



## Psychological distress among healthcare workers accessing occupational health services during the COVID-19 pandemic in Zimbabwe

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### ABSTRACT

**Background:** Healthcare workers (HCWs) have experienced anxiety and psychological distress during the COVID-19 pandemic. We established and report findings from an occupational health programme for HCWs in Zimbabwe that offered screening for SARS-CoV-2 with integrated screening for comorbidities including common mental disorder (CMD) and referral for counselling.

**Methods:** Quantitative outcomes were fearfulness about COVID-19, the Shona Symptom Questionnaire (SSQ-14) score (cutpoint 8/14) and the number and proportion of HCWs offered referral for counselling, accepting referral and counselled. We used chi square tests to identify factors associated with fearfulness, and logistic regression was used to model the association of fearfulness with wave, adjusting for variables identified using a DAG. Qualitative data included 18 in-depth interviews, two workshops conducted with HCWs and written feedback from counsellors, analysed concurrently with data collection using thematic analysis.

**Results:** Between 27 July 2020–31 July 2021, spanning three SARS-CoV-2 waves, the occupational health programme was accessed by 3577 HCWs from 22 facilities. The median age was 37 (IQR 30–43) years, 81.9% were women, 41.7% said they felt fearful about COVID-19 and 12.1% had an SSQ-14 score  $\geq 8$ . A total of 501 HCWs were offered referral for counselling, 78.4% accepted and 68.9% had  $\geq 1$  counselling session. Adjusting for setting and role, wave 2 was associated with increased fearfulness over wave 1 (OR = 1.26, 95% CI 1.00–1.60). Qualitative data showed high levels of anxiety, psychosomatic symptoms and burnout related to the pandemic. Mental wellbeing was affected by financial insecurity, unmet physical health needs and inability to provide quality care within a fragile health system.

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*Conclusions:* HCWs in Zimbabwe experience a high burden of mental health symptoms, intensified by the COVID-19 pandemic. Sustainable mental health interventions must be multisectoral addressing mental, physical and financial wellbeing.

## 1. Introduction

Globally the COVID-19 pandemic has resulted in increased prevalence of psychological distress [1,2]. Actions to mitigate the spread of SARS-CoV-2 such as lockdowns, social distancing and school closures, and their knock-on effects on livelihoods have exacerbated psychological distress and anxiety.

In the context of the pandemic, healthcare workers (HCWs) are particularly vulnerable to psychological distress. [3–5] Risk factors include their perceived increased risk of SARS-CoV-2 infection, insufficient supplies of personal protective equipment (PPE), limited treatment options for patients with COVID-19, stigma and discrimination because of their profession, personal fear of infecting their loved ones, isolation from family members and being quarantined. [6–9] Yet HCWs are crucial in ensuring an effective response to COVID-19 including diagnosis and treatment of patients infected with SARS-CoV-2, implementation of appropriate infection prevention and control (IPC) measures, vaccination and continued service provision for other health conditions.

Most studies assessing the mental health of HCWs were rapid cross-sectional surveys [3,4] providing a snapshot during a certain phase of the pandemic such as the “first wave” which was characterised by unprepared health care systems and high levels of uncertainty. Mental health needs of HCWs are likely to differ as the number of SARS-CoV-2 infections wax and wane, health systems adapt, and more information becomes available. Cross-sectional surveys among HCWs in sub-Saharan Africa, most of them distributed through online platforms and conducted during the first six months of the pandemic, revealed high prevalence of anxiety, psychological distress, insomnia and symptoms of depression. [10–18] To date, there is little evidence on the impact of interventions to benefit the resilience and mental health of HCWs during or after epidemics. [19] Many countries experience continuing SARS-CoV-2 transmission and substantial associated morbidity and mortality. Hence mental health programmes are being implemented under public health emergency circumstances with no resources for evaluation.

In July 2020 we set up an occupational health programme in Zimbabwe for HCWs offering screening for symptoms of common mental disorder (CMD) integrated with screening for SARS-CoV-2 and other infections including HIV and tuberculosis (TB) as well as common non-communicable diseases. We conducted a mixed-methods study to investigate changes in psychological distress and anxiety among HCWs accessing the programme over 12 months across three SARS-CoV-2 waves and evaluated a psychosocial support model that combined screening for CMD with referral for remote counselling.

## 2. Materials and methods

### 2.1. Study setting and population

The study was conducted between 27 July 2020 and 31 July 2021 in public hospitals in Harare and Chitungwiza, primary health clinics in Harare and mission hospitals near Harare. Sites were selected on the basis of need and logistics, beginning with the only functioning COVID-19 unit, at Parirenyatwa Group of Hospitals in Harare. Services were offered at respective health facilities over several weeks until demand decreased. From 1 October 2020 to 31 January 2021 two teams were active allowing parallel service provision at two locations. Details of study procedures have been described elsewhere. [20] All employees of the health facilities where the service was offered could access the

occupational health service free of charge. Those who accessed the service and consented to participate in the research were included in the analysis. Those who did not consent to participate in the research could also access the service.

### 2.2. Interventions and procedures

The occupational health programme was offered during weekdays on an appointment basis. It was advertised to HCWs through fliers and posters, via departmental heads, on work social media platforms and through word-of-mouth. Services were offered in an outside space wherever possible using tents to ensure good ventilation, with social distancing observed. HCWs accessing the service were provided with an information sheet and verbal consent was obtained. HCWs could opt-out of any screening test. Screening included measurement of height, weight, temperature, oxygen saturation, blood pressure, point-of-care HbA1c (SD Biosensor, Singapore) and HIV testing, either provider-delivered rapid blood test (Alere Determine HIV 1/2, USA) or an oral mucosal transudate self-test (OraSure Technologies, USA), self-administered on- or off-site. HCWs were screened for symptoms of TB and COVID-19; those screening positive were offered sputum and/or nasopharyngeal swab testing for TB and SARS-CoV-2 respectively. Test results were returned to HCWs within 48 h. Negative SARS-CoV-2 and TB results were communicated either by phone or SMS/WhatsApp. HCWs with positive SARS-CoV-2 results were contacted by telephone and given advice on IPC measures for themselves and household contacts. Severity of symptoms was assessed, and referrals made for hospital admission if warranted.

