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Research article

Psychological distress and associated factors among hospital workers in Uganda during the COVID-19 lockdown – A multicentre study

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ABSTRACT

Objective: To assess the prevalence of psychological distress (PD), and its associated demographic, psychosocial, hospital and health-related factors among hospital workers in Uganda during the COVID-19 related lockdown.
Methods: An online cross-sectional study was conducted among three hundred ninety six participants recruited from eight hospitals and PD was assessed using the Kessler 6 distress scale from May to June 2020.
Results: PD was present in 92.7% of the participants with majority (78.3%) having mild to moderate PD whereas 14.4% had severe PD. Severe PD had statistically significant association with having financial liabilities (O.R = 3.69 (1.55–8.77), p = 0.003). However, ability to maintain contact with family members and friends (O.R = 0.43 (0.22–0.84), p value = 0.013), and having enough personal protective equipment and safety tools at work place (O.R = 0.44 (0.23–0.84), p value = 0.012) were protective against severe PD. having excessive worry about getting infected with COVID-19, conflicts within a home, segregation by friends or community, longer working hours or involvement in management of suspected or confirmed case were not associated with severe PD.
Conclusion: The findings indicate the need to take into consideration the mental wellbeing of health workers during this COVID-19 outbreak. Whereas hospital workers continue to provide their services during the COVID-19 pandemic and related lockdown, it is important that they maintain contact with social support networks and be provided with counselling and mental health and psychosocial services in order to optimise their mental health during this pandemic.

1. Introduction

Coronavirus Disease 2019 (COVID-19) is a viral infection caused by a coronavirus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2) which causes mild to severe respiratory symptoms [1, 2]. It is partly believed to be airborne and mainly spreads through respiratory droplets and aerosols or from contact with contaminated surfaces [3, 4].

The global spread of the virus was declared a pandemic by the World Health Organization (WHO) on the 11th of March, 2020 [5]. In the general population, COVID-19 had numerous disastrous effects on people's mental wellbeing characterised by increased levels of psychological distress especially among the elderly, those with respiratory diseases or low socio-economic status [6, 7, 8]. Consequently, many countries instituted various measures to contain the spread of this virus [9, 10]. In

Uganda, the government declared several measures which included a countrywide lock-down, social distancing, self-quarantining and hand washing, among other measures [11, 12]. During this period, only limited activities related to essential services such as food outlets and private transport were allowed, while social gatherings, educational services at all levels, among others, were restricted [13]. Health care being an essential service meant that the workers in the health care service sector were to continue conducting their duties amidst the outbreak and the resultant lock-down. These workers, both medical and non-medical, are continuously at risk of contracting the COVID-19 just like other individuals, but their risk is increased by the fact that they get into close contact with suspected and confirmed cases [14]. This increased risk, in addition to the imposed lockdown protocols, have potential to impair the health workers' psychosocial wellbeing and, as a consequence, cause significant levels of psychological distress (PD) [15]. The situation is aggravated by various challenges such as heightened pressures at the work place due to the virus' high infectious rates [16, 17], working with limited personal protective equipment (PPE), longer working hours, limited human resources, multiple duties to be covered and burn out [15, 18, 19]. Furthermore, the associated lock-down presents physical barriers such as lack of transport to and from work, limited access to social services such as welfare services, food, religious services and personal non-COVID-19 related health care, and restricted social interaction, among others, hence worsening the related PD [20]. Several disease outbreaks such as Ebola, Cholera and the current COVID-19, have been associated with various degrees of PD, most especially among hospital workers, leading to disastrous mental health outcomes such as depression, anxiety and acute stress reaction or post-traumatic stress disorder (PTSD) in the long run; and a plethora of sleep disorders [21, 22].

