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Frontline health workers' experiences of providing care for people living with non-communicable diseases during the COVID-19 pandemic in Ghana: a qualitative study

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ABSTRACT

Background The COVID-19 pandemic has significantly impacted frontline health workers. However, a neglected dimension of this discourse was the extent to which the pandemic impacted frontline healthcare workers providing non-communicable diseases (NCDs) care. This study aims to understand the experiences of healthcare workers with no prior exposure to pandemics who provided care to people living with NCDs (PLWNCDs).

Methods A qualitative study design was employed, using a face-to-face in-depth interviews. Interviews were conducted in primary healthcare facilities in three administrative regions of Ghana, representing the Northern, Southern and Middle Belts. Only frontline health workers with roles in providing care for PLWNCDs were included. Purposive snowballing and convenience sampling methods were employed to select frontline health workers. An open-ended interview guide was used to facilitate data collection, and thematic content analysis was used to analyse the data.

Results A total of 47 frontline health workers were interviewed. Overall, these workers experienced diverse patient-driven and organisational challenges. Patient-level challenges included a decline in healthcare utilisation, non-adherence to treatment, a lack of continuity, fear and stigma. At the organisational levels, there was a lack of medical logistics, increased infection of workers and absenteeism, increased workload and burnout, limited motivational packages and inadequate guidelines and protocols. Workers coped and responded to the pandemic by postponing reviews and consultations, reducing inpatient and outpatient visits, changing their prescription practices, using teleconsultation and moving to long-shift systems.

Conclusion This study has brought to the fore the experiences that adversely affected frontline health workers and, in many ways, affected the care provided to PLWNCDs. Policymakers and health managers should take these experiences into account in plans to mitigate the impact of future pandemics.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This is one of the first attempts to understand frontline health workers' experiences of disruptions and challenges faced in providing non-communicable diseases (NCDs) health services in Ghana during the COVID-19 pandemic.
⇒ Our study presents a comprehensive account of how frontline health workers coped with the disruptions and challenges faced during provision delivery to people living with NCDs.
⇒ The study was not conducted nationwide and did not include frontline health workers in private health facilities that provide health services to a significant proportion of the population.

INTRODUCTION

In the wake of the COVID-19 pandemic, frontline health workers (first responders to COVID-19 while triaging patients) have faced unprecedented challenges characterised by burnout,[1 2] psychological distress[3–5] and confirmed cases of COVID-19-related infections and deaths.[6 7] As was the case with past outbreaks, evidence showed that the pandemic impacted healthcare providers during and after the pandemic.[8–11] Some studies reported that the pandemic increased health workers' risk of severe mental health conditions including depression, stress and anxiety, with some having far-reaching and lasting effects on their personal and professional lives.[12 13] The pandemic exacerbated existing challenges faced by frontline workers in resource-poor, underfunded health systems with huge logistical (eg, limited Intensive Care Units, oxygen, Personal Protective Equipment, etc) deficits, especially in sub-Saharan Africa and other low-middle-income countries' (LMIC) settings. Although more pronounced in the LMICs, these health systems challenges were also reported even in high-income countries (HICs).[14–16]

Being the first responders to the COVID-19 pandemic, frontline workers prioritised patients presenting with COVID-19-related symptoms and subsequently had to manage those cases to curb further spread of the virus. However, a key population that has been severely impacted by the pandemic and needed unique attention and care by frontline workers was people living with NCDs (PLWNCDs). This is important because following the pandemic, there was growing evidence of increased risk of COVID-19 virus, mortality and morbidity complications among PLWNCDs.[17] This population suffered most from the COVID-19-associated disruptions as most had challenges refilling their medications, and those vulnerable and needed regular care and checks could not access such services. As a result, the disruptions exposed PLWNCDs to more severe complications and poor outcomes.[17 18] The WHO Pulse survey showed inhibited access to outpatient services among 59% of countries surveyed[18]; thus, patients with NCD with rehabilitative services were affected. In Kenya, frontline health workers admitted that there were disruptions and lack of continuity-of-care NCDs owing to the COVID-19 pandemic. They were further challenged by a lack of training to boost their competence in managing NCDs during the pandemic.[19] In the USA, over 90% of vascular surgeries were cancelled or postponed as a result of the pandemic.[20]

Although disruptions in healthcare came under the spotlight in scholarship focused at the global and local levels, a neglected dimension of this discourse was the experiences of frontline healthcare workers in providing services to this key population. Whereas substantial evidence exists about frontline experiences of providing other healthcare services such as maternal and child care,[21–23] little is known about how frontline health workers experienced providing care to PLWNCDs who were key, at a higher risk of COVID-19 population. In this study, we present evidence from an LMIC setting on how the COVID-19 pandemic impacted frontline workers who provided NCD care in Ghana. This study also aimed to understand the coping strategies deployed by healthcare workers during the COVID-19 pandemic. There are two key outcomes which are expected from this study. First, the experiences of healthcare workers who provide NCD care to vulnerable populations in LMICs with no recent experience of major outbreaks have not been documented. Second, with increased discussions about health systems resilience and pandemic preparedness,[24–27] insights from this study will support current policy efforts and discussions on future pandemic preparedness.

