The Experiences of Newly Diagnosed Men Who Have Sex with Men Entering the HIV Care Cascade in Lima, Peru, 2015–2016: A Qualitative Analysis of Counselor–Participant Text Message Exchanges

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Abstract

Mobile phone technology (mHealth) is a promising tool that has been used to improve HIV care in high-risk populations worldwide. Understanding patient perspectives of newly diagnosed men who have sex with men (MSM) in Lima, Peru during linkage and engagement in the HIV care continuum can help close the gaps in care following initial HIV diagnosis and ensure retention in continuous care. From June 2015 to March 2016, as part of a randomized controlled trial, 40 MSM participants were linked to care with an mHealth intervention within 3 months of HIV diagnosis at Via Libre clinic. For 12 weeks, participants agreed to receive weekly pre-determined, standardized short message service (SMS), WhatsApp®, and/or Facebook® messages from an assigned HIV counselor. Text messaging was bi-directional, meaning participants could also send messages to their counselor at any time. In this qualitative study, we coded and thematically analyzed 947 SMS, 918 WhatsApp, and 2,694 Facebook bi-directional messages. Mean age of participants was 29.8 years (20–50); with 70 percent reporting some post-high school education and 73 percent self-identifying as homosexual. We identified six recurring themes that emerged from the data: (a) mental health symptoms; (b) coping behaviors; (c) interpersonal support; (d) physical symptoms; (e) HIV knowledge; and (f) care coordination. Participants sent text messages describing depressive symptoms and seeking mental health services during this initial stage of HIV care. For newly diagnosed MSM entering the HIV care continuum, a bi-directional mHealth intervention provided support to facilitate care while eliciting deeply personal mental and emotional states. Future interventions could benefit from using mHealth interventions as ancillary support for clinicians.

Keywords: mHealth, eHealth, HIV, HIV care continuum, MSM, recently diagnosed

Introduction

IN PERU, MEN who have sex with men (MSM) are disproportionately affected by HIV, with an incidence of 3.5 percent and a prevalence of 12.4 percent among MSM in metropolitan Lima.¹ HIV care in recent years has been guided by the finding that initiating early antiretroviral treatment (ART) is preventative.² A treatment paradigm known as the HIV “cascade,” or continuum of care, has defined a stepwise sequence to guide care: early diagnosis, linkage to care, re-

tention in care, early ART initiation, and attainment of an undetectable viral load.³ Unfortunately, the delivery of HIV care worldwide has struggled to fully realize the benefits of treatment as prevention due to drop offs occurring in the early stages of the cascade during linkage, engagement, and retention.⁴

The drop offs in the cascade are especially relevant for socially marginalized groups such as MSM who persistently have elevated incidence and prevalence rates of infection compared to the rest of the population. A recent estimate of

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the 2015 Peruvian HIV care continuum calculates a 64.9 percent rate of retention in care among MSM and transgender women who have been diagnosed as HIV positive.⁵ Previous studies have shown that linkage and retention are difficult to achieve, with as many as one in five HIV-positive patients choosing not to establish care after their first clinic visit.⁶

Mobile health (mHealth) interventions, such as text messaging, have been a promising avenue for improving HIV care and have recently been utilized to support patients who are at the highest risk of disengaging from care.⁸ According to World Bank data from 2015, Peru is classified as an upper-middle income country with 40.9 per 100 people in Peru being Internet users, defined as accessing the Internet at least once from a computer or mobile device.⁹ Similarly, telecommunications research shows that at the end of 2016 Peru had 113 percent mobile phone penetration, with many urban dwellers having multiple phone lines, yet approximately one-fifth of the population with no mobile phone access whatsoever.¹⁰

Previous mHealth interventions targeting MSM have shown high acceptability among this marginalized group,^{11–14} however, these past Peruvian mHealth interventions have emphasized only two steps of the HIV cascade, mainly diagnosis and treatment. Although early diagnosis and treatment initiation are key steps in the cascade, it has been increasingly recognized in recent years that patient attrition at the intermediate steps of the cascade poses barriers to the treatment as prevention approach.^{3,7} Specifically, poor patient engagement in care, delayed linkage to care, and low retention in care have been demonstrated to increase viral load and overall mortality.⁷

Additionally, past Peruvian mHealth interventions have also not addressed subgroups that are at increased risk for disengaging in care such as MSM who have been recently diagnosed with HIV infection. Relatively few qualitative studies have been conducted to assess Peruvian mHealth interventions, and when they have, they were narrowly focused on measuring HIV testing and ART adherence outcomes.^{11,12} As a previous study has pointed out, the HIV care cascade has been constructed by healthcare providers and is limited by their worldview that is different from that of patients.²² Thus, it is crucial to gain a deeper awareness of the patient experience at each step of the HIV care cascade to understand why drop offs occur and how to prevent them.

