BMC Health Services Research

RESEARCH

Open Access

Understanding health care workers' mental health needs: insights from a qualitative study on digital interventions

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Abstract

Importance Health care workers (HCWs) face significant mental health challenges when delivering care and over the span of their careers. Despite growing recognition of these issues, barriers such as stigma, structural limitations, and individual obstacles continue to impede progress in supporting HCWs mental health needs. Digital mental health platforms continue to expand in health systems as they offer novel approaches to address these gaps, but more evidence is needed to understand their reception among HCWs.

Objective To examine the perceptions of HCWs regarding their mental health, explore barriers and facilitators to accessing mental health care, and assess their experiences with digital mental health interventions within the context of the pandemic.

Design A qualitative study using semi-structured interviews with HCWs who participated in a prior randomized controlled trial (RCT) assessing the impact of a digital mental health platform on anxiety and depression.

Setting A large, urban, academic health system.

Participants A purposive sample of 64 HCWs, including physicians, nurses, technicians, administrative staff, and social workers, was recruited. Participants were selected from the upper and lower quartiles of anxiety and depression scores from the parent RCT to capture a range of mental health symptomatology.

Outcomes and measures The study aimed to identify HCWs' attitudes toward mental health care, barriers to utilizing professional resources, and their experiences with the digital mental health platform at the local institution. A thematic content analysis was used to analyze the interview data.

Results Five major themes were identified: (1) the evolving mental health challenges during and after the pandemic, (2) individual barriers to accessing care, such as personal coping strategies and familial responsibilities, (3) structural barriers like workload and limited access to mental health clinicians, (4) experiences with digital mental health

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interventions, including text message-based assessments, and (5) recommendations for future digital health strategies to improve access and reduce stigma.

Conclusion Digital mental health interventions provide a promising avenue to support HCWs by reducing stigma and improving access to mental health resources and clinicians. However, personalized and system-level changes are necessary to address the ongoing mental health challenges faced by the workforce.

Keywords Health care worker Well-Being, Mental health, Digital health

Introduction

Health care workers (HCW) face dynamic emotional challenges when providing patient care and over the span of their careers [1–3]. These challenges include, but are not limited to, mortality and morbidity of patients, moral injury when capacity is strained or resources are scarce, personal and psychological safety among rising workplace violence, and health care associated burnout. The pandemic exacerbated the mental health strain and symptomatology facing the many roles across the health care workforce beyond physicians and nurses, and also heightened public awareness of it, including calls from the US surgeon general [4] and national medical societies to address this unmet need [5–7]. A 2023 meta-analysis of anxiety and depression during the pandemic noted pooled prevalence of HCW anxiety at 41% and depression at 34% [8]. Despite this, research has shown that few, an estimated 20% of HCWs seek mental health care for themselves [9]. The implications of these strains and stressors are profound as burnout and mental health strain lead to a depleted workforce, worse patient care and outcomes, and increasing costs.

In an ever-expanding digital landscape, health systems have launched mobile apps, chatbots, and digital mental health platforms to support HCWs and connect them to mental health care [10–13]. These efforts continue to grow and yet uptake of these services or approaches are hindered by stigma [14, 15] associated with acknowledging a need for mental health support and care, as well as ultimately seeking and connecting with care. Furthermore, barriers to connecting with mental health care are more pronounced for women, racial and ethnic minorities (e.g., Black and Hispanic) members of the health care workforce. Developing system-wide solutions which account for the diversity across individuals and across roles remains difficult. An additional challenge remains in developing proactive approaches which help HCWs identify mental health challenges to address them before they worsen to disorders or contribute to burnout.

As digital methods grow, the voice and perspective of HCWs and their reactions to these programs remains understudied. Critical to improving, and sustaining, the mental health of the health care workforce is designing programs that are accessible and actionable by the HCWs themselves. Understanding the experiences and context of mental health in HCWs requires methods that provide time, space, and exploration of this contextual information. Using qualitative methods to explore these areas, we sought to understand HCWs' perspectives on mental health across the workforce, acknowledging and accessing mental health services, and the existing digital mental health solutions available to them in their local environment. We aimed to identify the key themes identified by a range of individuals working in the health care workforce and evaluate their perspectives of a proactive remote strategy for supporting HCW mental health and well-being in a digital world.

Methods

We conducted semi-structured qualitative interviews of HCWs who enrolled and participated in a separately reported randomized controlled trial (RCT) testing the effect of proactive digital mental health strategy upon anxiety and depression [12]. The RCT intervention sent enrolled HCW participants monthly mental health assessments and linkage to an existing mental health and well-being platform via text messaging. The RCT demonstrated reductions in anxiety and depression among those HCWs randomized to the intervention as compared to usual care which was self-initiated use of the mental health platform.

