

Barriers and attitudes toward tele-healthcare delivery with African Americans in the Mississippi delta region participating in a cardiovascular disease risk reduction education program

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Abstract

Introduction: As part of a larger study that sought to determine difference in cardiovascular disease (CVD) clinical outcomes among adult African American patients in federally qualified health centers in the Mississippi Delta who received (CVD) risk management education and monitoring from community health workers (CHWs), a Telehealth Needs and Satisfaction Survey (adapted) was administered when a shift to telehealth delivery of education and monitoring was made during the COVID-19 pandemic.

Methods: The adapted survey was administered to participants at baseline. Data was collected and managed through REDCap with questions analyzed and reported by frequency and percentage.

Results: Participants described difficulties with health care access related to being present at clinic appointments due to physical, psychological, or emotional difficulties, and issues associated with transportation and costs. They reported access to and were comfortable with technology-related factors, and most agreed with advantages associated with telehealth utilization. Notably, most participants were not interested in utilization of online based technologies (i.e. chat rooms, social media, live chats), but instead preferred cell phones (receiving and sending text messages and phone calls, and computers (for email) for health care support.

Conclusion: Rural regions have individual-level barriers to telehealth participation that include concerns associated with access like costs, infrastructure, and equipment. In addition, older populations of African Americans in the Mississippi Delta lack of confidence with some online based technologies. Technical support should be offered so patients can manage their chronic diseases more comfortably through telehealth.

Introduction

Mortality rates in rural areas are declining at a slower pace than are those in urban areas [1-4]. The disproportionate burden of mortality across rural areas of the US is known as the Rural Mortality Penalty. Nowhere is this burden more evident than at the intersection between rurality and extreme poverty [5]. The largest disadvantages are experienced by African Americans in these areas [6]. Rural areas also experience a greater burden of chronic diseases in general when compared to urban areas [7]. Rural residents have poorer health outcomes than do urban residents, and the disparity is growing [8-11].

There are several factors associated with poor health outcomes among rural residents. Findings suggest that disparities in social determinants of health [12] such as economic stability [13-15], education access and quality [7,15,16], factors associated with neighborhoods and the built environment [17-19], and healthcare access and quality drive mortality and health outcome differences in urban and rural areas. More specifically, with regard to healthcare access and quality, rural communities experience lower access to healthcare [20-21]. For

example, from 2005 – 2015, primary care physician density in rural counties experienced a sharper decline (-7.0 per 100,000 population) than did urban counties (-2.6 per 100,000 population) [22]. Further, more than half of rural counties do not have a general surgeon, more than 60% have no obstetrician/gynecologist, and more than half lack a pediatrician [23]. When non-metro residents are asked to describe providers of their Usual Source of Care (USC), they were more likely to report information at a facility level rather than at an individual level, individual providers were less likely to be physicians, and non-metro residents reported less access to providers outside of regular business hours [8]. Rural residents are also more likely to be uninsured or underinsured than urban residents [7,24]. More specifically, southern

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Table 1. Participant Demographics (n=157)

Category	n (%)
Age	
18 – 29	1 (0.6)
30 – 39	9 (5.7)
40 – 49	23 (14.6)
50 – 59	46 (29.3)
60 – 69	46 (29.3)
70 – 79	31 (19.7)
80 and above	1 (0.6)
Biological Sex	
Female	104 (66.2)
Educational Level	
Less than high school	44 (28.0)
Completed high school or equivalent	50 (31.8)
Some college or trade school	30 (19.1)
Associates Degree	13 (8.3)
Bachelors Degree or higher	16 (10.2)
Prefer not to answer	4 (2.5)
Employment Status	
Full Time	53 (33.8)
Part Time	15 (9.6)
Seasonally Employed	1 (0.6)
Unemployed	23 (14.6)
Retired	17 (10.8)
Disabled	35 (22.3)
Prefer not to answer	13 (8.3)
Income Level	
Less than \$10,000	46 (29.3)
\$10,000 - \$14,999	33 (21.0)
\$15,000 - \$24,999	27 (17.2)
\$25,000 - \$34,999	18 (11.5)
\$35,000 - \$49,999	14 (8.9)
\$50,000 - \$74,999	7 (4.5)
\$75,000 and above	1 (0.6)
Prefer not to answer	11 (7.0)
Insurance Status	
Private Insurance	16 (10.2)
Employer-Provided Insurance	18 (11.5)
Medicaid or Medicare	60 (38.2)
Military Insurance (Tri-Care)	1 (0.6)
Insurance through the Affordable Care Act.	14 (8.9)
No Insurance	42 (26.8)
Prefer not to answer	6 (3.8)