The objective of this qualitative study is to analyze data generated from an existing mHealth intervention to gain a more detailed understanding of patient experiences during the early stages of the cascade, including linkage, engagement, and retention in HIV care among recently diagnosed MSM.

Methods

Original study design and participants

The data analyzed in this study were collected from a randomized controlled trial testing a text message-based (mHealth) intervention aimed to increase linkage and retention in HIV care among adult MSM attending an HIV Clinic (Via Libre NGO) in Lima, Peru. From June 2015 to March 2016, we enrolled HIV-positive MSM ($n=80$) diagnosed within the last 3 months who owned a mobile phone to either establish bi-directional text message communication

($n=40$) or not ($n=40$), with both groups also receiving standard HIV post-test counseling.

We analyzed text message conversations in Spanish from the 40 participants in the intervention group. Participants were recruited from the Via Libre clinic within 3 months of testing HIV positive, with 75 percent of the total 80 participants being linked to care on the same day of their diagnosis. We defined linkage to care as the first clinic visit with an infectious disease specialist after initial diagnosis. Participants were offered two free clinic visits and a discount on lab services for agreeing to participate in the study.

mHealth intervention

The bi-directional text message intervention was designed to facilitate access to care with the goal of improving linkage, engagement, and retention along the HIV care continuum. Participants in the intervention arm agreed to receive weekly messages for a total of 12 weeks through short message service (SMS), WhatsApp®, and/or Facebook® platforms from an assigned HIV counselor. Via Libre NGO counselors were trained to provide emotional support, answer questions, and identify participants that needed immediate medical care from a physician. A set of 24 standardized text messages were created with the help of current HIV-positive MSM receiving treatment at Via Libre clinic and were later validated by the research team through personal interviews with a second group of long established clinic patients.

Text messages were tailored to elicit barriers and facilitators of care while encouraging in-depth conversation. Participants used their personal mobile phones to send and receive text messages. This intervention allowed for bi-directional communication with an assigned HIV counselor meaning that participants could respond to messages and initiate conversations at any time during the study period. In addition to sending participants weekly standardized text messages, the study counselors also provided feedback, support, and suggested coping strategies in response to participant questions and comments. This study was reviewed and approved by both the UCLA and Via Libre IRB.

Data analysis

Over 12 weeks, participant–counselor text message exchanges took place resulting in 947 SMS, 918 WhatsApp, and 2,694 Facebook messages. Our analysis followed the general principles of a thematic approach.^{15,16} The first step was immersion in the data by a Spanish-speaking author (E.B.) to ensure a complete review of text message transcripts.^{16,18} Upon iterative review of the transcripts, preliminary coding ensued using an inductive approach, consistent with grounded theory, and employing the constant-comparative method for open coding of keywords and repetitive concepts originating in the data until saturation was reached.^{15–19}

A second Spanish-speaking author (L.M.) conducted a separate in-depth, detailed reading of the transcripts to refine the preliminary codes. Coding disagreements were resolved by creating new codes and removing existing codes as needed. All coding and interpretation was performed manually. Once the entirety of text message transcripts was coded,

recurring themes were identified, sorted, and organized. The research team completed the analysis after several meetings to discuss the accuracy of the themes, resolve disagreements, and further refine the themes.

Results

Participants and main themes

Mean age of the 40 participants in the mHealth intervention was 29.8 years (20–50); with 70 percent reporting some post-high school education and 73 percent self-identifying as homosexual. Most participants used WhatsApp and/or Facebook for messaging, although six participants did not respond to Facebook messages. Our findings reflect that among the 918 WhatsApp messages exchanged, 523 (57 percent) were sent by the participants while 395 (43 percent) were sent by the counselors. Similarly, out of the 2,694 Facebook messages exchanged, 1,411 (52 percent) were sent by the participants while 1,283 (48 percent) were sent by the counselors.

In our study, SMS was used less often and a total of four participants did not reply to SMS messages. Among the 947 SMS messages analyzed, 426 (45 percent) were sent by the study participants while 521 (55 percent) were sent by the counselors. Regardless of platform used, all participants initiated a conversation at least once with their assigned HIV counselor at some point during the 12-week followup.

