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“A problem shared is a problem solved:” integrating human-centered design and implementation science to optimize lay counselor supervision in Western Kenya

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Abstract

Implementation science and human-centered design (HCD) offer useful frameworks and methods for considering and designing for individuals’ needs and preferences when implementing new interventions or technologies in global health. When used in tandem, the two approaches may blend creative and partnered research methods with a focus on the factors necessary to design, implement, and sustain interventions. However, research is needed that describes the process of blending these two approaches and explores the experiences of community partners. This study builds from a stepped-wedge cluster-randomized trial in Western Kenya, wherein teachers and community health volunteers have been trained to provide trauma-focused cognitive behavioral therapy (TF-CBT). Mobile phones emerged as a tool to supervise lay counselors from afar; however, their use was characterized by unique challenges. Informed by human-centered design and implementation science, we first engaged lay counselors (n = 24) and supervisors (n = 3) in individual semi-structured interviews then hosted an in-person participatory workshop to “co-design” solutions to optimize the use of mobile phone supervision. Lay counselors participated in focus group discussions regarding their experiences in the workshop. Focus group transcripts were analyzed using thematic analysis. We describe our approach as well as focus group discussion

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CRediT authorship contribution statement

Noah S. Triplett: Writing – review & editing, Writing – original draft, Supervision, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Anne Mbwayo:** Writing – review & editing, Supervision. **Sharon Kiche:** Writing – review & editing, Writing – original draft, Formal analysis. **Enoch Sackey:** Writing – review & editing, Writing – original draft. **Rashed AlRasheed:** Writing – review & editing, Writing – original draft. **Daisy Anyango Okoth:** Writing – review & editing, Project administration, Data curation. **Omariba Anne Nyaboke:** Writing – review & editing, Project administration, Data curation. **Cyrilla Amanya:** Writing – review & editing, Project administration. **Shannon Dorsey:** Writing – review & editing, Supervision, Conceptualization.

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results. Counselors felt the workshop was a valuable experience to learn new strategies from their colleagues, and they enjoyed the “collaborative spirit” that emerged as they worked together. Counselors felt that varying small and large group discussions fostered participation by creating opportunities for more people to engage and share their thoughts. Counselors suggested the approach be improved by providing more tangible materials (e.g., hand-outs) and more closely following a schedule of activities. It is important to also center stakeholders’ experiences as partners in the research process. Though counselors largely expressed positive sentiments, they also shared valuable suggestions for how to improve participatory research practices in the future.

Keywords

Lay counselors; Training; Human-centered design; Qualitative

1. Introduction

Mental health treatment is a vital component of healthcare. Yet, it remains inaccessible to many people worldwide (Kilbourne et al., 2018; Kohrt et al., 2018; Singla, 2021). In Western Kenya, one study of adults in Nandi County suggests that the lifetime prevalence of mental health disorders is high (45.5%) but only 3.6% with mental health disorders have received care (Kwobah et al., 2017). Though the Kenyan government has worked to improve mental health services (Ministry of Health, 2021), existing mental health care systems are limited and impacted by financial and human resource shortages (Kwobah et al., 2023). Task shifting has emerged as an acceptable and effective solution to increase access and deliver mental health interventions, especially in settings where trained mental health professionals are limited (Dorsey et al., 2020a; Galvin and Byansi, 2020). In task shifting, lay counselors are trained and supervised to provide mental health interventions. However, ensuring the feasibility and sustainability of supervision in task shifting is a challenge, especially in areas with fewer trained supervisors (Van Ginneken et al., 2013). In such areas, supervisors may have to travel extended distances to provide in-person supervision, leading to time and cost constraints that impact feasibility and sustainability (Triplett et al., 2023).

Digital technologies have been used across a range of healthcare areas and interventions to increase access or support the delivery of care (Agarwal et al., 2015; Long et al., 2018). Technology presents opportunities to scale interventions with minimal resources. Noting the promise of technology to close the global mental health treatment gap, the Lancet Commission on global mental health and sustainable development has advocated for the expansion of digital technologies for disseminating information about mental health disorders, facilitating screening and diagnosis, supporting treatment, supporting training and supervision of providers, and supporting system-level quality improvement efforts (Patel et al., 2018). A growing body of literature has examined how technology can be used to facilitate scaling up task-shifting mental health services globally (Naslund et al., 2019), including as a tool to support supervision. Mobile phones may present an opportunity to replace in-person supervision and supervise lay counselors from afar. However, as has been illustrated by work in other fields, including human-computer interaction, it is important to collaborate with the intended users of digital technologies to ensure that they can be used

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successfully (Molapo et al., 2016). In the case of lay counselor supervision, special attention must be paid to ensure that lay counselors are being sufficiently and appropriately supported via mobile phones.

