"Addressing barriers to digital health readiness among a Latino population"

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ABSTRACT

Objective: There are many potential barriers to an individual's readiness and ability to use telehealth, including technology access, trust and knowledge. This qualitative study was a partnership between Jefferson and Esperanza Health Center (EHC), focused on addressing barriers to digital readiness among the Latino population served by EHC.

Methods: We conducted semi-structured interviews with Latino patients to assess their experiences with technology and willingness to learn more about technology for healthcare. Interviews were transcribed, coded, and analyzed using a content analysis approach.

Results: We completed 28 interviews. Most interviews ($n = 23$, 82 %) were conducted in Spanish. Barriers to using health technology included forgetting passwords, platforms not being available in multiple languages, and lacking digital skills.

Conclusion: Participants identified a need and interest in receiving support to develop technological skills needed to access health information and engage in digital health services. Future work is needed to develop patient-centered interventions to support the digital health readiness needs of underserved populations.

Innovation: Healthcare systems and community health organizations can partner to build the capacity of community members to identify barriers in digital health use. These partnerships have the potential to empower communities to create culturally sensitive interventions that aim to increase digital health literacy.

1. Introduction

While the COVID-19 pandemic provided an opportunity for health systems throughout the world to advance telehealth delivery and use of e-health resources [1], the crisis highlighted an underlying digital divide threatening to exacerbate patient inequities [2-5] The Health Resources and Services Administration defines telehealth (TH) as the use of telecommunication technologies in healthcare delivery, information and education [6,7]. For the purpose of this study, we define telehealth as video and telephone visits with providers and use of an online patient portal. There are numerous barriers to the use of telehealth, which we refer to in the following as "digital health readiness barriers", including knowledge, trust and access [8-11]. Many patients lack one or more of these, resulting in an inability or lack of willingness to engage in digital healthcare. While the technical aspects of connectivity for telehealth services are important, building a foundation of trust, confidence, and relevance of telehealth to patients' lives is also critical to support uptake of telehealth across populations. This is especially true for patients with limited English proficiency (LEP) navigating a primarily English-speaking healthcare system [10].

Despite the benefits and opportunities of telehealth and new technologies to increase patient access to healthcare, recent research has

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shown that healthcare disparities related to telehealth use persist for underserved groups, especially for LEP populations such as the Latino population. Though this is the fastest-growing ethnic group in the US, this population continues to have disproportionate mortality and morbidity from preventable chronic diseases including diabetes, cervical cancer, and liver disease [12]. Studies have demonstrated that Latino individuals are less likely than other non-Hispanic minority groups to have insurance, more likely to have LEP, more likely to have experienced negative interactions with healthcare workers, and more likely to have low trust in health information sources [13,14],. Furthermore, research demonstrates that this group has been one of the most affected by the digital divide, and that compared to whites and Blacks, Latino individuals are less likely overall to use digital resources for their healthcare needs [15]. When looking specifically at video visits with providers, Latinos are 51 % less likely to use telehealth compared to other minority ethnic groups [16]. A unique challenge for the Latino population is that there is diversity among this group, and the digital divide varies along with many ethnic and cultural differences [15]. Thus, there is an acute need in this community to address the telehealth barriers and adapt tailored, unique, and culturally competent interventions to improve digital literacy.

To date, there has been limited work focused on understanding how to develop approaches tailored specifically to the Latino population to address digital health readiness barriers by engaging in community partnerships. Studies have addressed barriers and disparities for uptake [17,18], but few have engaged in-depth with communities to inform development of community-specific interventions to increase use of telehealth tools. To that end, we conducted a qualitative study in partnership with Esperanza Health Center (EHC), a community health center serving primarily Latino patients, to explore their perspectives regarding barriers to use of telehealth services. To facilitate community buy-in and ensure that the study incorporated the community perspective, the research team included two members of the Latino community. Findings from this work will be used to inform development of community-specific interventions that are tailored to address the unique digital readiness needs of this community, with a focus on increasing uptake of telehealth.

2. Methods

2.1. Study design and setting

This qualitative study used individual semi-structured interviews to identify and address barriers to digital health readiness among the Latino population served by Esperanza Health Center (EHC). The study team was a partnership between EHC and Thomas Jefferson University (TJU). EHC is a community health center located in North Philadelphia, PA that serves a predominantly Latino population. TJU and Jefferson Health comprise an 18-hospital academic health system that spans two states and is the largest health system in the Philadelphia region. The catchment areas cover more than 5.5 million residents in Philadelphia, Delaware, Montgomery, Chester and Bucks County in Pennsylvania and Camden, Burlington, Salem and Gloucester County in New Jersey. The TJU team consisted of an emergency medicine physician researcher with expertise in qualitative methods (KLR), a program manager with expertise in qualitative methods (ATG), a native Spanish-speaking research coordinator (KMG), and (EB) an MPH candidate. The EHC team was comprised of a physician (MS) and the Community Programs Manager (LP).