We found that a qualitative analysis of participant–counselor text message exchanges was important to reveal not only the nature of support provided by the counselors during this mHealth intervention, but also to reveal concerns, challenges, and solutions that were most impactful during the early stages of the cascade for our recently diagnosed MSM participants. Our coding of themes reflected the typical topics of conversation that emerged naturally, with an emphasis on understanding how participants utilized the mHealth intervention and identifying opportunities to provide support during the early phases of the cascade.

We found that six themes emerged from the data: (a) mental health symptoms; (b) coping behaviors; (c) interpersonal support; (d) physical symptoms; (e) HIV knowledge; and (f) care coordination. Table 1 demonstrates representative quotes for each of these themes, with a summary of the codes comprising each theme.

Mental health symptoms

The first theme, mental health symptoms, included depression, anxiety, affect, positive mind states, and negative mind states. Although our study did not screen for depression or comorbid mental illness, the majority of patients sent text messages to their counselors expressing content fitting this theme of mental health symptoms. Many participants explicitly used the word depression in their text messages to counselors, with one participant even saying “well, I left my job because I was so depressed about the news of my diagnosis.”

The anxiety code was applied if a patient expressed feeling panic, nervousness, or anxiety. If patients referred to more general emotional states or mood, then the text message data were coded as affect. Positive mind state and negative mind state codes were applied when participants expressed cognitive patterns that produced either a state of positive or negative outlook. The text message exchanges that occurred

within this theme emerged from natural conversations that developed either from participant initiated messages or as a reply to personalized messages sent by the counselor. The distribution of these exchanges usually ranged between 30 and 90 minutes for a typical conversation within this theme.

Coping behaviors

The second theme, coping behaviors, was comprised of the codes of disclosure, diet changes, exercise, attending therapy, and lifestyle modifications. Text messages within this theme represented overall positive coping strategies for living a healthier life (eating a balanced diet, eliminating harmful habits) and promoting a sense of wellbeing (relaxation activities, talking to a therapist). Some participants texted their HIV counselors about their ongoing engagement in gestalt therapy or other psychological counseling, while a few other participants sent text messages requesting mental health services at Via Libre NGO with the staff psychologist.

The text message exchanges that occurred within this theme emerged from both participant responses to standardized messages and from natural conversations. The distribution of these exchanges in time ranged from a single message response stating “I am fine thanks, I have started taking vitamins and eating better” to a more in-depth conversation lasting up to 45 minutes.

Interpersonal support

The third theme, interpersonal support, included the codes of family support, partner support, and partnership conflict. Text messages were coded as family support if participants expressed any family member responding positively to provide a sense of comfort or stability. We used the codes for partner support and partnership conflict to distinguish between positive responses by their partners resulting in wellbeing and strengthening of the partnership and negative responses by their partners that created distrust, quarrels, and ending the relationship.

The text message exchanges that occurred within this theme emerged from both replies to standardized messages and natural conversations. The distribution of these exchanges in time tended to be longer and it typically took between 30 and 120 minutes for a natural conversation within this theme to develop.

Physical symptoms

The fourth theme, physical symptoms, included the codes of medication reactions, physical symptoms, co-infections, and clinical support. Text messages were coded as medication reactions if participants described rashes, headaches, or nausea that developed as a direct result of taking anti-retroviral medication. The code of physical symptoms was applied to messages concerning any other physical ailment such as pain, fevers, malaise, and body aches, which were not directly related to antiretroviral medications. Co-infections referred to messages in which patients described being diagnosed with a sexually transmitted infection in addition to HIV.

Messages by counselors that either provided reassurance or directly setting up clinical services were coded as clinical support. The text message exchanges that occurred within this theme emerged from both replies to standard text

