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A Qualitative Examination of COVID-19's Impacts on Physical Activity and Perceptions of Remote Delivery Interventions

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Abstract

Purpose: The COVID-19 pandemic is correlated with decreased physical activity (PA). Transitioning to remote work may impact people's acceptability and preferences for remotely delivered behavioral interventions, including PA. The objective was to examine perceptions of COVID-19 impacts on PA engagement and motivation, and perspectives related to remotely delivered PA interventions.

Design: Cross-sectional small-group interview.

Setting: Harris County, Texas. Participants: Insufficiently active, overweight/obese adults (16 healthy adults [aged 25–52 years], and 7 cancer survivors [aged 50–74 years]).

Method: Group discussion was guided by semi-structured questions. Audio-transcribed data (278 pages) was analyzed using Braun and Clarke's process centering identification, analysis, organization, description, and reports.

Results: Overall, participants expressed a decreased level of PA due to the pandemic. Difficulties (e.g., care-taking activities, working from home, and safety concerns) negatively affected motivation. Participants indicated high acceptability of remotely delivered PA interventions, with advantages of virtual technology features (e.g., did not have to maintain a gym membership) and even accountability in maintaining a PA routine (e.g., using virtual groups to engage in community support).

Conclusion: Participants described COVID-19 negatively affects access to PA opportunities yet also expressed willingness to engage in remotely delivered PA interventions instead of in-person programs because of their COVID-19 experiences. Remote interventions can greatly increase accessibility and offer opportunities to provide personalized motivation and accountability that people need to be more physically active.

Keywords

exercise, ehealth, mhealth, behavioral intervention

Purpose

Low levels of physical activity (PA) are prevalent and are associated with negative health outcomes including cardiovascular disease, various cancers, and type 2 diabetes.[1] Several efforts to increase PA levels across the United States of America are underway, including recently updating the guidelines for PA behaviors to include that any amount of PA is beneficial in efforts to reduce disease risks. Remotely delivered interventions are one of the areas of interest for public health researchers to utilize to promote physical activity. COVID-19's entrance as a global pandemic unfortunately is correlated with decreased PA, further exacerbating the public health PA crisis.[2] However, transitioning to remote work may impact people's acceptability and preferences for

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remotely delivered behavioral interventions, including PA. For example, the shift to working from home has necessitated more virtual meetings (e.g., Zoom), possibly changing people's perceptions and acceptance levels regarding remotely delivered interventions. As such, the objectives of this research were to examine perceptions of (1) COVID-19 impacts on PA engagement and motivation and (2) perspectives related to remotely delivered PA interventions.

Setting

Our study used a community-based (Harris County, Texas, United States) cross-sectional small-group interview design to examine perceptions of COVID-19 impacts on PA engagement and motivation, and perspectives related to remotely delivered PA interventions.

Participants

Insufficiently active (i.e., engage in less than 150 minutes of moderate-intensity physical activity per week in the past month based on self-report) adults (age 18 years and older) who were overweight or obese (i.e., body mass index ≥25 kg/m^2 based on self-reported height and weight) were recruited for study participation from Harris County, Texas. Additional eligibility criteria were (1) able to walk one block without pain or discomfort and (2) fluent in English. Individuals were excluded if they had self-reported health issues limiting physical activity or if they were on dialysis.

Method

Eligible participants were scheduled for virtual (via Zoom) small-group interviews from June to September 2020, following COVID-19 protocols.[3] Groups were purposely homogenous, with cancer survivors (hereafter: patients) scheduled together and otherwise healthy adults (hereafter: non-patients) scheduled together. After signing informed consent, group discussions were guided by a moderator using a semi-structured interview guide developed from social cognitive theory[4] and self-determination theory[5] to examine the barriers and facilitators of PA. The interview questions were designed to minimize potential participant discomfort surrounding health topics. The discussions began by centering participants' COVID-19 experiences related to PA and perceptions of remotely delivered interventions as an alternative to traditional face-to-face PA interventions. To encourage richness and validity of responses, probing questions were used to deepen the conversations.[6] The research team checked participant understanding throughout the interviews for clarification purposes. This process allowed participants to clarify their comments, providing a method of validity and a data trustworthiness check.[7] Each session lasted approximately 60–90 minutes. Participants received compensation in the form of a $15 gift card.

All interviews were audio-recorded and transcribed verbatim by a professional transcription company totaling 278 single-spaced pages. Braun and Clarke's reflexive thematic analysis process was used to manage data collection, processing, and analysis, centering identification, analysis, organization, description, and reports.[8,9] The transcribed interviews were first read by the research team to ascertain the depth of the data and to increase data familiarization. Pseudonyms were assigned to each participant and used throughout the analysis and reporting process, as well as when quoting participants within the manuscript. The interview guides were compared with the data to create initial coding categories based on open coding processes in which major information content areas are perused, followed by sub-categories, which were then grouped into themes for axial coding and reviewed with exemplars in selective coding. Using Microsoft Word, the team reread the transcripts to ensure the data was fully analyzed. As responses became similar, data adequacy was accomplished.[10] The code book provided an audit trail.[11] The next section details the themes accompanied by participant response exemplars and quotes.