Implementation science and human-centered design (HCD) offer useful frameworks and methods for considering and designing for individuals' needs and preferences when implementing new interventions or technologies. Implementation science is the "study of methods to promote the adoption and integration of evidence-based practices, interventions, and policies into routine health care and public health settings to improve our impact on population health" (Division of Cancer Control and Population Sciences, n.d.). HCD is an "umbrella term [that] … speaks to practices for prioritizing people's aspirations and ordinary experiences when imagining and implementing complex systems, services, or products" (Holeman and Kane, 2019, p. 488). A key aspect of these practices is "co-design," which we define as working collaboratively with partners, merging research with lived experience, to create tools and processes that work best in partners' unique contexts. Importantly, many definitions of both implementation science (e.g., Allotey et al., 2008; Glasgow et al., 2013) and HCD exist (Holeman and Kane, 2019), with each highlighting different aspects of its respective field. When used in tandem, the two approaches may blend creative and partnered research methods with a focus on the factors necessary to design, implement, and sustain interventions. These efforts may be key to promoting global health equity (Holeman and Kane, 2019; LaFond and Cherney, 2021). There has been progress in blending the two approaches, with work compiling (Dopp et al., 2019) and aligning (Dopp et al., 2020) human-centered design strategies for implementation research. There has been notable progress in the area of mental health (Lyon et al., 2020; Lyon and Bruns, 2019; Lyon and Koerner, 2016); however, procedural guidance is still needed on how to align these approaches in global settings, and research is needed to explore the experiences of community partners in these efforts.

This article describes our approach to blending implementation science and human-centered design to support the use of mobile phone supervision with lay counselors in Western Kenya. We outline our approach, discuss the results of the process, and offer critical reflections not only on the challenges we encountered in these efforts but also on the challenges and considerations in applying human-centered design and implementation science frameworks to these efforts. Additionally, we present results from focus group discussions in which lay counselors themselves reflect on their experiences participating in the research project. Overall, our goal is to provide insights and practical guidance to help researchers and practitioners use technology to build capacity and scale up task-shifting in mental health treatment.

2. Material and methods

2.1. Overview

This study was situated within a larger stepped-wedge cluster-randomized trial that examined the effectiveness and implementation of a locally-adapted version of Trauma-focused Cognitive Behavioral Therapy (TF-CBT; Cohen et al., 2006) in Bungoma, Kenya [Building and Sustaining Interventions for Children (BASIC); Dorsey et al., 2020a]. BASIC

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uses an eight-session version of TF-CBT ("*Pamoja Tunaweza*"), which was adapted by longstanding Kenyan partners at Ace Africa (i.e., supervisors and counselors) for cultural relevance and acceptability. Lay counselors, trained and supervised by five Kenyan, Ace Africa supervisors, work together in groups of three to provide the treatment in a group-based format. Lay counselors were embedded within two governmental sectors in Kenya, identified as potentially viable systems for scale-up—Education (via teacher delivery) and Health (via community health volunteer [CHV] delivery). Ace Africa supervisors were previously trained and subsequently delivered the treatment in a randomized controlled trial that preceded the current trial (Dorsey et al., 2020b).

Within the BASIC trial, mobile phones emerged naturally as a tool to support lay counselors when supervisors were not able to provide in-person supervision. Supervisors would call or message (e.g., by SMS or via WhatsApp mobile application) lay counselors to check on treatment delivery and respond to any questions or concerns. As more lay counselors were trained and with the onset of the COVID-19 pandemic, the team's reliance on mobile phones to provide support increased. Despite this, there was no clear understanding of lay counselors' receptivity to mobile phone supervision or formal guidance on how to best implement it. To address this gap, the study integrated implementation science and HCD approaches to develop mobile phone supervision guidance that considers lay counselors' unique needs and preferences (Triplett et al., 2021).

2.2. Participants

To understand lay counselor and supervisor perspectives and co-develop guidance for mobile phone supervision, 24 (of 180 total) lay counselors from the first 5 sequences of the BASIC stepped wedge cluster randomized controlled trial were randomly selected and invited to participate in our co-design process. The lay counselors were selected via a stratified random sampling approach to balance participants across sectors (i.e., education and health; teacher and CHV counselors) as well as those who used mobile phones with varying frequencies: 1) high-frequency users; 2) average-frequency users; and 3) low-frequency users. Supervisors rated the lay counselors they supervised relative to the average peer (e.g., low-frequency users were those perceived as having less-than-average mobile phone contacts with supervisors). The choice to interview "extreme" users—those using mobile phones with high frequency or rarely—was informed by HCD techniques and intended to capture the broad range of behaviors and needs of the lay counselors (IDEO, 2015).