The prevalence of depression and anxiety among health workers in the COVID-19 pandemic has been reported to range from 12.5% to 18.1% and 20.1%–34.0%, respectively in China whereas moderate to severe PD is reported to have gone up to 50% in the same country [21, 23, 24, 25]. In Singapore, the prevalence of PD-related depression and anxiety among health workers during this pandemic has been reported to be 8.9% and 14.5%, respectively [26]. Currently, there is a paucity of published data with regard to PD among hospital workers in the various African countries affected by COVID-19, including Uganda. In Uganda, the reported prevalence of PD among health workers prior to the COVID-19 pandemic, was 21.5% [27]. The risk factors for experiencing occupational hazards such as stress included failure to have the necessary personal protective equipment (PPE) and safety tools, working in multiple facilities, working overtime, and work-related pressures [27]. Additionally, the pandemic-related lock-down presents other stressors to hospital workers such as isolation from family and other forms of social support, stigma and discrimination, fears of contracting the virus and transmitting it to loved ones and incidences of hostility and aggression from their communities [28, 29] which can potentially worsen the PD. Other factors include lack of a pre-existing infrastructure and relevant equipment such as ventilators, to handle the prevailing outbreak and for management of confirmed cases [30, 31]. The prevalence of psychological distress among hospital workers (medical and non-medical) in Uganda during this period of the COVID-19 pandemic has not been published. This study aimed at; 1) determining the prevalence of PD among hospital workers, and 2) identifying the demographic, psychosocial, hospital and health related factors associated with severe psychological distress (SPD) among hospital workers in eight hospitals in central, eastern, northern and western Uganda during the COVID-19 pandemic and related lock-down.

2. Methods

2.1. Study design

A cross-sectional study was conducted among hospital workers at eight referral hospitals across Uganda during the COVID-19 pandemic related lock-down through an online survey using a self-administered questionnaire.

The main study outcome variable was psychological distress whereas predictor variables were demographic, psychosocial, hospital- and health-related factors. Demographic factors included participant's age, sex, marital status, type of hospital work, residence, region of workplace, education level and religion. Psychosocial factors included use of addictive substances, maintaining contact with family and friends, excessive worry of getting COVID-19 infection, experiencing conflicts or misunderstanding within workplace or home, financial liabilities, difficulties accessing workplace and feeling segregated by family or community members. The hospital and health related factors included provision of PPE and safety tools, working more hours than before, increase in daily workload, and work-related pressure, COVID-19 related scaring/worrying information/news, involvement in the management of a COVID-19 suspected or confirmed case, knowledge about COVID-19 pandemic, medical comorbidities, multiple employments and having adequate medical equipment used in COVID-19 management at the hospital.

2.2. Study setting

The study was conducted in eight regional referral hospitals serving as regional isolation and treatment centres for COVID-19 patients across Uganda. Uganda has 13 public regional referral hospitals with four in the Northern and Western region each, three in Eastern and two in Central region. Two regional hospitals were sampled from each region of the country. The Gulu Regional Referral Hospital (RRH) and Lira RRH (northern region); Jinja RRH and Mbale RRH (Eastern region); Mubende RRH and Masaka RRH (central region) and Kampala International University Teaching Hospital (KIUTH) and Mbarara RRH (western region) were selected for the study. Seven of these (Gulu, Lira, Jinja, Mbale, Masaka, Mubende and Mbarara RRHs) are public hospital whereas KIUTH is a private, not-for-profit hospital. Additionally, they all serve as teaching sites for medical students from various institutions around the country.

2.3. Study participants

Participants included all hospital workers who were employed by the various study sites and were working during the COVID-19 pandemic and its related lock-down. The various cadres were subdivided into medical (health workers) and non-medical (administrators and support staff). The health workers included nurses, clinical officers, medical interns, medical officers, pharmacists, psychological support staff (counsellors, social workers, occupational therapists, psychologists etc.), senior house officers, specialists, and consultants. The support staff consisted of security guards, cleaners, and office staff (messengers, secretaries, among others). The study included all hospital workers of the eight selected hospitals in Uganda who were in hospital at the time of data collection.