METHODS AND DESIGN

Design

We used face-to-face in-depth interviews to collect data from frontline health staff working across primary, secondary and tertiary care, recruited from three regional referral hospitals from the northern, middle and southern belt of Ghana from April to August 2022.

Reflexivity statement

This work was completed by an inclusive and diverse team, with authors from both Global North and Global South universities, from different and diverse disciplines transcending medicine, health systems, health policy, social science, public health and epidemiology. 50% of the authors are women. SMPK is early career research while LB and LNA are mid-career researchers, and the rest are senior researchers. Most of the authors are experienced, qualitative researchers.

Setting

The study was conducted in three regions of Ghana, with one region each from the three zones of northern, middle and coastal to ensure representation of the different ecological zones of the country. For each of the zones, we purposively selected one region with a major referral centre for healthcare delivery. For this reason, the regions considered for this study comprised the northern region, Ashanti region, Eastern region and Greater Accra region. Each of these regions has a major referral/tertiary-level facility for the screening, treatment and management of COVID-19 and also NCDs. The study sites are geographically diverse, with different socioeconomic development trajectories in Ghana. At the facility level, data were collected from the outpatient and inpatient units of the various hospitals where PLWNCDs with suspected cases of COVID-19 presented and were attended to as well as PLWNCDs with COVID-19 complications who were admitted as inpatients.

Participants

In-depth interviews were conducted with frontline health workers with key roles in the delivery of care for PLWNCD hospitals but working across all levels of care—primary health care (PHC), regional and tertiary referral hospitals. Only frontline healthcare workers providing treatment services for PLWNCDs were recruited and interviewed. Only full-time healthcare workers with at least 1 year of professional experience in the study sites were eligible for the study. Healthcare providers whose primary responsibilities do not include the provision of NCD care were excluded.

Sampling and recruitment procedure

A purposive snowballing and convenience sampling approach was employed to select frontline health workers and recruit them into the study. We approached administrative officials initially via emails and requested to recruit and interview eligible participants. Eligible participants were identified and provided with participant information sheets, which contained information about the study. Each eligible potential participant was then given about a week to decide whether to participate in the study or not. Participants were recontacted via telephone or other appropriate means where each potential participant was asked to indicate their willingness and availability to be interviewed via regular phone call, zoom video call or

face-to-face. Following this, dates and times were then arranged, and interviews were conducted. We used theoretical sampling to determine the sample size, that is, recruitment, data collection and recruitment occurred iteratively and we continued recruiting until we reached a point of thematic saturation.[28 29]

Data collection

An open-ended interview guide was used to facilitate data collection for the study with the healthcare workers. The content of the interview guide was developed based on a review of the literature on COVID-19 and NCDs globally, and a review of national strategic documents. Interview guides were iteratively refined as data collection proceeded. The interview guide probed health workers' experiences of providing NCD care during COVID-19, their health services disruptions experienced, challenges faced and the coping strategies to improve care during future public health emergencies. Interviews were conducted face-to-face and through telephone interviews, taking detailed field notes throughout. Interviews were conducted in private, closed-door settings including consulting rooms, offices of interviewees and other venues of their preferences. All interviews were audio recoded. Data collection continued until saturation was reached, that is, a point where additional interviews added no new thematic insights. All interviews were conducted in English. This is the first/working language used by all healthcare workers.

Data management and analysis

Interviews were transcribed verbatim by members of the research team/professional transcribers and uploaded into NVivo V.12. We used thematic content analysis to analyse the data from the interview transcripts as well as our field notes. Two researchers independently read and re-read the transcripts, and then coded the data. A codebook was developed to contain the main themes and the subthemes from the data. The codebook was developed using a combination of established categories based on the research objectives and interview guide as a starting point, which was then adapted to include additional codes/themes emerging from the data. Finally, the results of the qualitative data were presented as narratives, with relevant quotes from the transcripts to support identified themes.

