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Barriers and potential solutions for effective integration of depression care into non-communicable diseases clinics in Malawi: a qualitative end-point evaluation of the SHARP randomized controlled trial

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Abstract

Background The sub-Saharan African Regional Partnership for mental health and capacity building (SHARP) study was a clinic-randomized trial of two implementation strategies for integrating depression screening and treatment into non-communicable diseases' (NCD) clinics in Malawi between 2019 and 2022. We report on the barriers to implementing depression care integration at SHARP study sites and potential solutions.

Methods *N* = 39 in-depth interviews with participants from all ten sites were conducted, recorded, transcribed, coded in NVivo 12 and analyzed by qualitative experts. We used thematic analysis to identify implementation challenges and potential solutions. The Consolidated Framework for Implementation Research helped to develop guides and organize the results.

Results Outer setting barriers included high workload (due to high patient volume, increased paperwork, shortage of staff), the effects of coronavirus disease 2019 (COVID-19) pandemic, staff turnover and negative provider attitudes. Limited clinic space arose as an inner setting barrier. Workload can be overcome by increasing the number of NCD personnel, decentralizing the depression/NCD services and integrating mental health and NCD documents (implementation process). The COVID-19 pandemic presented unique challenges including fear of interpersonal contact and changes in scheduling staff that were difficult to overcome in the short term. To deal with the effects of staff turnover, participants identified the need for continuous depression training to new providers. Lobbying for more rooms from leadership can address concerns of limited space. To reduce negative provider attitudes, participants urged facility leadership to make themselves available for consultations and mentorship and to provide continuous learning opportunities such as refresher trainings.

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Conclusion The experience in the SHARP study highlights the need for a culture of continuous learning and adaptation in healthcare settings, enabling the development of strategies to overcome evolving challenges. Planning for the integration of mental health and NCD care should extend beyond immediate challenges and consider long-term goals and sustainability.

Trial registration This study reports part of the findings from the endpoint evaluation of the SHARP clinical trial that is registered at ClinicalTrials.gov, NCT03711786 first posted 20,181,018.

Keywords Qualitative, Evaluation, Barriers, Integration, Depression, NCDs, Task shifting, Common mental disorders, Hypertension, Diabetes, Implementation science

Background

Integration of depression care into non-psychiatric settings (e.g., general, or primary care) is recognized as a critical next step to address the mental health gap in low-resource settings. Although depression is the most common mental health disorder affecting people in low-resource settings, access to treatment is extremely low [1–3]. Roughly, three-quarters of people living with mental illness in low-resource settings do not receive any treatment and few receive the basic standard of care [4]. In Malawi, previous cross-sectional studies in general outpatient department and chronic care clinics respectively showed that clinicians attending to the patients failed to detect patients with depressive symptoms despite being identified by the study teams [5, 6]. Unmet mental health needs are caused by stigma and discrimination towards mental health, low awareness, and lack of human resources' to assess and manage mental health disorders (i.e., very few trained mental health human resources in low-resource settings) [7]. Lack of trained mental health personnel leads to challenges in scaling up mental health programs in low-resource settings. In addition, there is less coordination and sharing of research results among researchers, policy makers and practitioners across all sectors that could be used to scale up mental health programs [7]. Integration of mental health care, specifically depression care, into existing health care systems and programs in low resources settings is urgently needed and will support scale up by leveraging existing human resources and infrastructure.

Although studies on integration of depression into chronic diseases' care are scarce in the sub-Sahara Africa region and in Malawi, one pilot study done in Malawi successfully implemented the depression screening program among HIV patients at two clinics, achieving screening rates of 88.3% and 93.2% among newly diagnosed HIV patients, respectively. The findings of this study further revealed that 25% of the enrolled patients had mild to severe depression symptoms, with an additional 6% experiencing moderate to severe symptoms [8]. However, sustainability of this program and similar interventions is a challenge [9]. Other challenges to effectively integrate depression into general health care are limited knowledge on mental health care by general health care providers, limited funding, competing demands and priorities, high work load, and stigma and discrimination associated with mental illness [7, 10, 11].

Accordingly, a comprehensive exploration of health care systems involved in integration of depression services into general health care is essential for understanding and addressing persistent challenges in Malawi and similar settings. The study described in this paper explores the barriers, their perceived causes, and their potential solutions to successful integration of depression care into NCD care in Malawian district level hospitals. Additionally, this analysis aims to identify effective solutions that can be implemented to sustain integration of depression services within the broader healthcare framework.

Methods

General description

This analysis uses data from the endpoint qualitative evaluation of the SHARP study [12, 13] and it builds on the earlier efforts made during formative and midpoint evaluations [11, 14]. The participants in the endpoint qualitative evaluation had fully experienced trial implementation and were thus able to talk about implementation strategies more in-depth. As such, this analysis yields detailed findings relevant to implementation, sustainability, and scale-up of the integrated depression and NCD care programs in low-resource settings.

Design and setting

Parent study design and setting

The SHARP study was a clinic-randomized controlled trial that compared implementation strategies to integrate depression assessment and care into NCD clinics in ten Ministry of Health (MoH) hospitals ($n = 1$ central, $n = 8$ district and $n = 1$ rural) between 2019 and 2022 [13, 15]. Of the 10 SHARP study sites, 2 were in the northern region, 4 in the central region, and 4 in the southern region of Malawi. The SHARP study collaborated with Malawi MoH headquarters to identify the ten study sites and ensure geographic representation across the country. In Malawi, the health care delivery system is divided into

three levels: primary care (only primary care services at health centers and health posts), secondary care (primary and secondary care services at district and community/rural hospitals), and tertiary care (primary, secondary and specialized care services at central hospitals) [16]. The MoH has established NCD clinics in central, district and some rural/community hospitals, which are expected to serve high volumes of both in- and out-patients.