This qualitative study took place within a large, urban, academic health system located in the northeastern United States. Eligible HCWs for this study included adults (age 18 years or older), employed by the health system and working in roles such as physicians, nurses, technicians, social workers, pharmacists, registration staff or other roles where patient facing interaction regularly. The interviews were informed by existing society frameworks on clinician well-being including the National Academy of Medicine [16–18] and designed to explore HCWs' attitudes and decision-making involved in mental health care, perceptions of accessing mental health care, and experiences with digital mental health platforms. This study followed the Consolidated Criteria for Reporting Qualitative Research (COREQ) [19]. The study protocol was approved by the University of Pennsylvania Institutional Review Board (#848844).

The parent RCT assessed anxiety and depression over nine-months. For the interviews, a purposive deviance

sampling approach [20] was used to identify HCWs from the upper and lower quartiles of anxiety and depression. This deviance selection process was used to increase the potential to identify themes unique to high or low levels of mental health strain. Participants were invited via email to participate in the study following the RCT intervention period and interviews were completed within 3 months of a participant's completion of the RCT.

Data collection and analysis

Participants were recruited using email and text message invitations over a five-week period. Participants completed informed consent, and interviews were conducted between March 2023 and May 2023 using a HIPAA-compliant video conferencing platform. Participants were compensated $50.

Interviews lasted 20–35 min and averaged 30 min. Interviews were recorded and transcribed using videoconferencing captions and verified by the research team. Two non-HCW research team members completed all interviews (RG, MS). The two interviewers self-identified as female, one as South Asian, and one as Hispanic. A coding structure was developed based on concepts from the interview guide as well as emergent themes. Thematic content analysis and a general inductive approach was used to code all of the transcripts using NVivo 14.0 software (QSR International) [21, 22]. Two coders read five transcripts and drafted the outline of a codebook. Each coder then independently coded five more shared transcripts to adjust the codebook and conduct an inter-rater agreement assessment. Following adjudication of any areas of discrepancy, the coders shared an additional three transcripts to review coding for inter-rater reliability, measured by Cohen's kappa which was >0.8, and overall comprehensiveness was achieved. Following adjudication of any areas of discrepancy, coders independently coded the remaining transcripts. Strategies used to ensure reliability and validity in the qualitative data included a comprehensive audit trail, checks between coders, and team debriefings. Interviews were audio-recorded only, and no participants ended the interview early.

Table 1 Self-reported demographic and professional participant characteristics ($n = 64$)

	n	%
Gender		
Male	3	5%
Female	60	94%
Other	1	2%
Race	0	0%
White	35	55%
Black	21	33%
Non-White/Non-Black	8	13%
Ethnicity	0	0%
Hispanic or Latino	7	11%
Non-Hispanic or Latino	57	89%
Race/Ethnicity	0	0%
Hispanic Black	1	2%
Hispanic Other	4	6%
Hispanic White	2	3%
Non-Hispanic Black	20	31%
Non-Hispanic Other	4	6%
Non-Hispanic White	33	52%
Professional Role		
Administration	15	23%
Environmental Services	2	3%
Manager	7	11%
Physicians & Advance Practice Providers	3	5%
Patient Care Coordinator	6	9%
Clinical Research	7	11%
Nurses	16	25%
Social Work	1	2%
Technicians (lab, pharmacy, radiology)	7	11%

Results

Ninety-three HCWs completed informed consent, and 64 were interviewed; the remainder were lost to follow-up or unable to schedule an interview (Table 1). Thematic saturation was reached among those interviewed and the qualitative coding was organized into five themes with subthemes (Table 2); (1) Mental health and the evolving pandemic (adjustments to clinical work; uncertainty and communication), (2) Individual barriers to professional mental health care resources (perceived need or personal obstacles; coping mechanisms; familial responsibilities), (3) Structural barriers to care (capacity of the mental health system; workload; work culture), (4) Mental health during the study (outlet for reflection; resources, text messages), and (5) Future recommendations for supporting mental health of HCWs (survey design features; system level investment).

Mental health, the pandemic, and beyond

Participants reflected on how the pandemic upended their professional and personal lives. Many participants noted changes that were brought on by the pandemic that had lasting impacts on their mental health and experience in the workplace, with trust having been broken by a changed clinical environment. Content captured in the following subthemes contextualized the current state of mental health among the population allowing for barriers and engagement with the intervention to be better understood.