Trustworthiness

We used several strategies to optimise the trustworthiness of our findings, as suggested by Shenton.[30] First, we ensured that all processes allowed an audit trail of the data management, analysis and decision consensus points. This ensured transparency in the analysis and reporting process. Cross-checking of transcripts among four study participants was done to ensure the text of the transcripts represented true reflections of what was discussed during the interviews. The process was double checked by two authors to minimise bias in the analysis process. We reported our results following the Standard for Reporting Qualitative Research checklist.[31]

Table 1 Demographic characteristics of study participants

Category	Characteristics	N (%)
Sex	Female	29 (62)
	Male	18 (38)
Age	20–30	4 (9)
	31–40	16 (34)
	41–50	19 (40)
	51+	8 (17)
Rank/staff category	Nurses	18 (38)
	Medical doctors	11 (23)
	Physician assistants	8 (17)
	Specialists/consultants	6 (13)
	Allied health professional	4 (9)
Years of professional experience	1–5	6 (13)
	6–10	11 (23)
	11–15	12 (26)
	16–20	12 (26)
	21–30	6 (13)

Patient and public involvement

Patients and/or the public were not involved in the design, conduct, reporting or dissemination of this research.

RESULTS

Characteristics of the study participants

A total of 47 frontline health workers were recruited and interviewed about their experiences of providing NCDs care during the COVID-19 pandemic in publicly managed regional referral health facilities. Although the study sought to have equal representation of both sexes, 61.7% of the participants were women. Table 1 provides further information about the study participants.

Summary of key themes

Frontline health workers shared their experiences of providing care to PLWNCDs during the pandemic. These were thematised into experiences of challenges faced and the coping strategies adopted to mitigate some of the challenges. Table 2 presents a summary of emergent experiences of challenges, disruptions and coping strategies.

Experiences of challenges to providing care to PLWNCDs during the pandemic

Frontline workers shared their experiences of challenges in providing care to PLWNCDs. Two main themes of challenges emerged namely patient-related factors and structural-level factors.

Table 2 Health workers' experiences of challenges and coping strategies

Theme 1	Patient-level experiences of challenges
Subtheme 1	Decline in hospital visits and consultations
Subtheme 2	Non-adherence to treatment and lack of continuity of care
Subtheme 3	Fear and stigma
Theme 2	Organisational-level experiences of challenges
Subtheme 1	Lack of medical equipment and logistics/PPEs lacking
Subtheme 2	Infection of health workers and absenteeism
Subtheme 3	Increased workload and burnout
Subtheme 4	Limited motivational package for health workers
Subtheme 5	Delayed COVID-19 treatment guidelines and protocols
Theme 3	Response and coping strategies
Subtheme 1	Postponement of reviews and consultations
Subtheme 2	Reduced and infrequent inpatient and outpatient visits
Subtheme 3	Change in prescription practices
Subtheme 4	Teleconsultation
Subtheme 5	Long-shift systems

Theme 1: patient-driven factors

Although the COVID-19 pandemic substantially disrupted the provision of health services, NCD care came under the spotlight given that people living with pre-existing conditions were at greater risk of COVID-19 infection and complications. According to the frontline health workers, despite the overall disruptions caused by COVID-19 on care provided to PLWNCDs, some of the experiences of care disruptions and challenges experienced were occasioned by patient-level factors including missed appointments for review, consultation or medication refill. PLWNCDs were found to be self-medicating at homes and communities and failing to visit health facilities for fear of COVID-19 infection. Finally, in situations where some patients had to be hospitalised for urgent inpatient care, some got discharged against medical advice. Below, we report further details of such experiences of frontline workers in providing NCD care during the pandemic.

Subtheme 1: decline in hospital visits/consultations

Frontline health workers told us that PLWNCDs were failing to visit health centres for review and consultation appointments. This resulted in a massive scale down in outpatient visits. This situation was driven by two factors. First, due to the high risk of COVID-19 infection among this group of patients, most refused appointments and even when there was an opportunity to visit the facility and consult their physicians to review their conditions or refill their medicines, they did not attend the health facilities. Hospitals were perceived by the public as the breeding grounds or source of the COVID-19 virus and as a result, people were unwilling to visit the hospitals even when they felt unwell or needed to refill their medications. According to some nurses, some people were misinformed about the fact that every presentation at the health facility was diagnosed as a COVID-19 case and treated as such so did not trust the health workers and felt there was no point in going to the hospital. As a result, both inpatient and outpatient cases fell significantly.