2.4. Measures

a) Study-designed questionnaire for collecting information regarding sociodemographic, hospital-related and psychosocial factors of the participants. b) Kessler 6 (K6) distress scale [32, 33] which is a short version of the Kessler 10 tool that was developed with support from United States government's National Centre for Health Statistics to measure PD/mental illness [34, 35]. It has six Likert scale questions used to measure PD and five additional questions that assess its persistence and associated impairment within the past 30 days [36]. The Likert scale questions are scored as "all the time" 4, "most of the time" 3, "some of the time" 2, "a little of the time" 1 and "none of the time" 0, hence the minimum and maximum scores being 0 and 24 respectively [35]. The questions are; "During the past 30 days, about how often did you feel; a) nervous, b) hopeless, c) restless or fidgety, d) so depressed that nothing could cheer

you up, e) that everything was an effort and f) worthless?". A total score of 0 denotes absence of PD, 1 to 4 mild PD, 5 to 12 moderate PD and above 12 is severe PD/mental illness [35, 37, 38]. K6 has a sensitivity, specificity and Cronbach's alpha of 0.36, 0.96 and 0.89 respectively and excellent reliability [39, 40]. It has been validated and used to measure psychological distress in different low income settings including Uganda [41].

2.5. Sample size calculation

The sample size for this study was calculated using Kish Leslie formula [42] with an assumed prevalence of PD among health workers in Uganda of 50% at 95% confidence interval and 5% margin of error, giving a minimum sample size of 384 study participants.

2.6. Sampling, recruitment and data collection

The hospitals were purposively selected having considered the two largest regional referral hospital in each of the four regions of Uganda that had been selected by the ministry of health to act as Isolation and/or treatment centres for COVID-19 patients. All hospital workers were considered for participation in this study and the various cadres were offered an equal opportunity to take part in the study by way of voluntarily responding to the survey. This was ensured by sharing the pretested and piloted survey Google form (link) through the various social media platforms such as Whatsapp groups, email address lists of the various study sites (hospitals) as well as to individuals found at study sites. The Google form was designed with checks that helped to minimise errors or data loss and had clear instructions on how to be filled. In case of any challenges regarding how to access and fill Google form, the trained study contact person at the respective site was available to provide the required assistance. Data was collected during May and June, 2020 and participants were recruited consecutively until the required sample size was achieved. Potential study participants provided informed consent (online) prior to participating in the study (filling in the Google forms). The COVID-19 preventive standard guidelines and standard operating procedures of the Ministry of Health as well as guidelines for conducting research during COVID-19 pandemic by the Uganda National Council of Science and Technology at that time were taken into consideration [43].

Completed questionnaires were immediately submitted to the online server which was only accessed with authorisation from the principal investigator(s). Filling out the online survey took about 30 min, hence causing minimal interruption to study participants' work/duties and no monetary compensation was awarded to the study participants. The collected data was stored in a safe and secure password-protected cloud server to ensure privacy and participants identifying data was not collected.

2.7. Data analysis

The collected data was downloaded in an excel sheet which was cleaned and coded before being uploaded into STATA (Stata/MP 15.0, StataCorp LLC) for analysis. Continuous variables were summarised using proportions, means, standard deviations (SD) and medians, and were presented in the form of charts, graphs and tables. The prevalence of low, moderate and severe PD was expressed as proportion of participants who scored from 1 to 4, 5 to 12 and above 12 as per the K6 respectively. Participants who scored 0 on the K6 were categorised as having no PD. Chi squared test was used to compare proportions. For additional K6 questions, t-tests were used to compare difference between two means. Bivariate logistic regression was done to determine factors associated with SPD from which all factors with a p value of <0.1 were considered for the multivariable logistic regression model. The measure of association was odds ratios and 5% level of significance was considered at 95% confidence interval.

2.8. Ethical considerations

Ethical approval was obtained from Kampala International University Research Ethics Committee as per approval number UG-REC-023/202016. All participants completed an online informed consent form before they could proceed to fill the data collection form. Participants' identification data remained anonymous in order to ensure confidentiality of their information. Data collected were submitted to the password protected central server hosted on Google cloud which is only accessible by the principal investigators to ensure safe keeping and confidentiality.

3. Results

The total estimated number of hospital workers in the 8 hospitals was 2227 and the participants that completed the online survey were 396 giving a response rate of 17.8% with western region having the majority (30.1%). Participants' age ranged from 18 to 63 years with an average age of 33.1 (SD = 9.0). Majority (76.3%) of the participants was medical workers and most resided outside their hospital quarters (77.8%). The number of participants who were married, single or cohabiting (p = 0.007), Muslims or Christians (p < 0.001) and those who attained certificate, diploma, bachelors or masters level of education (p < 0.001) were significantly higher among medical compared to non-medical hospital workers whereas the other differences in demographic variable were non-significant (Table 1).