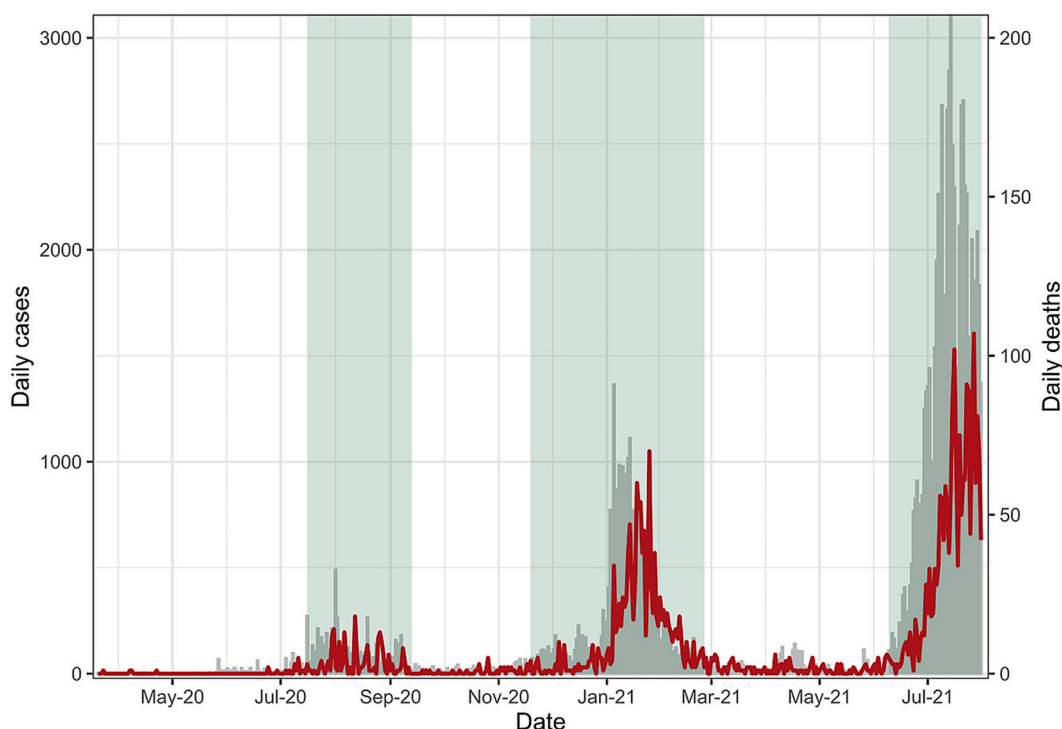
HCWs were screened for CMD using the Shona Symptom Questionnaire (SSQ-14) that was developed and validated in Zimbabwe, with a score  $\geq 8$  suggestive of CMD. [21] HCWs with a SSQ score  $\geq 8$ , having ‘red flags’ (suicidal ideation and/or visual or auditory hallucinations) or testing positive for SARS-CoV-2 were offered referral for telephone counselling, provided by the Harare-based Counselling Service Unit (CSU) free of charge. CSU is a registered non-governmental health facility established in 2003. All CSU counselling staff hold recognized qualifications in their respective professions with accredited universities/institutions of higher learning. HCWs who accepted counselling were asked for their telephone numbers. CSU counsellors contacted HCWs on the same day for red-flag referrals and within 2–3 days for other referrals. The number and frequency of counselling sessions were tailored to the needs of the HCW. Clients who needed further care were referred to government hospitals.

### 2.3. Quantitative data collection

While HCWs awaited screening, a trained research assistant administered a questionnaire, which included questions on past medical history, contact with patients infected with SARS-CoV-2 with and without appropriate PPE, perceived severity of the COVID-19 pandemic in Zimbabwe (known as concern score, on a 0–10 scale) and fearfulness about COVID-19 on a 4-point Likert scale. Data were collected on tablets with forms designed using SurveyCTO software, uploaded daily and saved to a Microsoft SQL Server hosted at the Biomedical Research and Training Institute (BRTI).

### 2.4. Qualitative data collection

To better understand the mental health stressors experienced by HCWs and how best to model our services we used in-depth interviews

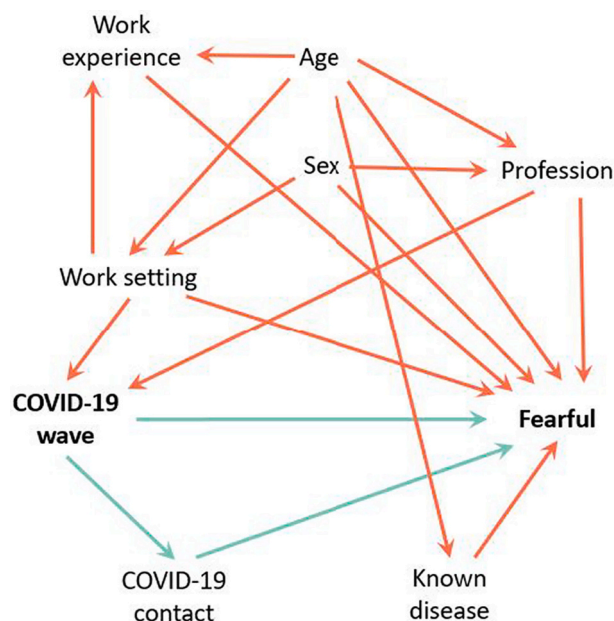


**Fig. 1.** National SARS-CoV-2 cases and death over time. Daily cases (grey shade), daily death (red lines), waves (green shades). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

and participatory workshops. We began with two participatory workshops within the first month of service provision, held at one of the main hospitals, with department representatives invited to participate. The main purpose of the workshops was to learn what worked well and what could be improved, to inform changes to the service design. We used participatory workshops as a means of data collection because nationwide industrial action was ongoing and the workshop was the only opportunity to engage with low-level HCWs. We anticipated to complete 15–25 in-depth interviews with HCWs who accessed the service. Data analysis occurred concurrently with data collection, and interviews were stopped once data saturation had been achieved. Interview participants were purposively selected to include varying SSQ-14 scores (<8 and ≥8), SARS-CoV-2 test results, presence of diabetes and/or hypertension.

Semi-structured topic guides were developed. The workshops topic guide sought to elicit the contextual setting in which the intervention was embedded and gain an understanding of the occupational health services provided at the health facilities. The interview guide asked questions on the perceived impact and experiences of the pandemic, on the psychological wellbeing of HCWs including their feelings, fears and anxieties, as well as the stressors and protective factors for mental health. Interviews were conducted face-to-face or by telephone depending on lockdown restrictions at the time. CSU counsellors fed back regularly on operational issues, and wrote 2 reports summarising recurrent themes that emerged during the counselling sessions.

All interviews were conducted in the local language (Shona), audio recorded, transcribed and translated into English. We used thematic analysis to identify, analyse and interpret patterns of meaning within the data. The transcripts were reviewed several times by the research team, with important statements being extracted, coded and discussed. Codes were summarized into themes and a continuous comparison of codes and categories was carried out with the research team.



**Fig. 2.** Directed acyclic graph for the relationship between COVID-19 wave and fearfulness. COVID-19 wave = exposure, fearfulness = outcome, green = association and causal pathway, red = potential confounders. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

2.5. Choice of outcome measure

The primary outcome for the quantitative analysis was fearfulness about COVID-19. HCWs were asked ‘How do you feel about COVID-19?’,

**Table 1**  
Baseline characteristics.

Variables	Total N*	Not fearful N (%)	Fearful N (%)	Chi <sup>2</sup> , <i>p</i>	Missing
	3539	2065 (58.4)	1474 (41.7)		
Sex	Male 641	380 (59.3)	261 (40.7)	0.26, <i>p</i> = 0.61	2
	Female 2896	1685 (58.2)	1211 (41.8)		
Age	Median (IQR) 37 (30; 43)	36 (29; 43)	37 (30; 44)		4
Patient-facing	Yes 2687	1537 (57.2)	1150 (42.8)	6.1, <i>p</i> = 0.014	0
	No 852	528 (62.0)	324 (38.0)		
Work setting	Tertiary Hospital 2197	1348 (61.4)	849 (38.6)	21.6, <i>p</i> < 0.001	0
	District or mission hospital 805	431 (53.5)	374 (46.5)		
	Primary health clinic 537	286 (53.3)	251 (46.7)		
Work experience in years	Median (IQR) 5.8 (2.0; 12.3)	5.5 (2.0; 12.2)	6.3 (2.0; 12.6)		2
Contact with a SARS-CoV-2 patient	No 2966	1743 (58.8)	1223 (41.2)	10.3, <i>p</i> = 0.006	0
	Yes, wearing PPE 247	157 (63.6)	90 (36.4)		
	Yes, without PPE 324	165 (50.9)	159 (49.1)		
IPC training	Yes 2172	1318 (60.7)	854 (39.3)	12.6, <i>p</i> < 0.001	0
	No 1367	747 (54.7)	620 (45.4)		
Known chronic condition	Yes 918	498 (54.3)	420 (45.8)	8.6, <i>p</i> = 0.003	0
	No 2621	1567 (59.8)	1054 (40.2)		
BMI	Healthy weight 1336	788 (59.0)	548 (41.0)	3.6, <i>p</i> = 0.17	6
	Overweight 1104	661 (59.9)	443 (40.1)		
	Obese 1093	613 (56.1)	480 (43.9)		
Medical aid	Yes 2329	1362 (58.5)	967 (41.5)	0.02, <i>p</i> = 0.89	2
	No 1208	703 (58.2)	505 (41.8)		
Month	August 2020 251	160 (63.8)	91 (36.3)	46.7, <i>p</i> < 0.001	0
	September 405	244 (60.3)	161 (39.8)		
	October 589	388 (65.9)	201 (34.1)		
	November 656	394 (60.1)	262 (39.9)		
	December 243	148 (60.9)	95 (39.1)		
	January 2021 373	183 (49.1)	190 (50.9)		
	February 180	95 (52.8)	85 (47.2)		
	March 185	102 (55.1)	83 (44.9)		
	April 196	111 (56.6)	85 (43.4)		
	May 155	80 (51.6)	75 (48.4)		
	June 199	96 (48.2)	103 (51.8)		
	July 107	64 (59.8)	43 (40.2)		