We selected 12 participants from each sector (i.e., 12 CHVs and 12 teachers), as 12 is generally considered sufficient for saturation (Guest et al., 2006; Hennink and Kaiser, 2022). Mobile phone usage was balanced across counselors (i.e., 1/3 of the total sample was from each usage category and 1/2 of those users were teacher and CHV counselors). The supervisor participants were three of five supervisors who remained employed with Ace Africa at the time of this study. Given supervisors are all active and frequently connected to their lay counselors, we did not rate their frequency of use. All supervisors would have been considered high-frequency users. Interviewers approached participants via telephone to invite them to participate and gather informed consent. There were no exclusion criteria for lay counselors or supervisors.

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2.3. HCD approach

The first phase of our approach included semi-structured interviews to understand the acceptability and feasibility of mobile phone supervision as well as lay counselors' and supervisors' strategies for improving the usability of mobile phone supervision. We chose to focus on acceptability and feasibility because we wanted to understand if clinicians would be receptive to mobile phone supervision and explore any potential challenges with expanding that approach. We did not directly examine usability because we had not yet specified goals or processes for mobile phone supervision; however, general issues of usability did emerge during interviews. The full results from these interviews are reported elsewhere (Triplett et al., 2023). Interviews lasted approximately 1 h and were conducted in the language of the participant's choosing (i.e., Kiswahili or English). Ace Africa employed, Kenyan study interviewers completed all lay counselor interviews, and all supervisor interviewers were completed by the study PI (NST). Interviews began broadly, first reminding interviewees of the goals of the study, then asking lay counselors and supervisors to reflect on their use of mobile phones. Drawing from implementation science, questions then explored the acceptability and feasibility of mobile phone supervision, asking specifically what they liked most about using mobile phones for supervision, challenges or frustrations with mobile phone supervision, and the degree to which they felt mobile phones could replace in-person supervision. Informed by HCD, the final question asked participants to describe how they would use their mobile phones during a hypothetical "scenario of use" (Maguire, 2001) in which they were preparing for a treatment group and needed to receive supervision via their mobile phone.

For the next phase of our co-creation process, lay counselors and supervisors convened for a participatory research workshop after all semi-structured interviews had been completed and analyzed. All interviewees (N = 24) were invited to participate in the participatory research workshop, and 23 were able to attend. We worked with the Kenyan supervisors before the workshop to review the various HCD design thinking concepts and techniques. We were intentional in ensuring that Ace Africa supervisors would lead all activities, as they have the most cultural knowledge and could leverage existing relationships with lay counselors. Further, we used this strategy intending to minimize potential power imbalances arising from a U.S. white researcher leading ideation sessions with Kenyan lay counselors. We were wary of how cultural differences and power dynamics might influence the ideation activities. The supervisors and PI also practiced before the workshop to plan for time management, coordinating roles and transitions among supervisors, and identifying opportunities to incorporate participatory or "energizing" activities for participants. Supervisors decided among themselves who would act in separate roles during each part of the workshop based on their strengths and comfort levels. For example, one supervisor was assigned to lead the check-in and welcome session. In contrast, the other two supervisors divided orienting the group to the goals of the workshop and presenting results. We also discussed ways to structure activities to be mindful of power dynamics and cultural norms. This included separating teachers and CHVs during small group discussions and distributing paper and pencils such that participants could write and share notes if they did not wish to speak in front of the group.

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The workshop agenda is presented in Table 1. Before the workshop began, supervisors mingled with and facilitated connections between participants. The supervisors used this to begin thinking about opportunities to adapt or augment the workshop (e.g., What is the group's level of literacy and comfort with English? Does the group connect naturally? Noting the cultural diversity in the region, which cultural examples are more appropriate for this group?) The workshop began by co-creating rules for participation. Supervisors elicited suggestions from the workshop participants. Supervisors also supplemented suggested rules with their suggestions, drawing from experience facilitating clinical trainings, group counseling sessions, and group supervision meetings.

2.4. Orient group to goals, review findings, discussion

The first objective of the workshop was to present findings from the semi-structured interviews conducted in Phase I and elicit any feedback, additions, or clarifications of our interpretations, thereby member checking our qualitative results. Before the workshop, the study PI (NST) and supervisors (DO, ON) co-created PowerPoint slides that presented the key themes from the semi-structured interviews. The supervisors presented the slides during the workshop and then, using paper flip charts, elicited feedback from participants, including any clarifications or additions to the themes, definitions, and examples. Throughout the workshop, the supervisors who were not presenting "floated" throughout the room to encourage participation and individually engage participants, when necessary. The supervisors also relied on their experiences leading group counseling sessions to gauge group participation and use different strategies to encourage participation. For example, the supervisors would rely on call-and-response questions to encourage dialogue and ensure understanding. Supervisors also made eye contact with participants across the room and noted the importance of incorporating storytelling and humor to maintain participants' attention.

