receive information effectively (Shiber & Northcutt, 2016). According to the Cellular Telecommunications and Internet Association (CTIA), more than 2.88 trillion text messages were sent and received in the United States from December, 2014 to December, 2015 (CTIA, 2015). This number has increased in just five years as 2.05 trillion text messages were sent and received in 2010 (CTIA, 2015). According to the Pew/ Internet and American Life Project 85 % of adults in the United States own a cell phone and 80 % indicated that they send and receive text messages (Schoenberger, Phillips, Mohiuddin, Schoenberger, Phillips, & Mohiuddin, 2015). Furthermore, people from racial and ethnic minority groups were found to text message more than Caucasians, and African-Americans were more likely than other cell phone owners to sign up for health text alerts and text with others in their neighborhood about issues in their community (Fox & Duggan, 2012). Even though many African Americans agree communicating face-to-face at local venues in their community (i.e. Barbershops, Hair salons, and Churches) is more helpful than text messaging, African Americans still prefer to send text messages (Broaddus & Dickson-Gomez, 2016). Just as Facebook, Twitter, LinkedIn

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and other forms of social media text messaging would not be favored if there were no personal or social benefits to using this communication method (Foster, 2015). Text messaging allows low-income African Americans to build, maintain, and sustain relationships with their friends and family (Kaiser Family Foundation, 2012).

Along with building and maintaining relationships with friends and family, there is also evidence that text messaging provides an opportunity to link people to simple health information to promote behavior change (Kaiser Report, 2015). For instance, in 2011, a study was conducted in Melbourne, Australia where participants received a total of twelve educational text messages over 5 months. Results indicated a significant increase in sexual health awareness and sexually transmitted infection testing (Gold, Lim, & Hocking, 2011). In 2009, a Canadian university used text messaging to promote vitamin use. At the end of the study participants responded by texting back that they had taken the vitamin that day and that the text messages were motivational (Cocosila, Archer, & Haynes, 2009). Naughton, Prevost, and Gilbert, (2012), targeted pregnant women and sent two text messages a day for 11 weeks to explore their motivations to quit smoking. Results showed that text messaging did help motivate those who participated in the intervention group to quit smoking compared to the control group. Many of the studies conducted in the US and International countries have focused on populations that are avid mobile phone consumers, specifically young adults, and college age students who utilize cell phone technology (Kazi, Murtaza, Khoja, Zaidi, & Ali, 2014). However none of these studies focus on text messaging as a method to prevent obesity among low-income African Americans. The use of an innovative approach such as text messages which is not only timely, but highly relevant to low-income African Americans to prevent obesity would be beneficial to the discipline of health promotion and health education. We address the gap in the literature by using a theory-driven intervention to determine the perception of and willingness to prevent obesity among low-income African Americans using mobile phone text messaging as cues to action to eat healthy and be physically active.

Theoretical Framework

The Health Belief Model proposes that in order for an individual to take action to reduce the risk of disease, the individual needs to believe that (a) he or she is susceptible to the disease (*perceived susceptibility*); (b) the disease could have at least a moderately severe impact on some component of his or her life (*perceived severity*); (c) certain behaviors could be beneficial in reducing his or her perceived susceptibility or severity in the event of distress with the disease (*perceived benefits*); and (d) these behaviors would not be impeded by factors such as cost, pain, and embarrassment (*perceived barriers*) (Rosenstock, 1974) (Table1).

The literature indicates that the Health Belief Model is useful in predicting health-related behaviors such as nutritional knowledge (Shojaei, Farhadloo, Aein, & Vahedian, 2016), pap smear testing (Bal, 2014), teenage distracted driving (Adeola, 2016), and weight management (Das & Evans, 2014). This study examines constructs of the Health Belief Model to predict the willingness to prevent obesity via text messaging. We specifically focus on four of the six constructs perceived susceptibility, perceived seriousness, self-efficacy, and cues to action toward preventing obesity among low-income African Americans who self-identified themselves as obese.