with 4 possible responses, 'very fearful', 'fearful', 'fearful but optimistic' and 'neutral'. To create a fearfulness outcome the first two responses were recoded 'yes' and the last two 'no'. Secondary outcomes were SSQ-14 score and the individual items of the SSQ-14. The SSQ-14 (English translation in Supplementary Table 1) is widely used in Zimbabwe to screen for CMDs at population level. It consists of 14 yes/no items and takes <10 min to administer. A cutpoint of  $\geq 8$  has been validated against a diagnosis of anxiety and/or depression using the Structured Clinical Interview of the DSM-IV applied by psychologists. [21]

## 2.6. Statistical analysis

The primary exposure was time period, defined based on the national COVID-19 data indicating the first, second and third waves, with corresponding lull periods between waves (Fig. 1). The start of a wave was defined by a 7-day average of  $\geq 50$  cases excluding localised outbreaks, while the end of a wave was defined by a 7-day average of <50 cases.

Prior to analysis a directed acyclic graph (DAG) was drawn using DAGitty (<http://www.dagitty.net/>) (Fig. 2) to identify variable adjustment sets (occupation and clinical setting).

Median and IQR of SSQ-14 score (range 0–14) and concern score (range 0–10) were calculated per week and lowess curves were fitted.

Definitions for body mass index (BMI) followed World Health Organization guidelines. [22] An individual with a BMI of 25 to <30 kg/m<sup>2</sup> was considered overweight, and of  $\geq 30$  kg/m<sup>2</sup> obese. Occupations were coded as patient-facing and non-patient-facing. Patient-facing occupations comprised: nurse, nurse aide, midwife, doctor, community health worker, radiographer, dentist, physiotherapist, social worker, counsellor, or student of any of the above. Domestic and cleaners were also coded as patient-facing due to their increased exposure risk when cleaning rooms and attending to linen and waste. Non-patient-facing occupations included security guards, pharmacists, administrators,

and kitchen staff. Clinic setting was coded as tertiary hospital, district or mission hospital and primary health clinic. Analysis was performed using Stata v15 and graphs were created using R.

## 2.7. Ethics

Ethical approval was granted by the Institutional Review Board of the BRTI, the Medical Research Council of Zimbabwe (MRCZ/A/2627) and the London School of Hygiene & Tropical Medicine ethics committee (22514). HCWs were given an information sheet about the occupational health services. The study was granted a waiver allowing verbal rather than written consent to be obtained because the primary intention of the study was to provide an occupational health service. Participants provided written informed consent for the workshop and face-to-face in-depth interviews. If the interview was conducted by telephone the information sheet was sent to the participant via email prior to the call. At the time of interview the study procedures were explained, any questions were answered and recorded verbal consent was obtained.

## 3. Results

The following dates defined the SARS-CoV-2 waves: 16 July 2020–13 September 2020 (wave 1), 11 November 2020–25 February 2021 (wave 2), and 6 June 2021 – ongoing at the time of writing (wave 3). The service was accessed 3673 times between 27 July 2020 and 31 July 2021, by 3577 HCWs (90 HCWs came twice and three came thrice) from 22 facilities. The median age was 37 (IQR 30–43) years and 81.9% were women ( $N = 3007$ ) (Table 1). Most HCWs ( $N = 2800$ , 76.2%) worked in patient-facing roles with the majority employed as nurses (828/2800, 29.6%), midwives (408/2800, 14.6%) and cleaners (425/2800, 15.2%). Almost two-thirds worked in tertiary hospitals ( $N = 2279$ ; 62.1%),

**Table 2**  
Association between waves, lull periods between waves and feeling fearful and symptoms suggestive of CMD.

	Fearfulness odds ratio (95%CI)		CMD symptoms (SSQ-14 $\geq$ 8) odds ratio (95% CI)	
	Unadjusted	Adjusted for setting and patient-facing role	Unadjusted	Adjusted for setting and patient-facing role
N	3539	3539	3671	3671
Period between wave 1 and 2	0.98 (0.78; 1.23)	0.87 (0.68; 1.10)	1.16 (0.79;1.70)	1.05 (0.70; 1.57)
Wave 2	1.35 (1.07; 1.71)	1.26 (1.00; 1.60)	1.53 (1.04; 2.25)	1.43 (0.97; 2.12)
Period between wave 2 and 3	1.44 (1.11; 1.85)	1.01 (0.67; 1.52)	1.93 (1.29; 2.89)	1.29 (0.69; 2.41)
Wave 3	1.34 (0.97; 1.83)	0.96 (0.63–1.46)	1.97 (1.22; 3.17)	1.43 (0.76; 2.71)

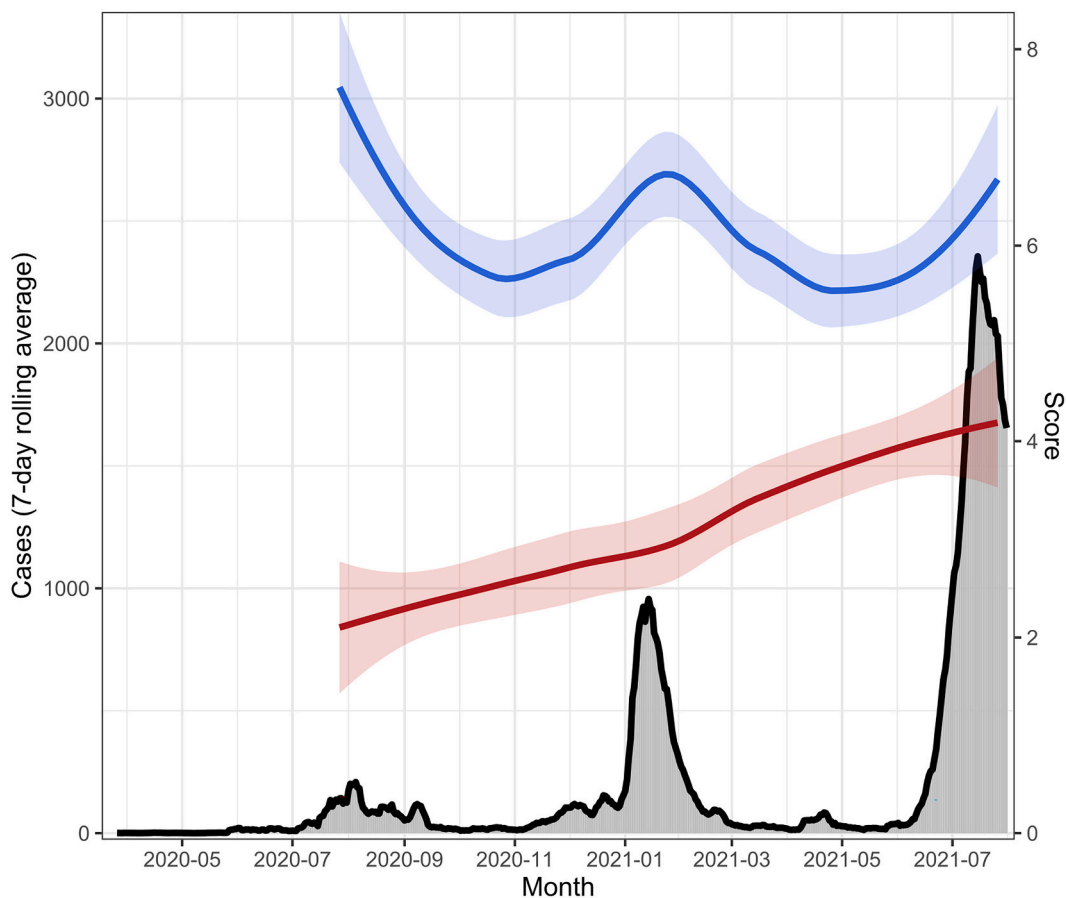
followed by district or mission hospitals ( $N = 814$ , 22.2%) and primary health clinics ( $N = 580$ , 15.8%). A small minority of HCWs reported contact with a person known to be SARS-CoV-2 infected, with PPE ( $n = 270$ , 7.3%) and without ( $n = 374$ , 10.2%). A quarter of HCWs ( $N = 963$ , 26.2%) reported previously diagnosed health conditions (HIV, hypertension, diabetes, asthma or cardiovascular disease). A third were overweight ( $N = 1148$ , 31.3%) and another third were obese ( $N = 1139$ ,