Drawing from human-centered design methods (IDEO, 2015), *key insights* and *opportunity areas* that were derived from the semi-structured interview themes were presented to participants. Key insights are an HCD concept that reframes core themes in terms of specific problems, strengths, or processes that emerged from interviews (IDEO, 2015). These were presented to the group as "Major Takeaways." Corresponding opportunity areas were phrased as design questions to the groups: 1) How do we improve mobile phone supervision?; 2) How should we determine when in-person supervision is needed?; 3) How do we ensure lay counselors are getting all the information they need over the phone?; 4) How do we address challenges with network connection?; 5) How can we decrease distractions and disruptions with mobile phone supervision?

2.5. Small group discussion

After member-checking findings, participants were sorted into 4 groups of 5-to-6 participants for smaller group discussions. Groups were split by teachers and CHVs. This was intentional, given the language preferences between the two groups. Teachers tend to prefer speaking in English, whereas CHVs more often speak in Kiswahili. This was also intended to mitigate any potential power dynamics that might arise between teachers and CHVs, as teachers have a higher social standing in Kenya. Group discussions were

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facilitated by a Kenyan member of the research team (i.e., supervisor or Ace Africa research director). Group leaders were supplied with printed “Group Discussion Goals” that outlined facilitator instructions and goals for the group discussions. Supervisors were instructed to guide their groups through discussion goals, reminding groups that the goals of the workshop were to generate feasible and workable strategies to improve mobile phone supervision. Supervisors were instructed to elicit ideas on how to improve mobile phone supervision while steering the conversation away from conversations on how to adapt the clinical intervention.

The discussion was guided by the five *key insights* and *opportunity areas* that were derived from the semi-structured interview themes. Supervisors were instructed to create 5 separate pieces of paper to include notes for each of the discussion questions. One notetaker was selected for each group, and they were instructed to record comments for each discussion question on the corresponding papers. Per the original protocol, the *opportunity areas* were going to be used to facilitate a large-group “co-creation session” with lay counselors and supervisors. Participants were to collectively brainstorm barriers and solutions associated with each *opportunity area*, which would be posted on separate sheets of large paper or posterboard to facilitate the co-creation of different workflows. Per the original study protocol (Triplett et al., 2021), each group was to be randomly assigned one opportunity area to discuss and refine a workflow to address the specific opportunity. However, before the workshop, it was decided in conjunction with supervisors that it would be best for small groups to continue discussion of all opportunity areas and potential strategies. Results from semi-structured interviews indicated that there were a variety of challenges with mobile phone supervision, thus creating discrete workflows to be used broadly did not seem feasible or appropriate. Additionally, we wanted to encourage broad and open participation. As such, we felt it would be best to create opportunities for participants to share in a smaller group without feeling bound to respond to a specific opportunity area.

2.6. Large group discussion

Following the small group discussion, the supervisors reconvened participants for a full group discussion (N = 23). Each small group selected one participant to share back the notes from their discussion. Supervisors facilitated suggestions and additions from other group members, as well as other participants. Supervisors collated all groups’ notes onto large paper flip charts. Following this, the supervisors facilitated a brief closing discussion on what was learned within the groups and final comments on how to improve mobile phone supervision. Per the original protocol, the final discussion was supposed to include anonymous voting on the top 3 most feasible workflows; however, given our departure from a focus on discrete workflows, we instead facilitated a discussion about how we could share findings with other lay counselors in the program.

2.7. Focus group discussions

After the workshop, lay counselor participants took part in focus groups to gather perceptions on the use of participatory research techniques. Focus groups were split by participant type—teacher counselors and CHV counselors participated in separate groups. Supervisors did not participate in focus groups because they had been extensively involved

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in the planning and facilitation of the workshop. Questions focused on gathering lay counselors' perceptions of the participatory research workshop, including general likes, dislikes, and suggestions for improvement. Focus groups were facilitated by trained study interviewers from the parent study.

2.8. Analysis

Recordings from the focus group discussions were analyzed following Braun & Clarke's six-phase framework for thematic analysis (Braun and Clarke, 2006). Kiswahili transcripts were translated by professional translators in Kenya. Two coders, one from the United States (NST) and one from Kenya (SK), reviewed all transcripts, discussed and identified potential codes, and then drafted and refined code descriptions. Ensuring Kenyan perspectives were represented on the coding team helped to refine code descriptions in a culturally sensitive manner.

3. Results

First and foremost, during semi-structured interviews and throughout the participatory workshop, lay counselors and supervisors alike firmly expressed that they would *not* be amenable to completely replacing in-person supervision with mobile phone supervision. Mobile phones were acceptable as ad hoc support, with counselors noting that they liked how mobile phones facilitated a greater level of independence. However, lay counselors and supervisors also described several challenges with using mobile phones for supervision, including limited resources to support pre-paid phone usage ("airtime") and technical difficulties because of network outages and broken phones. As a result of this, our co-creation process shifted to decide how to best integrate in-person and mobile phone supervision while developing flexible strategies that could support the use of mobile phone supervision.