> You will go to pharmacies and see them there with some of them saying oh it's better I go to the pharmacy and pick my medications because when you go to the hospital, sometimes these hospitals lie that you have Covid", So, most of them weren't coming or refused appointments and even when there was an opportunity to visit the facility and consult their physicians to review their conditions or refill their medicines. Nurse, ID 03

Frontline health workers also observed that missing appointments or a major fall in patient visits was experienced during the peak of the pandemic when some major regions including Greater Accra and Ashanti regions had 3 weeks of lockdowns, with the introduction of other stringent, restrictive measures by the government to prevent further spread of the COVID-19 virus.

> The challenge I can say is because of the lockdown, they were unable to go for their treatment. So it became a huge problem for them and also really affected us. As a result, we saw a decline in patient visits for medical review and consultations. Nurse, ID 013

Subtheme 2: non-adherence to treatment and lack of continuity of care

Self-medication and the use of non-orthodox medications characterise NCD treatment and management among PLWNCDs during the COVID-19 pandemic. The workers observed that of all the cases attended to during the pandemic, PLWNCDs were non-adherent and often resorted to other treatments either simultaneously with the orthodox medicine or abandoned the hospital prescription and care completely. As a result, some patients had poor health outcomes or complicated diabetes when they finally decided to seek care after their self-medications failed them.

> Those at home would not even come. They would just take their traditional or herbal medications and stay at home. The facility was always empty Nurse, ID 07

According to one specialist, several PLWNCDs started to self-medicate when reports were rife about the increasing infection of health workers with the COVID-19 virus. As a result, most started to self-medicate or self-manage their NCD medications often using non-orthodox medicines

> Now to be very specific, people who were diabetic and hypertensive were very very affected. Because these were people who were taking routine treatment. That means that some of them were due to come and take their routine treatment and this. Physician Assistant, ID 01

Subtheme 3: fear and stigma

Frontline health workers were a source of fear and stigma in the community. It was believed that the health facilities, especially frontline health workers were superspreaders of the COVID-19 virus. Following, PLWNCDs who used to visit the health facilities to refill their medications and review their health regularly either stopped or reduced clinical visits. Frontline workers observed that these stigmatising practices also affected outpatient attendance, including people living with some NCDs. This will eventually lead to poor health outcomes.

> if people found out you were a nurse, they'd run away and try to avoid coming into contact with you because they feel we are those bringing infections from hospitals to infect them. Because of that, we tried to de-identify ourselves in public places, especially when joining public transport. Nurse, ID 02

It was also observed that even those in admissions were eager to be discharged and leave the hospital premises. Some health workers recounted occasions of patients unwilling to cooperate during ward rounds by either staying away from the wards during rounds or pretending to be asleep. They also noted that some people with NCD conditions requested to be discharged against medical advice.

> During the time of Covid should I say it was worse? People, including patients, were not willing to visit the hospitals and even if they made it because of their poor health conditions, they did not want to get close to us. At that time, even those on admissions were rather requesting to be discharged against medical advice and made every effort to distance themselves from us. We felt stigmatised Nurse, ID 07

Theme 2: structural and organisational-level factors

According to the frontline health workers, despite the overall disruptions caused by COVID-19 on care provided to PLWNCDs, some of the experiences of care disruptions and challenges experienced were occasioned by four key factors namely (1) lack of medical equipment and logistics/PPEs lacking, (2) infection of health workers and absenteeism, (3) insufficient motivational package for health workers and (4) increased workload and burnouts.

Subtheme 1: lack of PPEs and medical logistics

A major challenge experienced by frontline health workers is the lack of essential consumables, equipment, logistics and more importantly personal protective equipment. The lack of basic and essential consumables including PPEs constrained efforts to provide NCDs and other general care. Given the high risk of infection among frontline health workers, the absence of PPEs and other essential logistics prevented frontline workers from attending to patients. Accordingly, PPEs were limited, and most facilities had challenges in stocking the basic essential equipment as attention was diverted to COVID-19 prevention and management. As a result, there was less priority for NCD care.

> I mean logistics. They will give you a nose mask and expect you to use the nose mask for one week. The first time they gave us the N95, they were expecting us to use it for two weeks. It was very dangerous. It could have even been the source of infection for most of the frontline workers who later got infected with the virus. Physiotherapy, ID 03

The lack of PPEs in some instances necessitated the need to limit admissions or refuse further admissions of inpatient cases as that had the potential of exacerbating their challenges and exposure to the virus. In the excerpt below, one medical officer shared his account about this point:

> The nurses sometimes refused admissions because they were not provided with PPE… So a lot of them even tried to boycott work… they were like they were exposing themselves to harm. And there was no proper way of ensuring that. So most of them wanted to stop the work. Doctor, ID 02

Subtheme 2: infection of health workers and absenteeism

Participants observed that the lack of PPEs exposed frontline health workers to COVID-19 infections. Consequently, a good number of frontline health workers got infected with the virus, some diet, experienced complications and died. Some frontline workers recounted how they got infected and passed it on to their families and close ones. As a result, they got quarantined with only a few remaining to work.