31.1%). No HCW tested positive for TB.

A total of 1474/3539 (41.7%) said they felt fearful about COVID-19. HCWs were more likely to be fearful if they worked in patient-facing roles, at district or mission hospitals or primary health clinics, had contact with a patient or colleague infected with SARS-CoV-2 without PPE, had received no IPC training, or had known chronic health conditions (Table 1). In univariate analysis odds of being fearful was higher during and following the second wave compared to the first wave. After adjusting for setting and patient-facing role, the odds ratio of fearfulness during the second wave compared to the first was 1.26 (95%CI 1.00–1.60) (Table 2).

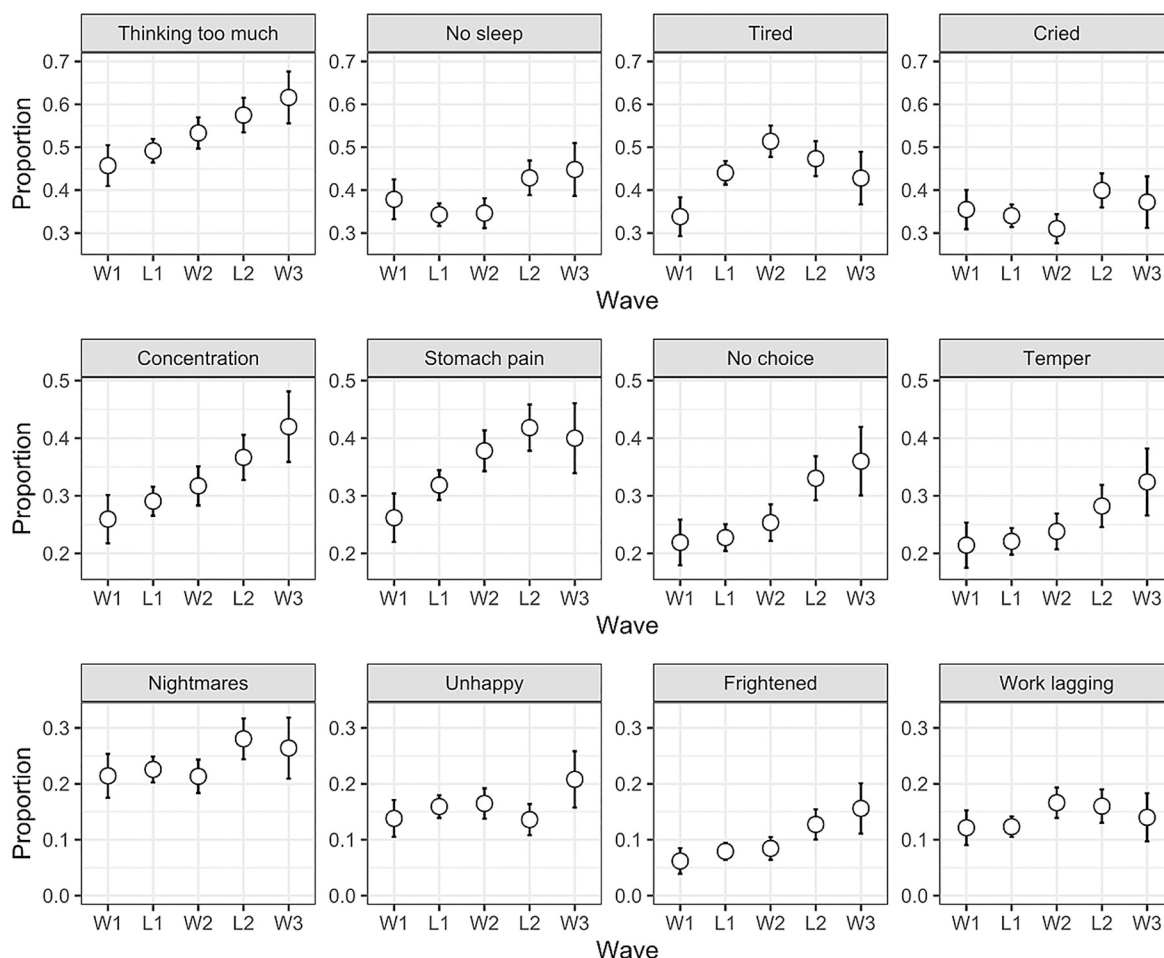
HCWs’ perception of the seriousness of the pandemic in Zimbabwe mirrored SARS-CoV-2 notifications over time, while median SSQ-14 score increased throughout the 12 months (Fig. 3). Fig. 4 displays the proportion of HCWs answering yes to 12 of the 14 SSQ-14 items (excluding the rarest 2 items) across the five time periods (three waves and two lull periods). The proportion of HCWs reporting failure to concentrate, being frightened and losing their temper over trivial matters, having difficulty deciding what to do and ‘thinking too much’ (a local idiom for depression) steadily increased over time. When asked if there were times during the past week when they felt life was so tough that they cried or wanted to cry, one in three HCWs responded with yes (31.5–40.1%). The proportion of HCWs reporting nightmares (21.3–27.8%) and stomach pains (26.3–41.9%) was high across the five periods. The proportion feeling run down peaked during the second wave (51.6%, 95%CI 48.0–55.2).