3.1. Small and large group participatory processes results

Given the shift in goals to determining how to best integrate in-person and mobile phone supervision, the workshop became less focused on clearly defining and refining specific workflows to replace in-person supervision. Instead, there was a broader discussion of all the challenges inherent in mobile phone supervision and additional brainstorming on potential strategies to improve its use. A key focus of this discussion was then determining when it was appropriate to substitute mobile phone supervision and when lay counselors felt in-person supervision was necessary. It was decided that in-person supervision should occur at least four times throughout the delivery of the 8-session treatment groups, spread throughout the beginning, middle, and end of groups. The exact timing of in-person supervision was purposefully ambiguous to allow for greater flexibility for the supervisors, who would be balancing visits across multiple sites. Lay counselors and supervisors also stressed that it was imperative to outline a procedure to request in-person supervision, should lay counselors need additional support.

After discussing when it was best to integrate mobile phone supervision, lay counselors largely discussed and refined strategies to improve its use. The discussion largely expanded

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upon and refined the solutions that had previously been identified in qualitative interviews (Triplett et al., 2023) and presented as part of member-checking. Lay counselors noted that some strategies may not be feasible or should not be suggested to future counselors for other reasons (e.g., given concerns with data use we did not suggest video calls and role plays). Lay counselors also generated five additional strategies that they felt were essential for integrating mobile phone supervision that had not been previously identified: 1) ensuring all counselors had each other's contact information; 2) deciding on the preferred language for supervision; 3) ensuring mobile phones were updated with latest software; 4) identifying private and quiet locations for supervision; and, 5) defining a process for canceling mobile phone supervision in the event of network outages.

After the participatory workshop, the PI (NST) and Ace Africa supervisors (DAO, OAN) collaboratively determined how to best share the strategies with future counselors. It was decided to organize all strategies under four goals, which roughly approximated the major themes of the qualitative interview results and workshop discussions (see Table 2). Counselor-generated strategies were then clustered under these goals. After drafting a prototype on a paper flipchart, a handout was created that could be shared and discussed with lay counselors. Supervisors determined it would be most feasible to share and discuss the handout during their first in-person supervision meeting, which occurred shortly following training and before lay counselors began TF-CBT groups. All strategies were optional, and supervisors stressed the importance of selecting and trialing strategies that counselors felt best matched their unique contexts.

3.2. Focus group results: themes related to the acceptability of the participatory approach

Teachers and CHVs both expressed that they found the workshop to be satisfactory, citing both specific elements of the workshop that they liked and noting the impacts of the workshop in terms of their knowledge and motivation to continue working in their roles. As one teacher described, "The experience was wonderful, since most of the things we've been experiencing out there [working in their respective communities] were shared out in the group."

3.2.1. Specific activities—

Participants referenced specific activities or features of the workshop that they enjoyed, ranging from sharing the objectives of the workshop to being provided for tea and lunch. To begin, participants mentioned how they liked hearing the objectives and the plan for the workshop at the beginning of the day. As one teacher explained, sharing the objectives from the beginning illustrated to participants "*what to do and what we expect. And then it made the workshop flow smoothly."* After establishing the objectives for the workshop, participants also enjoyed collaboratively establishing rules and expectations for participation. As a result of co-creating these, participants felt "free to bare out their views, opinions, because everyone was to respect his/her colleague's opinion."

The presentation of qualitative themes back to interview participants was not only essential for member-checking but it was also appreciated by participants and facilitated more productive brainstorming. Participants noted their appreciation of the presentation of themes

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from qualitative interviews and the integration of visual aids, such as PowerPoint slides and paper flipcharts. Beginning the session by presenting qualitative themes grounded participants in their own experiences and reminded them of the challenges associated with mobile phone supervision. This was particularly important for counselors who may not have been actively delivering the treatment (i.e., they participated in earlier clusters of the parent trial) and to illustrate the variety of challenges their colleagues faced. Additionally, it prepared them to brainstorm additional strategies to improve mobile phone supervision. As one participant expanded, "*The review that was given by the supervisor that handled that session was so vivid, it made us get a clear picture of what is entailed in supervising using mobile phones. And that is why when we went back to our groups, we were able to come out with the [solutions] that we came out.*"

Regarding group activities and discussions, participants liked discussing and brainstorming in both the large group as well as smaller groups, with each offering different benefits. Participants shared that engaging in large group discussions allowed them to hear a variety of different perspectives, including those from other types of counselors (i.e., both teachers and CHVs) or those with different levels of resources (i.e., local network connection or type of mobile phone). As a result, participants were able to learn more and have any assumptions challenged or corrected by other participants. As one CHV explained, *"I learned a lot when we were in groups. I have found that while you are in groups you learn more. At some point, a group may have been wrong to write something, and you find the other group making corrections."* Particularly given the goals of creating widely acceptable tools to support mobile phone supervision, opportunities to hear and learn from the large group may have been especially helpful. Large group discussions were also instrumental in creating opportunities for participants to get to know one another, a noted positive of convening the in-person workshop. As one CHV stated, *"I say thank you very much [for convening the workshop] because it has enabled me to get to know the people who work with us."* These opportunities to meet other counselors may be especially important given counselors are physically dispersed when delivering the treatment in their communities. Particularly for CHV counselors, who are not working within a school and therefore may be less connected to their co-counselors or other colleagues, they "*liked how [the workshop allowed them to] improve [their] connection with [their] supervisors and [other] CHVs.*"