The prevalence of psychological distress was 92.7% with 14.4% of the participants having the severe form whereas majority (78.3%) had mild to moderate forms. In a period of one month, hospital workers experiencing SPD were unable to work for more days (p = 0.001), spent more days doing half or less of what they would normally do (p = 0.001) and/or spent more time seeing a doctor other health workers (p = 0.011) compared to the rest of their colleagues (Table 2).

Bivariate analysis of demographic, psychological and hospital and health-related factors and PD showed that there was significant positive association between SPD and residing in the Eastern region (odds ratio (O.R) = 3.15, p value (p) = 0.019), having been excessively worried of getting infected with COVID-19 (O.R = 3.46, = 0.006), experiencing conflict or misunderstanding within your home (O.R = 2.10, p = 0.010), having financial liabilities (O.R = 4.96, p = 0.001), working more hours than before (O.R = 2.30, p = 0.009), involvement in the management of a suspected case (O.R = 2.30, p = 0.005). However, maintaining contact with relatives and friends (O.R = 0.37, p = 0.001) and having PPE and safety tools (O.R = 0.40, p = 0.002) were protective (had negative association) against SPD (Table 3).

From bivariate analysis, all factors with p value <0.1 were considered for the multivariable logistic regression analysis. The final multivariable regression model showed that SPD was significantly associated with maintaining contact with family and relatives, having financial liabilities as well as being provided with PPE and safety tools (Table 4). The odds of having severe psychological distress among participants who maintained contact with relatives and friends were 0.43 times (p = 0.013) compared to those who did not. Additionally, having been provided with PPE and safety tools was protective against SPD (O.R = 0.44, p = 0.012), while the odds of having SPD among hospital workers having financial liabilities was 3.69 times (p = 0.003) higher compared to those who had no such liabilities.

4. Discussion

To our knowledge, this is the first study conducted among medical and non-medical hospital workers in regional referral hospitals in all the four regions of Uganda during the COVID-19 pandemic to determine the prevalence of PD, its associated factors and common stressors. The prevalence of low to moderate PD was 78.3% whereas that of SPD was 14.4%. SPD was associated with having financial liabilities, whereas maintaining contact with relative and friends and having PPE and safety tools were protective against SPD.

Table 1. Demographic characteristics of all participants from the eight hospitals (n = 396).

Characteristic	Total (n)	Type of Work		P value
		Medical, n (%)	Non-Medical, n (%)	
Average age		33.3 (SD = 8.8)	32.3 (SD = 9.8)	
Sex				0.069
Male	215	171 (79.5)	44 (20.5)	
Female	178	130 (73.0)	48 (27.0)	
Prefer not to say	3	1 (33.3)	2 (66.6)	
Marital status				**0.007**
Married	189	150 (79.4)	39 (20.6)	
Single	143	114 (79.7)	29 (20.3)	
Cohabiting	29	17 (58.6)	12 (41.4)	
Separated/ divorced	35	21 (60.0)	14 (40.0)	
Religion				**0.000**
Christian	333	267 (80.2)	66 (19.8)	
Muslim	62	34 (54.8)	28 (45.2)	
Others	1	1 (100.0)	—	
Education level				**0.000**
Certificate	100	51 (51.0)	49 (49.0)	
Diploma	125	109 (87.2)	16 (12.8)	
Bachelors	120	99 (82.5)	21 (17.5)	
Masters	43	40 (93.0)	3 (7.0)	
PhD	3	3 (100.0)	—	
Others	5	—	5 (100.0)	
Study site/region				0.097
Northern region				
Gulu	36	25 (69.4)	11 (30.5)	
Lira	50	34 (68.0)	16 (32.0)	
Eastern region				
Jinja	50	45 (90.0)	5 (10.0)	
Mbale	60	42 (60.0)	18 (40.0)	
Central region				
Masaka	31	21 (67.7)	10 (32.3)	
Mubende	50	39 (78.0)	11 (22.0)	
South-western region				
Mbarara	67	55 (82.1)	12 (17.9)	
KIUTH	52	41 (78.8)	11 (21.2)	
Residence				0.050
Within hospital	88	74 (84.1)	14 (15.9)	
Outside hospital	308	228 (74.0)	80 (26.0)	

Table 2. Persistence of SPD feelings and associated impairment of functioning among hospital workers (during the past 30 days) (n = 367).