Overall, 443/3670 (12.1%, 95%CI 11.0–13.2) HCWs had symptoms suggestive of CMD (SSQ-14  $\geq$  8). The proportion of HCWs with CMD



**Fig. 3.** Level of concern and mental health symptoms over time. Rolling 7-day average of SARS-CoV-2 cases (grey), SSQ-14 score median (red line) and 95% confidence intervals, score of the level of concern about the COVID-19 situation in Zimbabwe median (blue line) and 95% confidence intervals. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)





**Fig. 4.** Proportion of healthcare workers with CMD symptoms across waves and lull periods. W1 = wave 1, L1 = lull period between wave 1 and 2, W2 = wave 2, L2 = lull period between wave 2 and 3, W3 = wave 3. The following questions related to the course of the past week and each heading of a panel: Concentration: “Did you find yourself sometimes failing to concentrate?” Cried: “Were there times when you felt life was so tough you cried or wanted to cry?” Frightened: “Were you frightened by trivial things?” Hallucinations: “Did you sometimes see or hear things others could not see or hear?” Nightmares: “Did you have nightmares or bad dreams?” No choice: “Did you feel you had problems deciding what to do?” No sleep: “Did you sometimes fail to sleep or did you lose sleep?” Stomach pain: “Was your stomach aching?” Suicidal ideations: “Did you sometimes feel like committing suicide?” Temper: “Did you lose your temper or get annoyed over trivial matters?” Thinking too much: “Did you sometimes think deeply or think about many things?” Tired: “Did you feel run down (tired)?” Unhappy: “Were you generally unhappy with the things you were doing each day?” Work lagging: “Was your work lagging behind?”

symptoms increased from 8.7% (95%CI 6.2–11.8), to 10.0% (8.4–11.8), 13.0% (11.0–15.2), 15.5% (12.7–18.6) and 15.6% (11.7–20.3) across waves and lull periods. After adjusting for setting and patient-facing role the adjusted odds ratio for CMD symptoms in wave 2 versus wave 1 was 1.43 (95%CI 0.97–2.12) (Table 2).

Only 3 (0.8%) out of 3673 HCWs did not complete the SSQ-14, opting out of mental health screening. Among those completing the SSQ-14 13.4% (N = 490) had an SSQ-14 ≥ 8 and/or red flags and 382 (78.8%) accepted referral for counselling. An additional 11 HCWs tested SARS-CoV-2 positive and agreed to counselling. CSU counsellors successfully contacted 87.7% (345/393) HCWs who were referred for counselling (Fig. 5).

Qualitative data collection occurred over two timepoints: September–November 2020 and March–April 2021. The two workshops

included 22 females and seven males, consisting of nurses (n = 8), doctors (n = 2), laboratory scientists (n = 2), cleaners (n = 2), security officers (n = 2) and staff working at the mortuary (n = 2), kitchen (n = 2) and stores (n = 2). The 18 participants who gave in-depth interviews included: nurses (n = 9), nursing matrons (n = 3), doctor (n = 1), medical student (n = 1), nurse-aide (n = 1), accountant (n = 1), municipal police officer (n = 1), groundsman (n = 1). Thirteen were women, four tested positive for SARS-CoV-2 and 13 had an SSQ-14 score ≥ 8.

Emerging themes were categorised into fear and anxiety, stressors, and protective factors improving mental health and well-being (Table 3). The CSU counsellors noted that “clients’ concerns originated from a combination of factors, ranging from general unmet social, economic, psychological, and medical needs; poor working conditions

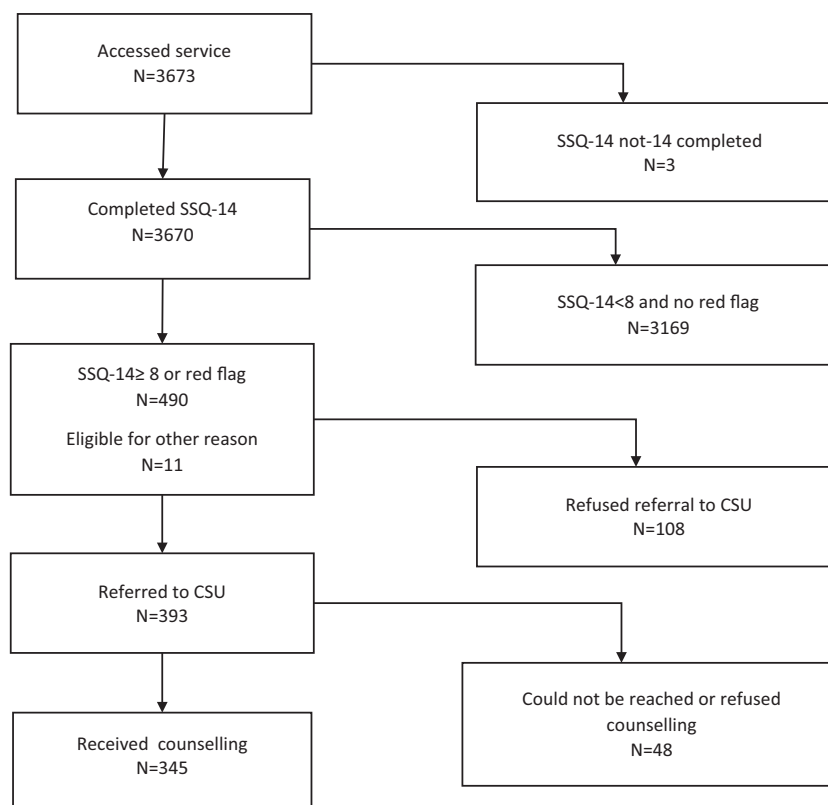


Fig. 5. Flow chart of participants.

and the current COVID-19 concerns". Most interviewees expressed feelings of fear and anxiety related to becoming infected or potentially infecting their loved ones with SARS-CoV-2. As the number of SARS-CoV-2 cases and related deaths increased, death became a source of distress, especially among parents of dependent children. Fear and anxiety were enhanced when PPE was lacking, particularly among those with pre-existing health conditions who felt at increased risk of severe COVID-19.

Stress was common and some participants reported feelings of burnout. Work-related pressures included long working hours and inadequate resources hindering HCWs to provide quality patient care and to practise recommended IPC. Disordered sleep and overthinking were frequently reported. HCWs felt vulnerable and alone because of societal stigma and discrimination from their families and communities. They were "labelled" as "the person who works in the hospital". Some HCWs who looked after patients with COVID-19 or had been exposed to patients or staff with SARS-CoV-2 had to live separately from their families or temporarily relocate other household members. Lockdowns restricted socialising which was a source of distress for some participants as they were unable to attend church services, or funerals of their loved ones, and meet socially with family and friends. This aggravated stress levels. Relationship problems and family tensions were additional stressors. CSU counsellors reported that whilst "some of the clients scheduled for review were feeling much better, there were high levels of ongoing distress due to poor health, safety issues as well as economic challenges". The CSU highlighted the "need for additional support beyond crisis care" for HCWs.

HCWs mentioned several factors and coping mechanisms that promoted their mental well-being. During lockdown some HCWs tried to improve their physical health by "spending more time exercising" whilst others took the opportunity to strengthen relationships through "increased family time". HCWs also identified positive aspects in the health system as a result of SARS-CoV-2 such as increased IPC training and enforcement of IPC measures.

HCWs who received counselling expressed gratitude and thought it was helpful. The knowledge that somebody "cared about you" made them feel "recognized" and valued. Being able to talk to somebody, if needed, provided reassurance. A 59 year-old midwife said "This call to ask about one's wellbeing is of great importance to us, even if I get overwhelmed, I know I can call that person now and tell them I am not well". HCWs gave mainly positive feedback about the occupational health service: a "free comprehensive service" offered in "a friendly atmosphere". The service encouraged HCWs to be more health conscious, to "know their health status" and to prioritise their own well-being by improving their "selfcare and lifestyle".

CSU had initially planned to establish WhatsApp peer support groups for HCWs, but HCWs preferred one-to-one counselling sessions from external providers. Thus, CSU provided client-centred counselling tailored to individual needs. In the early months CSU counsellors often had to make several attempts to contact HCWs, and failed to reach some because of wrong numbers or phones not working. From January 2021 HCWs were asked for multiple phone numbers including a number of a trusted friend, which improved the contact success rate. Another challenge CSU encountered was the unavailability of HCWs during working hours. Some HCWs had difficulty finding a time and place when they could speak openly about their problems.