TABLE 1. PATIENT EXPERIENCES DURING EARLY HIV CARE AS EXPRESSED IN BI-DIRECTIONAL TEXT MESSAGE EXCHANGES

Theme	Codes	Representative quote
Mental health symptoms	Anxiety	Anxiety Participant: "I feel so much anxiety and anguish but I know this will pass. I am conscious of the things I did but I know that at first it will be a shock. I am scared of being alone even though my boyfriend says we will always be together and also that my family will distance themselves because of their beliefs. Another worry is how the reactions to the pills will be in my body. That gives me panic because I have heard they have side effects and the truth is that it terrifies me."
	Depression	Depression Participant: "I have been very depressed because of the tension of not being sure about my diagnosis...I know it is not good news but I am putting all my faith in you guys."
	Affect	Affect Participant: "You know in another sense I feel bad. The truth is that these days I can't even stand being around myself." Counselor: "Tell me what happened, why do you feel that way?" Participant: "I complain about everything and the person who feels it the most is my partner. I fight with him all the time, I don't know why."
	Negative state of mind	Negative state of mind Participant: "Hello M., I hope you are well. I woke up feeling bad, I am unmotivated to go to work. Could it be I am a little sick? I felt a bit feverish and my stomach hurts. How upsetting I get no relief. And this makes me think that everything is starting to get affected within me, and this makes me sad." Counselor: "Hello J., I understand that the physical ailments you are feeling today are making you think things are not going well. But remember, you have not yet begun your treatment and once you do, you will see that you will feel better!"
	Positive state of mind	Positive state of mind Counselor: "By taking the medication as directed, many people such as you all over the world have achieved good health and have the infection under control." Participant: "Yes, I believe that many people are doing well. Many of my friends tell me to take this disease as if I just had a common cold or like it is diabetes. I can do that." Counselor: "Hello, disinformation only generates anguish. Informing yourself at the adequate place will put you at ease." Participant: "I know friend...I feel more at ease in every sense and the people who could be at risk are as well, I spoke to them kindly so that they would understand me, just like you have. You encourage me every day." Counselor: "Very good V., I am very happy for you!"
	Disclosure	Disclosure Participant: "I feel so scared. I can't concentrate with so many things in my head. Should I tell my family? My parents, brothers? Should I tell my ex? I feel so bad for having been so irresponsible and not protecting them." Counselor: "First you have to be sure who you can confide in so that you can tell them."
Coping behaviors	Diet changes	Diet changes Participant: "Let me tell you, I am doing very well. I left behind many habits, both social and dietary, and the truth is that I am going three months this way and I feel super. Diet, no alcohol, no cigarettes, no staying up late, vitamins, and natural foods, etc."
	Exercise	Exercise Participant: "I have a question. Is it safe for me to exercise right now? I have not been started on any medications, but I want to keep some muscle mass and not lose too much weight."

(continued)

TABLE 1. (CONTINUED)

Theme	Codes	Representative quote
Interpersonal support	Partnership conflict Family support Partner support	Therapy engagement Participant: "I must tell you that I finally filled out my stress and anxiety table we use in therapy. It was really difficult to do, but I am getting psychological and psychiatric help. And the truth is I don't even take those pills anymore. I am in relaxation therapy, getting calm emotionally, it's Gestalt therapy."
		Lifestyle modifications Participant: "Good morning. I have a medical question. I smoke, not in excess but I do it...I was thinking about quitting. My question is, would electronic cigarettes be an option instead of normal cigarettes? I asked a friend who told me there would not be a problem with e-cigs."
		Partnership conflict Participant: "Hello, I am not doing so well. I feel very depressed. I just found out my partner also has HIV. He takes his pill for life. I feel terrible." Counselor: "Are you referring to your current partner? He also has HIV?" Participant: "Yes, he showed me the pills he takes. He lied to me. He told me he had diabetes. He is already on treatment, he has known for a few months. That's why I'm terrified. And I started feeling really bad."
		Family support Counselor: "How have you been?" Participant: "Good, feeling encouraged. I told my sister about the issue. She is also at ease about it. I just get sleepy and tired, in the mornings I feel feverish but I think it's the weather." Counselor: "That is great that your sister knows and is supportive. That is good news."
Physical symptoms	Medication reactions Physical symptoms Co-infections Clinical support	Partner support Participant: "Hello, good afternoon. A question, my appointment today is at 4:30pm, do you think I can get there at 4:45pm? I have had a delay at work." Counselor: "Not a problem A. I will notify the clinic." Participant: "I'm in a taxi, I'll be there at 4:35pm. My partner is also coming with me so he can get tested."
		Medication reactions Participant: "At the end of the month, they only stopped the Efavirenz, soon they will give me another medication to combine with Duovir...I got a rash, it was ugly, but I am doing better, now I'm just waiting for indications."
		Physical symptoms Participant: "I'm worried that I keep losing weight despite eating my normal amount for breakfast, lunch, and dinner."
		Co-infection with other STI Participant: "Well I wanted to know if there is anything else that I may have, I would like to take a good look at my test results because I am scared of having something else that the doctor is not aware of... I'm also worried because I don't know how advanced the syphilis is, but I will ask at my appointment on Saturday."
		Clinical support Participant: "Hello, I have a question. This has just appeared on my chest and arms is it a rash from side effects to the medication? Just a coincidence or an allergy? Because all week I have been taking my treatment no missed doses. It doesn't itch but I just noticed it."—attached two images Counselor: "The most recommendable option is for you to see your doctor. I can set up an appointment for you. I will call you tomorrow."