Methods

To assess how low-income African Americans perceive text messaging as a way to prevent obesity, this study used focus group interviews to allow participants to share their own perceptions about obesity and how the feasibility of using cell phones can be used in this population. Using the standard procedures for focus group methodology (Kruger, 2000) the Health Foundation of Greater Cincinnati invited twice the number of participants required to achieve the targeted number of participants. The Health Foundation of Greater Cincinnati project was conducted by the Child Policy Research Center at the University of Cincinnati and was approved by the institutional review board at the University of Cincinnati. Researchers conducted five focus groups consisting of 30 participants. Focus group participants were recruited from the local Cincinnati Recreational Center where they were part of a 10-week sustainable obesity modification program offered by the Health Foundation of Greater Cincinnati. Prior to the start of the program researchers described the proposed study and the criteria for participation, then interested participants signed the consent form. Adults at the Cincinnati Recreational Center were eligible to participate if they self- identified as African American, English speaking, were 31 – 34 years old, lived in a single-family home, owned a cell phone, and had knowledge of how to use a mobile phone. Each interview lasted 40 minutes and participants received $25 gift cards for their time and participation in the study. Thirty low-income African American adults participated. Participants were equally male and female, primarily 31 and 32 years of age, lived in single-family homes and already owned a cell phone (Table 2).

One researcher was responsible for conducting group discussion while taking notes and the other observed and transcribed participants verbal communication and non verbal cues. The same two researchers conducted all five focus groups to maintain consistency. Once the focus groups discussions were completed, each researcher read through the transcripts to conduct open coding, specifically related to obesity and constructs of the health belief model. During the second phase of the data analysis, researchers identified themes within the categories. Data analysis was continuous throughout the data collection process, so themes were narrowed, adjusted, and combined as focus groups took place. Because two researchers conducted all data analysis, triangulation was a method used for ensuring trustworthiness. Merriam (2009) concludes that triangulation is an important step in data analysis because it involves using multiple investigators to confirm emerging findings. Data collection continued until saturation, which is also crucial to the trustworthiness of the study.

Four focus group interview questions were used to initiate discussion on the process of how text messages with the use of the Health Belief Model could be used to prevent obesity among African Americans. Focus group questions were open-ended and broad to allow for free flowing open discussion and to avoid leading participants' responses in one direction or another. The first question looked at perceived susceptibility and asked the following question, "Do you believe that being physically inactive or eating poorly puts African Americans at

Table 1.

Health Belief Model

Concept	Definition	Application
Perceived Susceptibility	One's opinion of chances getting a condition	Define population(s) at risk, risk levels Personalize risk based on a person's features or behavior Heighten perceived susceptibility if too low
Perceived Severity	One's opinion of how serious a condition and its sequelea are	Specify consequences of the risk and the condition
Perceived Benefits	One's opinion of the efficacy of the advised action to reduce risk or seriousness of impact	Define action to take: how, where, when; clarify the positive effects to be expected
Perceived Barriers	One's opinion of the tangible and psychological cost of the advised action	Identify and reduce barriers through reassurance, incentives, assistance
Cues to Action	Strategies to activate "readiness"	Provide how-to information promote awareness, reminders
Self-Efficacy	Confidence in One's ability to take action	Provide training, guidance in performing action

Source: (Bishop, Baker, Boyle, & MacKinnon, 2015)

risk for becoming obese or decreases their quality of life. If so, why?" The second question addressed perceived seriousness and asked the following question "Do you believe there are health consequences for African Americans if they are not physically active or eating healthy? Why or why not?" The third question focused on self-efficacy and asked the following question "How confident do you feel you can reduce your obesity and what can be done to help you be physically active and eat right"? The fourth question addressed cues to action and asked the following question "What techniques, strategies, or tools can motivate you to prevent obesity?" Participants also completed a brief questionnaire to gather additional information on text messaging. The questionnaire included questions such as how many mobile phone messages have you sent and received per day, who do you text most of the time, and how long does it take for you to respond to a text.

Health Belief Model based text Messages

We discussed the feasibility of using cell phones messages for obesity prevention by using selected constructs from the health belief model over the course of 10 weeks while the participants were at the recreational center. Discussions from the research team would take place every Monday, Wednesday, and Friday during work hours. The Monday discussions were focused around text messaging, perceived susceptibility and perceived seriousness. On Wednesday, the discussions focused on text messaging and self-efficacy, and on Friday the discussions generally emphasized cues to action and text messaging (Table 3).