The goal of the SHARP study was to compare the success of two implementation strategies in achieving high-quality integration of depression care: a basic strategy focused on training and supporting an internal clinician champion who in turn trained and supported fellow NCD providers in a task-shifted depression care approach; versus an enhanced strategy that supplemented the basic strategy with an audit-and-feedback strategy delivered by external experts through quarterly quality assurance and mentorship visits. The SHARP study used multiple training and mentorship implementation strategies that are widely used globally to build health workforce capacity and to adopt new interventions effectively and efficiently [17, 18]. As part of the basic strategy, district NCD coordinators and their deputies facilitated and championed the integration of depression and NCD care. These coordinators and deputies later trained NCD providers in their respective facilities using the Training of Trainers approach [17]. Second, NCD patients were trained to work as "expert" peer or lay psychosocial counselors in the NCD clinics as part of the Friendship Bench (FB) task shifting intervention – a psychological intervention model that originated in Zimbabwe to increase access to psychosocial counseling in the presence of a health workforce shortage [19, 20]. The concept of "task shifting" was adopted by the World Health Organization (WHO) as a public health initiative and solution to the critical shortage of the health workforce in low-resource settings [21]. The WHO defines task shifting as the rational redistribution of tasks among health workforce teams [21]. For instance, several healthcare tasks such as HIV counseling and treatment have been shifted from specialists to non-specialists and have improved health outcomes in low-resource settings, such as Malawi [10, 22–25]. Finally, as part of the enhanced strategy, the five intervention arm facilities received additional mentorship and supervision in the form of audit and feedback on a quarterly basis. This was provided by a team of experts in mental health, NCD care, clinic management, epidemiology, and implementation science.

During the SHARP study, all 10 NCD clinics fully integrated depression care. Throughout the study period, the clinics collectively encountered 60,744 patients, and depression screening fidelity showed moderate levels in both groups (58% in the enhanced arm versus 53% in the basic arm), resulting in a probability difference of 4% with a 95% confidence interval ranging from – 38 to 47%. Treatment initiation fidelity remained high in both arms, with rates of 99% in the enhanced arm and 98% in the basic arm, yielding no probability difference. However, during the COVID-19 period, screening fidelity sharply declined in the basic arm, while in the enhanced arm, screening fidelity remained stable. Furthermore, follow-up treatment fidelity was significantly higher in the enhanced arm compared to the basic arm (82% versus 20%), demonstrating a probability difference of 62% with a confidence interval of 36–89%. Additionally, of the 589 patients with depressive symptoms enrolled in the follow-up of the SHARP study, depression remission rates were notably higher in the enhanced arm compared to the basic arm (55% versus 36%), indicating a probability difference of 19% with a confidence interval of 3–34% [12]. A cost-effective analysis of the basic and enhanced strategies, revealed that although the enhanced strategy (i.e. use of internal champions plus external supervision with audits and feedback) would be more expensive than basic strategy (i.e. use of the internal champions only without external supervision and audit and feedback), it was more effective in achieving depression remission and reducing disability-adjusted life years (DALYs) [26].

Endpoint qualitative evaluation design and setting

We used an exploratory approach to better understand the challenges to depression care integration in NCD clinics, their perceived causes, and the possible solutions across the ten study sites. This allowed us to explore issues of interest and develop an in-depth understanding of the integrated depression/NCD program and its processes, as well as the experiences of those who participated in the program [27, 28].

The revised Consolidated Framework for Implementation Research (CFIR) framework [29, 30] guided the development of the interview guides, was used to organize the findings and guided the write up of the results section of this paper. The revised CFIR has five domains: (1) the *Innovation*, the "thing" that is being implemented; (2) the *Outer Setting*, the greater environment where the innovation is being implemented (e.g., a health care system); (3) the *Inner Setting*, the location in which the innovation is implemented (e.g., the NCD clinic); (4) the *Individuals*, the roles and characteristics of the people who are involved in implementing the innovation (e.g., NCD coordinators or Friendship Bench counselors); and (5) the *Implementation Process*, the activities and strategies used to implement the innovation (e.g., training champions) [30]. The CFIR is useful for evaluations of implementation programs because of its ability to classify implementation determinants at multiple levels, and to illustrate the connections between them [30, 31].

Data collection and management

The SHARP end-point evaluation data were collected between November 2021 and January 2022 at each of the 10 SHARP study sites. Endpoint qualitative interviews were conducted by interviewers who were not part of the SHARP study site. Across the ten study sites, purposive sampling was used to select 39 participants for in-depth interviews [32, 33]. Participants were selected based on their relevant experience and knowledge to the study, individuals who had worked at the NCD clinics during the SHARP study period and could provide valuable insight that pertained to depression integration. Participants included the District Medical Officer (DMO), the NCD coordinator, one NCD provider, and the former SHARP study research assistant (RA) from each study site. The DMO is a physician who has a district level leadership role. During the SHARP study period, the DMO oversaw all patient care activities that were conducted at the NCD clinic and supervised the NCD coordinator. The NCD coordinator served as the intervention "champion" and led the integration of depression care and NCD services. In this leadership role, the NCD coordinator led trainings, mentored the other NCD providers at their clinic, compiled and sent reports to the MoH. For this study, the NCD providers were mainly the clinical officers (Physician Assistants) and nurses with very few clinics having physicians who provided the integrated depression and NCD services to patients. The SHARP study RAs represented study staff who led the participant recruitment and consent process and conducted study surveys. Because RAs were not clinic staff, we assumed they might provide an unbiased perspective of depression care integration within each NCD clinic. RA perspectives therefore represented essential components in our data set due to their corroboration of challenges to clinic staff from the same hospitals.

The data collection process used multiple interview guides tailored to the distinct roles of participants—DMOs, clinical coordinators, NCD providers, and RAs—within the SHARP study. This approach ensured that questions were relevant to each participant's role and captured their unique perspectives on depression care integration. The questions on the guides aligned with the CFIR domains. For example, there were questions that focused on Innovation (the integration of depression care), Outer setting (e.g., health system and COVID-19), Inner setting (provider turnover, paperwork and workload), individuals (i.e. we splinted the guides by the participants' role and we asked questions about attitudes and personal experience with integration), and Implementation Process (i.e., questions about training, incentives to motivate the integration. While the guides shared core themes (e.g., organizational climate, workload, and integration challenges), questions varied to reflect each participant's level of engagement. For example, clinical coordinators were asked about clinic-level implementation challenges, NCD providers about daily patient interactions, DMOs about high-level administrative support and sustainability strategies, and RAs about their role in supporting workflows and addressing provider engagement challenges. These targeted questions allowed for an in-depth understanding of integration efforts at multiple levels. Although all participants were fluent in English, the interview guides were translated into Chichewa (the national language of Malawi) and Chitumbuka (a language widely spoken in the northern region of Malawi) to accommodate the participants' language choice. The senior qualitative researchers trained three interviewers to use the IDI guides and make sure they understood the meaning of the questions, to build their interview skills (e.g., how to ask open-ended questions, probe for details, and interpret body language).