Variable	Participants with SPD	Participants without SPD	P value
Average number of days out of 30 when you were totally unable to work (or carry out your normal activities) because of these feelings (mean (S.D)).	7.55 (6.55)	3.6 (4.77)	**0.001**
Average number of days in the past 30 when you were able to do only half or less of what you would normally have been able to do, because of these feelings. (mean (S.D))	6.00 (5.88)	3.7 (5.00)	**0.001**
Average number of times you saw a doctor or other health professional about these feelings? (mean (S.D))	1.5 (4.1)	0.7 (2.33)	**0.0133**
Average number of times when physical health problems have been the main cause of these feelings. (mean (SD))	1.1 (1.1)	0.9 (0.9)	0.159

SPD = Severe Psychological Distress.

The high prevalence is in line with studies conducted in other countries which showed that PD was highly prevalent among hospital/health workers during COVID-19 and other earlier pandemics [26, 44]. However, these findings show a higher prevalence of PD than what was found in Singapore and India, Saudi Arabia and New York City where the prevalence of PD among hospital workers was 31.5% [45], 40% [46] and 57% [47] respectively during COVID-19 pandemic. The prevalence of PD in this study is also higher compared to that found during other pandemics or infectious disease outbreaks in other countries such as 56.7% during A/H1N1 influenza in Greece (2009) [48], 64.1% during Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in Korea (2015) [49] and 11% during the Severe Acute Respiratory Syndrome (SARS) in Taiwan (2003) [50]. This difference may be due to difference in timing of conducting studies whereby people tend to be more distressed in the early stages of the pandemic due to the many uncertainties but gradually get better as more reliable information becomes available to the public. It could also be as result of sociocultural variations, difference in study methods used, as well as differences in the approaches applied by various countries in preventing and managing COVID-19 pandemic [51, 52]. Among some health workers such as nurses, the prevalence of

psychological distress in absence of a pandemic was reported at 27% in Norway, 44.1% in Nigeria and 42.9% in Iran [53, 54, 55]. Hence these findings further emphasize that PD among health workers may be on the rise during the pandemic period compared to the usual routine work environment. It is important to note that the difference in findings can also be due to the differences in study tools used in the different studies such as Depression Anxiety and Stress Scale (DASS) used in Singapore and India [45], COVID-19 Peritraumatic Distress Index (CPDI) in Saudi Arabia [46] and Impact of Events Scale – Revised (IES-R) in Korea [49]. Some tools such as DASS assess depression and anxiety, IES-R assesses intrusion and avoidance symptoms of post-traumatic stress disorder and CPDI measures phobias and stress disorders specific to COVID-19, whereas K6 assesses non-specific psychological distress which usually results into depression, anxiety disorders and other mental disorders [56, 57, 58]. Whereas prevalence of PD in the general population in Uganda is not known, before lock-down the prevalence of PD among health workers was about 21.5% [27]. This study also indicates that majority of the hospital workers (78.3%) during this period of COVID-19 are distressed and are at the verge of progressing to severe to SPD if not attended to. Additionally, a substantial number of these workers (14.4%) had already reached psychological distress levels that require mental health treatment. This could be because during this COVID-19 pandemic and its resultant lockdown there have been several changes in the livelihood of most people in the country including restriction on movements from one place to another [59].