#### 4. Discussion

Four in ten HCWs in Zimbabwe felt fearful about COVID-19 with a 1.26-fold increase during the second wave. The prevalence of insomnia, nightmares, somatisation (stomach-ache), tearfulness and fatigue were high throughout the study spanning three national SARS-CoV-2 waves. The prevalence of concentration difficulties, feeling frightened, short-tempereness and indecisiveness increased steadily over the 12 months of the study as did median SSQ-14 score.

Other studies conducted among HCWs in Africa during the COVID-19 pandemic reported prevalence of anxiety including mild, moderate

**Table 3**  
Themes, codes and supporting quotations from reports, workshops and in-depth interviews.

Theme	Codes	Quotation
Fear and anxiety	Fear of being exposed	<p>“My first encounter with a COVID-19 patient made me cry, I was asking God why. I was very shaken, I thought I was going to contract the virus and I was very scared.” (nurse, female, 58)</p> <p>“My work mates tested positive for COVID-19...this made me feel unstable, as we did not know when the virus would end and we thought we will end up getting infected as well, so it affected our mental health, and we were very unstable and shocked because we would even share things with them.” (nurse, female, 49)</p> <p>“I was afraid of the place I would be working; I would hear stories of people who had died there.” (nurse, male, 63)</p>
	Heightened risk perception due to lack of PPE	<p>“What made me overthink was we as frontline workers were asked to come to work without adequate protective equipment and this was at a time when COVID-19 was initially hitting the most, in the January–February period (2021), that is the time I was over thinking, I thought God what can we do, how will we live through this?” (midwife, female, age unknown)</p> <p>“At start it was not that adequate but as we progressed on and also the numbers of those affected with COVID-19 were increasing, they started to procure more and more PPE so that the staff was not exposed... that made me feel better” (nurse, male, 48).</p>
Fear of exposing loved ones	Fear of exposing loved ones	<p>“I was not afraid of contracting the virus because with the nature of my job I knew it was possible, but I was worried about my family, that if I get it and I have to self-isolate at home, I will infect my family.” (ambulance driver, male, 48)</p> <p>“Most people were afraid to get the virus at work and spread it to their children at home.” (nurse, female, 38)</p> <p>“When I would finish work and head home, I was disgruntled a lot, I would be thinking I work around people with the virus so if I get home, I could infect my family. This made me think excessively.” (groundsman, male, 63)</p>
		Death

**Table 3 (continued)**

Theme	Codes	Quotation
Psycho-somatic experiences	Insomnia	<p>contact with them and I said hey, I am going to die now. It was really devastating, and I thought I would be better off somewhere where I could really isolate myself, so I moved to the rural areas.” (nurse, male, 48).</p> <p>“When you are sick and also information is spreading that people are dying and you have lost some of your friends, you will be very nervous and you will really lose sleep” (nurse, male, 48)</p> <p>“I had that anxiety and I also was failing to sleep; at times I would actually go on my bed and I would be tossing and turning till it was the early morning hours like 4 o’clock and that is when I would start feeling sleepy.” (nurse, female, 59)</p>
	Burnout	<p>“I was just feeling tired most of the time, if I had work at times I would just seat down to rest due to the fatigue.” (midwife, female, 59)</p> <p>“My position required a lot from me, other than my normal nursing rounds, I had to make sure I was constantly researching on the COVID-19 developments. I was now working long hours, by the end of the day my feet were burning and I could barely stand” (nurse, female, 38)</p> <p>“I also had a headache; it would pang from the forehead area and it would come and go...it should lack of sleep.” (nurse, female, 59)</p>
Stressors	Work related stressors	<p>“Because some staff members were not coming to work, this increased pressure and sleepless nights of work to those who could afford coming to work” (casualty nurse, male, 33)</p>
	Failure to grieve loved ones	<p>“My grandmother died of it and my uncle had it and recovered, this was hurtful, and it affected me as I could not even go to bury my grandmother in the rural areas.” (nurse, female, 31).</p> <p>“I lost my cousin in January to COVID. We watched the funeral proceedings online. It still hurts me till now... we were close but her body could not be brought home” (medical student, female, 27)</p>
	Relational problems	<p>“I thought the mental health problem was caused by my high blood pressure because I am hypertensive, but sometimes, it’s a mixture of family problems, financial problems and the way treated at work, so, it’s a combination of issues.” (ambulance driver, male, 48)</p> <p>“Just being at home all the time cause an increase in domestic violence cases.” (midwife, female, 59)</p>

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Table 3 (continued)

Theme	Codes	Quotation
Stigma and loneliness		<p>“There is a lot of frustration out there. Staying at home means no income, us men are not used to not providing and with bars being closed frustrations are let out at home” (participant, workshop 1)</p> <p>“The other issue came in the form of being labelled in society, being pointed to as she who works at the hospital...” (nurse, female, 39).</p> <p>“If you are positive, people would not want to associate with you, and it gives off a bit of stigma. Mentally it will kind of torture you,” (nurse, male, 48).</p> <p>“People who knew I am working at PGH were not free and are still not free to interact with me, even our children are facing the same discrimination in the community” (nurse, female, 36).</p> <p>“I think what causes stress is feeling neglected by family, the ones you look at and consider to be your closest relatives” (midwife, female, 59)</p> <p>“My family has isolated from me because they fear I can transmit COVID-19 to them” (nurse, female, 39)</p>
	Change in family set up	<p>“I sent my children to the rural area...because I was worried about them, I knew that if my wife had Covid-19, so did I ... it affected me so much to an extent of wanting to send my pregnant wife back to my in laws if she was feeling unwell, but I realized I was the only one to help her as they were also looking down on her...I was angry to the core...” (ambulance driver, male, 48)</p> <p>“After my child’s birth I had to send my wife and child to stay with other family member and this was hurtful because I couldn’t be with my family”. (doctor, male, 33)</p> <p>“Things did not change that much [with COVID-19], all I did was to ask a grandchild I was staying with to go to her aunts place in Chitungwiza and so all this time, I was staying alone.” (midwife, female, 59)</p> <p>“At one point I was exposed to a COVID patient. I had to isolate in my room and my wife slept with the children, they had nowhere else to go. It was difficult for my little daughter to understand why daddy was not coming out to play with her. It was difficult” (casualty nurse, male, 33)</p> <p>“Our families where used to us coming home daily but in the period that we were on duty, we stayed at the hotel afraid to put them at risk. It was not easy for me and for them” (participant, workshop 2)</p>

Table 3 (continued)