rural residents are more likely to be uninsured compared to other regions of the US [7].

One way to reduce health disparities related to access to primary care is to offer healthcare support through telemedicine [6]. Telemedicine is the “use of electronic information and communications technologies to provide and support healthcare when distance separates the participants” [25]. Telemedicine can exist in many forms and has been used by providers with the potential applications for rural residents widespread [25]. Though several studies report implementation barriers experienced from a rural healthcare system and clinic perspective [27-29], few studies capture the experiences of individuals who participate in rural telehealth risk management education and monitoring programs with community health workers (CHWs). The following manuscript presents findings from a Telehealth Needs and

Satisfaction Survey [30], completed by rural African Americans living in the Mississippi Delta who received care from a Federally Qualified Health Center and participated in a broader clinical trial focused on the effectiveness of the CHW model on care and management of CVD patients. The initial clinical trial shifted to telemedicine as a result of the COVID-19 pandemic.

Methods

As part of a larger project, a randomized clinical trial was conducted that sought to determine the difference in impacts on clinical outcomes (BMI, Waist Circumference, Hemoglobin A1C, blood pressure, glucose, and cholesterol) among African American adult participants who received cardiovascular disease (CVD) risk management education, and monitoring from community health workers (CHWs) through telehealth and participants who received normal standard of care without CHW support. While the study methodology originally had in-person sessions with CHWs, the COVID-19 pandemic required a shift in mode of delivery, with subsequent study design changed to virtual sessions with CHWs conducted through telehealth. With the change in protocol delivery of education sessions and monitoring of health status, it was deemed necessary to determine patients’ experiences and confidence in telehealth methodologies. As a result, all participants in both arms of the clinical trial were administered a Telehealth Needs and Satisfaction Survey at baseline [30]. The survey (adapted) consisted of 44 multiple choice items, and assessed five key constructs (health needs, difficulties accessing health care, technology-related factors such as “availability, confidence using technology, and perceived benefits and drawbacks of telehealth”), in addition to sociodemographics. Items also gauged participants’ interest in using different technologies for telehealth (phone, social media, email and Internet). Study data were collected and managed using REDCap (Research Electronic Data Capture) tools hosted at the University of Southern Mississippi [31-32]. Demographic and survey questions were analyzed and reported by frequency and percent within each categorical answer choice.

Results

Participants

One hundred fifty-seven (157) participants completed the survey. Participant demographics can be found in Table 1. All participants were African American (AA), and their ages ranged from 28.4 to 82.6 years with a mean of 57.3 (±12.0). All were residents of the Mississippi Delta area (21 counties in the northwest quadrant of Mississippi). Two-thirds (66.2%) of participants were female. Approximately one-third (28.0%) of participants had completed less than a high school education, 43.4% were employed, and 22.3% reported a disability that kept them from working. Half of the participants (50.3%) reported an income of less than \$15,000 annually, and 26.8% lacked health insurance coverage.

Access difficulties

Service delivery

Participants were asked to provide information about their difficulties with health care access related to service delivery (Table 2). Most participants experienced no difficulty, however, there were ‘some difficulties’ reported around waiting past the appointment time to be seen (21.0%) and making appointments for days and times that were convenient (20.4%).