Smaller group discussions did not allow for as broad of engagement; however, participants felt they were equally important to connect with and learn from their colleagues. Given the cultural power and gender dynamics at play (e.g., between supervisors and counselors, teachers and CHVs), small groups may have been essential to create opportunities for participants who may have felt less comfortable speaking in large groups. For example, teachers tend to hold greater power and garner more respect than CHVs in Kenyan culture, thus CHVs may have been more hesitant to share in larger group discussions. Though no CHVs stated this or a dislike of larger group discussions, CHVs did reference liking the small group discussions and activities more often than teachers. Overall, and simply put by one CHV participant, "*I would like to say that I have had a good experience because according to my group activities, and the way my colleagues were reading [the report backs from their small groups]; I saw a group can make you get a great experience.*"

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Finally, participants liked the incentives offered during the session, such as tea, lunch, and reimbursements for travel. As one CHV explained, "*the second thing I enjoyed was drinking tea and samosa which I had missed for five years. (laughter) Then I ate ugali with chicken, It's a very rare thing* …" Given the economic position of some participants, especially CHV participants, providing what may be considered a high-value or "rare" meal may be particularly impactful. Importantly, participants also appreciated reimbursements for travel expenses as well as the speed with which they were reimbursed. As one teacher explained, this gesture conveyed respect to the participants and motivated them to participate: "*The things I liked about the workshop today, one, we were promised the reimbursement of our fare, and it came even at the middle of the session. That one energized members* … *we having our breakfast, then my friend showed me the text message. Confirmation has come."*

3.2.2. Impacts of the workshop—Lay counselors discussed how they gained knowledge because of participating in the workshop. As a result of convening lay counselors from different sections and communities and sharing the results from the qualitative interviews, counselors were able to learn new strategies for how they might improve mobile phone supervision that they might not have otherwise learned or tried. As one CHV counselor explained, "*[the workshop] has helped me to see the challenges we face and how we can overcome those challenges. How we can solve those challenges and achieve the goals of those challenges and progress well through telecommunications."* Another CHV noted the benefits of working together in groups to discuss and learn new strategies, "*As if they were giving us a pen, chalk, but this time we saw we were in a group. We talk about how we do it so we can get on the phone to talk. So that we can educate each other to know how to teach our [children]. I found there something, and it has been unique*." The group activities were essential to cultivating a "*collaborative spirit*" in the workshop that "*enhanced [participants] to at least actively participate or be involved in giving out freely, the views in their individual groups*."

Learning new strategies from other lay counselors was both validating and motivating for the counselors at the workshop. Though not the goal of presenting the results from qualitative interviews, seeing that "*most of the things [they have] been experiencing out there were shared out in the group*" was validating for counselors who may have otherwise felt alone in their challenges accessing supervision via mobile phones. This, coupled with learning new strategies to address these challenges, motivated counselors to continue in their roles. As one teacher counselor explained, "*I think there's one saying that a problem shared is a problem solved. It was a problem before we went to the groups, before we came here* … *But since we've come here* … *we have the solutions to those challenges. And therefore, we're now convinced beyond our limits, that surely, we can now use mobile phone supervision effectively."* Another teacher counselor further explained the impact of this on their attitudes: "Today *we have changed our attitude, and the challenges that we thought they're there, we have the remedies for the same challenges, and then we have known how to deal with the challenges."*

Overall, lay counselors expressed their commitment to the program and gratitude for having been invited to participate in the workshop. One CHV counselor noted, "*Yes, I want to add something. I am thankful today because of today's lessons I have been encouraged to be*

committed and to be faithful. So, I can do this work at Pamoja Tunaweza.” Importantly, the presence of US members of the research team further contributed to this perception and was mentioned in both focus groups. One CHV specifically noted this in their comments: “*Today I really enjoyed this workshop. For we have been in the workshop for many days but we have not met our sponsor even one day. Like me. Today I am happy because we are here once again which has made me realize that we are recognized worldwide. Now this workshop has motivated me to work because I know we are appreciated. That is, there are people who know we are working and we shall continue working. It’s an encouragement*.” Beyond being present for the event, participants noted the impacts of smaller interactions with US team members, like sharing tea and meals. One CHV described, “*In fact, during my 10 o’clock tea I shared my table with an American, and I was very proud. He talked to me very friendly, and I was moved*.”