Table 2.

Demographics and Mobile Phone Use of Sample

Characteristics	Male		Female	
Age	**N**	**Percent**	**N**	**Percent**
31 years old	7	23	6	20
32 years old	4	13	3	10
33 years old	2	7	3	10
34 years old	2	7	3	10
Mobile phone messages sent per day				
10 messages	1	3	3	10
11 messages	3	10	2	7
25 messages	3	10	5	17
50 messages	4	13	3	10
100 messages	4	13	2	7
Response time to messages				
1 second	6	20	4	13
25 seconds	4	13	3	10
35 seconds	5	17	6	20
Mobile phone messages received per day				
10 Messages	2	7	4	13
15 Messages	2	7	7	23
25 Messages	5	17	1	3
100 Messages	6	20	3	10
Whom do you text the most				
Family	6	20	7	23
Friends	7	23	7	23
Co-Workers	2	7	1	3

Results

Participant receptivity via text messaging for obesity intervention

The focus group participants were all excited to show their willingness to be apart of an intervention to prevent obesity through text messages on cell phones. The adults primarily sent text messages to their family and friends very few participants actually texted their co-workers. All participants (N = 30) had access to mobile phones that consisted of text messaging services. Three adult males stated "They texted their friends all the time." One female (31 years old) stated "I never go anywhere without my cell phone I would not know what to do if I did not have my cell phone." On average, participants had owned a mobile phone for 7 years, sent an average of 45 messages per day (range 10 -100), received an average of 40 messages per day (range 10 – 100), responded immediately (in less than one minute) when text message was received, and expected an immediate response (in less than one minute) when they sent text messages (Table 2).

Perceived Susceptibility of physical inactivity and eating poorly

The findings in the focus groups determined that perceived susceptibility for adults being physically inactive or eating poorly impacted their quality of life. Ninety-six percent of the participants believed that "it's a good idea if they received text messages asking about if they ate poorly and if they exercised daily." All the participants agreed that this could be a constant reminder that we all are at risk for obesity if we don't take care of ourselves." Eighty-six percent of the participants suggested they should only receive three texts a week as oppose to daily text. One participant stated "As African Americas we are constantly stressed so we don't need tons of text messages everyday, we already know we are susceptible to becoming obese in our community."

Perceived Seriousness of health consequences

Majority of the participants (83%) in the focus groups believed that receiving text messages about the health consequences of not being physically active or eating healthy was significant among African Americans that they were willing to do anything in their power to avoid those consequences. One male stated "I want to travel the world and see as many cultures

Table 3.

Text message questions using Health Belief Model constructs

Text Messaging Questions	Health Belief Model (HBM) Theoretical constructs	Outcome Affecting
Do you believe being physically inactive or eating poorly puts African Americans at risk for becoming obese or decreases their quality of life?	HBM: Perceived Susceptibility	Obesity awareness
Do you believe there are health consequences for African Americans if they are not physically active or eating healthy?	HBM: Perceived Seriousness	1) Increase physical activity 2) Increase fruit & vegetable intake to maintain a healthy weight
How confident do you feel you can reduce your obesity and what can be done to help you be physically active and eat right?	HBM: Self-Efficacy	Increase confidence to exercise more often and eat right to reduce obesity
What techniques, strategies, or tools can motivate you to prevent obesity?	HBM: Cues to Action	1) Increase physical activity to prevent obesity 2) Decrease foods high in fat to prevent obesity 3) Increase fruit & vegetable intake to maintain a healthy weight