(continued)

TABLE 1. (CONTINUED)

<i>Theme</i>	<i>Codes</i>	<i>Representative quote</i>
HIV knowledge	Transmission Misinformation Clinician expertise	<p>Transmission Participant: “Thanks C., good morning. You know my parents are coming to visit, do I need to prepare a separate set of utensils for them to eat with? And not share anything that has touched my mouth like sharing drinks, is this recommended? Thanks again.”</p> <p>Misinformation Participant: “Today I saw people in the waiting room, I don’t know if they are part of the program, but they all looked normal, which is to say without physical deteriorations or after effects on the face that would make you think they have the virus...I always had the idea that the face gets consumed.”</p> <p>Clinician expertise Participant: “I just got out of my doctor appoint. He gave me a list of lab work I need to complete. My CD4 count will be taken on Wednesday. You know, the doctor explained to me a lot about the whole process and also put me more at ease.” Counselor: Very good! That is the idea, the truth is that when you know more, you realize it’s something you can do.</p>
Care coordination	Economic concerns Scheduling appointments Lab followup	<p>Economic concerns Participant: “I’m at my gestalt therapy my dear C., we shall keep chatting afterwards it helps strengthen me despite my concerns. But sometimes I hear people say that for this disease you have to have a lot of money or else you die, etc. I imagine we shall chat more about this, people have also told me it’s better to go to a hospital.”</p> <p>Scheduling appointments Participant: “Hello, a favor please. My appointment is not until Monday but it seems that I have a rash, and I am itchy. Is my doctor in today or another doctor I can see for this?”</p> <p>Lab followup Counselor: “I wanted to tell you that yesterday and today I asked about your test results, but they are still not ready.” Participant: “I have a question about when to do the additional bloodwork they requested. I am still waiting for my CD4 result. Can I go Saturday when I am free?” Counselor: “Sure, which tests do you still need to get done?”</p>

messages and natural conversations. The distribution of these exchanges in time typically ranged between 10 and 60 minutes for the conversation to take place.

HIV knowledge

The fifth theme, HIV knowledge, included the codes of transmission, misinformation, and clinician expertise. Messages in which participants expressed what they knew or understood about HIV modes of transmission were coded as such. The code of misinformation was used when messages described false beliefs, stereotypes, or other false information about HIV that was regarded as true by participants. Messages were coded as clinician expertise when participants described a doctor or nurse explaining and clarifying HIV information to them or when counselors provided education to participants.

The text message exchanges that occurred within this theme emerged from both replies to standard text messages and natural conversations. The distribution of these exchanges in time ranged from a single message reply by participants to a 30-minute text conversation.

Care coordination

The sixth theme, care coordination, included codes of economic concerns, scheduling appointments, and laboratory followup. Messages were coded as economic concerns when participants asked questions about the cost of services and expressed concerns about being able to pay for treatment. Messages involving scheduling and rescheduling were coded as such. The laboratory followup code was applied when either participants or counselors discussed lab or exam results.

The text message exchanges that occurred within this theme emerged from both responses to standardized messages and natural conversations. The most common patient initiated message was related to scheduling issues. The distribution of these exchanges in time ranged from 10 to 90 minutes for the conversation to take place.

Discussion

In this qualitative study of an mHealth intervention examining the experiences of MSM newly diagnosed with HIV navigating the early steps of the HIV care continuum, we gained important insights from a patient perspective that are

not evident in the provider-defined care model as is currently applied in the Peruvian context. The six themes that emerged from our analysis of the text message data showed that participants expressed concerns about mental health symptoms and asked questions about coping skills during the linkage and engagement steps in the HIV care continuum. Additionally, the themes we identified captured the potential of an mHealth intervention to be used as ancillary support for clinicians through participant reporting of mental health and physical symptoms, dissemination of accurate HIV information by counselors, and enhanced care coordination.