All participants completed the interviews in English, with an occasional few sentences or words in Chichewa. Most IDIs ($n=34$) were conducted by phone, and few ($n=5$) were conducted face-to-face following COVID-19 virus prevention protocols. To maintain participant confidentiality, all interviews were done in a private place regardless of the mode of data collection. The interviews were audio recorded and transcribed verbatim in English using a one-step approach (i.e., the few Chichewa words or sentences that were within some interviews were transcribed directly into English).

Data analysis

Thematic analysis was used to identify, analyze, and report patterns (themes) within the qualitative data and involves systematically coding data to identify recurring themes or patterns of meaning [34, 35]. A team of qualitative experts (CZ, KRL, and AM) first read the transcripts to familiarize and immerse themselves in the data. A codebook was iteratively developed that guided the analysis and helped maintain consistency between coders [36].Firstly, a priori codes were drawn from the interview guides and used as parent codes. Child codes were added as themes emerged. The coders met weekly to discuss the codes, coding process and agree on the emergent themes. Coding was done using NVivo 12 [37]. To systematically analyze implementation challenges and their potential solutions, we constructed matrices of participant roles (i.e., Clinical Coordinators, DMOs, Providers and RAs) by themes (e.g., workload and attitudes toward depression integration) and quantified themes within them. This approach enabled us to identify and compare key themes within and across roles, linking themes across sites to enhance the depth and contextual relevance of our findings on barriers to NCD care integration and their potential solutions. Memoing, recording emerging

thoughts on variations within themes and connections between themes, was employed to help organize the data and facilitate interpretation. This process allowed us to explore how themes intersected across roles and settings and ensure a richer and more systematic analysis of implementation challenges and proposed solutions.

Results were organized according to the five CFIR [30] domains. The *Innovation* domain was used to describe how depression care integration to NCD care in general affected care in general at the NCD clinics. The *Outer* and *Inner setting* domains were used to describe the barriers to depression integration and their perceived causes that arose from the health care system and within the NCD clinics respectively. The *Individual* domain was used to describe implementation barriers related to NCD providers. Finally, the *Process* domain was used to describe the actions and approaches the SHARP study sites used to integrate depression care into NCD care.

CFIR domains were applied during development of guides and the analysis phase, serving as an organizational framework rather than direct codes in the codebook. Initially, the codebook was developed with a priori codes based on interview guides and study aims. After coding, themes were reviewed and systematically assigned to specific CFIR domains by the study team on their weekly meetings. This process involved "tagging" each theme with the most relevant domain based on its alignment with the CFIR constructs, allowing for clear categorization.

Ethical consideration

The University of North Carolina at Chapel Hill Institutional Review Board (Chapel Hill, NC, USA; approval # 18-2211) and the National Health Science Research Committee (NHSRC) of Malawi (Lilongwe, Malawi; approval #18/09/2143) approved the SHARP trial and all aspects of this research. All study participants provided written informed consent. Consent forms were available in all three widely spoken languages in Malawi i.e., English, Chichewa and Chitumbuka. For this study, consent forms were provided in English because all participants chose it over the other languages, and all had education of O-level and above. Privacy and confidentiality were maintained by assigning unique identification numbers to all the participants and by conducting interviews in private rooms. Audio recordings were collected on audio recording devices and were stored on an encrypted computer with two passwords known by only essential researchers. Audio recordings were deleted from the audio recorders after they were transferred to the encrypted computer, to which only essential, key personnel have access for use in data analysis.

Table 1 Distribution of study participants' role

Participant role	# of IDIs
District Medical Officers	*n* = 9
Clinical Coordinators	*n* = 10
NCD Providers	*n* = 10
Research Assistants	*n* = 10
Total	*N* = 39

Results

Of the 39 individuals approached for participation (four per site, with one DMO responding for two sites), all 39 agreed to participate and were interviewed. Table 1 shows the distribution of the participants in relation to their role at the study site.

Thematic overview

We report our thematic results following the five domains of the CFIR framework [30] (see Fig. 1).

Outer setting barriers

High workload

Most participants (32 of 39) identified high workload as a predominant *outer setting* challenge that impacted depression care integration (*the innovation*) at all SHARP study sites. Participants reported that although the NCD Coordinators and DMOs helped to schedule patients in line with the availability of the NCD providers, high workload was caused in part by the large numbers of walk-in patients. NCD clinics are mostly located at district hospitals rather than primary care settings and thus they serve a larger catchment area. Further, participants reported that the unbalanced provider-patient ratio resulted in providers feeling pressured to keep interactions brief which challenged their ability to complete depression screening with each of their patients. One NCD provider reported that:

> *For some of the challenges, sometimes we might have so many patients and that affects the quality of the [depression] assessment and that increases the turnaround time for the patients. Some of the patients may not be assessed very well or they may be forced to falsify their experiences to the assessment so that they may go out early.*

An NCD provider at another site reported that:

> *As a clinician, you see that you have a long line [of patients] …So, you make sure you finish [consulting with them] so that they don't wait for long. So, I think, that is affecting the screening [of depression] and everything. So, I think, the numbers [of patients reporting at the NCD clinic] they do [affect our work].*