3.2.3. Challenges and suggestions—Lay counselors voiced some challenges and offered suggestions to improve future workshops. On a material level, we did not supply physical copies of all materials for the workshop (e.g., physical copies of slideshows presenting the results of the qualitative interviews). Lay counselors suggested having more physical materials for future workshops could make it easier for them to digest, react, and discuss. Lay counselors also noted challenges with the set-up of the meeting space, in which the paper flipcharts for notetaking blocked the view of the projector. Finally, some lay counselors voiced concerns about the refreshments and food offered at the workshop, noting the need to supply more water throughout the workshop and that the “diet lacked some vitamins. It didn’t have the fruits.”

Related to the conduct of the workshop, some counselors noted that the activities and discussions did not match their expectations, highlighting the importance of setting clear expectations with participants. One teacher counselor noted that the reimbursement for travel and participation was “*below the expectation of members*.” One CHV counselor also disliked that there was less conversation on strategies to improve the treatment specifically, as opposed to just mobile phone supervision. Importantly for the use of HCD and other brainstorming techniques, one counselor expressed a desire for more “*feedback*” on their discussions and suggestions to “*know where [they] are right or wrong*.” Finally, some counselors expressed dissatisfaction with the timing and time management of the workshop. Several counselors suggested being more “*strict on arrival time*” and more closely following the agenda in the future. Counselors suggested that workshops be held for shorter periods but across multiple days (i.e., two or three days consecutively). As one CHV explained, *“Our mind gets tired quickly. We would be given time, to learn … then finish the next day.”*

4. Discussion

4.1. Overview of results

Overall, lay counselors expressed positive sentiments regarding the participatory research process. They enjoyed participating in semi-structured interviews and appreciated that results were presented back for member-checking. Particularly regarding the workshop, counselors enjoyed working alongside other counselors. They felt it was a valuable

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experience to learn new strategies from their colleagues, and they enjoyed the "*collaborative spirit*" that emerged as they worked together to develop solutions. The counselors referenced specific activities that they enjoyed about the experience and offered suggestions for how to improve future workshops.

4.2. Discussion of approach

We borrowed principles and activities from HCD to facilitate a participatory research approach—a research-to-action approach that emphasizes direct, ongoing engagement of stakeholders or those who directly affect or are affected by the research (Cornwall and Jewkes, 1995; Vaughn and Jacquez, 2020). Given other work examining participatory research within implementation science (Triplett et al., 2022) and the imperatives to conduct more just and ethical global health research (Abimbola et al., 2021), we tried to remain cognizant of the various ways in which we navigated power dynamics into our approach.

We were aware of the dynamics of white, US-based researchers "training" the Ace Africa, Kenyan supervisors in design thinking techniques. The supervisors have a long (4+ year) history of leading engaging trainings in mental health interventions, and a longer history working as engaging and effective group therapists. We felt it was not the place of US-based researchers to explain to them better ways to engage lay counselors and prompt their participation—particularly given the Western roots of design thinking. Importantly, much of our training in HCD was facilitated through US-based organizations, such as IDEO (IDEO, 2015). It is important to note the justified criticism of IDEO's approach to HCD, which may reinforce harms and power structures in global health research by situating external "designers" as experts in creativity and the creative process (Irani, 2018). HCD often promises solutions to "wicked problems," such as global inequity, and states that bringing in external design "experts" is the key to developing those solutions (Gram, 2019). The reliance on external designers can lead to decontextualized and infeasible solutions that may never be implemented (Ackermann, 2023). External and decontextualized design may also lead to solutions that reinforce existing inequities (Gram, 2019). Still, we hold that HCD and other design approaches can be useful resources from which to draw when collaborating with and empowering community partners. Emerging design practices, such as pluriversal design (DeColonizing Design Thinking, n.d.; Escobar, 2018), may offer useful frameworks to consider in global health.

In our work, we felt this tension with elevating US researchers as the sole experts and HCD methods as the "gold standard" for leading our co-creation session. After we finished preparing for the co-creation session and as the supervisors were actively facilitating the session, there may have been additional opportunities to draw from design thinking and test additional activities. However, we decided not to interrupt their process or prioritize "methods" over letting the conversations and ideation progress naturally. This illustrates the importance of flexibility and "give-and-take" in global health research to effectively empower partners and not center oneself or Western cultural values, particularly those that are deeply embedded in research (Akena, 2012).