To ensure inclusion of the community perspective in this work, we engaged Latino individuals from the EHC community as Community Research Assistants (CRAs). The community members (CT and JH) were trained by ATG in overall research methods including qualitative interview skills so that they could to participate on the research team and be compensated for their time as community research assistants CRAs. These CRAs were included throughout the research process,

including study design, data collection, data analysis, and intervention development. All study activities were approved by the TJU Institutional Review Board.

2.2. Participants

Participants were eligible for inclusion if they were adults (18 years and older), spoke English or Spanish, self-identified as Latino, and were willing and able to provide informed consent. Potential participants were approached by research staff in person at various EHC clinics throughout North Philadelphia. If they were available to complete all study activities at the time of recruitment, they were interviewed the same day. Flyers were also distributed throughout EHC clinics as well as to members of other EHC community programs (e.g., senior groups, parenting Circles, and others). Eligible individuals who were interested in participating though were not available to complete the interview at time of recruitment were asked to provide a telephone number and were contacted at a later date. Patients were recruited until thematic saturation was reached [19]. All participants provided verbal consent and were compensated with a $20 gift card for participation. Recruitment took place from September 2021 to April 2022.

2.3. Data collection

The team including academic researchers and community members who worked together to develop a semi-structured interview guide designed to explore participants' prior experiences using digital devices and engaging in virtual services, barriers to digital engagement, perceptions regarding acceptability of using digital devices to receive healthcare, and barriers to digital readiness. The questions were reviewed by the EHC clinical and community team members for readability, relatedness, and to ensure cultural sensitivity. The interview guide was then piloted with three individuals to ensure relevance and acceptability. Participants' demographics were also collected at the time of the interviews including age range, ethnicity, race, gender, primary and secondary languages, public benefits received (medical assistance, SNAP, WIC), education level, zip code, health literacy, devices used to access the internet, and weekly internet use. All interviews were recorded and transcribed by a professional transcription agency. Interviews were conducted by the two CRAs as well as TJU research assistants in each participant's preferred language (English or Spanish). We used the consolidated criteria for reporting qualitative studies (COREQ) checklist [20].

2.4. Data analysis

All interviews were audio-recorded and professionally transcribed (either in English or Spanish), with participant identifiers removed. Transcription was performed by a professional HIPPA-compliant company transcription. All transcripts were reviewed by a Spanish-fluent member of the research team (KMG) for accuracy. They were then imported into NVivo 12 [21] for coding and analysis. Qualitative data were analyzed by four coders (CT, JH, KMG, EB) using a conventional content analysis approach, in which interviews served as a unit of analysis and were coded to explore content, identify, and organize salient themes [22]. We performed coding of interviews in the native language in which they were conducted (Spanish and English). Inter-rater reliability was ensured using Cohen's kappa coefficient of >0.6.

All members of the team worked together to develop an initial version of the codebook through a combination of a priori (informed by the literature and interview guide) and line-by-line reading of subsections of three interview transcripts. The initial codebook was applied by the coders and was refined to include new themes as they emerged. Codebook development was an iterative process and continued until the coders and the project manager agreed on the final coding structure. Any codebook discrepancies were resolved in group discussions among the

research team. The final codebook was then applied to all transcripts, with double-coding of 46 % of transcripts. Participant demographics were summarized using descriptive statistics.

3. Results

3.1. Participant characteristics

There were 28 participants who completed an interview. Most interviews (*n* = 23, 82 %) were conducted in Spanish. More than half of participants were age 46 or older (60.8 %) and most were female (78.6 %), Spanish-speaking (75 %), and reported their race as "something else" (63 %). Nearly half had less than a high school diploma (46.4 %) and most (79 %) reported receiving government assistance. (Table 1).

Regarding health literacy, over half of participants (64 %) reported feeling "quite a bit" or "extremely" comfortable filling out medical forms in their preferred language and only 7.2 % reported "often" or "always" having difficulty understanding written medical information in their preferred language. (Table 2). While most participants reported using the internet (82.1 %), a similar proportion (78.6 %) reported not feeling comfortable using the internet. Participants most often reported access to the internet via phones (89.3 %). Finally, most participants (86 %) reported they have participated on a video call with a provider, while only 32 % reported using a health portal. (Table 2).