Many hospital workers (24.2%) had problems connecting with their close relatives and friends with several of them spending several days at their work places hence causing severe psychological distress. Inversely, maintaining contact with one's close people was protective against SPD since this ensures good communication and provides good social support system to the hospital workers. This emphasizes the fact that good social support is associated with good mental health outcomes [60, 61] especially during challenging times such as the current COVID-19 pandemic. However, with COVID-19 infection preventive measures such as social total and partial lockdown with curfew there was a break in this crucial social interaction, which potentially predisposed to the hospital workers to SPD [62, 63, 64]. In the same line, hospital workers provided with PPE and safety tool were at reduced risk of SPD since this give them a sense of protection and safety. Providing adequate PPE and safety tools is very important mainly for good mental health of frontline workers managing infectious disease outbreaks and has been reported in several viral disease outbreaks such as Ebola, SARS, MERS [65, 66], and COVID-19 currently [67]. Therefore, it is important that amidst the many financial demands caused by Covid-19, hospital workers should be provided

Table 3. Bivariate analysis of factors associated with SPD among hospital workers (n = 396).

Variable	SPD, n (%)		Crude odds ratio (p value)	95% Confidence interval
	No	Yes		
Demographics factors				
Age categories				
18–34	170 (83.7)	33 (16.3)	1 (reference)	–
35–44	118 (86.8)	18 (13.2)	0.79 (0.446)	0.42–1.46
>45	51 (89.5)	6 (10.5)	0.61 (0.288)	0.24–1.53
Sex				
Male	184 (85.6)	31 (14.4)	1 (reference)	–
Female	153 (86.0)	25 (14.0)	3.06 (0.368)	0.27–35.02
Prefer not to say	2 (66.7)	1 (3.3)	1.03 (0.916)	0.58–1.82
Marital status				
Cohabiting	26 (89.7)	3 (10.3)	1 (reference)	–
Married	166 (87.8)	23 (12.2)	1.20 (0.778)	0.34–4.29
Single	117 (81.8)	26 (18.2)	1.93 (0.311)	0.54–6.84
Separated/ divorced	30 (85.7)	5 (14.3)	1.44 (0.636)	0.31–6.64
Type of hospital work				
Medical	259 (85.8)	43 (14.2)	1 (reference)	–
Non-medical	80 (85.1)	14 (14.9)	1.05 (0.874)	0.55–2.03
Residence				
Within hospital	70 (79.5)	18 (20.5)	1 (reference)	–
Outside hospital	269 (87.3)	39 (12.7)	0.56 (0.069)	0.30–1.05
Region				
Northern	80 (93.0)	6 (7.0)	1 (reference)	—
Eastern	89 (80.9)	21 (19.1)	**3.15 (0.019)**	1.21–8.19
Central	69 (85.2)	12 (14.8)	2.32 (0.110)	0.83–6.51
South-western	101 (84.9)	18 (15.1)	2.38 (0.080)	0.90–6.26
Education level				
Certificate	84 (84.0)	16 (16.0)	1 (reference)	–
Diploma	103 (82.4)	22 (17.6)	1.12 (0.750)	0.55–2.27
Bachelors	104 (86.7)	16 (13.3)	0.81 (0.577)	0.38–1.71
Religion				
Christian	282 (84.7)	51 (15.3)	1 (reference)	–
Muslim	56 (90.3)	6 (9.7)	0.59 (0.251)	0.24–1.45
Psychosocial factors				
Have used any addictive substance such as alcohol, tobacco, cannabis, Khat, others.				
No	275 (85.9)	45 (14.1)	1 (reference)	–
Yes	64 (84.2)	12 (15.8)	1.15 (0.700)	0.57–2.29

Table 3 (*continued*)