Rapid adjustments to clinical work environment

Many participants shared that seemingly constant changes in their work environment heavily impacted

Table 2 Qualitative themes, subthemes, and select quotes

Themes and Subthemes	Illustrative Quotes
Mental health, the pandemic, and beyond	
Rapid adjustments to clinical work environment	"It was quite stressful… It was unexpected, nobody was prepared in many ways for what was going on. The patient overload during those 2 years [and] the unknown of what's going on, how can we deal with this and how can we treat it? It was pretty, overwhelming in many ways, body and mind, I mean. We were non-stop for months, and when I say non-stop, it was 7 days a week, 18 hours, we slept in the hospital." (Participant 10, Physician) "We had so many pass away. It was really hard to deal with, and then also our study decided that we need to ask 50 questions about how sad everybody in the pandemic was, and how they couldn't access healthcare. [For example], if they could get their medications or not. They gave us a month to do this for 400 people and said it would take 15 minutes to 2 hours, so I was pulling 16 hour days, completely alone. I would call their relatives and they'd either be dead, or they would be able to get their medication. They, all their friends and family, were dying. It was the worst experience of my life." (Participant 19, Other)
Communication and uncertainty:	"It was very tense. There were so many changes daily, and it was challenging as a leader to translate those changes in real time. They were pretty heavy, strong changes and changes that we haven't ever seen or dealt with before. Managing staff's reactions to these changes was hard… Anger was shared among the staff, and then I had to manage all of their feelings all at one time. That was very challenging." (Participant 47, Nurse) "It was incredibly stressful. There was so much information coming down the pike. But no real map at all as to what to do. [It felt like a] random inventing of the wheel in terms of how to provide care and how to support therapist. Partnering that [feeling] with the fear of actual Covid, and not knowing what was safe or unsafe, at work or in your personal life. It was stressful, confusing, and scary." (Participant 21, Social Worker)
Internal and personal barriers to care	
Stigma	*"I think with mental health, it is more personal, and you may not have any experience. I think, especially in different communities, it's you stigmatized or not talked about, and so you may not know where to go or who to talk to." (Pt 9, Physician)* *"I think that again that there's a stigma attached to it. Not as [much] maybe… I think we've gotten better… think there's definitely you know more work to be done… to really just lay it out there and say, 'Hey, it's okay if you're not okay. That's all right. And we can help you. We have resources to help you.' Because it may be that something that simple… people just don't know." (Pt 57, Nurse)*
Perceived Need	"I know that I have access to mental health services but it's something that I've personally struggled to get into… I think that's like more of a personal obstacle that has been created rather than like an actual like physical obstacle that exists." (Participant 41, Research Coordinator) "I felt like they were there, but I wasn't sure how they were going be helpful." (Participant 21, Social Worker) "I don't believe that it was something on the top of my mind. I don't think it had anything to do with access. I just think that it wasn't something that was just at the forefront of my mind. I think we were just so much on. [It was like], 'go, go! Let's get it done let's get it done.' (Participant 6, Receptionist/Patient Intake)
Individual coping in place of professional help	"I sewed and crocheted, I kept myself busy. I read a lot. I kept the TV off; I didn't watch the news and didn't listen to the news. I didn't follow new stories and things like that. I [would] call my family and relatives to make sure that they were doing okay. I was mindful of my own situation and manage[d] to get through my stress." (Participant 44, Other) "I've always been a runner. Running is huge for me. [I liked] being outside and working in my flower beds. I have a huge support. I did personal meetings with some of my church members." (Participant 27, Nurse) "My co-workers, we're going through the same thing, both because we're able to talk with each other and vent to each other." (Participant 41, Research Coordinator) "We have a pharmacy group [chat] where we just share memes with each other about our troubles and our mental health issues. That's how we called that power therapy." (Participant 12, Pharmacy Technician)
Familial Responsibilities	"I did try to talk to my family, but none of them really understood, because and no one of my family is in the medical field. They were happy to be home, doing work from home, so they didn't really fully understand. I mean they felt bad for me but they only knew what I told them and what they saw on the news." (Participant 38, Nurse) "I had to make sure my kids were okay. I had to make sure they weren't scared. My well-being was on the back burner the entire time." (Participant 42, Radiology Technician) "My husband is also an essential employee. So there was the fear of who's going to take care of my kids? Am I exposing our parents to this. That was very. That was probably the most stressful thing." (Participant 49, Nurse) "My schedule was completely thrown up in the air, and when could I get hours to continue to make money to support our family? I had a lot of stress. I feel like it took a negative effect on my marriage a bit because we just didn't really connect during that whole shutdown time because I was work trying to work shifts to get the income that we needed." (Participant 64, Physical Therapist)