3.2. Major themes

Four major themes regarding use of technology and engagement in digital health were identified. These included: 1) experiences using technology for health/wellness, 2) challenges and barriers using technology, 3) interest in learning more about use of technology, and 4) trust in technology and the internet. Exemplar quotes can be found in table 3.

3.2.1. Experiences using technology for health/wellness

Many participants reported positive experiences overall using telehealth. A majority expressed value in using technology for healthcare, for reasons including that it saves travel time, makes going to the pharmacy to pick up medication easier, and facilitates communication with providers. As one noted, "*The help comes faster, especially when it's a serious situation, and I've been in serious situations. They immediately order medication and it's delivered, okay? If I didn't communicate well with technology I would call 911 and go to the hospital and wait, it's a whole long process. This way I just pick up the phone or whatever, or email, and doctor's email to me information about what I need to do. I'm gonna do that today*". Others noted that access to communication with providers, through a patient portal, for example, makes it easier for patients to address their healthcare needs.

Participants also reflected on overcoming the fear of using technology for healthcare. One interviewee highlighted being afraid of using technology because it was something new. Nevertheless, quickly after starting to use technology, the participant realized it was "*lifesaving*". Additionally, participants emphasized that learning how to use technology for healthcare is a "slow process" and takes time. Other participants expressed alternative opinions about technology for healthcare. While technology is valued for its efficiency and accessibility, they consider in-person interactions to be more valuable and meaningful.

3.2.2. Patient portal access and applications used for healthcare

In terms of patient portal use, participants discussed feeling frustrated with learning how to access and use the patient portal. Participants who had challenges with accessing the patient portal tended to prefer calling or going in-person for services (e.g., scheduling appointments or receiving test results). Two of the most common barriers faced when trying to access online services at EHC and navigating the patient portal was forgetting passwords and limited language proficiency. Participants highlighted the need to have individual support and assistance

from staff to set up accounts because their support needs varied. One participant suggested that mailing and emailing instructions on how to set up a patient portal would be helpful.

Participants also discussed using different technology and applications to help them with their wellness, emotional or spiritual health. Some participants reported using apps to help keep track of their health, such as how many calories they burn and how often they exercise. Others reported using apps to research health symptoms, understand their prognosis, learn how to navigate their medical conditions and to look up medical terminology. A few stated they seek medical information online to help them understand treatment options and search for alternative medications. Two participants mentioned researching symptoms when they are feeling sick to learn about what medication to take. The most used application by participants to access health information was YouTube. Overall, patients' perspectives about technology were that it makes access to information about their health and medical conditions easier.

3.2.3. Experiences with telehealth

Participants highlighted the importance of having clear instructions about how to join the video visit, reporting they felt more comfortable and confident in engaging in a telehealth appointment when they had all the information and an understanding of the steps they needed to enter a telehealth visit. Participants highlighted accessibility and convenience when describing the value of telehealth visits. This was especially true for low-income participants who did not have access to a car or transportation. Most agreed that telehealth visits, either by phone or video, were helpful for keeping up with health needs and not missing appointments. Some patients, however, reported still preferring in-person interactions with their doctors, stating that "communication with providers feels better when you are in-person".

3.2.4. Challenges and barriers using technology

3.2.4.1. Technological skills.
The main challenge in using technology highlighted by participants was lacking skills to navigate technology, either because they had never learned the skills or couldn't recall them. The majority expressed needing help with basic aspects of using technology, stating "*You got to be smart*" and "*Eso es para muchachitos (That's for young people)*". Older adult participants mentioned struggling to understand technology, and not always having someone to help them with technology at home. Several stated they do not know how to use a computer or access email. One participant noted knowing how to access email but not having the skills needed to send an email or attachments. Another participant stated having difficulties learning how to download applications on their phone. Another participant lamented about not having "the brain" to learn how to use technology.

When discussing problems remembering instructions, some participants talked about problems recalling passwords. "*It's hard for me because sometimes, like I say, I forget about it. I just forget sometimes my password. And I have to call her [daughter] to tell me the password.*" Similarly, a couple of participants felt that they would readily forget the things they were taught regarding using technology. "*You show me something now. In two minutes you tell me to do it, I won't remember.*" Only a few participants emphasized not being interested in learning how to use technology, either because of age or not wanting to dedicate enough time to learn it. One participant mentioned not having the educational background to learn it.