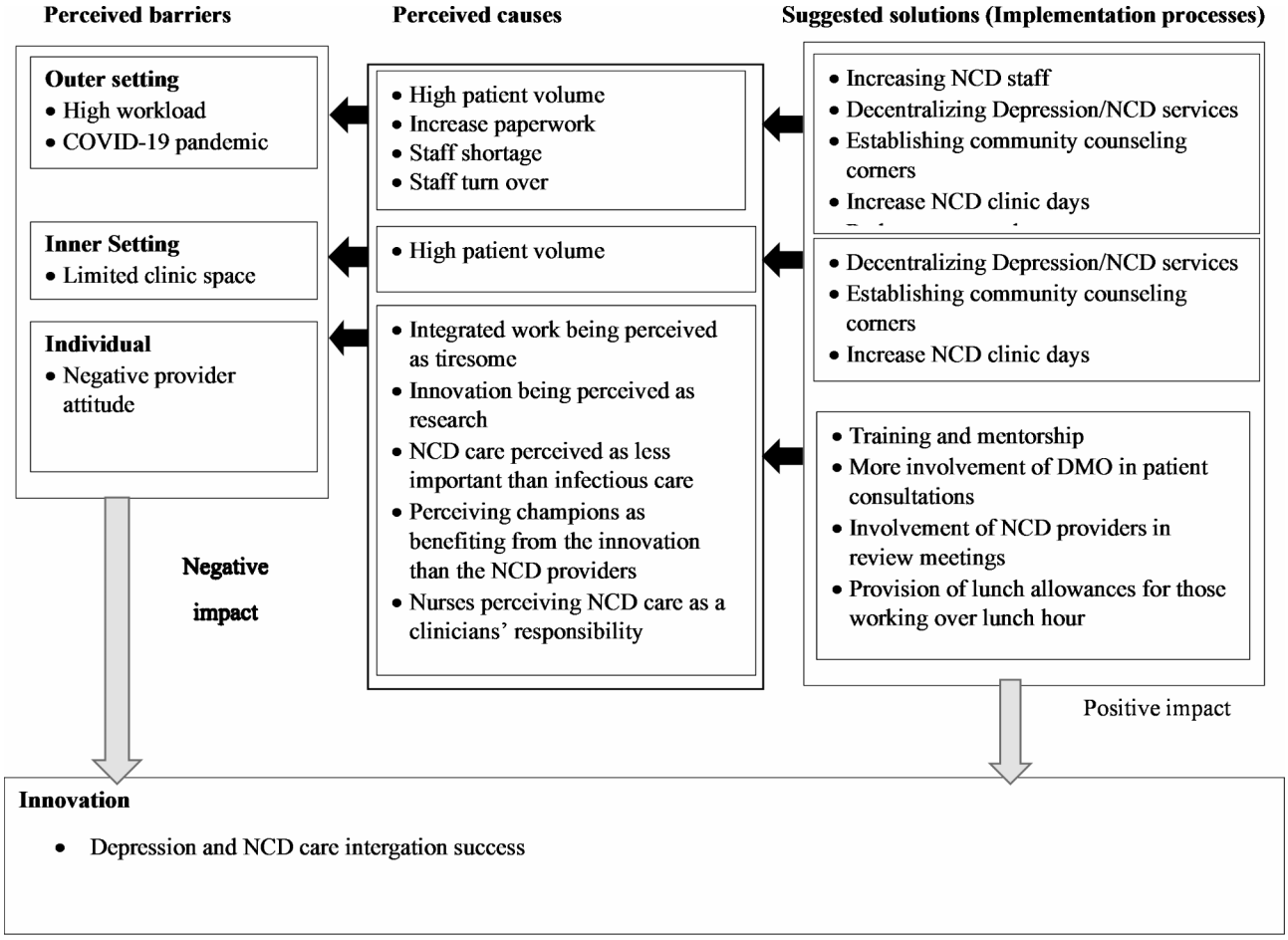

Fig. 1 Themes from the endpoint qualitative analysis

High workload was also reported to be caused by the amount of paperwork NCD providers were required to complete. Paperwork included completing the Patient Health Questionnaire-9 (PHQ-9) which is used to assess the presence of depressive symptoms in patients suffering from noncommunicable diseases. If a patient is found to have depressive symptoms (e.g., persistent feelings of sadness and loss of interest for two weeks or more as measured by the PHQ-9), providers were required to document this on mental health specific forms in addition to other NCD forms (i.e., NCD card, registers, and the patient portable medical record book). The following quote describes how additional paperwork was perceived to have caused some of the high workload for providers:

> *Providers complain about workload. So, most of the times I think, it has to do with the screening tool [PHQ-9 form]…even though when it's shorter…to use it on every patient, it takes time. The other thing they complain about is the documentation. (DMO).*

An NCD Coordinator further described how additional paperwork was an impact on workload:

> *Most of the challenges raised are paperwork. There is too much paperwork. They [NCD providers] say it is cumbersome compared to the number of patients.*

Participants also highlighted staff shortages as another factor contributing to high workload. Staff shortages were described as too few NCD providers to attend to the high numbers of patients that were scheduled on each clinic day. Participants also reported that the existing staff overworked because they were also assigned to other duties within the hospital in addition to depression/NCD integration activities.

Lastly, participants reported that staff turnover that occurred at both the leadership level (i.e., hospital director, DMO and NCD Coordinator) and the NCD provider level contributed to high workload. Participants reported that staff turnover was driven both by transfers within the hospital and by providers moving to other organizations, returning to school, or retiring. This created a knowledge

gap among new NCD providers on depression screening and reporting. One of the NCD coordinators described how staff turnover affected NCD/depression integration services:

> *…we have some other staff who have followed their spouses; we have got especially a lot that have gone for upgrading [schooling] and others have been transferred for different reasons. But we don't usually have those that have transferred within the district [who are competent to take over the depression/NCD integrated activities]….*

An NCD Provider added:

As for the staff turnover, we may have new clinicians who are not aware of the mental health assessment, and so, they may not conduct the mental health assessment.