Results

Sixteen otherwise healthy adults (non-patients) (aged 25–52 years) and seven cancer survivors (patients) (aged 50–74 years) met eligibility criteria, corresponding with similar participant numbers in recent research.[12] The following findings are presented using the structure of our predetermined categories, with themes then expanded upon (see Table 1 for additional quotes).

COVID-19 Impacts on Physical Activity Engagement and Motivation

COVID-19 impacts on PA engagement and motivation were numerous and primarily negative for both patients and non-patients. Both groups reported needing to engage in more PA while expressing decreased levels of PA due to the pandemic. Simply put, Addison, patient, stated that, "I feel that I really, truly need to be doing much more in my exercising that I do." Ryan, non-patient, said, "I guess I need help in terms of motivation and guidance." Without motivation, lower levels of PA engagement were reported.

Specific difficulties (e.g., care-taking activities, working from home, safety concerns, and even irregular routines) negatively affecting engagement were reported by both groups of participants. For example, Addison cared for her hospital-bound mother in "12-hour shifts" while Bailey cared for her adult child with autism who could not be left at home alone. Adrian, patient, also reported caring for her mother who was undergoing cancer treatment. Devon, non-patient, described how her job demanded much of her time, leaving her with only a couple of hours to spend with her toddler daughter before

Table 1. Organization of Qualitative Findings by Categories, Themes, and Quotes.

Categories	Themes	Illustrative quotes
COVID-19 impacts on PA engagement and motivation	Care-taking activities Environmental concerns (heat) Work obligations Working from home Safety concerns Irregular routines	"I'm a teacher right now, and so we are very confined to our desks because they don't want us walking around the classroom, obviously, with all the students and the virus… I try to go on walks and stuff, but I just don't have time, because trying to teach virtually and in person is just–it's a nightmare." "So I have not been doing well at all with exercising or–especially with this whole COVID thing. I Think that really messed me up. So I need a new, like, I guess a boost to get started again."
RDPAI advantages	Do not have to maintain a gym membership Tailored messages Accountability Asynchronicity	"I would love to get text messages to motivate me." "So I think the real motivation is that I'm in competition with friends, so I will do whatever the text message tells me to do at that point."
RDPAI disadvantages	Feeling bombarded	"I get about 100 emails a day and I get probably 50 text messages a day, so I honestly would not read it at all."

RDPAI = remotely delivered physical activity interventions.

bedtime, "it sounds bad, but I don't want to spend it exercising where I'm not spending time with her." Each of these participants felt the tension of wanting to spend time with family while also improving their own health behaviors during the pandemic.

COVID-19's public health precautions included stay-at-home orders, with many individuals working from home during the first months of the pandemic. These changes affected reported PA levels negatively for most participants. For example, one participant said, "All that walking that we used to do–well, that I used to do at work, I don't do it at home, you know?" Kennedy, non-patient, agreed, "I'm primarily working from home, so I'm very sedentary right now." Robin, patient, reported similar difficulties, "Previously, I was walking to and from my office, using the stairs, doing small ways to get more exercise in. But currently I barely leave my house, so it's much harder for me to get exercise in now."

Changes in routine were also identified as barriers. Cameron's regular routine included going to the gym, and the pandemic interrupted that routine. Other barriers (eg, environmental concerns and work obligations) were described too, such as the weather. Logan, nonpatient, described

Yeah, I need motivation. However, because I--you know, and right now I'm going to office very, very early in the morning. Then I come back home and I keep on working, then I have to go to sleep early because then I can't wake up the next morning. So my barriers is that the heat is so–it's so hot outside. I mean, I can go walking, but it's so hot that by the time the sun goes down I'm already in bed.

Remotely Delivered Physical Activity Intervention Perceptions

Participants indicated high acceptability of remotely delivered PA interventions, with advantages of virtual technology features (e.g., did not have to maintain a gym membership) and even accountability in maintaining a PA routine (e.g., using virtual groups to engage in community support) discussed. Participants discussed specific smartphone applications (apps) that they found helpful. Participants also relied upon their COVID-19 experiences affecting their willingness to adopt to remote technologies in ways they hadn't considered previously. For example, Parker, patient, stated,

> I feel that nowadays–it might start being the new norm. We may not have a whole lot of face-to-face. And then it may be a while before we have it. In the meanwhile, we're not moving, we're not doing what we're supposed to do. And so, this way we can do it over the phone. We can do our things; we can talk to each other; we can get our messages. And it's just like [other participant] said, we need to mix it up. We can mix it up.