Table 2 (continued)

Themes and Subthemes	Illustrative Quotes
Structural barriers to care	
Capacity of the Mental Health System	"I tried to call in a lot of therapists but they weren't taking any appointments. I had a situation outside of work that happened, and I also needed to find therapy. I literally had a list of therapists, and I was going down the list, calling each and every one of these doctors and no one was accepting new appointments" (Participant 42, Radiology Technician) "I do hear some people say that a lot of the therapists now are booked, so it's hard for them to schedule an appointment. I think I was like one of the lucky ones that kind of gotten right when the pandemic started." (Participant 40, CNA) "If you're in an underrepresented community, I think it's harder to find someone that you made feel comfortable talking to. I still don't feel like that was necessarily there for me." (Participant 9, Physician) "Everything is so far out like when you call from access to mental health services. It's very hard to get an appointment with anyone. It seems to be so far out." (Participant 6, Receptionist/Patient Intake) "I didn't feel like there was anything really available. Everyone was stretched so thin. I can't say that even if I knew something was available, I would have had been able to take advantage of it because of the way our schedule worked with our kids and my husband's job." (Participant 64, Physical Therapist)
Workload	"There's no normal regular hours. There's no 40 hour [work week], and we get that. It comes with the territory. But when you work 7 days a week and you sleep there, and you wake up to the same atmosphere, the same environment over and over again." (Participant 10, Other) "My patient flow is so demanding right now. I was just talking to my coworker about yesterday." (Participant 13, Patient Care Coordinator) "I was living here [at the hospital] and got less sleep. You're going from the minute you walk in. There's stuff to do but like your normal stuff. Everything is an emergency, and in that fight or flight [mode]. (Participant 25, Administrative)
Work Culture	"I think they should definitely be a lot more conscious of it, especially in [health] care providers. There's been a huge amount of burnout in healthcare workers, and eventually it got to the point where no amount of money is really going to help them. It is more deep-seated. So whether it is offering resources or just offering better work environments, it's something that [leaders] should consider heavily." (Participant 14, Researcher) "I feel like they've they always send out like the emails, with different resources in it. But there's nothing in our day that makes space for those resources, or to do any of that." (Participant 64, Physical Therapist) "You have to find the time to do it. Everything is not accessible during the week. We work during the week. Like I said, it's good on paper. They can send you everything in your email, but you can't access that all week." (Participant 13, Patient Care Coordinator)
Mental health and a digital health RCT	
Outlet for Reflection	"I enjoy those surveys because I remember honestly, it was me and 2 other people that were doing the surveys, and we were at our own computers. But after we finished the surveys, we discussed it, and it was almost like, Wow! The question that they were asking was almost like some of the question, like with people working through. And you almost feel like someone cares, or they. They are trying. They see a change in something, and they want to fix it." (Participant 40, CNA) "I like the surveys because I feel like they're trying to get to the root of what the issues may be, no matter what they are. It shows that they care, you know. That's why I said. The resources are there. You gotta use them because we can't find a whole bunch of people that actually care." (Participant 45, EVS) "It felt good to have an outlet. Finally, somebody's asking the questions that matter, somebody actually cares. But it is also depressing in a sense, because now I have to admit these realities to myself." (Participant 42, Radiology Technician) "Some of [the survey] definitely made me pause and really think about like and assess how I've been feeling in the past couple of months. I feel like it was panic time. Taking this survey helped me be able to slow down. And be like, 'okay, I actually have been dealing with this amount in anxiety and I actually have been, you know, feeling burned out in some situations. So definitely a time for introspection." (Participant 41, Research Coordinator)
Resources	"I think it's really good to stay on people's minds, so that they remember that this is a resource." (Participant 21, Social Worker) "I thought it was a good reminder, a good check in. I honestly didn't utilize them, but I didn't feel bothered by them." (Participant 22, Nurse Practioner) "They were informative, especially, if I wanted to look into it and peruse what the resource was." (Participant 23, Program Manager) "I think there was some tips on when you're feeling down what you can do. What of the things was to get out, move around, do some like if you have a small space, you can do this, and this as far as exercise goes. And I still do that. That was very, very helpful." (Participant 25, Adminstrative) "I think it was a helpful reminder to kind of check and see what might have been new. It wasn't a resource I looked at every day, obviously so it was nice to have like an update, whether it was like the podcast or other sessions that might have been coming up. I think that's how I initially found the group sessions. I would recommend keeping those up." (Participant 30, Research Management) "I already have a therapist I work with, so I didn't feel like I needed them. But if someone did not have regular access to a therapist, and maybe could have used someone to check in with. I thought it was nice to have that offer presented to them. It can take a lot of mental energy just to kind of go through the process of 'like okay, where do I go to find these sessions.' It involves a lot of clicking and navigating, and you're kind of over it if you can't find it right away. So it was nice that it was fed to you." (Participant 14, Researcher)