These results are especially significant given that this is the first qualitative study, to our knowledge, to present patient experiences of MSM who have been recently diagnosed with HIV navigating the early and intermediate steps of the Peruvian HIV care continuum.

One of the main overarching themes emerging from our analysis of the text message data was related to discussions centering on mental health symptoms. Our results show that despite our study not screening for depression, the majority of our participants self disclosed feeling anxious, having depressive symptoms, or explicitly used the word depressed to describe how they felt. This finding complements other studies that have found the prevalence of depression among HIV-positive patients to be as much as twice that of patients who are HIV negative, and more specifically that up to two-thirds of patients who are newly diagnosed and not yet linked to care screen positive for depression.^{23,24} Past studies have shown that depressed patients are more likely to disengage from care, and depression is a strong predictor of missed appointments.^{20,22}

The fact that participants in our study shared intimately personal details about their emotional and mental state with their assigned HIV counselor shows the potential role that a bi-directional text messaging intervention can have for engaging patients during the early steps of the HIV cascade. Additionally, these findings are consistent with a previous Peruvian study that found no difference in mHealth acceptance and mobile phone use among HIV patients whether they were depressed or not.¹³

The results of our study serve to broaden the existing literature on the Peruvian HIV care cascade, and provide deeper insights from the patient perspective on the early steps of linkage and engagement in care. The findings from our study show that MSM recently diagnosed with HIV frequently asked questions about coping skills during the early phases of the care continuum. One of the most common questions was related to making diet changes and the safety of taking vitamins and supplements. Other participants were interested in entering either individual or couples therapy to work through personal issues regarding their diagnosis.

By initiating conversations with their assigned counselor and in responding to standardized messages, participants were able to elicit and manage their interpersonal support to bolster their wellbeing. Additionally, patients were able to schedule and reschedule appointments and ask questions about lab results by sending text messages to their counselor. Overall, these conversations reflect that participants were actively engaging in their own care.

To further understand the Peruvian HIV care cascade, our study focused on recently diagnosed HIV-positive MSM (≤ 3 months), a subpopulation with a high risk for disenga-

ging from care.^{7,8,22} Physical symptoms emerged as another overarching theme from the data and were the most common text message topic sent by participants to their HIV counselors. Although the majority of our patients did not experience medication-related physical symptoms, there were several that developed rashes after starting ART. In a study by Curioso et al., medication side effects were among the most important barriers to ART adherence, and subsequently retention in continuous care.²¹

The results of our study reveal a potential role for an mHealth intervention to serve as ancillary support to clinicians, especially when patients are entering the ART adherence step of the HIV cascade during which they may experience medication side effects. The participants in our study sent messages describing their symptoms and counselors were able to ask questions to determine whether an emergency was occurring and needed immediate clinical attention, or if the person could wait until the following day to receive care. The added capability to send and receive photos was especially helpful in assessing rashes and improved patient understanding of their own symptoms.

Our study has some limitations that must be considered when interpreting our results. First, all participants in this study were recruited from a single site that can limit the generalizability of results. Also, as a descriptive qualitative study, our results serve only to illustrate major themes regarding experiences of MSM recently diagnosed with HIV in the early phases of care but determining the effectiveness of this mHealth intervention will require further investigation.

Despite these limitations, our study has several strengths. First, participants actively utilized the bi-directional component of the intervention, demonstrated signs of increased engagement, and even utilized the mHealth intervention as a type of telehealth intervention by sending images of acute rashes they experienced. Participants also expressed feeling supported with the personal nature of text messages and overall felt pleased with their care. Additionally, participants did show signs of engaging in their care and thus this type of mHealth intervention may be used to further elucidate gaps in the HIV care continuum at these crucial stages of linkage and retention in care.

Conclusion

This is the first study, to our knowledge, to report qualitative findings of barriers and facilitators of the early and intermediate steps in the Peruvian HIV care continuum among recently diagnosed MSM. Our study underscores the importance of intervening during a critical phase of this disease, in a recent diagnosis, when vulnerability and potential for disengagement from care is high. Additionally, our qualitative analysis of data from an mHealth intervention contributes insight into the mind states of recently diagnosed MSM, which further highlights the most crucial barriers and facilitators of HIV care in this population. The use of technology interventions has the potential to reveal the most personal feelings and thoughts of such a vulnerable population during a critical stage of care.

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Author Disclosure Statement

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