Theme	Codes	Quotation
Protective factors	Financial constraints	<p>“The salary is too low...you get RTGS but you will need to get USD to buy things, pay rental and send the kids to school, you will be left with nothing, hence things are too hard and this result in deep thinking.” (nurse-aide, female, 58).</p> <p>“...people overthink because of things like money, the money is not enough to cover expenses so that is what causes people to overthink.” (nurse, female, 50).</p> <p>“...people might seem as they don’t want their work but, they will be stressed and thinking of what to do to take care of their families.” (nurse, female, 31).</p> <p>“being a frontliner does not work to our advantage when it comes to our health concerns. The staff clinic only caters for consultation and you pay 200rtgs or use your own medical aid card...if I am infected in the line of duty and go on to expose my family, their medical treatment is on me. My family and I should not struggle to get treatment when I am a health worker who offers services and treatment to other people...” (participant, workshop 2)</p>
	Limited social interactions	<p>“I heard that my mother in the village was sick...I could not travel there in person due to transport and the lockdown... it stressed me out?” (groundsman, male, 63)</p> <p>“what affected me most was failure to attend church gatherings...At times when you are discouraged and need the encouragement of others in groups it helps but now that is no longer happening...” (midwife, female, age unknown)</p>
Protective factors	Belief in a higher power	<p>“I feel very happy seeing those recovering, I see the Lord’s hand in that, God was so helpful.” (midwife, female, age unknown)</p> <p>“I believe in God and I believe God will fight for us. There are other diseases which came and passes, like cholera and swine flu, so I believe this will pass as well.” (ambulance driver, male, 48)</p>
	Healthy lifestyle	<p>“I would also exercise until I felt tired as this helped me to sleep better at night, I would exercise bath and then sleep so that was helpful, and I felt fine.” (midwife, female, 59)</p> <p>“Now people are spending more time exercising. COVID has made us see the importance of being fit, I have even started taking morning jogs” (midwife, female, age unknown)</p>
	COVID-19 recoveries as a source of hope	<p>“When I tested positive, COVID-19 has long been there, since I had seen other people before me</p>

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Table 3 (continued)

Theme	Codes	Quotation
		getting better, I accepted it and it did not affect me much.” (nurse, female, 29). “Seeing those who get infected recovering made me want to keep fighting for my life.” (nurse, female, 31)
Psychological adjustments		“At first our mental health was weak because we were fearful but now with getting knowledge, we are now better and strong, and I have no fear.” (nurse, female, 49) “The fear was there, but with time, and having full knowledge on COVID-19, (the symptoms, the condition), as well as seeing others get better it first-hand helped.” (nurse, female, 33) “With my post I had no option but to quickly work through my fears...COVID seemed scary at first but I now know how to minimise my risk of exposure” (nurse, female, 36)
Increased family time		“My husband could find time with me unlike before COVID when he would just go out, but now having time improved our love due to increased family time and we were open to each other about where we were wrong. (nurse, female, 29). “I was happy and hoped I stayed home more to spend time with my child.” (nurse, female, 31). “I was scared that he would contract COVID-19 but he would say...if I leave no one else will help you. I was happy that this man was loving and he stood by me.” (nurse, female, 29). “It is these same people (family) who reassured me when they heard that mum has also tested positive, they sent lots of advice and what not... I got a lot of support and I never got stressed then” (midwife, female, 59) “Social support is helping us as well. As an individual I get support from my work colleagues, when you are at work you talk and help each other and even our bosses help us sometimes. This gives us hope that at least when we are working, we will not be too afraid.” (nurse, female, 29).
Family support		“This call to ask about one’s wellbeing is of great importance to us, even if I get overwhelmed, I know I can call that person now and tell them I am not well” (midwife, COVID-19 patient, female, 59) “CSU called me, they asked how I was feeling, what I was thinking about...they still call now to ask how I am feeling... I was called by 2 or 3 different people...The calls helped because I realized there are some people who are caring about you when you think you
Access to psychological support		

Table 3 (continued)

Theme	Codes	Quotation
		are of less value.” (nurse, female, 31) “It is good to know that out there are people who know that an individual needs support and to be conversed with.” (nurse, female, 29). “Mental health problems are always there, things are not well, but I received some counselling, they told me that everyone is going through a tough time, hence I should accept, what is going on...It really helped me. I was called two times, now I feel better.” (municipal police officer, female, 36)
Evaluation of the health services	Comprehensive service provision	“It was a very friendly atmosphere; I got all the assistance I needed on that particular day. For me it was a total package because they checked my sugar levels, BP, COVID test and also HIV, so for me it was a total package.” (forensic accountant, male, 48) “What I was most grateful for was that I got tested for all the services looking at my health, everything was on point, there was nothing wrong in terms of my health status.” (painter, male, 63)
	Promotion of well-being and health awareness	“I think all the services were helpful because it’s rare to find people who actually explain the purpose, even when you are told you are positive it doesn’t mean you are dying. They explained my results in relation to the manner in which one was living. I was told my weight and height was not proportional and I had to lose at least 6 kgs from 78. Yes, I am trying to watch my diet, I am increasing intake of vegetables.” (mid-wife, female, 59) “All in all, everything was good, I was helped with my mental health which from my responses, it showed that I was not stable. This could be because of my work, we transport Covid-19 patients to Parirenyatwa and you start to think that you will get infected and this increases stress or BP [...] So, it all went well, we hope you will keep coming back.” (ambulance driver, male, 48)
	Referrals to further care	“I was happy with everything because I was actually one of the patients who got diagnosed as diabetic on those tests regardless of being covid-19 negative.” (nurse, female, 29) “The services are very good because when I met them, I was a bit depressed and I was helped, I managed to get counselling, because the time I was helped, I was suicidal. Mental health was relevant to

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Table 3 (continued)

Theme	Codes	Quotation
	The need for intervention expansion	<p>me because I was having problems at that time. I had already given up...now I'm feeling better." (municipal police, female, 36)</p> <p>"When I visited the tents, the staff was polite, and they did their testing privately and confidentially. What actually disappointed me was that I think the staff were short staffed. Such a good service needs to expand and to be well staffed to meet our demand" (nurse, female, 29)</p> <p>"The service is good. We feel at ease to come here than the staff clinic because we know our privacy will be respected. On top of that having such free and comprehensive services should be the benefit given to us as healthcare workers. I would recommend you make two visits a year at each facility." (casualty nurse, male, 33)</p>
Feedback from CSU	Service provision & general assessments	<p>"We [CSU] initially envisioned support groups for referred workers, however early assessments demonstrated that there was low interest from referred staff in this, with a preference for one-on-one support from an external provider"</p> <p>"Some also preferred using WhatsApp chat as a mode of counselling, which was offered as per request. Psychological support is ongoing on both whatsapp texts at a time requested by the client and tele-counselling." (CSU, report 01)</p> <p>"Similar to 2020, clients' concerns originated from a combination of factors ranging from general unmet social, economic, psychological, and medical needs, poor health and safety working conditions to the current COVID-19 concerns."</p> <p>"It was noted that 30% of clients scheduled for review were feeling much better as revealed by SSQ8 score on re-assessment and their narratives. However, 70% have remained anxious citing poor health and safety issues as well as economic challenges. The high levels of ongoing distress in follow up cases demonstrates the high need for this group and indicates that additional support beyond crisis care may be required for this group of health workers."</p> <p>"The clients' mental state were disturbed due to operational environment, particularly those with underlying health conditions. They all bemoaned lack of equipment that protect them against health and safety risks during the course of their work (PPE)."</p>

Table 3 (continued)

Theme	Codes	Quotation
	Review of Tele-counselling	<p>"Tele-counselling is not only a timesaver; but also allows clients to access therapy from places that may be more convenient. The occupational health programme referred clients started and continued therapy without having to leave their homes or work environments. Some clients were able to do their sessions during their lunch breaks at work in parked cars. To a greater extent, the strategy was effective in addressing mental health issues of HCWs. Tele-counselling brought people to therapy who would otherwise not seek it."</p> <p>"The service screens for, HIV, TB etc., and also SSQ14 detects other related stressors, under this background, if it were face to face some professionals may be uncomfortable opening up in a face-to-face setting and prefer the anonymity of tele-counselling assistance. [...] Contrary, tele-counselling treatment is less suited to severe forms of mental health issues, such as suicide and severe PTSD making in-person services as the only feasible choice" (CSU,</p>
	Clients feedback	<p>"The clients appreciated the supportive counselling they got from CSU. They liked being able to share with someone who was external. Although counselling services are there in some of their facilities, they prefer an external counsellor."</p> <p>"This initiative was a well-received and appreciated by HCWs. The services helped clients to know their health statuses and to seek medical attention to previously unknown ailments. They also started to appreciate the concept of self-care"</p> <p>"Clients advocated for a more holistic approach for total rehabilitation. Yes, mental health was addressed but the physical complaints were left unattended. It was like wounds were opened and left open physically. Medical intervention besides counselling alone could have complimented psychological support rendered."</p> <p>"The occupational health team, should liaise with hospital authorities for HCWs to be accorded time to engage in [counselling] sessions while at work"</p>
	Referral to further care	<p>"One reported that she is a single parent and has a child who needed special attention because of autism. She feared passing on COVID to her son whom she could not give anyone for care. She was given</p>