Table 2 (continued)

Themes and Subthemes	Illustrative Quotes
Text Messages	"I thought it was fine, and it was over text, which made it very nice and convenient. Definitely easier to receive wherever I happen to be." (Participant 29, Research Nurse) "It actually helped me to make an appointment. I scheduled a one on one." (Participant 13, Patient Care Coordinator) "I think the reminders were a good thing for us, because I tend to sometimes be forgetful, or I just have so many things on my plate that the text reminders were good for me." (Participant 44, Other)
Recommendations for supporting mental health care using digital strategies	
Design features	"[I would like to] use more words to describe feelings instead of just like anxiety or depression. Maybe try to go into the source and maybe you could have a question that had a whole bunch of words like, my heart's pounding, or I feel like I can't catch my breath, or my chest is tight, or my hands are shaking. That would help me recognize my anxiety a little bit more." (Participant 17, Nurse)
System-level investment	"Taking a timeout to really check on your mental health. I feel like it's very vital to have a sit-down time to really analyze how you're actually feeling." (Participant 39, Patient Registration) Some sort of a quarterly wellness check-in and designated time and date that we're allowed to like step away from all work." (Participant 29, Research Nurse) "There's no like blanket approach. I think that every person is unique and what's going to help improve their mental health in the workplace is going to be different. But I do think, having tailored conversations with each employee when they start about what would help them, kind of feel supported, and ensure that their mental health is in the best place possible would be a strong starting point." (Participant 15, Program Manager)

their mental health. Several noted that the pandemic made their work and home lives more isolating.

> *"My clinic was one of the initial COVID units, so coming into that as a new nurse was overwhelming and isolating. [It was] physically uncomfortable and hard to connect with patients and peers due to the physical lack of ability." (Pt 26, Nurse)*

Communication and uncertainty

The constant changes led to confusion, chaos, and general "*unknowingness.*" "*It felt like doomsday… It was just a complete state of panic and not knowing anything.*" (Pt 42, Technician) Confusion was amplified by inconsistent and changing communication, "*I had to translate or communicate changes on a daily basis which was exhausting. It was just non-stop.*" (Pt 46, Receptionist) Throughout the interviews, participants noted a wide variety of stress-inducing emotions describing, "*it was a lot, I think I still have some trauma from it… It interfered with everything*" (Pt 40, CNA). Many reflected on their choice to be a HCW and the associated "new reality" created between HCWs and their employers; one participant noted, "*My anxiety was that I personally would die and although I have peace with this, my anxiety now is a lack of trust in the health care system.*" (Pt 17, Nurse).

Internal and personal barriers to care

While participants expressed a need for mental health support tied to the pandemic's lasting impacts, several identified personal factors that impacted their ability and willingness to connect with mental health resources or care. This included mental health care and resources outside of the scope of the intervention and those recommended as part of the intervention.

Stigma

Woven throughout the discussions with nearly all participants was a component of an internal struggle with acknowledging a personal mental health symptom and/or need to access mental health care. Stigma was summarized as a feeling of admitting weakness to others or among others who remain stoic in the face of emotional distress. One physician noted.

> *"I think with mental health, it is more personal, and you may not have any experience. I think, especially in different communities, it's stigmatized or not talked about, and so you may not know where to go or who to talk to." (Pt 9, Physician)*

Furthermore, for those who acknowledged their own need, seeking out and accessing mental health care was also taboo to talk about in the workplace or with coworkers, adding an additional barrier to care. Some participants commented on a national conversation around mental health but a reluctance to talk about it within healthcare spaces.

> *"I think that again that there's a stigma attached to it. Not as [much] maybe… I think we've gotten better… think there's definitely you know more work to be done… to really just lay it out there and say, 'Hey, it's okay if you're not okay. That's all right. And we can help you. We have resources to help you.' Because it may be that something that simple… people just don't know." (Pt 57, Nurse)*

Perceived need

Participants acknowledged and acted upon their self-perceived need for mental health resources. Those who had engaged or sought out mental health care saw value in it and appreciated the help available to them. The majority felt that the mental health resources available to them, "*weren't necessary*" and that they could otherwise "*manage on their own.*" One participant shared.