Physical access

Participants were asked to provide information about their difficulties with face-to-face health care visits (Table 3). Participants

Table 2. Access difficulties due to service delivery (n=157)

Sometimes people find it hard to get the health support and advice they would like. Have you had any difficulty with the following?	No Difficulty n (%)	Some Difficulty n (%)	Lots of Difficulty n (%)
a) Making appointments for days and times that suit you	121 (77.1)	32 (20.4)	4 (2.5)
b) Making appointments with the particular health professionals that you want to see	128 (81.5)	24 (15.3)	5 (3.2)
c) Having to wait past your appointment time to be seen	118 (75.2)	33 (21.0)	6 (3.8)
d) Getting care and support at the times when you feel you need it most.	126 (80.3)	25 (15.9)	6 (3.8)
e) Getting the amount of care and support you feel you need from health professionals (for example, having long enough appointments and being able to see them often enough)	132 (84.1)	19 (12.1)	6 (3.8)
f) Getting the quality of care you want from health professionals providing services through telehealth	125 (79.6)	27 (17.2)	5 (3.2)
f) Getting enough information about your health and the services available to support you	128 (81.5)	24 (15.3)	5 (3.2)

Table 3. Access difficulties due to physical access (n=157)

Sometimes people find it hard to get the health support and advice they would like. Have you had any difficulty with the following?	No Difficulty n (%)	Some Difficulty n (%)	Lots of Difficulty n (%)
a) Getting to appointments outside of your home, due to your physical health	132 (84.1)	23 (14.6)	2 (1.3)
b) Getting to appointments outside of your home due to psychological or emotional difficulties	133 (84.7)	22 (14.0)	2 (1.3)
c) Getting to appointments outside of your home due to difficulties with transport and travel	108 (68.8)	42 (26.8)	7 (4.5)
d) Cost of transport and travel to get to appointments	109 (69.4)	43 (27.4)	5 (3.2)

Table 4. Technology-Related factors: Technology availability (n=157)

Do you have any of the following easily available for you to use? (For example: at home, at work, or at the home of friends or family members)	Available n (%)
a) A landline telephone	55 (35.0)
b) A mobile phone	146 (93.0)
c) Internet access	100 (63.7)
d) A personal e-mail address	84 (53.5)

Table 5. Technology-Related factors: Technology confidence (n=157)

How confident do you feel about doing the following?	Not at all Confident n (%)	Quite Confident n (%)	Extremely Confident n (%)	I have never tried this n (%)	I don't know what this is n (%)
a) Using a telephone (landline)	26 (16.6)	49 (31.2)	72 (45.9)	6 (3.8)	4 (2.5)
b) Using a mobile phone for phone calls	13 (8.3)	38 (24.2)	100 (63.7)	2 (1.3)	4 (2.5)
c) Using a mobile phone to send and receive text messages	28 (17.8)	47 (29.9)	75 (47.8)	3 (1.9)	4 (2.5)
d) Using a computer	43 (27.4)	46 (29.3)	58 (36.9)	6 (3.8)	4 (2.5)
e) Sending and receiving e-mails	42 (26.8)	43 (27.4)	55 (35.0)	12 (7.6)	5 (3.2)
f) Finding out information using the internet	44 (28.0)	47 (29.9)	53 (33.8)	8 (5.1)	5 (3.2)
g) Using a 'chat room' on the internet	72 (45.9)	19 (12.1)	30 (19.1)	29 (18.5)	7 (4.5)
h) Using social networking sites on the internet (Facebook)	60 (38.2)	35 (22.3)	41 (26.1)	18 (11.5)	3 (1.9)
i) Using 'live messaging' online	53 (33.8)	25 (15.9)	37 (23.6)	25 (15.9)	17 (10.8)

experienced 'some difficulty' around attending in-person appointments due to their physical health (14.6%) or psychological or emotional difficulties (14.0%). A greater percentage of participants experienced 'some difficulty' around transportation and travel (26.8%) and cost associated with transportation and travel (27.4%).