Variable	SPD, n (%)		Crude odds ratio (p value)	95% Confidence interval
	No	Yes		
Have maintained contact with relatives and friends.				
No	72 (75.0)	24 (25.0)	1 (reference)	–
Yes	267 (89.0)	33 (11.0)	**0.37 (0.001)**	0.21–0.67
Have been excessively worried of getting infected with COVID-19				
No	98 (94.2)	6 (5.8)	1 (reference)	–
Yes	241 (82.5)	51 (17.5)	**3.46 (0.006)**	1.44–8.32
Have experienced any form of conflict or misunderstanding within your home.				
No	227 (89.0)	28 (11.0)	1 (reference)	–
Yes	112 (79.4)	29 (20.6)	**2.10 (0.010)**	1.19–3.70
Have experienced any form of conflict or misunderstanding within your workplace.				
No	215 (87.8)	30 (12.2)	1 (reference)	–
Yes	124 (82.1)	27 (17.9)	1.56 (0.123)	0.89–2.75
Have had any financial liabilities (e.g. debts, loans, mortgages, etc).				
No	139 (95.2)	7 (4.8)	1 (reference)	–
Yes	200 (80.0)	50 (20.0)	**4.96 (0.001)**	2.19–11.27
Have had difficulties getting to/accessing your work place.				
No	110 (85.9)	18 (14.1)	1 (reference)	–
Yes	229 (85.4)	39 (14.6)	1.04 (0.897)	0.57–1.90
Have felt segregated by your family friends and/or community.				
No	211 (88.3)	28 (11.7)	1 (reference)	–
Yes	128 (81.5)	29 (18.5)	1.71 (0.063)	0.97–3.00
Hospital and health-related factors				
Have been provided with PPE and safety tool				
No	100 (77.5)	29 (22.5)	1 (reference)	–
Yes	239 (89.5)	28 (10.5)	**0.40 (0.002)**	0.23–0.71
Have worked more hours than before.				
No	153 (91.1)	15 (8.9)	1 (reference)	–
Yes	186 (81.6)	42 (18.4)	**2.30 (0.009)**	1.23–4.31
Have felt a significant increase in your daily work load.				
No	154 (88.5)	20 (11.5)	1 (reference)	–
Yes	185 (83.3)	37 (16.7)	1.54 (0.148)	0.86–2.76
Have felt a significant increase in the work related pressure				
No	139 (87.4)	20 (12.6)	1 (reference)	–
Yes	200 (84.4)	37 (15.6)	1.29 (0.400)	0.72–2.31
Have experienced an increase in the COVID-19 related scaring/worrying information/news.				
No	60 (90.9)	6 (9.1)	1 (reference)	–
Yes	279 (84.6)	51 (15.4)	1.83 (0.184)	0.75–4.45

Table 3 (*continued*)

Variable	SPD, n (%)		Crude odds ratio (p value)	95% Confidence interval
	No	Yes		
Have been involved in the management of a COVID-19 suspected case.				
No	262 (88.5)	(11.5)	1 (reference)	–
Yes	77 (77.0)	23 (23.0)	**2.30 (0.005)**	1.28–4.14
Have been involved in the management of a COVID-19 confirmed case.				
No	297 (86.3)	47 (13.7)	1 (reference)	–
Yes	42 (80.8)	10 (19.2)	1.50 (0.289)	0.71–3.20
Have adequate knowledge about the COVID-19 pandemic				
No	91 (83.5)	18 (16.5)	1 (reference)	–
Yes	148 (87.6)	21 (12.4)	0.72 (0.339)	0.36–1.42
Don't know	100 (84.8)	18 (15.2)	0.91 (0.795)	0.45–1.86
Have any medical condition/disease that you have had for a long time				
No	230 (86.5)	36 (13.5)	1 (reference)	—
Yes	82 (83.7)	16 (16.3)	1.25 (0.500)	0.66–2.37
Don't know	27 (84.4)	5 (15.6)	1.18 (0.746)	0.43–3.27
Currently employed in more than one health facility				
No	258 (84.9)	46 (15.1)	1 (reference)	–
Yes	81 (88.0)	11 (12.0)	0.76 (0.448)	0.38–1.54
Your hospital has medical equipment used in the management of COVID-19 e.g. ventilators				
No	95 (81.9)	21 (18.1)	1 (reference)	–
Yes	158 (87.8)	22 (12.2)	0.63 (0.163)	0.33–1.21
Don't know	86 (86.0)	14 (14.0)	0.74 (0.416)	0.35–1.54

Table 4. Final multivariable logistic regression model of factors associated with SPD among hospital workers (n = 396).