> as I said earlier, even some medical wards at a point were closed because some staff had been infected, and the fear was strong such that the moment you get a positive case on your ward, even the staff feels that… am I also going to get some, am I also going to die… Nurse, ID 009

Despite the infection, exposure and consequently getting isolated or quarantined, only a few remained to treat people reporting to the facilities with general health conditions, most of whom were people with pre-existing chronic conditions. Given the spate of infections, absenteeism among health workers was high and this impacted the provision of NCD care, especially frontline health workers primarily responsible for NCD care.

Subtheme 3: increased workload and burnout

Health workers noted that the COVID-19 pandemic had a great toll on their workloads and consequently most experienced burnout. The increase in COVID-19 cases together with the increased infection rates of frontline health workers placed significant pressure and workload on them. This also caused burnout among frontline health workers who had to work extra hours and days given the absence of their colleagues who were either being isolated, quarantined, infected or had passed on. Most frontline workers were overstretched, and this invariably impacted their interaction with patients, and the quality of time spent with patients, including PLWNCDs.

> We experienced an intense workload adjusting to the new roles and schedules, and case management protocols were just too much. The task of treating COVID-19 and NCDs at the same time was an unprecedented challenge. Experiencing this in my over 12 years of medical practice was not fun. This was indeed tough. The same staff were expected to support and manage the COVID-19 treatment units, attend to all patients, and ensure the dissemination of reliable information to the public. This was exhausting and all these negatively impacted our work-life balance, especially our mental well-being. Doctor, ID 04

Before the COVID-19 pandemic, provisions were sometimes made to provide online consultations to patients with NCD especially when they needed to refill their medications or online consultation to review some specific cases. The advent of COVID-19 increased their workload, and this service was cancelled altogether for PLWNCDs.

> in this facility, we had an online service for NCD consultation. This project was supported by one of our partners and patients needed only a smartphone to record their daily readings of their vitals for us to track and provide remote/teleconsultation. Hmmm. COVID-19 came and we had to cancel that service because the COVID-19 cases to manage at the facility were overwhelming with new guidelines and protocols to treat patients. The workload quadrupled and we just could not cope with any other service. Doctor, ID 02

Subtheme 4: limited motivational package for health workers

Our study identified a strong theme relating to an experience of an insufficient motivational package for frontline workers by the government. Although they highlighted that this was not specifically to only PLWNCDs but generally to all patients, they felt the lack of incentives from the government was a major disincentive to providing better care to patients. Frontline expectations about bonuses, tax rebates on salaries and holidays abroad were often cited. According to frontline health workers, despite the demonstration of commitment to duty and rising to the occasion to ensure people are treated and provided optimal care when exposed or infected with COVID-19, the government did little to motivate or incentivise them.

> At some point, I did not feel not going to work anymore. I felt all our efforts in trying to save lives went unnoticed as most of what was promised to us by the president on national television was a façade. It was just cheap talk as there was nothing on the table for frontline health workers to make them feel motivated to even do more. You all saw how we worked under challenging circumstances sometimes without the basic PPEs and other medical consumables. Physician Assistant, ID 03

Subtheme 5: delayed COVID-19 treatment guidelines and protocols

Another observation from the interviews was the lack of guidelines and protocols for managing people during the pandemic. There was an information gap regarding treatment for people with suspected COVID-19 cases as well as those with pre-existing conditions. These uncertainties were further spurred by the evolving nature of the pandemic and response mechanisms with limited or no local guidelines hampered the provision of care at the facilities.

> it was quite difficult for us to proceed with treatment for some complicated cases. We lacked guidelines and the knowledge to manage some of the cases and this was exacerbated by the evolving nature of the virus and the complexity of the cases, especially those with pre-existing conditions. The lack of guidelines made treatment difficult. Physiotherapist, ID 01

In the absence of guidelines, the information gap was rife, and multiple sources of information about treatment existed from colleagues to senior colleagues. Others consistently searched online to seek guidance on treatments and case management.

> As doctors and all other medical practices, our practice is evidence-based and as such, some of us were always online searching for new information to guide treatment decision-making and address the information gaps of our time. Doctor, ID 07

Theme 3: response and coping strategies adopted by frontline health workers

Views from health workers on how they coped with the pandemic are summed in five thematic points namely (1) delays and postponement of reviews and consultations, (2) change in prescription practices, (3) teleconsultation, (4) reduced and infrequent inpatient and outpatient visits and (5) extended long shifts

Subtheme 1: postponement of reviews and reduced consultation periods

A constant refrain from the interview sessions with participants relating to their coping strategies was the postponement or delays in consultation hours with patients.