When asked about the preferred remote communication methods, majority of the participants indicated text messaging over emails. Participant statements included, "I would love to get text messages to motivate me," (Molly, non-patient) and "that [a text message] would be an accountability thing that I was looking for," (Robin, patient). When asked about the content of the messages, participants described how they preferred to receive a limited number of reminders or communications regarding PA, as receiving too many notifications or messages was overwhelming. For example, Lucia (non-patient) commented, "I don't mind receiving text messages as well, just as long as they're not like bombardment like, you know, multiple a day." However, participants indicated acceptance for messages that taught or demonstrated how to exercise. The ability to (1) learn something new, and (2) can come back to the message and watch the video or read the instructions at a more convenient time were lauded by both types of participants. For Robin, patient, this was particularly

exciting, "It gives you a new tool and you're not having to say, "Okay, I'm bored. I don't want to go walking, but maybe I can do this stretching. Maybe I can do this other thing." Other survivors echoed this response. Jordan, patient, stated, "And if you can't do it immediately, then if you have a video, that's something that you can go back to. So, I think that would really be great." Non-patients responded similarly, "Well, if it's in a video, I mean, to me, it's better… if I could see somebody doing it, I could try myself too" (Logan). Self-proclaimed visual learners like Charlie also agreed. Emerson stated that having the demonstrations would be particularly helpful for strength training as "I always feel less confident about how I'm executing those moves."

Participants were also asked about message personalization. Non-patients reported that they preferred personalized messages. Yet, patients were less accepting of certain types of personalized messages, specifically those that could tailored to their cancer survivorship status. Patients reacted negatively to messages that were perceived as a "smack on your hand" (Addison), considering the use of the "c-word" [cancer] (Parker) as a "scare tactic" (Robin).

Conclusion

Participants described how COVID-19 negatively affects access to PA engagement opportunities as well as motivation expanding previous research demonstrating barriers to PA engagement.[13] However, participants also expressed willingness to engage in remotely delivered PA interventions instead of in-person programs because of their COVID-19 experiences. Our research, focused on adult perspectives, therefore extends previous research focusing on acceptability of remotely delivered PA interventions, as one systematic literature review found that approximately half of research studies on PA and wearable sensors focus on adolescents.[14] Remote interventions can greatly increase accessibility and offer opportunities to provide personalized motivation and accountability that people need to be more physically active.[15] These findings suggest that participants may have a heightened understanding of the benefits of remotely delivered health interventions due to the pandemic, and practitioners should develop interventions to capitalize on this. Future interventions could develop strategies to build accountability and social support structures leveraging wearable sensors and mobile technologies without the need of in-person interactions. These practices would be useful in other patient populations (e.g., myositis) as well.

Text messaging is one of the common communication strategies used in remotely delivered interventions.[16] While message personalization is touted as a pathway of increasing PA,[17] there are some caveats as reported in this study. While non-patients felt the more personalized and tailored the message during the remotely delivered PA intervention was best, patients provided pushback on identifying cancer specifically within the remotely delivered messages. This finding demonstrates the unique needs of cancer survivors based on their previous healthcare experiences. Future research should examine how people with various health experience backgrounds perceive health condition references within remotely delivered messages, as the references may have the opposite effect as intended.

Strengths of this study include the sample, as lived experiences of both patients and non-patients during the COVID-19 pandemic regarding PA interventions are not widely available from other research. Further, including both types of participants allows for comparison between groups. However, this study also has several limitations. First, the data was collected as a cross-sectional small-group interview, limiting interpretations for causality. It is also possible that some participants may have been influenced by other participants within their groups to either agree or disagree with the majority. Second, participants are subject to their own recall bias when describing their experiences and perceptions, potentially affecting the results. Future studies should explore participant perceptions using a mixed-methods approach to triangulate data.

So What? (Implications for Health Promotion Practitioners and Researchers)

What is already known on this topic?. Low levels of physical activity are a public health challenge, further exacerbated by COVID-19. Developing effective PA interventions for people who are overweight and obese is a priority.

What does this article add?. Many participants reported that they are willing to participate in remotely delivered PA interventions instead of relying on traditionally in-person programs because of their COVID-19 experiences.

What are the implications for health promotion practice or research?. Remotely delivered interventions are a promising approach to increasing PA levels among both patients and non-patients. Future studies should ensure that these interventions are offered particularly for those who live in hard-to-reach geographical locations, as well as increasing the visibility of these types of interventions to further encourage participation in these interventions.

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Ethical Approval

The study protocol (PA19-0317) was approved by The University of Texas MD Anderson Cancer Center.

Informed Consent

Signed informed consent was obtained from all participants.

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