3.2.4.2. Access to devices and internet.
Another common barrier to using technology discussed by participants was access to the needed technology and internet services. Participants mentioned the need to have access to devices to use technology, such as a laptop or tablet. In addition, they highlighted the importance of having access to reliable internet.

3.2.4.3. Language. Participants mentioned language as a barrier to using technology for healthcare reasons, specifically participants' ability to speak, read and understand English. Many participants stated that the websites and information they are seeking are not always available in Spanish, making it more difficult to access and understand how to navigate technology.

3.2.5. Interest in learning more about use of technology

3.2.5.1. What to learn. Participants were interested in learning more about technology in general, technology for healthcare, and the best way to learn how to use technology. Twenty-five of the participants reported eagerness to learn more about technology in general, such as learning how to use the internet, navigate computers, use web applications, use email, and protect themselves from hackers/malware. Many also wanted to learn more specifically about the use of technology for health-related reasons (e.g., navigate patient portals, EHC's website, communicate with doctors, and look at lab results). Among the three participants who did not want to learn more about technology, reasons included age, not wanting to dedicate enough time to learn it, and not having the educational background to learn it.

3.2.5.2. How to learn. Patients had mixed views about what would be the best method to learn about technology, either in general or for their health. One theme that emerged from the conversations was the possible utility of an in-person class or tutorial for learning about technology. A potential option for such a class would be to hold it in the waiting rooms for attendance while patients were waiting to see their doctor. Others brought up a brochure or handout that would teach participants how to use technology, either in general or specifically regarding their health. This brochure could be available to patients while waiting to see providers or be sent directly to participants via email or through a physical copy. There were a few concerns about brochures, including that some people would just throw the brochure out without looking at it or wouldn't have the skills necessary to apply lessons from the handout. Two participants thought that watching a YouTube video would be an effective method of teaching people about technology. Finally, multiple participants suggested that combined methods were needed such that they could cater to individual needs.

3.2.6. Trust in Technology and the internet

Most participants expressed some level of distrust with health information found on the internet, though there was a wide variety among participants. Some did not trust any form of technology for their healthcare while others trusted it fully. Common reasons for distrust in the internet included their limited ability to determine if the information was factual, to understand the information, and to identify non-biased information. In addition, they identified a problem with general information overload related to seeking health information on the internet. A common method that participants employed to increase trust was to use multiple sources of information to corroborate information or checking if the website was secure. Other people would rely on family members or medical providers to confirm the information they had looked up online.

Participants had high trust in communicating with providers through technology (e.g. phone, patient portal or video visits) for reasons including their knowledge, being a trusted source, and the ability to link information to an identifiable source. Several participants expressed feeling comfortable talking to their healthcare providers over the phone. Only a few participants said that they would prefer in-person communication as compared to phone communication.

4. Discussion and conclusion

4.1. Discussion

We engaged a convenience sample of Latino individuals served by a single health center in North Philadelphia to explore their experiences using technology and perceptions about barriers to using technology for healthcare and general wellness. Our findings suggest that the majority of participants has access to technology and basic experience with using technology both for general needs and healthcare. Despite this, however, there is significant perceived need within the population for increased support in learning the skills needed to be proficient in use of technology both for general tasks (e.g., accessing email, navigating the internet) as well as accessing healthcare services (e.g., use of the patient portal).

While prior studies have demonstrated that Latinos are less likely to use the Internet and technology [13,15,18] our study findings suggest that most Latinos are using technology in their daily lives. The Latino patients engaged believed technology makes access to information about their health and medical conditions easier and facilitates keeping up with medical appointments. Nonetheless, patients continue to report low levels of digital literacy and participants indicated not having sufficient knowledge to use computers or some even cellphones.