> *"It's something that I've like personally struggled to get into. I think that's more of a personal obstacle that has been created rather than like an actual physical obstacle that exists." (Pt 41, Research Coordinator)*

Individual coping in place of professional help

In addition to accessing mental health care, participants identified coping mechanisms they deploy when responding to dynamic and growing workplace stressors. These coping mechanisms included establishing firm work-home boundaries, exercise, venting to colleagues, faith, connecting with family, and taking on new hobbies. A participant elaborated how a work group chat (e.g., peer support) was very therapeutic, "*we would just support each other in our messenger group. Would just send each other memes… I feel like that is a great service that we [can] do for ourselves.*" (Pt 12, Technician).

Familial responsibilities

Participants reflected on how their role within their family and how these roles contributed to their individual well-being and ability to handle stressors. Participants shared that their identity as a parent often meant caring for their family took priority over self-care. Some reflected the personal sacrifice being similar to clinicians prioritizing patient care over themselves.

> *"I have to make sure the kids are okay. During the pandemic, I had to make sure they weren't scared. I had to make sure [of that]. So, for me personally, for my well-being, I feel like that was on the back burner the entire time and still is." (Pt 42, Technician)*

Several participants stated that the pandemic reinforced isolation, which continues for HCWs today.

Structural barriers to care

Consistent with prior research, participants also spoke about the role external factors played in shaping their mental health, including aspects of their work and system limitations [7, 23, 24]. Many felt that they were limited in their ability to engage in mental health care by the structural barriers captured in the following subthemes.

Capacity of the mental health system

In discussing access to mental health care, many pointed to issues with the broader mental health care system. Specifically, the logistical issues with access (long wait lists) and out of pocket costs. One participant stating, "*it's there, but it's not actually there,"* (Pt 10, Patient Care Technician) as they spoke of the frustration of getting an appointment. Another shared, "*After a while you just stop. I've gone down this list they gave me (of providers to see), and I'm calling 6 and 7 doctors a day. Nobody's taking appointments.*" (Pt 42, Technician) Few expressed positive views of their mental health care, nothing that they were "*lucky*" to have a therapist after observing others struggle with connecting to care. Of note, many of these "*lucky*" HCWs sought care outside of their employer and sought private, out-of-pocket coverage.

Workload

Participants described an increasingly heavy workload which inhibited their ability to prioritize their own mental health.

> *"There's no 40 hours [per week], and we get that. It comes with the territory. But when you work 7 days a week and you sleep there, at work, and you wake up to the same atmosphere, the same environment, over and over again… it's relentless." (Pt 10, Patient Care Technician)*

Work culture

Participants reflected on a broader medical culture which was not supportive of prioritizing one's mental health. Many felt unheard by their managers or that CHW well-being was not a high priority.

> *"A lot of the management around here [are] not worried about the mental health of people. They are only worried about running a practice which, I can understand both sides, but again, you guys realize you are working with humans and not AI [artificial intelligence], right?" (Pt 37, Patient Registration)*

One participant shared "*I did have difficulty with scheduling therapy appointments because they are typically during normal business hours, which is totally understandable. And I did get some pushback requesting some time off work.*" (Pt 62, Physician Assistant) Participants pointed to a need for more flexibility to their working hours to accommodate time for workplace well-being initiatives.

Mental health and a digital health RCT

Despite previously detailed barriers, participants also reflected upon their involvement within the parent RCT

digital mental health study and how their participation improved their mental health. RCT participants in the intervention arm received proactive mental health assessments and connections to care using text messaging. Notably, participants in the control arm, who received only surveys, also reflected positively on their experience.

Outlet for reflection

Many expressed that receiving text based mental health assessments made them feel cared for by the health system. Participants felt "*checked in on*" and that their mental health mattered. One participant shared, "*You feel like someone cares, or they are trying to see a change in something, and they want to fix it." (Pt 40, CNA)* Another stated, "*Being able to put my feelings [on to] paper was nice, because we always know how we feel or what we go through, but we don't really express ourselves.*" (Pt 12, Technician).

Several mentioned the study allowed them to reflect on how they were feeling and express negative emotions, which were often neglected in favor of other responsibilities. This outlet was used both independently and with others, with one participant sharing,

> *"It was me and 2 other people that were doing the surveys, and we were at our own computers. But after we finished the surveys, we discussed it, and it was almost like, "Wow! The questions that they were asking were some of the questions that we were actually working through." (Pt 40, CNA)*

Resources

Participants appreciated the reminder of the breadth of mental health resources available to them. One shared, "*I think giving people options is great, because sometimes people find stuff that someone else wouldn't find or just didn't know where to look*" (Pt 23, Manager). Others found themselves engaging in additional resources offered on the platform, "*some of the videos I've watched, and I've taken advantage of some of the counseling sessions, so that's been really good.*" (Pt 33, Clinical Manager).