Technology-related factors

Technology availability and confidence

Participants were asked if they had easy access to a landline telephone, a mobile phone, the internet, or a personal e-mail address (Table 4). It was more common for participants to have access to a mobile phone (93.0%) than a landline telephone (35.0%). Only two-thirds (63.7%) of participants had internet access, and approximately only half (53.5%) had a personal e-mail address. Participants were also asked if they felt confident using various forms of technology (Table 5). Though the majority of participants (63.7%) were 'extremely confident' using a mobile phone for phone calls, less than half (47.8%) were 'extremely confident' using it to send and receive text messages. Fewer were 'extremely confident' using a landline telephone (45.9%). Confidence with computer usage was fairly evenly distributed with 27.4% of participants

'not at all confident', 29.3% who were 'quite confident', and 36.9% who were 'extremely confident'. Similar trends were seen with confidence in sending and receiving emails with 35.0% of participants reporting that they were 'extremely confident' using this technology. Fewer participants were confident with using a 'chat room' on the internet (45.9% 'not at all confident'), using social networking sites on the internet such as Facebook (38.2% 'not at all confident'), and using 'live messaging' online (33.8% 'not at all confident'). In fact, 10.8% of respondents didn't know what 'live messaging' was, and 15.9% had never tried 'live messaging.'

Telehealth advantages and disadvantages

Participants were asked to rate their agreement with statements that reflected advantages and disadvantages related to telehealth (Table 6). The advantage statements were all positively-worded. Participants were most likely to 'strongly agree' or 'agree' with the statements, "I would like to be able to choose to get support at times that are best for me" (73.9%), "I would find it reassuring to be able to get support when I feel that I need it the most" (73.2%), and "I could save money by not having to travel to appointments" (18.5%). They were most likely to 'strongly disagree' or 'disagree' with the statement, "It would make me feel special to be getting 'extra' support in this way (20.4%), and 'getting

Table 6. Telehealth advantages and disadvantages (n=157)

How much do you agree or disagree with the following possible advantages?	Strongly Disagree n (%)	Disagree n (%)	Uncertain n (%)	Agree n (%)	Strongly Agree n (%)
a) Getting support in this way would help me to feel more independent	10 (6.4)	20 (12.7)	43 (27.4)	59 (37.6)	25 (15.9)
b) I would like being able to choose to get support at times that are best for me	9 (5.7)	7 (4.5)	25 (15.9)	91 (58.0)	25 (15.9)
c) I would like being able to get support in my own home	7 (4.5)	17 (10.8)	20 (12.7)	88 (56.1)	25 (15.9)
d) It would make me feel special to be getting 'extra' support in this way	7 (4.5)	25 (15.9)	27 (17.2)	74 (47.1)	24 (15.3)
e) I would find it reassuring to be able to get support when I feel that I need it most	7 (4.5)	17 (10.8)	18 (11.5)	87 (55.4)	28 (17.8)
f) I could save money by not having to travel to appointments	8 (5.1)	17 (10.8)	18 (11.5)	85 (54.1)	29 (18.5)
g) Getting support with my health by phone or computer would be valuable to me	7 (4.5)	12 (7.6)	29 (18.5)	88 (56.1)	21 (13.4)
How much do you agree or disagree with the following possible disadvantages?					
a) I would worry about relying too much on the technology	14 (8.9)	78 (49.7)	26 (16.6)	30 (19.1)	9 (5.7)
b) I would dislike being unable to see the person face-to-face	7 (4.5)	83 (52.9)	24 (15.3)	32 (20.4)	11 (7.0)
c) I would not want to discuss sensitive issues over the phone or using a computer	6 (3.8)	66 (42.0)	20 (12.7)	56 (35.7)	9 (5.7)
d) I would be concerned about the security of the information that I give	4 (2.5)	60 (38.2)	23 (14.6)	56 (35.7)	14 (8.9)
e) Getting support in this way would make me feel anxious about my health	17 (10.8)	69 (43.9)	25 (15.9)	41 (26.1)	5 (3.2)
f) I would worry about the possibility of the equipment not working	22 (14.0)	62 (39.5)	19 (12.1)	46 (29.3)	8 (5.1)
g) I would dislike speaking to someone other than a doctor about my health.	4 (2.5)	85 (54.1)	22 (14.0)	38 (24.2)	8 (5.1)

Table 7. Interest in Using Different Technologies (n=157)