Two factors accordingly accounted for this. First, participants believed the increased workload precipitated by the pandemic reduced consultation periods for non-COVID-19-related cases. As a result, NCD-related cases were not prioritised so a common practice was to reschedule, cancel or reduce the consultation periods for appointments. Consequently, people with chronic NCDs had limited or shortened encounters with healthcare providers despite that increased risk.

> We are supposed to be doing but because of the workload…we want to follow them up for like a month but because of that we had to extend it to 3 months, 4 months. So, the monitoring was poor… So, as I earlier stated most of them came back with complications which, subsequently we had to manage. Doctor, ID 02

The second reason was a move to reduce or minimise their risk of exposure to the COVID-19 pandemic. This also became necessary as there were limited supplies of PPEs and as a result, the risk of infections was relatively high, and consequently, health workers reduced ward rounds. This became necessary in light of the dwindling numbers of available health workers as many were infected and got isolated leaving a shortfall of health workers available to attend to people with NCD and other health-related conditions.

> … any time staff in a particular ward got Covid, the ward was to be closed down. And it was very difficult for us to do those things. So we started running shifts and spacing ward rounds to do consultation so that when that happens we won't lose the entire unit because they had to isolate. Physician Assistant, ID 03

Subtheme 2: reduced and infrequent inpatient and outpatient visits

Before the COVID-19 pandemic, it was common for some health workers to visit clients to provide home care or consultation and provide all the necessary clinical assistance. This was importantly common with patients who had a stroke who required physiotherapy sessions. The accounts from some physiotherapists interviewed opined that before the pandemic, they used to visit the homes of some patients who had a stroke for physiotherapy sessions, but this practice was suspended following the COVID-19 pandemic. This became necessary to protect the workers and the clients from infection by the virus.

> We used to go but not as frequently. Because PPEs were a problem. So sometimes you don't even have the requisite PPEs to visit homes. And we were equally scared because we also had families we didn't want to risk. So we've reduced it in a way because we were scared, and were not safe. Physiotherapist ID 02

Health workers also adopted this strategy to reduce the length of stay and any potential exposure of inpatients to the COVID-19 virus. This excerpt emphasises this point.

> If patients were supposed to stay for a particular number of days to be able to observe them well, it wasn't done, because we didn't want to keep them on the ward for long for them to get exposed. So their stay had to reduce. Nurse, ID 07

Subtheme 3: change in prescription practices

Discussions among health workers in providing NCD care during COVID-19 also pointed to the practice of prescribing sufficient medicines for the patient to use for a long period. This was done to minimise patients' exposure through frequent visits to refill medications and as a strategy to protect health workers from the risk of infection. It was thus important for health workers, especially physicians to prescribe medicines that will last for long.

> During the pandemic, we didn't want the patients to be frequenting the hospital. For those who were able to come, we extended their medications for at least 3 or 2 months so that there would be enough medication for them For those who were very stable, when they came we could give them three months and ask them to come back if they have any new complaints. Doctor, ID 03

Further probes to understand the extent to which this arrangement remained beneficial and not harmful or a disservice to the patients revealed further that despite the extended medication duration, patients were still encouraged to contact their health facility in case of any emergency or should they need immediate medical attention.

> Following consultation, we often ask them to make any follow-ups when necessary, through phone calls to check up if there's any problem so we can schedule a review. Nurse, ID 03

Subtheme 4: teleconsultation

Participants mentioned use of teleconsultation as a strategy to cope with the workloads, to reduce face-to-face interaction with patients to minimise their risk of infection of the COVID-19 virus and as part of efforts to ensure continuity of care. While discussing the use of telemedicine intervention as a coping measure, some expressed concerns about the sustainability of using the telemedicine since in some facilities, increased workload and burnouts from emergency departments congestions with COVID-19 cases pished them to abandon this intervention. Some also acknowledged the use of teleconsultation at their facilities but observed its limited use since this was not an institution-wide arrangement but the initiative of some healthcare workers. The telemedicine arrangement was made to reduce patients' direct visits and replace the direct inperson visits to the health facility especially those with non-emergency cases.

> And even during that time, some patients were stable, so we were seeing them over the phone. And, a few of us set up a telemedicine system where people could

call in when they had an issue that they could not be addressed. Doctor, ID 05

Subtheme 5: long-shift systems

Another predominant theme from the interviews with health workers in relation is the long working schedules. This situation was necessitated by two events. First, frontline workers worked for extended periods because of limited staff. To cope with the limited staff numbers, one key strategy was to have extended shifts to be able to respond to the rising cases of COVID-19. In their view, this helped reduce their workload.