The suggested solutions to overcome workload: the process domain Participants identified a number of ways to address high workload and its causes. One DMO thought workload could be reduced by scaling up NCD and depression care to primary health centers:

> *There are several challenges ranging from human resource to the infrastructure… we want to make sure that this is a well-integrated and sustained district, we want to also do this [NCD/depression integration] at other high burden clinics …. We want to decentralize it.*

Another NCD coordinator suggested that paperwork could be reduced by employing a data officer to be responsible for paperwork:

> *… if the paperwork can be modified or if there can be someone to be filling that form, but for the clinician to be doing all those things, it is hectic… If the registers can be trimmed and the data entry should be trimmed because there are a lot of registers that we are supposed to use… yes, or someone should be doing the interviews, and someone should be doing the diagnosis and treatment, not that the same person should do the interviews, diagnosis, and documentation. It is hectic.*

Other potential solutions included [1] increasing the number of the NCD personnel (i.e., NCD providers, statistical clerks, social workers) [2], allowing literate patients to self-administer the depression assessment tool [3], establishing counselling corners/places in communities [4], increasing the number of days the current NCD clinics are open [5], reducing and integrating mental health and NCD documents, and [6] providing continuous trainings and mentorship activities to new staff and those returning to NCD clinic after a rotation from other departments.

The COVID-19 pandemic

The COVID-19 pandemic, another *outer setting* barrier, was reported by participants as a challenge that had major impacts on integration of depression into NCD care at all study sites. All groups of the study participants (i.e., the DMOs, NCD coordinators, NCD providers and the SHARP RAs) reported that during the COVID-19 pandemic, there was a decrease in the numbers of both the patients and the service providers reporting to the NCD clinics. Participants reported that social distancing, providers working in shifts, and other policies that were brought into health facilities by the Malawi MoH to combat the COVID-19 pandemic contributed to the reduced number of NCD providers who were scheduled to work at the NCD clinics at any given time. The participants also reported that the NCD Providers were directed by the facility leadership to focus on issues related to COVID-19 pandemic, which took attention away from depression care integration activities. It was also reported that the pandemic made people fear close proximity with others, causing some NCD providers and patients to not adhere to their scheduled NCD visits/schedules for fear of contracting COVID-19 virus. For patients who did adhere to scheduled visits, NCD providers reported wanting to move them through the clinic quickly to reduce possible exposure time, minimize crowding, and promote social distancing. This resulted in partial or no depression screening for some patients. Some NCD providers also reported being afraid of touching the mental health and NCD paper documents for fear of contracting the COVID-19 virus through fomite transmission. Additionally, participants reported that due to SHARP study RAs being recalled from the sites during the COVID-19 pandemic, they believed that the depression/NCD integrated services have been stopped. This also led to reduced or stopped depression screening. One NCD coordinator said of the COVID-19 pandemic affecting the NCD/depression integrated activities at the SHARP study sites:

> *The common issue that has been raised by most of them [NCD Providers] is the COVID 19 pandemic. We have been hit hard by the pandemic…so for us,… it was posing a greater challenge because clinicians were afraid to screen the patients because they were thinking that they would expose themselves to the pandemic. So, the screening [of depressive symptoms] was compromised….*

Another reason cited by the study participants that contributed to some patients not adhering to their clinic

schedules was fear of being screened for the COVID-19 virus if they reported to the health facility. This was due to hospitals adopting policies requiring all individuals to be screened for fever before entering as a way to detect those who may be infected with the COVID-19 virus.

> *So, on that one [COVID-19 pandemic], the issue is that the turn-up of the patients was low because … patients at NCD [clinic] were being screened for COVID at our main entrance gate, so most of clients were screened for fever, so they could run away… they would say that " at this facility they will give us COVID " this and that…(NCD Coordinators).*

Additionally, the participants reported that the COVID-19 pandemic disrupted drug supply chains which left the clinics with a deficit of both antidepressant and NCD drugs. Due to disrupted drug supply chains, patients were not always able to receive their prescriptions on time or at all which lowered motivation to adhere to their scheduled NCD clinic visits. Since COVID-19 was a pandemic, there were no specific suggested solutions by the participants for the service disruption due to this.

Inner setting barriers

Limited clinic space

Limited clinic space emerged as an *Inner setting* barrier that affected the integrated NCD/depression services in most SHARP study sites. Participants reported that due to limited space at the NCD clinics, there was overcrowding of patients in the consultation rooms that compromised privacy and confidentiality, leading to NCD providers not assessing patients for depression. In addition, they reported that lack of space, privacy, and confidentiality led to some patients being unable to respond correctly to the depression assessment questions for fear of others overhearing even if clinicians asked the questions.

> *so, to me it has been a challenge, because we don't have enough space and most of the clients would not answer the [depression screening] questions because the place does not have the privacy it would have, and you find that most of the clients who would have answered are restricted… (NCD Provider).*

Limited clinic space was also mentioned in relation to the COVID-19 pandemic as it made social distancing more difficult.

Individual barriers

Negative provider attitudes

Negative provider attitudes toward NCD/depression integration emerged as an *Individual* barrier. Participants described that some NCD providers who were involved in implementing integration activities reported negative attitudes that led them to deliberately excuse themselves from depression integration services. We coded sentiments like provider frustrations around feelings related to 'having' to screen for and treat depression, a lack of provider motivation to apply the depression assessment tool, and knowledge gaps between newer and more senior providers that resulted in unequal screening loads as generally 'negative attitudes' related to depression integration. Participants also reported that leadership personnel (i.e., the DMOs and some NCD coordinators) also had negative attitudes. Participants reported that negative attitudes were caused by the perception that integration activities were tiresome and time consuming, delayed patients from going home, were a waste of time, and were only part of a research study and not part of the clinic responsibilities. Some participants also believed that NCD care was less important than infectious diseases' (ID) care. Further, participants reported that there were not enough incentives and some participants believed that the coordinator was benefitting from integration more than the other staff. Participants reported that untrained clinicians in depression were reluctant to learn about depression care integration activities on the job as they believed that this as less motivating than the formal in-service training model. Participants also reported that some nurses thought NCD/depression integration services were the responsibility of the physicians or physician assistants and did not want to help. Participants also reported that at some sites, negative attitudes were related to lack of leadership support (i.e., lack of DMO involvement at NCD clinic). They said that this demotivated NCD providers because they had no one to consult at the clinic when faced with difficult cases. One NCD provider stated:

> *…from our clinic, I think there might be a problem of attitude. Most providers didn't treat depression seriously, so I have noticed that most of us do not think [that depression is serious]…we could just chose not to screen because we did not know how serious depression is and what are the consequences when someone who has depression is not treated. Apart from the providers' attitude, more clients per clinic day was also a challenge to screen each and every client, and this brings us again back to shortage of staff.*

And another former SHARP study RA reported how negative attitude affected depression care,

> *The [negative] attitude that people have [affected depression screening], they [NCD providers] think*

that if they are screening patients with depression, they are helping someone, or someone else is going to benefit, so basically those are the reasons they complain about or that makes them fail to screen each and every patient who comes at the NCD clinic.