How much would you be interested in using the following to get support with your health?	Very Interested n (%)	Fairly Interested n (%)	Not at All Interested n (%)	I don't know what this is n (%)
a) Using a telephone (landline)	35 (22.3)	51 (32.5)	65 (41.4)	6 (3.8)
b) Using a mobile phone for phone calls	72 (45.9)	59 (37.6)	20 (12.7)	6 (3.8)
c) Using a mobile phone to send and receive text messages	65 (41.4)	52 (33.1)	33 (21.0)	7 (4.5)
d) Using a computer	53 (33.8)	51 (32.5)	48 (30.6)	5 (3.2)
e) Sending and receiving e-mails	53 (33.8)	48 (30.6)	52 (33.1)	4 (2.5)
f) Finding out information using the internet	53 (33.8)	55 (35.0)	43 (27.4)	6 (3.8)
g) Using a 'chat room' on the internet	18 (11.5)	30 (19.1)	98 (62.4)	11 (7.0)
h) Using social networking sites on the internet (Facebook)	23 (14.6)	36 (22.9)	94 (59.9)	4 (2.5)
i) Using 'live messaging' online	23 (14.6)	40 (25.5)	81 (51.6)	13 (8.3)

support in this way would help me to feel more independent” (19.1%). The disadvantage statements were worded as statements reflecting something that would be worrisome or that the client might dislike. A participant’s disagreement with the disadvantage statement indicates that they don’t share that opinion. Participants were most likely to ‘strongly disagree’ or ‘disagree’ with the statement, “I would worry about relying too much on the technology” (58.6%), and “I would dislike being unable to see the person face-to-face” (57.4%). Participants were most likely to agree with the statements, “I would be concerned about the security of the information that I give” (44.6%), and “I would not want to discuss sensitive issues over the phone or using a computer” (41.4%).

Interest in using different technologies

Lastly participants were asked about their interest level in utilizing various technologies to get support with their health (Table 7). Many participants were ‘not at all interested’ in using ‘chat rooms’ on the internet (62.4%), using social networking sites on the internet (59.9%), or using ‘live messaging’ online (59.9%). However, some were ‘very interested’ in using a mobile phone for phone calls (45.9%) and to send and receive text messages (41.4%). Approximately one-third of participants (33.8%) were ‘very interested’ in using a computer, sending and receiving e-mails, or finding out information using the internet.

Discussion

This study is one of the first to report findings around attitudes and barriers related to telehealth participation in a rural, African American cohort from the MDR. Most participants had a mobile phone (92.7%), but more than one-third (36.3%) reported no access to the internet.

Only half (53.3%) had a personal email address. One-third were ‘not at all confident’ about using a computer, and 6.3% had never used a computer or did not know what a computer was. The majority (72.0%) reported that they would like to get support in their home through telehealth, but 44.6% had concerns about the security of the information they would provide.

As describe above, most participants were not interested in utilization of online based technologies like chat rooms, social media, or live chats, but instead preferred mobile cell phones to receive phone calls and send and receive text messages. Participants were also comfortable in using a computer, searching for information on the Internet, and sending and receiving emails for support with their health. Participant demographics, as noted previously, were predominantly female (66.2%), older population (mean age of 57.3), who reported an income of less than \$15,000 annually (50.3%). Age, education, and socioeconomic status may be factors that impact confidence and preference of technology tools and environment.

Conclusion

Though many communities were able to make the transition to tele-healthcare delivery so that continuity of care could be preserved during the COVID-19 pandemic, rural regions may have individual-level barriers to tele-healthcare participation that must be addressed so that health disparities do not become more pronounced as a result of lack of access and confidence with current technologies. Lack of access includes costs associated with Internet utilization, equipment or devices to access telehealth, and Internet infrastructures in rural areas. Low-income African Americans in the MDR with CVD are accepting of utilizing telehealth, however barriers exist that impact feasibility such as lack of reliable internet access and lack of confidence around some

technologies. Future research should explore efficacy with technology as a factor that affects telehealth usage. Technical support should be offered so their CVD can be comfortably managed through telehealth. Assessing device availability and confidence in usage is paramount to success.

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