> We the nurses undertook certain measures to protect ourselves. We divided ourselves into groups where some may come one week, others will come the following week. So this group would come for a week, and the other would come the following week so that you'd have enough time to rest and take care of yourself, Nurse, ID 013

On one hand, frontline workers worked for extended shifts mainly to reduce their risk of being exposed to COVID-19. This practice was common where a group of staff were infected or got exposed to the virus and were often required to stay off work for a period of at least 2 weeks to avoid further spread or infection of other staff. Frontline workers often adopted this strategy to ensure that they were protected from potential infection from their peers who have been exposed or infected.

> Yes, there were times when a particular group was exposed to a patient so all of them had to stay out of work and then the other group had to divide themselves again to come to work. So there were times we had a shortage especially when there was a suspected case or a confirmed case we had to let that whole group go off… for treatment and quarantine. Then other groups would then have to divide themselves again and then cover-up. Nurse ID, 017

DISCUSSION

In the wake of the pandemic, healthcare providers around the world faced a litany of challenges characterised by abrupt disruptions in the provision of essential health services. Unquestionably, the pandemic has amplified preexisting deficiencies in all healthcare systems. This study sought to map the experiences of disruptions and challenges faced by frontline healthcare providers in providing care for PLWNCDs and the general population in Ghana. Frontline healthcare workers experienced a diversity of patient-driven and organisational/structural challenges. Patient-level challenges included a decline in attendance, non-adherence, a lack of continuity and concerns about fear and stigma. At the organisational/structural levels, there was a lack of medical equipment and logistics/PPEs, infection of health workers and absenteeism, increased workload and burnout, a limited motivational package for health workers, and inadequate guidelines and protocols. Frontline health workers coped and responded to the pandemic by using postponement of reviews and consultations, reduced and infrequent inpatient and outpatient visits, changes in prescription practices, teleconsultations and long-shift systems.

Findings compared with previous literature

Major logistical constraints that impeded the provision of care have also been reported in studies among frontline healthcare workers where they experienced anxiety owing to the absence of PPEs, hand sanitizers and other medical logistics during the COVID-19 pandemic[32–35]. Studies that focused on the experiences of frontline workers in providing maternal and newborn care services similarly experienced a lack of logistics, and PPEs with limited training to manage COVID-19 infections. A large body of literature also reported on the high levels of stress, anxiety, depression and other mental disorders as a result of the workload, lack of PPEs and training.[3 4 7] These disruptions were not uncommon in the African context where evidence also showed significant disruptions and the impact of the pandemic on NCD care.[36–38]

The lack of or delayed COVID-19 management protocols for people with NCDs was highlighted. This made the management of such cases complex. For instance, it was difficult to manage infection in people with pre-existing conditions. Ghanaian healthcare workers' concerns about the lack of protocols and guidelines mirror the concerns of mental health workers from other settings who were found to experience depression and anxiety during the COVID-19 pandemic.[34] Our findings also support a report from Kenya where frontline workers also expressed concerns about the limited guidance and support to competently manage and provide NCD care during the pandemic.[19] A study from the Pacific revealed that frontline workers faced challenges including stigma, difficulties in managing the chronic health needs of patients, and COVID-19 infections at the same time; and also had to contend with issues of limited human resource capacity.[39] These findings mirrored what the present study found in Ghana where such challenges were also reported to have undermined efforts to provide competent general and other NCD care. The US Center for Disease Control reported that the total number of emergency department visits in the USA dropped by 42% relative to the same period a year before the COVID-19 pandemic, and similar evidence of decline was found among visits for acute myocardial infarction stroke admission in the wake of the pandemic,[40] mirroring the decline in attendance seen in Ghana.

In this study, burnout was identified as an issue of great importance to frontliners' ability to provide competent care. Consistently, burnout was also identified as a ubiquitous problem in the wake of the COVID-19 pandemic.[41 42] Owing to this, strategies were developed to minimise or prevent the impact of burnout on safe patient care, patient

satisfaction, absenteeism and high workforce turnover.[43] We proposed strategies including the use of teleconsultation and other measures to reduce contact hours for ward visits or consultations to attenuate the effect of burnout on frontline workers during pandemics. As reported elsewhere,[41 43 44] these are promising strategies that policymakers may want to consider as part of pandemic preparedness and health systems strengthening efforts.