as possible. If I'm out of shape or sick, then it's impossible for me to work, I can't possibly do that." One female stated "I know I have a family history of some of these diseases and being sick may impact many of the things I want in life, like getting married and having a family." However, when asked the question "Do you believe there are health consequences for African Americans if they are not physically active or eating healthy? More than half of the participants (60%) in the focus group perceived this as stigmatizing the African American community. Seventy- three percent of the participants believed that "All people have health consequences if they do not exercise or eat healthy, therefore we are all in the same boat, and so we should not just focus on the African American community." The participants (70%) also mentioned that we should generalize our text messages and not just focus on obesity. One adult mentioned: "We should talk about all the issues related to obesity such as lack of grocery stores in neighborhoods, food deserts, and poverty." The oldest adult in the group indicated that many supermarkets are moving out of the low-income neighborhoods. Majority of the participants (80%) agreed that they had to purchase foods high in fat, because foods that were considered to be nutritionally- dense were expensive. One adult male stated, "Every time a grocery store leaves the neighborhood I am forced to buy unhealthy food from the local corner store because that is all I can afford and the only store in the neighborhood that I have access too."

Self-efficacy to be physically active and eat right

Participants were asked to think about "How confident he/she felt in his/her ability to reduce obesity and what can be done can be done to help him/her be more physically active and eat right"? Participants were asked to assess their own confidence on a 5-point Likert scale. 1 represented *not at all confident,* 2 represented *slightly confident*, 3 represented *moderately confident,* 4 was *very confident*, and 5 was *extremely confident.* Responses varied by gender. The average self-efficacy score for males (n=15) was 3, or moderately confident. Males believed that self-efficacy could be improved by text messaging if they had more social support, such as a recreational center listserve for people who want to get serious about dealing with their weight management. One male stated, "We are members of this recreational center and we have access to several classes to improve our quality of life; it shouldn't be too hard to focus on physical activity and eating healthy to prevent obesity." Another man stated, "I like doing activities with the men here at the recreational center. It would be nice if we had a listserve or cell phone directory that connects me with people who like doing the same type of stuff [prevent obesity]."

For females (n = 15) the average self- efficacy score was 2, or slightly confident. Females stated not being confident in their ability to be more physically active and eat right to reduce obesity due to a lack of time management and social support. Women believed that their self-efficacy could be improved by receiving text messages that disseminated information about self-control and discipline. One woman reported, "I just don't have time to exercise and do all these things to keep my weight down and prevent obesity. I played sports when I was in high school but my coaches were the ones who told us when we had to practice and for how long, so they took care of all of this for me."

Cues to Action to prevent obesity

Participants were asked "What techniques, strategies, or tools can motivate you to prevent obesity?" Participants' responses were (1) the increase use of social media to encourage healthy lifestyles, and (2) the inclusion of humor to promote behavior change. Twenty-five participants (83%) agreed that the problem is that many health professionals want African Americans to lose weight but they are always talking about obesity from a dark place stating obesity is associated with diabetes, heart disease, stroke, and even some types of cancers. Nineteen participants (63%) reported, Mix jokes into it [text messages]. One male reported, "You just want to like have a joke in the text message somewhere every now and then, you know, then I will laugh at it and then I would be like oh, yeah, I probably should get out the house an go for a run today or something like that." Participants suggested engaging them by using humor first, then following it up with facts would be a great way to get them motivated to prevent obesity. Thirteen participants (43%) reported that their grandchildren were showing them how to use social media. One female reported, "The Cincinnati Recreational Center, should tap into that and begin to show many of us how to get reliable information from Facebook and Twitter."

Discussion

This study examined the perceptions and willingness of low-income African Americans to use mobile phone text messages to prevent obesity. As weight management in the African American community continues to be a problem for low-income individuals, it is important to understand the perceptions and willingness to change their health behaviors. Our focus group findings represent the willingness and ideas of low-income African Americans, who was recruited by the Cincinnati Recreational Center. Participants represented our targeted population of African American, English speaking, 31 – 34 years of age, lived in a single-family home, owned a cell phone, and had knowledge of how to use a mobile phone. The innovation of this study which separates this study from other studies was the operationalizing of four key theoretical constructs (perceived susceptibility, perceived seriousness, self-efficacy, and cues to action) of the Health Belief Model to prevent obesity among low- income African Americans using text messaging. Using text messaging is a novel research technique used in health promotion and has not been applied to preventing obesity.