In the end, the co-creation session did not result in our original goal of creating actionable workflows for mobile phone supervision. Though the deviation from refined workflows was

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not totally intentional, it became very clear during the co-creation session that there was no singular workflow that would be acceptable or feasible across all communities. In outlining considerations for integrating human-centered design into global health programming, LaFond and Cherney emphasize that “framing problems and generating solutions centered on people in their contexts” is a key tenant of HCD (LaFond and Cherney, 2021). In our experience, a key challenge with integrating HCD into our work is that problems and solutions vary greatly across contexts in global settings, even within a group of individuals asked to undertake similar tasks. There were vast differences in mobile phone access, cellular network connection, and other contextual variables between our lay counselors. Instead, prioritizing our partners over our research design, our approach shifted to designing an approach that could present all possible solutions and support lay counselors in identifying and prioritizing solutions that they felt would work best in their respective contexts. We chose to stop and listen, as is essential when applying theories and frameworks from white, upper-middle-class, urban, highly educated, and well-resourced settings to lower-resourced, more diverse, and more representative settings (Orengo-Aguayo et al., 2020).

4.3. Discussion of focus group results

Qualitative themes shed light on what specific activities the lay counselors enjoyed about the workshop. Expectations for group behavior, such as turning off cell phones, were essential to establish a sense of mutual respect and convey the importance of working together toward the group’s shared goal—improving mobile phone supervision. Researchers have stressed the importance of developing structure and rules of operation in participatory research (Horowitz et al., 2009), while also acknowledging the importance of flexibility (D’Alonzo, 2010). There were times during the workshop when the group diverged from the schedule, often spending longer engaging in unstructured discussions, as opposed to more structured HCD techniques. Ultimately, lay counselors noted that these opportunities to hear others’ perspectives and participate in different ways (i.e., small and large group discussions) enhanced their experiences. Allowing for that flexibility was essential to ensuring our lay counselors felt respected and validated.

Lay counselors’ appreciation of incentives and acknowledgment of US researchers’ presence was also a key theme in focus group discussions. Given the cultural dynamics regarding food and sharing meals, providing tea and lunch may convey a deeper appreciation of participants’ time and create additional opportunities for participants to come together and connect. Though it was not a primary goal of our research study to bring lay counselors together, it is important to facilitate these relationships and build a sense of community within participants. Ultimately, these stronger personal connections may lead to more generative ideation. Additionally, it is important to note that incentives, reimbursements, and sharing meals are often expected when participating in research and are part of ethical compensation for partners’ time and effort. This underscores again the importance of working with community partners throughout to consider the contextual norms when engaging in research and ensuring that research processes are aligned with those norms and expectations.

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Relatedly, it is important to acknowledge the personal benefits that lay counselors discussed because of participating in the workshop. Often, discussions of the benefits of participatory research approaches, such as community-based participatory research, have focused on how these approaches can benefit research and improve the applicability of research findings to communities (Horowitz et al., 2009); however, our results suggest that the very act of participating in research may also be beneficial to some communities. Participants felt validated and honored that they were being included in the research process. Lay counselors felt “appreciated” and “moved” that US researchers would be interested to hear their perspectives. There is tension within participatory research approaches of academic researchers working to diminish power imbalances while also practicing critical reflexivity to acknowledge their power and position (Muhammad et al., 2015). These tensions may be amplified when applying HCD methods in global health, as it is impossible to ameliorate the power imbalances that have been constructed after centuries of colonialism and racism within one research project or community partnership. Critical reflexivity, then, becomes increasingly important to acknowledge the impact of one’s power and privilege on the research process and think about opportunities to diminish their influence.

5. Conclusions

We approached this project as implementation scientists with great interests in HCD and health equity. While we share values with both implementation science and HCD, we also note the challenges of enacting these values through their methods, particularly in a way that centers equity and in global settings. We have demonstrated how these values may not always be in alignment with implementation science in our other work. In defining a research agenda at the intersection of implementation science and HCD, we offer our perspective as individuals with great interests and commitment to centering equity in both.

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Table 1

Workshop agenda.

8:00–8:45 a.m.	**Arrival, Check-in, Formal Introductions, Welcome**
8:45–10:00 a.m.	**Orient Group to Goals, Review Findings, Discussion**
	• Review the findings from interviews regarding the mobile phone supervision
10:00–10:30 a.m.	**Tea Break**
10:30–1:00 p.m.	**Small Group Discussion: How do we improve mobile phone supervision?**
	• ***How should we determine when in-person supervision is needed?***
	• ***How do we ensure lay counselors are getting all the information they need over the phone?***
	• ***How do we address challenges with network connection?***
	• ***How can we decrease distractions and disruptions with mobile phone supervision?***
1:00–2:00 p.m.	**Lunch**
2:00–3:30 p.m.	**Large Group Discussion**
	• **What did you learn in the groups?**
	• **Sharing of Discussion: How can we improve mobile phone supervision in PT?**
3:30–5:00 p.m.	**Focus Group Discussions**

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Table 2

Workshop goals, as presented to attendees.

Workshop Overarching Goals
• Explain to counselors that they will use in-person and mobile phone supervision together to ensure counselors are supported through PT delivery
• Ensure counselors get all the information and support that they need through mobile phone supervision
• Plan for any challenges with network connection
• Decrease distractions and disruptions during mobile phone supervision.