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Table 3 (continued)

Theme	Codes	Quotation
		contacts for Pathways Autism Trust, an organization founded by parents of children with autism in Zimbabwe.”
		“Another client was severely stressed ... she had a child with spina bifida who needed constant attention and was due for an operation which she could not afford. Contacts were given to the client to contact Spinal Bifida Parent’s Association of Zimbabwe for peer support.”
	Recommendations and evaluation of the occupational health services	“That occupational health team should work with health authorities to ensure ongoing assessment, monitoring and treatment of health conditions which are causing and/or exacerbating stress, including blood pressure, diabetes, positive HIV status and other chronic conditions. This includes advocating for treatment to be free or subsidised, including medication.” (CSU, Report 01)
		“We [CSU] recommend a long-term counselling program, with health care workers being provided services over several sessions (rather than only providing this for the cases most in need). This need is indicated by the high levels of distress, the relatively low recovery rates in follow up assessments, and the understanding that workers are returning to the same stressful conditions which may further deteriorate as Covid-19 case numbers increase.”
		“CSU is pleased to be engaged with the team providing the occupational health service: support for frontline staff is rarely supported by donors or adequately researched. The number of referrals indicates the clear need for counselling support for healthcare workers, and we hope through this partnership we can continue to engage in this needed support.
Challenges encountered by CSU	Failure to reach clients	“Some were not reachable, and this was notified to the referring team periodically”
		“It was hectic contacting clients during working hours when they were too busy to respond freely hence unanswered calls despite numerous attempts. A counsellor could be told to call at night or during weekends when clients would be free. [...] Counselling sessions were rescheduled many times. [...] At times clients would receive calls in the presence of workmates, patients etc. hence a hindrance to openness and confidentiality.”
		“With telephone counselling, the client has to find a time and place where he or she can speak

Table 3 (continued)

Theme	Codes	Quotation
		freely. A counsellor cannot take care of the environment, environment can be distractive, and privacy is not guaranteed. If clients do not feel a sense of privacy, they may disclose less information, making treatment more difficult with little or no relevant information at all. This was not easy for some clients who were at the workplace and some at home with family members or other people.”

and severe ranging from 25.5% to 90.5%. [10–13,17,23–26] The prevalence of depressive symptoms ranged between 32.1%–94.0%. [10–13,17,23–26] Most of these studies used the Generalized Anxiety Disorder 7 (GAD-7) [11,12,15,16,23,24,26–28] and Patient Health Questionnaire 9 (PHQ-9) [12,15,23,24,26,28] to determine anxiety and depression. Other data collection tools included the 10-item Cohen Perceived Stress Scale [10,26,27,29], 14-item Shirom-Melamed Burnout measure [10], 7-item Insomnia Severity Index [12,26,28,30], 22-item Impact of Event Scale-Revised [12,28], 16-item Stanford Professional Fulfilment Index [12,28], Hospital Anxiety Depression Score [13], Coronavirus Anxiety Scale [17] and Primary Care PTSD Screen. [15] The differences in prevalence of anxiety and depression across studies even when using the same tools may be explained by different cutpoints, study populations (primarily doctors versus primarily nurses), settings (COVID-19 specialist services versus general medicine, obstetrics [31] and psychiatry [14]), health system capacity, data collection methods (online versus in-person interviewer or self-administered) and timing of the survey in relation to the global and national pandemic situation. Of note, while most studies used standardised data collection tools they were not necessarily validated for the context or the population. Also online surveys are vulnerable to selection bias that can affect prevalence estimates. [32]

Compared to the depressive symptoms and anxiety reported by other studies the prevalence of CMD in this study was relatively low. This is not surprising as the SSQ-14 cutpoint of ≥8 is used for CMD case-finding and to identify individuals who should be referred for psychological assessment and intervention. [21] A recently published study reported a CMD prevalence of 11% among lay counsellors in Zimbabwe before the COVID-19 pandemic [33], similar to the prevalence among HCWs in this study.

In contrast to other rapid cross-sectional surveys aiming to describe the prevalence of mental health symptoms among HCWs, we used the SSQ-14 as a screening tool to identify those in need of psychological support. HCWs were free to choose any screening tools or tests provided by the occupational health service. Of note uptake of mental health screening was almost 100% indicating high acceptability. In contrast uptake of HIV (58.5%) and HbA1c (94.6%) testing was considerably lower (data not shown). HCWs felt that mental health screening was an important aspect of the service. More than two thirds of HCWs who were offered referral agreed to counselling. In-depth interviews and reports from CSU showed that counselling was helpful, but also highlighted the need for ongoing support beyond the pandemic. Pre-existing stressors including financial constraints and relationship problems, were aggravated by the pandemic because of increased costs of commodities and limited social interaction and support. Salaries of health care workers in Zimbabwe have not kept pace with inflation (255% in 2019 and 557% in 2020 against the US dollar), hence in 2020 a nurse earned the equivalent of USD 50 per month, while a junior doctor earned USD 70. These untenable conditions have led to repeated industrial action, a huge brain drain of health care workers, and further pressure on those who remain.

Similar to other settings, HCWs in Zimbabwe feared for the lives and

wellbeing of themselves and their loved ones. [9,15] Those with dependent children felt particularly vulnerable and anxious, as shown in other studies. [9]

This study has several strengths. Services were offered over 12 months allowing capture of trends across three waves. The study included HCWs from all tiers of the healthcare system and a wide range of professions. The SSQ-14 has been designed, validated and used extensively in Zimbabwe. [21,33–36] The mixed-method approach enabled a more in-depth understanding of aggravating and mediating factors of mental health and well-being.

The study also has limitations. HCWs taking up the occupational health service may have been more health-conscious than those who did not, introducing selection bias. However, the service was not focused exclusively on mental health and the decision of which “screening package” to take up was entirely voluntary. Service provision was guided by need and hence tertiary hospitals were prioritised during the peak of SARS-CoV-2 waves. We tried to adjust for that in the analysis, but residual confounding cannot be excluded.

In conclusion, HCWs in Zimbabwe experience a high burden of mental health symptoms, intensified by the COVID-19 pandemic. Financial insecurity, unmet physical health needs and inability to provide quality care within extremely limited resources impede on the mental well-being of HCWs. Sustainable mental health interventions must be multisectoral addressing mental, physical and financial wellbeing.

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## Contributors

KK, VS, RAF, CEN, HM, SR conceptualised the study. RMSC, FPN, ETM collected data. KK and VS led the statistical data analysis with input from IDO. RMSC led the qualitative data analysis. MM, TH and NX provided counselling services and contributed to qualitative data collection. AJVM, CP, MC and PC facilitated service delivery at health care facilities. KK, RMSC, VS and RAF wrote the first draft of the manuscript. All authors provided input to the draft manuscript and read and approved the final manuscript.

## Data sharing statement

Individual, anonymised participant data and a data dictionary will be available through the London School of Hygiene & Tropical Medicine repository (Data Compass) 12 months after publication of results.

## Declaration of Competing Interest

No conflict of interest.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.comppsy.2022.152321>.

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