Participants reported that the depression care was more affected in clinics where the DMO couldn't support clinicians at the clinic level as reported by one of the former SHARP study RA in the following quote:

The DMOs' attitude is affecting it [depression care] negatively since he does not conduct the supervisions that I think are supposed to be happening, that closer link with the clinicians that work at NCD clinic is not there. Or maybe even with the friendship bench counsellors. So that there is that kind of disjoint between these cadres, in terms of depression integration at the NCD [clinic].

And the NCD coordinator also reported that the DMOs' attitude greatly affected depression integration work at some SHARP study sites:

The DMOs' attitude … has a lot of impact because if the DMO says "no this is adding more work to the providers", the providers will listen to that because they respect the words of the DMO and because this was attached to a research program, people think it is a research program and when the DMO says "don't do this", everyone will follow.

Overall, participants reported that negative provider attitudes, compounded by a lack of leadership support and perceived low importance of depression integration, hindered the NCD providers' efforts to effectively integrate depression care within NCD clinics at SHARP study sites.

Implementation process

Suggested solutions to address staff turnover, limited clinic space and negative attitudes

Participants suggested several potential solutions *(implementation processes)* that can be used to address the perceived causes and effects of staff turnover (i.e., lack of depression training and orientation to new clinicians or those who were on rotation for a long period of time). These includes provision of continuous depression trainings to new NCD providers and to those reporting to NCD clinics from the prolonged rotations, and inclusion of presentations about depression during the morning handovers at the facility to build capacity and increase knowledge of mental health for providers. Participants also suggested that immediate recruitment or replacement efforts, or the use of interns could be helpful in addressing staff turnover. However, participants reported that use of interns can be an effective solution to permanent staff turnover if continuous depression trainings are provided since interns are located to the NCD clinic for only three months.

Participants suggested that limited clinic consultation space can be improved by lobbying for more clinic space from the facility leadership (i.e., the district health management team).

Participants said that the negative attitudes of providers can be improved by motivating them. Participants of this study reported that NCD providers would be motivated if the DMO could be available and helping with patient consultation at the NCD clinic, providing mentorship and supervision (i.e., more involvement of the DMO at the clinic level), having continuous orientations and refresher integrated depression/NCD trainings and holding review meetings. Participants also mentioned a need to scale up (decentralize) the depression/NCD integrated services, increase staff, provide lunch allowances to NCD providers who work over lunch hour, and reduce NCD/depression paperwork. In addition, participants reported that staff would be more motivated if facility leadership (i.e., district health management team including the DMO and the MoH officials at headquarters) encouraged them as they provide the integrated depression/ NCD care. NCD providers also suggested that Malawi should include depression/NCD integrated care in the medical and nursing curricula so that when providers graduate, they would already have knowledge of the depression/NCD integrated services.

Discussion

This qualitative endpoint evaluation of the SHARP clinic-randomized trial explored [1] barriers to effectively integrate depression care into NCD care [2], perceived causes of the identified barriers to integration, and [3] methods of overcoming the identified barriers to successfully integrate depression into NCD care in 10 district-level health facilities across Malawi. The findings were categorized into the 5 CFIR domains: *Innovation*, *the Outer Setting*, *Inner Setting*, *Individual*, *and the Implementation Process* [29, 30].

According to participants, major *Outer setting* barriers that impacted *Innovation* (i.e., NCD/depression integration success) across all SHARP study sites were high workload and the COVID-19 pandemic. High workload was perceived to be caused by an unbalanced provider-patient ratio, increased NCD and depression paperwork, shortage of staff, staff turnover, and lack of NCD services in primary care centers. In addition, participants reported that limited clinic space was an *Inner setting* barrier. Negative provider attitude toward integration

was identified as an *Individual barrier* that affected NCD/depression integrated work in some SHARP study sites. *Implementation processes* (i.e. suggested solutions for overcoming the identified barriers) that emerged from this study were: reducing the patient-provider ratio by offloading the patients from the current facilities that were offering the NCD/depression integrated services to other primary facilities and communities, increasing the number of the NCD personnel, changing the clinic flow by increasing the number of clinic days or changing the clinic times at the current NCD clinic, reducing and integrating mental health and NCD documents, lobbying for more clinic spaces and providing continuous trainings and mentorship activities to new staff and those returning to NCD clinic after their other clinical rotations. Participants reported that if these proposed methods for overcoming the identified barriers could be put in place, Malawi may be able to effectively sustain or scale up the SHARP services.