Text messages

Many expressed neutral feelings towards these messages, stating they were "*easy, simple*" and "*not invasive at all.*" Others noted that the text message reminders were useful, with one participant stating the messages "*actually helped [them] make an appointment [and] schedule the one on one.*" (Pt 13, Patient Care Coordinator).

Recommendations for supporting mental health care using digital strategies

Having experienced the intervention, participants provided recommendations for continued support for mental health awareness and access. These recommendations, captured in the following subthemes, may provide insight into how to overcome personal and structural barriers to care to improve mental health outcomes among HCWs.

Design features

Participants enjoyed the digital health intervention and recommended additional design features. They suggested that the assessment surveys could include additional mental health assessments to help users identify and process their mental health symptoms. For instance, one participant said,

> *"[I would like to] use more words to describe feelings instead of just like anxiety or depression. Maybe try to go into the source, you could list other phrases like, "my heart's pounding, or I feel like I can't catch my breath, or my chest is tight, or my hands are shaking." These would help me recognize my anxiety a little bit more." (Pt 17, Nurse)*

Several participants recommended more personalized reminders to facilitate continued engagement, and opt-in tools like journaling, guided self-reflections, and mindfulness exercises.

System-level investment

Participants highlighted a need for system-level investments and policy changes to better support HCWs. Participants frequently noted the importance of "*making space for mental health.*" They suggested specific breaks throughout the day to allow HCWs to satisfy necessities like going to the bathroom and eating meals. One participant said, "*Taking a timeout to really check on your mental health. Having sit-down time to really analyze how you're actually feeling. I feel like it's very vital." (Pt 39, Patient Registration)* In addition to individual time, it was important for leaders to solicit insights from the team, "*Some sort of quarterly wellness check-in and designated times that we're allowed to step away from all work" (Pt 29, Nurse);* while another said.

> *"There's no like blanket approach. I think that every person is unique and like what's going to kind of help improve their mental health in the workplace is going to be different. But I do think, having like tailored conversations with each employee when they start about what would help them, kind of feel supported, and ensure that their mental health is in the best place possible, would be a strong starting point." (Pt 15, Clinical Manager)*

Discussion

This study provides a HCW perspective on the challenges they face and on rapidly expanding digital health solutions in the shadow of the pandemic and also a future path for health systems deploying digital mental health strategies. The National Academy of Medicine's conceptual framework for clinician well-being outlines a need for individual, system, and structural levels of opportunities to support workforce well-being [18]. Digital health solutions aim to address some of these levels by providing a dynamic and scalable solution for busy HCWs who may work eccentric hours or have little time to connect to care. Despite having a digital mental health solution available for these participants, a key finding from this study is that the stigma associated with acknowledging the need for and connecting with mental health care or resources remains a stubbornly persistent barrier at the individual and systemic levels to acknowledging and accessing mental health care among health care workers [14, 25, 26].

The culture of medicine has reinforced a perversely normalized culture and mentality whereby individuals place the needs of their patients and their careers over their own mental health. Indeed, in this study, participants reflected on lack of time to care for basic needs (e.g., eating or going to the bathroom) as a stark contrast to the perceived "luxuries" of connecting to mental health care. While many studies have highlighted stigma (e.g., embarrassment, perceived weakness, or ability to treat one's self) related to seeking mental health care among physicians and nurses, this study includes a broader range of voices from varying roles including technicians, assistants, aides, and more. Despite the heightened attention the pandemic brought to the mental health of HCWs, the workforce remains persistently strained which has led to an exodus with many citing mental health as a primary reason for leaving [27]. Findings from the study support that challenging the expectations associated with stoicism or a culture of heroism and thus hopefully lowering the stigma surrounding mental health care should remain a top priority for health system leaders. While individualized methods continue to grow, future research will need to develop strategies that personalize care for individuals and secure or prioritize time for HCWs to care for themselves, both at work and at home.

We highlight the dearth of mental health expertise, in the form of one-to-one therapy, available to HCWs. The Association of American Medical Colleges recently reported on existing and worsening gaps in mental health care [28]. Despite factors which may improve access to mental health care (e.g., higher education, employment) [29], HCWs in this study noted that once they overcame the barriers to entry, they became frustrated as they attempted to navigate a complex system and struggled to connect with an actual mental health expert. Our participants note frustration when attempting to schedule care, challenges with insurance, and timely appointments that fit their schedules. As health systems expand employee assistance programs, study findings suggest that ensuring adequate and timely access to group or individual counseling is important and providing structural mechanisms to allow HCWs to connect with care while not worrying about their clinical obligations. Potential options could include telehealth-based appointments and peer-to-peer support as complementary adjuncts to care [30, 31]. Within the work environment and emphasized by the CDC as an "actionable step for employers", creating reserved time and space for HCWs to decompress during work could help individuals process, cope, and recharge as they care for patients.