Further, the potential for technology to increase efficiency and accessibility of healthcare was appreciated by many. Participants emphasized convenience as a primary value of telehealth visits and the patient portal. This was especially true for low-income participants who did not have access to a car or transportation. Participants highlighted, however, the need for availability of support staff in the clinic to help patients set up patient portal accounts and teach them how to use them. This supports the fact that digital readiness needs vary across individuals, and there is value in healthcare institutions ensuring access to personalized support services to help patients engage in using digital platforms [2,23-25]

While our findings largely reflect barriers already identified in prior studies, they provide important insights to guide development of interventions for use with this specific population. Participants reported barriers they faced when engaging in digital platforms for their health care including remembering passwords, not having platforms available in Spanish, and lacking digital skills needed to navigate technology. In addition, they identified the clinic waiting room as a good time for delivery of information. As a result, our community partners elected to develop a series of basic educational videos, recorded in both Spanish and English, that focus on specific challenges (e.g., making a new email account, retrieving lost passwords, sending a message in the clinic-specific patient portal) and are shown in the clinic waiting rooms,

In addition, our findings reinforce the need already identified by others for targeted interventions that are culturally sensitive to underserved populations [14,15], as we found persistent inequities among Spanish-speaking communities regarding access to language accessible services. This suggests that healthcare institutions and community organizations should continue to develop interventions with a language-inclusive approach for patients who are predominantly Spanish-speaking [26,27]. Additionally, use of popular apps among the Spanish-speaking community (e.g. WhatsApp and YouTube) may be beneficial as means of promoting and educating communities about navigating healthcare systems and trusted sources for digital health [18]. Our findings suggest that including community members on the research team can effectively engage underserved communities. One practical implication is for other community health organizations to train CRAs to assist in enrolling patients in the health portal and communicate with providers online. This strategy has the potential to increase community uptake of digital technology and improve health outcomes.

4.1.1. Limitations

This study has limitations. Participants all received services at the same community health center and lived in the same geographic region within Philadelphia, PA. Experiences and priorities identified among this population may not be generalizable to other underserved populations with different demographic breakdowns or living in different geographic regions. We also limited our sample to patients seeking care at EHC who identified as part of the Latino community. Experiences within the Latino community may vary depending on their immigration status and time living in the United States. Most participants were also women, thus important perspectives from men may be missing. Despite these limitations, our study provides important contributions to understanding common barriers experienced by a Latino population in an urban setting in the US.

4.2. Innovation

This study contributes to a growing body of literature exploring best practices for a patient-centered approach that addresses challenges, barriers, and opportunities around digital health literacy and readiness in an underserved population [28]. In this work, we leveraged a novel partnership, between an academic institution with resources to enact large-scale changes and a community health organization that is deeply embedded within a Latino community, to conduct an in-depth community assessment to understand the specific barriers to digital health uptake among the community of interest, with findings used to develop interventions that were specifically tailored to the needs of the specific community. This partnership was particularly impactful as we incorporated Spanish-speaking community members as part of the research team. To do so, we trained two Latina women who were part of the EHC community to conduct and analyze the interviews conducted with community members. This was done to ensure inclusion of the community perspective in all phases of study implementation and to encourage participation of other community members in the interview process who may have otherwise not participated because lack of trust with the research team. Further, conducting interviews in Spanish with native Spanish-speaking research team members and performing analysis in Spanish helped preserve the voice of this marginalized community and informed development of a culturally tailored intervention. This detailed assessment of barriers was vital to inform next phases of intervention development, The identification and training of two community members as part of the research team is a sustainable outcome of the partnership between TJU, EHC and the community we jointly serve.

4.3. Conclusion

The Latino participants engaged in this study identified interest in receiving support to develop the technological skills needed to more proficiently access health information and engage in digital health services. They highlighted the need for significant support in developing basic digital skills, and also the fact that there is not a one-size-fits-all solution, and thus a multi-pronged approach to meet different individuals' needs is necessary. Future work is needed to develop patient-centered interventions to support the digital needs of various underserved populations in an effort to increase health equity through improved access to care.

Informed consent and patient details

We confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

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CRediT authorship contribution statement

Karla Martin González: Writing – review & editing, Writing – original draft, Project administration, Investigation, Formal analysis, Data curation. **Alexzandra T. Gentsch:** Writing – review & editing, Project administration, Methodology, Investigation, Formal analysis, Data curation. **Chelsea Torres:** Writing – review & editing, Formal analysis, Data curation. **Elias Borne:** Investigation, Formal analysis. **Josefina Hendry:** Formal analysis, Data curation. **Lianette Pappaterra:** Writing – review & editing, Resources, Funding acquisition, Conceptualization. **Maryann Salib:** Writing – review & editing, Resources, Funding acquisition, Conceptualization. **Brooke Worster:** Writing – review & editing, Supervision, Funding acquisition, Conceptualization. **Steven Gravier-Leon:** Investigation, Formal analysis. **Kristin L. Rising:** Writing – review & editing, Supervision, Methodology, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors have no conflicts of interest to declare.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.pecinn.2024.100336.

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