The findings from this analysis are similar to findings of prior studies [38] and have persisted across the SHARP study sites for the past year [11]. An evaluation of a community-based program to prevent malaria in Malawi, Madagascar and Mali found limited human resources caused difficulty in implementing some program activities (e.g., mentorship/coaching and supervision) and affected service delivery by the providers. Our study found that NCD/depression integration success was greatly affected by high workload due to limited of both human and material resources which can be addressed by decentralizing or scaling up the NCD and depression services to primary care settings and establishing counseling venues in communities [39–41]. Provision of NCD care in primary care settings is feasible and cost effective especially when service providers are trained and given the treatment protocols to guide them [40]. To reduce workload of the NCD providers, the SHARP study used the Friendship Bench Counseling Model [19, 20] to shift counseling services from mental health practitioners to NCD patients who could then provide peer support and counseling to patients with mild to moderate depressive symptoms [12, 13]. If counseling services can be provided in primary facilities and communities as suggested by the findings of this study, peer support and counseling services can easily be done by the already trained Friendship Bench counselors in communities surrounding the SHARP study sites. With proper training, community counseling using peer-counselors or members of the community is feasible and has shown to produce similar results compared to counseling provided by professional counselors at health facilities in patients with comorbid of metal health problems and that of chronic diseases in both resource worth and constraints countries [42, 43]. In addition, our study revealed that increasing the number of NCD personnel (i.e., clinicians and nurses, statistical clerks, and social workers), re-organizing the clinic workflow by increasing the NCD clinic days and lobbying for more consultation rooms. The facility leadership can use their authority to allocate space within the facility to be used for depression and NCD care [44]. The facility leadership also has the power to lobby their partner organization to help with renovating the buildings to better include space for depression and NCD care. High workload can also be managed by allowing patients to self-administer the PHQ-9 and integrating mental health and NCD documents. Although some patients in Malawian NCD clinics are illiterate, allowing those who can read to self-administer the PHQ-9 tool would reduce workload of the NCD providers. Moreover, the PHQ-9 tool has been validated for self-administration [45, 46]. Our study further suggests that if the Malawi MoH can employ Social Workers at hospitals, clinic-based counseling can be shifted to this cadre which would also reduce NCD providers' workload.

Although staff turnover and negative provider attitude were reported as independent barriers to depression/NCD integration, they contributed to high workload experienced by the NCD providers at the SHARP study sites. Perceived causes of the providers' negative attitude were lack of motivation due to limited leadership support at a clinic and a knowledge deficit of depression integration services by the new staff at the clinic. Strong leadership support is required to build effective health care systems and integrate new services. Our prior paper from this Endpoint qualitative evaluation demonstrated that engaged and approachable leaders who actively participated in problem-solving activities and provided mentorship to NCD providers were effective in addressing clinic-level barriers to SHARP study interventions [44]. These leaders were highly involved in day-to-day clinic operations, prioritized teamwork, and fostered collective ownership, ultimately facilitating the integration of depression care into NCD services and promoting sustained success with positive patient outcomes [44]. Organizational leadership that coordinates activities with providers is likely to build a learning culture and be able to adapt to changes within the organization [47]. There is evidence that trained, supervised, supported service providers are more likely to provide high-quality services and if service providers receive training, supervision, coaching/mentorship and attend review meetings, they will be motivated to engage in service delivery. In order for implementation programs to be successful, there is a need to use the manual that should be designed to provide the necessary guidance and tools that are tailored to the needs of the service providers as the users in order to build their capacity required for them to perform the activities of the program. In addition, the service

providers should be trained and followed with technical assistance [48]. Negative provider attitudes may have also arisen in part because depression care traditionally has not been common in Malawi. However, current college medical and nursing curricula includes depression diagnosis and management for all providers. in Negative provider attitude towards depression care is also common in western countries where primary care physicians have been described as resistant to or lacking interest in integrated depression screening and treatment [49]. In this view, negative provider attitude perhaps has less to do with cultural concepts of what depression is, and more to do with the cross-cultural concept of feeling overburdened and overworked. Service providers are also more likely to be motivated if monetary incentives are provided especially when workload is high [38]. These implementation strategies if properly used, are likely to reduce negative attitudes and builds confidence in service providers [38]. In SHARP study sites, most NCD providers received the integrated depression/NCD trainings and those in half of the sites received training, supervision, and mentorships [12]. However, only leadership (i.e. the Health Services Directors, DMOs and NCD coordinators) attended review meetings, leaving out all NCD providers who directly implemented the depression/NCD integrated services at the clinic level. Excluding NCD providers who directly implement integrated services at the clinic level from review meetings can lead to a disconnect between leadership decisions and frontline realities, potentially hindering effective implementation and improvement of depression/NCD services. Inclusion of these providers is crucial for holistic understanding, feedback, and collaborative problem-solving, ensuring alignment between leadership directives and frontline experiences for improvement and sustainability of the integrated depression/NCD delivery. Thus, the effectiveness of implementation programs like the SHARP study, relies on the provision of comprehensive support, ongoing training with tailored manuals, supervision, and incentives, ensuring that service providers are equipped and motivated to deliver high-quality services, thereby fostering positive attitudes and confidence among them.

Another barrier to depression care integration was the COVID-19 pandemic. This pandemic caused several policy changes such as social distancing, working in shifts/from home that contributed to providers and patients develop fear of contracting the virus through close contact. As a result, some NCD providers stopped screening patients for depression. Although COVID-19 pandemic affected the entire health care system in Malawi and worldwide [50, 51], policies that required NCD providers to work in shifts and put much of their effort in managing patients infected by the COVID-19, negatively affected the depression/NCD integrated services in the SHARP study sites. The COVID-19 pandemic was a hardship for the already overburdened Malawian health care system. To avoid similar effects of future pandemics, the MoH needs to prepare for preventive rather than curative measures [52, 53]. To prevent and mitigate the effects of pandemics such as COVID-19, there is a need for emergency preparedness and management plans and policies at hospital and country level that should help to mitigate, prepare for, respond to, and recover from the effects of such pandemics [54].

Limitations and strengths of this study

The SHARP endpoint evaluations did not interview officials at policy level from the MoH headquarters which may have limited the ability to identify systems-level challenges that affect service providers at facility levels. For example, participants reported that facility leadership did not have control over staff turnover. If we had interviewed officials who have power to transfer staff from their workplaces across the healthcare system, it may have been possible to learn how to mitigate the effects of turnover on depression/NCD care in Malawi. However, we interviewed the DMOs, NCD coordinators, NCD providers and former SHARP Ras who were the most key participants and provided a range of valuable perspectives and knowledge regarding the SHARP intervention and its processes. In addition, this endpoint evaluation used a qualitative approach which resulted in data that can only be applied to Malawian healthcare systems to integrate depression and NCD services and may not be generalizable to other settings [55]. Despite this, qualitative research is a strong and essential way of gathering rich data from participants who were directly involved in or affected by the NCD/depression integrated services that would otherwise not be captured in quantitative analysis.