Variable	Adjusted O.R (p value)	Confidence Interval
Region		
Northern	1(Reference)	–
Eastern	2.35 (0.111)	0.82–6.71
Central	1.67 (0.378)	0.53–5.21
South-western	2.01 (0.217)	0.66–6.11
Residence		
Within the hospital	1(Reference)	–
Outside the hospital	0.56 (0.102)	0.28–1.12
Maintaining contact with relatives and friends		
No	1(Reference)	–
Yes	**0.43 (0.013)**	**0.22–0.84**
Having excessive worry about getting infected with COVID-19.		
No	1(Reference)	–
Yes	2.40 (0.070)	0.93–6.21
Experiencing any form of conflict or misunderstanding within your home		
No	1(Reference)	–
Yes	1.59 (0.159)	0.83–3.03
Having any financial liabilities (e.g. debts, loans, mortgages, etc).		
No	1(Reference)	–
Yes	**3.69 (0.003)**	**1.55–8.77**
Have felt segregated by your family friends and/or community.		
No	1(Reference)	–
Yes	1.14 (0.697)	0.28–1.12
Being provided with PPE and safety tools		
No	1(Reference)	–
Yes	**0.44 (0.012)**	**0.23–0.84**
Working more hours than before		
No	1(Reference)	–
Yes	1.69 (0.144)	0.84–3.40
Involvement in the management of a COVID-19 suspected case	1.06 (0.926)	0.29–3.96
No	1(Reference)	–
Yes	1.64 (0.164)	0.82–3.28

with adequate and appropriate PPE and safety tools to promote good mental health. Additionally due to the same prevention guidelines, many people lost their jobs and businesses stalled which caused financial losses to many people including hospital workers who could have lost an extra income to supplement the meagre salaries [68, 69, 70]. Unfortunately, this did not take away the basic and routine financial responsibilities of these people hence causing increased financial strain and liabilities that resulted into SPD. This is in line with other studies' results which have shown that poor socioeconomic status is associated with poor mental health [71, 72]. In many settings, the financial constraints have frustrated and compromised family structure which further fuels home related conflicts and misunderstandings during this period [73, 74] hence worsening the cycle of poverty, conflicts and SPD especially among frontline health responders [75, 76]. Additionally, the findings relate closely to findings from other parts of the world like India where COID-19 lockdown was associated with negative emotional responses especially among people with low resilience and high alexithymia scores which resulted into psychological distress [77]. On the same note, several other studies reported that COVID-19 lockdowns were associated with negative emotional responses which affected people's mental health [78, 79, 80]. Contrary to previous findings, age and sex were not associated with SPD in our setting, which indicates that COVID-19 pandemic and its related national preventive policies such as lockdown affect the mental health of hospital workers non-discriminatively. Furthermore, this study included both medical and non-medical hospital workers unlike several

studies that only focused on medical hospital workers yet the pandemic affects the mental health of both categories of hospital staffs.

4.1. Study limitations

Due to the prevailing circumstances of the lock-down participation in the study could have been affected by the underdeveloped utilization of information technology and limited access to internet connectivity by some hospital workers in certain parts of the country. Additionally, all participants were selected from hospitals that were involved in management of COVID-19 patients hence there is need to assess the psychological distress among those workers of hospital that were not involved in COVID-19 management. Also there was no screening of PD among hospital workers before the pandemic hence making it difficult to determine the exact effect of the pandemic on psychological distress. This study did not assess the psychological distress levels of the various hospital staffs/professionals. Hence there is need for studies exploring how PD levels vary among the different hospital workers and professionals during this pandemic.

5. Conclusion

Therefore, as the world explores all possible options of managing COVID-19 pandemic and its after-effects, it is important to pay special

attention to the mental health of hospital workers in the developing countries like Uganda. This is because in such countries the pandemic has worsened the already existing psychosocial challenges such as poverty and inadequate medical supplies faced by these frontline responders hence predisposing most of them to SPD. When low to moderate PD is not well managed alongside other factors, these people can progress to SPD/ severe mental illness which will greatly affect their service delivery at such a critical time. Hence further longitudinal studies to assess the long term mental health effects of COVID-19 pandemic and its related lockdown among frontline hospital workers are recommended. Strengthening and maintaining social support, offering financial support and providing adequate PPE and safety tools can help to optimise mental health among hospital workers during the current COVID-19 pandemic in Uganda. Additionally, ongoing counselling as well as mental health and psychosocial support services for hospital workers involved in COVID-19 management can help to optimise their mental health during this pandemic.

Declarations

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