Our study in Ghana identified a variety of adaptations and coping strategies including teleconsultation, postponement of reviews and consultations, reduced and infrequent inpatient and outpatient visits, change in prescription practices and long-shift systems. The coping and adaptive strategies discussed by healthcare workers have not surfaced in other studies, to date. For example, a study reported coping strategies by frontline health workers to include limiting media exposure, limited sharing of COVID-19 duty details and religious coping.[45] Conversely, other studies revealed that to cope with the challenges of anxiety and depressive symptoms, some frontline workers coped in these situations by rather engaging in self-care, self-relaxing activities, relying on peer and family support to survive the odds of the COVID-19 pandemic.[46]

Study implications

In Ghana and other LMICs, our findings showed that urgent measures from policy managers and health managers are needed to develop and roll-out pandemic preparedness strategies that will mitigate the above challenges as experienced by frontline health workers. The timely provision of protocols, early deployment of frontline health workers and timely training on new guidelines use or treatment uses should be done on a routine basis where necessary.[19] Globally, there was a widespread infection among health workers.[6] These issues were also quite pervasive in Ghana. It is therefore important for adequate planning and investment into ensuring PPEs and other basic logistics needed to mitigate the exposure of frontline workers in future pandemics. This point is very important for contexts with less resilient health systems as they remain highly susceptibility to outbreaks. In Ghana and other similar contexts, insights from this study suggest that steps must be taken to ensure they are protected and receive counselling and psychological support before, during and after the pandemic. These challenges were reported to directly affect the productivity of health workers and indirectly impact the provision of care to patients. A major highlight of the pandemic was the disruption of routine care and PLWNCDs were among those affected by the pandemic in sub-Saharan Africa (SSA) as illustrated in the WHO Pulse surveys[18 47–49] and evidence from South East Asia[50] and other studies.[51 52] Fear of infection after visiting a health facility further exacerbated this situation and this resulted in a decline in service utilisation, and non-adherence to medications.[53–55] In response, many countries repurposed their health systems to minimise these disruptions and ensure continuity of care especially for PLWNCDs.[56] The use of telemedicine as a strategy to ensure continuity of care should be promoted and invested to be integrated into existing health systems. Although evidence about its impact is still developing, early evidence shows huge promise; thus, it is important to invest more in implementing and scaling up telemedicine services as part of postpandemic measures and preparedness. A recent scoping review reported the use of telemedicine as the single most significant and predominant health system adaptation to improve access to NCD care in LMICs.[56] This has also been reported in HIC including Israel, Italy, the UK, France and the USA.[57]

This study has also revealed some opportunities for future research. First, it would be beneficial for future research to further explore the experiences of frontline health workers who were primarily providing NCD care. Second, some of the themes of coping strategies were less popular in the mainstream literature thus, further research work is required to understand whether these practices of reduced visits, longer time for next appointments and reviews, and the prescriptive behaviours of clinicians were also common practices in other contexts and other working scenarios or conditions outside Ghana.

Strengths and limitations

This study is one of the first attempts to use in-depth interviews to understand frontline health workers' experiences of disruptions and challenges faced in providing NCD health services, including other health services in Ghana during the COVID-19 pandemic. The study provides a comprehensive understanding of the disruptions and challenges faced by frontline healthcare workers and how they coped during the pandemic. Insights from this work have the potential to support policy-makers in Ghana and other LMICs with similar settings to develop more appropriate interventions and programmes to mitigate future pandemic impacts on service delivery disruptions, and impact on frontline health workers to ensure sufficient protection. Despite these strengths, the study was not conducted nationwide and did not include frontline health workers in private health facilities that provide health services to a significant proportion of the population; thus, the findings cannot be generalised to all settings. Participants were also recruited through convenient and purposive sampling techniques, thus further limiting the generalisability of the findings. Although our recruitment of participants took into account the cultural and social diversity of the participants, we did not explore this further to identify possible nuances that could inform unique interventions in future pandemics for better support of frontline health workers from diverse groups. This is an important gap for future research.

CONCLUSION

Challenges can be broadly categorised into patient-driven factors and structural-level factors. Some coping

strategies were also identified including postponement of reviews and consultations, change in prescription practices, use of teleconsultation and long-shift systems. In light of these findings, it is important to highlight experiences that adversely affected frontline health workers and, in many ways, affected the optimality of care provided to PLWNCDs. Policy-makers and health managers need to take these experiences into account in modifying pandemic preparedness and response policies: these need to be tailored to ensure they protect frontline health workers. It is also imperative to ensure these issues receive the greatest policy attention and prioritisation. Such plans when implemented will help mitigate the impact of future pandemics on frontline health workers and PLWNCDs at the end.

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