Perceived Susceptibility

All five focus groups perceived that they were subject to having a negative quality of life if they did not eat healthy and maintain a physically active lifestyle. African Americans also thought it would be a great idea to receive text messages asking them if they exercised and ate healthy. This suggests that many participants were dedicated to eating healthy foods and exercising throughout the day. Our findings were supported by the literature where a study conducted by Mistry (2015) found that there was mounting evidence to support that text messaging had a huge impact on people wanting to engage in physical activity during their work day.

Perceived Seriousness

Participants in the focus groups believed that receiving text messages about the health consequences of not being physically active or eating healthy was significant to their quality of life. Participants felt they could not afford to be out of shape because they wanted to travel the world. This finding may be supported by traditional beliefs where Africans American men feel that being obese can negatively impact their financial situation as being the bread winner in the home as well as their careers. A study conducted in Houston, Texas found that African American males receive fewer opportunities and career benefits in corporate settings due to their weight, especially in areas of White males (Khosrovani & Ward, 2011). It may also be possible that African Americans may feel susceptible to obesity-related prejudice at their place of employment. Arango-Lasprilla (2014), found that minimum wage African American filed more Title 1 work discrimination allegations under large to extra-large employers compared to minimum wage Whites in the workplace.

Self-efficacy

The findings for self-efficacy demonstrated that there were differences between males and females. Males on average felt moderately confident when it came to self-efficacy and their ability to prevent obesity through text messaging. Males believed that their self-efficacy could be improved if they had more social support. This reveals that men place a high value on social health, to the point where weight management and healthy eating behaviors are vital to them preventing obesity. On the other hand, females stated that they were not confident when it came to being physically active and eating healthy to prevent obesity. Females believed that their self-efficacy could be improved by having more self-control and discipline. This finding is consistent with other research. Bray, Graham, and Saville (2015), found that females who had higher levels of self-control and discipline where able to lose weight through cardiovascular training compared to individuals who did not have self-control or discipline.

Cues to Action

Focus group participants believed that increasing the use of social media and text messaging about obesity was a great way to promote behavior change. This finding is consistent with other research demonstrating how timely and influential social media can be in preventing obesity. Harris and colleagues (2014) found that they could reduce childhood obesity by distributing evidence-based information through Twitter by using credible sources and other content from scientific sources. Because of this finding it is imperative that health professionals play a pivotal role in preventing obesity by using social media and text messaging.

Limitations

There were several limitations in this study that needs to be discussed. First, there was a small convenient sample from one geographic region of the country. Therefore, we cannot generalize the results of this study to other parts of the country. Second, focus groups were conducted at a local recreational center during weekdays when people have to work. This conflict caused many participants to miss the focus groups

due to the fact they had to work. Third only participants who owned a cell phone could participate in the research study. This caused many participants to miss the opportunity to take part in the study because they did not own a cell phone. Fourth, this study focused primarily on avoiding obesity primarily through physical activity and eating healthy. Future studies should focus not only on personal behaviors but environmental and social factors that may influence obesity. Finally, there were only 30 people in the research study. The recommended goal with qualitative research is to reach data saturation and not meet a specific number of participants. Therefore, there is no way of knowing if the participants would have expressed different ideas as it relates to the willingness to prevent obesity via text messaging. Despite these limitations we believe that our research still is of importance and that in future studies these limitations could be addressed. First, we can conduct focus groups on the weekend where it does not conflict with the participants' work schedules. Second, the research team can provide prepaid cell phones for participants to participate in the research study if they don't already own a cell phone. Finally, researchers can ensure that there is data saturation allowing participants to express their full ideas in the research study.

Conclusion

Based on these findings it is important to explore the perceptions and willingness of low-income African Americans to prevent obesity via text messages. There is a lack of intervention studies using text messaging to prevent obesity, especially interventions that are theory-driven and focused on African Americans. Since we live in a digital age where millions of people rely on their cell phones for information and send text messages daily, it is critical that we allow people the self-efficacy to make healthy decisions and have a positive healthy lifestyle. Text messaging with cell phones have the potential of expanding the reach of obesity prevention in that they are inexpensive, convenient, and accessible to low-income Africana Americans. Our findings showed that many low-income African Americans were in favor of receiving text messages to prevent obesity. If effective, it makes an important contribution to the design and implementation of obesity prevention for low-income African Americans.

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