Recommendations

The SHARP study's Endpoint qualitative evaluation identified several key factors impacting the success of NCD/depression integration, particularly highlighting the challenges posed by high workload and the COVID-19 pandemic in all the 10 SHARP study sites. Participants also identified limited clinic space and negative provider attitude as factors that affected delivery of the integrated depression/NCD services at some SHARP sites. These factors have significant implications for the integration of depression and NCD services within the Malawian healthcare system.

To address the identified barriers and challenges, promoting the successful integration of depression and NCD services within the SHARP study sites and enhancing overall healthcare delivery in Malawi, we recommend that the Malawi MoH reduce the high workload burden

on district hospitals by decentralizing and scaling up the integrated NCD/depression services to other primary care facilities. By expanding services to primary care settings (i.e., health centres or clinics in communities), access to these integrated NCD/depression services can be broadened, and the strain on the current district hospitals can be reduced. The Malawi MoH should also consider increasing the number of staff, particularly in NCD clinics to alleviate some NCD/depression work from the current few NCD providers. To reduce the paperwork burden on the NCD providers, we advise integrating the NCD and mental health documents, digitizing these integrated documents and task-shifting some documentation work to patients by empowering the literate patients to self-assess depression symptoms. The NCD and mental health integration could enhance efficiency and effectiveness in service delivery, contributing to improved NCD and depression patient care. Establishing counseling services in communities staffed by trained Friendship Bench peer counselors can make counseling services outside formal healthcare settings available and would reduce the number of patients at NCD clinics. This decentralized approach can increase accessibility and reduce the burden on centralized healthcare facilities in Malawi. This can also empower NCD patients to take an active role in their assessment and healthcare and can facilitate early detection and intervention, ultimately improving patients' health outcomes. From the lessons learned from the effects of the COVID-19 pandemic, we recommend that the MoH should establish emergency preparedness policies to guide healthcare systems during public health crises such as the COVID-19 pandemic. These policies should ensure the continuity of essential services, including the depression/NCD integrated services, even in the most challenging circumstances. To motivate NCD providers and reduce negative provider attitude, we recommend that implementation studies should plan on provision of on-going trainings, supervision and mentorships programs that could support the program. If the services providers work in challenging work environments with limited staffing and long hours, monetary incentives could motivate them to effectively engage themselves in service delivery in Malawi and the rest of low- and middle-income countries.

More broadly, to ensure the continuity of NCD/depression integrated services in Malawi, there is a critical need for more implementation research studies. These studies should focus on assessing whether the suggestions outlined in this study can effectively address the identified barriers to integrating depression and NCD care in Malawi. Such research will play a critical role in crafting sustainable frameworks designed to enhance the effectiveness and sustainability of the integrated NCD and depression services leading to improved healthcare outcomes for patients suffering from NCDs and depression in Malawi and globally.

Conclusions

According to the participants of the SHARP Endpoint qualitative evaluation study, high workload and the impact of the COVID-19 pandemic were the major factors that affected the success of depression integration into NCD clinics within the SHARP study sites. High workload was caused by increased patient volume and paperwork which significantly affected the success of depression integration within the SHARP study sites. The challenges posed by the COVID-19 pandemic further emphasized the difficulties in implementing the NCD/depression integrated services. Additionally, limited clinic space and negative provider attitudes were identified as barriers in some sites. Limited space led to overcrowding and ineffective patient screening, while negative attitudes among some providers hindered integration efforts.

To address these barriers, participants suggested decentralizing the NCD/depression integrated services to primary care facilities, reducing paperwork, increasing NCD staff, and introducing counseling services in communities. We also recommend implementing emergency preparedness policies and providing ongoing training and support to providers to improve the integration efforts. These efforts will enhance healthcare outcomes for patients with both NCDs and depression in Malawi.

Abbreviations

CFIR	Consolidated Framework for Implementation Research
COVID-19	Coronavirus disease 2019
DMO	District Medical Officer
FB	Friendship Bench
HIV	Human immunodeficiency virus
IDI	In-depth interview
MoH	Ministry of Health
NHSRC	National Health Science Research Committee
NC	North Carolina
NCD	Non-communicable disease
PHQ-9	Patient Health Questioner-9
RA	Research Assistant
RCT	Randomized controlled trial
SHARP	Sub-Saharan African Regional Partnership
USA	United States of America
WHO	World Health Organization

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Author contributions
CCZ led the evaluation study, coordinated the study activities, trained research assistants, supervised data collection, analyzed the data, interpreted findings and drafted this manuscript; JKM, coordinated the study activities at two SHARP sites, coded data, analyzed data and read the manuscript and gave feedback; MM, collected data, coded data, analyzed data and read the manuscript and gave feedback, MM collected data, coded data, analyzed and read the manuscript and gave feedback, HA, coordinated the study activities at four SHARP sites, coded data, analyzed and read the manuscript and gave feedback, CFA, KRL and AM analyzed data read the manuscript and gave feedback, VG, MCH, BNG, MU and JM read the manuscript and gave feedback, BWP conceptualized the study, played a consultative role throughout data collection and analysis, and thoroughly reviewed and offered feedback on each stage of manuscript preparation. All authors participated in the review and approved the final manuscript.

Data availability
The datasets for this study are accessible and can be provided upon request from the principal investigator (BP), who is also a co-author of this manuscript.

Declarations

Ethics approval and consent to participate
Ethical approval for both the parent SHARP study and this endpoint evaluation was obtained from the University of North Carolina at Chapel Hill Biomedical Institutional Review Board (Chapel Hill, NC, USA; ID 250449) and the Malawian National Health Sciences Research Committee (Lilongwe, Malawi; #1925). All research activities adhered to ethical standards following procedures outlined in the relevant guidelines. Written informed consent was obtained from all study participants.

Consent for publication
As indicated in the design, ethical approval, and consent to participate sections above, all participants in the study provided written informed consent. In doing so, they agreed to the publication of data while ensuring the safeguarding of their confidentiality.

Competing interests
The authors declare no competing interests.

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