In the parent RCT, participants were either left to usual care or were sent mobile assessments with linkage to mental health care and resources. Interestingly, the resources available did not change, but they brought participants closer to care via individual messaging. In this qualitative study the participants provided rich insight on receiving these mobile assessments and messages reported a feeling of support and a sense of being cared for using this remote methodology. Participants described the text messages as useful reminders to check in on themselves and their mental health, and appreciated the connection to the mental health platform. At scale, the strategy may provide one approach to overcoming stigma and setting up structural methods for health systems to be responsive to the mental health needs of the workforce. As our participants have highlighted a one-size-fits-all approach cannot work, this digital strategy helps bring assessments to the individual in a confidential way and in their words, "*helped them feel cared for it by their employer*." Broadly, this study adds to the literature as it provides the user centered insights needed in an evolving landscape of clinical medicine where mental health strain persists far beyond the pandemic.

Limitations

This study has limitations. It was conducted at a single large academic institution and thus may not represent a generalizable population. This study was conducted among HCWs at a health system located in the northeastern United States and cultural or societal norms reflected in these interviews and the responses from the participants may not be generalizable to other countries with differing norms related, but not limited, to careers, work, and healthcare more broadly. While the interviewers are trained and experts in qualitative research, their own identities may have unintentionally shaped the interview. Additionally, the interviews were transcribed and coded, but in this study the transcription

drafts were not shared with participants for verification, a process known as member checking, and without member checking there may be portions of the interview that are open to misinterpretation [32]. This study was also a follow-up evaluation from a prior RCT, whereby participants were provided differing methods of accessing a mental health and well-being platform named Cobalt and not all institutions have a digital mental health platform for their employees at this time. Participants completed the interview after the RCT ended, recall bias is possible. 93 HCWs completed informed consent while 64 completed the interview. We were unable to schedule an interview with 29 participants. The study sample was predominantly female; although this mirrored the parent RCT, males face additional stigma in acknowledging and accessing mental health services. (e.g., societal norms related to masculinity, self-reliance, shame as a few examples) [33]. Finally, to preserve confidentiality among this group, we did not link or stratify qualitative responses with anxiety or depression scores.

Conclusion

This study highlights the persistent mental health challenges HCWs face in connecting to care. As health systems attempt to create structural change in addressing stigma and improving the culture (e.g., expectations of HCWs, psychological safety, and value of mental health) within medicine, they must also build systems for individuals to connect to care. Our study builds upon previous findings and highlights a personalized digital strategy which may address these concerns. Participants noted simple text messaging assessments kept mental health top of mind and signaled that the health system cared about their mental health. The digital solution represents one potential strategy to ensure confidentiality, privacy, and to lower the barriers to connecting with evidence-based mental health care.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12913-025-12678-w.

Supplementary Material 1.

Supplementary Material 2.

Acknowledgements
Not applicable.

Authors' contributions
AKA, RG, LS, LB, DA, RMM wrote the main manuscript. MB, CBW, EBH, RK, SB provided commentary and edits to the manuscript and were all part of the study design and execution. RG, LS, DS, MS completed interviews, coding, and result reporting. All authors reviewed the manuscript.

Funding
This study was supported by National Institute of Neurological Disorders and Stroke (NINDS), National Institute of Mental Health (NIMH), National Institute on Minority Health and Health Disparities (NIMHD) (Award Number: 1R01MH127686 -01). ClinicalTrials.gov identifier: NCT05028075, Date 11/29/2021.

Data availability
Data from de-identified transcripts are available by request to the corresponding author at anish.agarwal@pennmedicine.upenn.edu. Interview guide is included in the supplementary material.

Declarations

Ethics approval and consent to participate
Approved by the University of Pennsylvania Institutional Review Board (#848844).

Consent for publication
Not applicable.

Competing interests
Dr Merchant is the PI of NIH NHLBI R01HL1-141844, NIH/DHHS R01 MH127686, and NIH K24 HL157621. David A. Asch, MD, MBA is partner and part owner of VAL Health and serves as an advisor to Thrive Global. The research team was supported by the NIMH R01 MH127686.

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Received: 1 November 2024 / Accepted: 31 March 2025
Published online: 07 May 2025

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