



Psychological Impact of COVID-19 on Healthcare Workers during the Early Phase of the Epidemic in Uganda, April–May 2020

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Summary

During the COVID-19 pandemic, healthcare workers (HCWs) working in COVID-19 treatment units may be subject to increased mental stress compared to 'normal' times. We assessed risk perception and immediate psychological state of HCWs in referral hospitals involved in management of COVID-19 patients in Uganda, and identified factors associated with psychological distress.

We distributed paper-based, self-administered questionnaires to HCWs in four referral hospitals from April 20–May 22, 2020. The questionnaire included questions on socio-demographics, COVID-19 risk perception, and psychological distress. Risk perception towards COVID-19 was assessed using several concern statements with a four-point Likert scale. We defined psychological distress as a total score >12 from the 12-item Goldberg's General Health Questionnaire (GHQ-12). We used modified Poisson regression to identify factors associated with psychological distress.

Of the 335 HCWs who received the questionnaires, 328 (98%) responded. Respondents' mean age was 36 (range, 18-59) years; 172 (52%) were male. Median duration of professional experience was eight (range 1-35) years; 116 (35%) were nurses, 52 (14%) doctors, 30 (9.0%) clinical officers, and 86 (26%) support staff. One hundred and forty-four (44%) had a GHQ-12 score >12. The most common concerns reported were fear of infection (89%), stigma from community and colleagues (79%), and inadequate availability of personal protective equipment (PPE) (56%). In multivariable analysis, moderate ($aPR=2.2$, 95% CI: 1.2-4.0) and high ($aPR=3.8$, 95% CI: 2.0-7.0) risk perception towards COVID-19 (compared with low risk perception) was associated with psychological distress.

Nearly half of HCWs surveyed in the early COVID-19 epidemic in Uganda reported psychological distress related to fear of infection, stigma, and inadequate PPE. Higher perceived personal risk towards COVID-19 was associated with increased psychological distress. Optimizing patient care during the pandemic and future outbreaks should include addressing concerns of HCWs by ensuring sufficient PPE and safeguarding morale of HCWs. Efforts to reduce infection-associated stigma should be enacted by supervisors and employers.



Background

After confirming the first COVID-19 case in Uganda on March 21, 2020 [1], the number of confirmed COVID-19 cases increased to 212 with no deaths as of May 24, 2020. Although no health care workers (HCW) in Uganda had been diagnosed with the disease at that time, there were widespread reports globally about HCWs who had contracted the disease and died [2, 3], and heightened tension and fear were anticipated among HCWs in Uganda. To understand more about potential psychological distress among HCWs in Uganda and design appropriate interventions, we assessed risk perception and immediate psychological state among HCWs with regard to the COVID-19 outbreak.

Methods

We conducted a cross-sectional survey from April 20–May 22, 2020 in Mulago National Referral Hospital, Entebbe Regional Referral Hospital, Kabale Regional Referral Hospital, and Arua Regional Referral Hospital. At the time of this study, these hospitals were the only hospitals managing active COVID-19 case-patients at the time in Uganda. By the time the study began, the hospitals had managed 212 cases [4].

We distributed the questionnaire to all consenting HCWs who were working at the facilities on day shifts when we visited the facilities (n=335). These included doctors, nurses, midwives, radiographers, cleaners, drivers, administrators, laboratory personnel, and support staff.

We designed a self-administered, structured questionnaire based on previous studies in outbreaks of respiratory infectious diseases, including COVID-19 in China [5]. We captured data on HCWs' socio-demographic and occupational characteristics, concerns and attitudes regarding COVID-19, and their immediate psychological status. Data collected included age, sex, professional cadre, level of education, years of professional experience, number of hours worked per week, number of children, persons with whom the HCW resided, and whether the HCW had ever provided care to a suspected or confirmed COVID-19 patient.

We assessed risk perception towards COVID-19 using 27 concern statements related to fear of contracting COVID-19, fear of spreading COVID-19, workplace-related conditions, and stigma. Each concern statement had four response options: 'strongly agree', 'agree', 'disagree', or 'strongly disagree'. We applied a scoring system using a four-point Likert scale from zero points ('strongly disagree') to three points ('strongly agree'). The possible range of total concern scores reported by our respondents was 0-81 points. Concern statements were negatively worded (e.g., "there is no adequate personal protective equipment (PPE) at my workplace"), so that a higher score signified a higher degree of risk perception.

We used the 12-item General Health Questionnaire (GHQ-12) proposed by Goldberg[6] to assess the psychological state of HCWs. The tool is multi-dimensional and has questions that assess social dysfunction, anxiety, and depression. The instrument includes 12 items (scored from 0-36); we classified respondents with scores greater than the cut-off point of 12 as having psychological distress.

We entered data into EpiData 3.1 (Odense, Denmark) and exported to STATA version 13 (Statacorp, College Station, Texas) for analysis. We summarized categorical data by frequencies,



continuous normally-distributed data (risk perception score and GHQ-12 score) as means with standard deviations, and continuous non-normally-distributed data (hours worked, number of children) as medians with interquartile ranges. We dichotomized responses to concern statements into non-concern (strongly disagree and disagree) and concern (strongly agree and agree). We categorized respondents into three groups: low risk perception (at or below the first quartile of concern scores); moderate risk perception (in the second quartile); and high risk perception (third and fourth quartiles). We determined the prevalence of psychological distress as the percentage of respondents with total GHQ-12 score greater than 12. Finally, we performed bivariate and multivariate analyses with psychological distress as a binary outcome to identify factors associated with psychological distress among HCWs. We reported prevalence ratios (PRs) with corresponding 95% confidence intervals as measures of association between psychological distress and associated factors. We obtained the prevalence ratios using a modified Poisson regression. We considered risk perception among HCWs as our main exposure variable of interest and adjusted for other variables including duration of professional experience, contact with confirmed COVID-19 case, and sex as potential confounders.

Results

Socio-demographic characteristics of study participants in tertiary referral hospitals during the early phase of COVID-19 epidemic in Uganda, April-May 2020

Among 335 HCWs who received questionnaires, 328 (98%) completed and returned them. Respondents' mean age was 36 (SD±9.9) years and ranged from 18-59 years; 172 (52%) were male and 242 (74%) were in the direct contact group. Approximately one-third (35%) were nurses, one quarter (26%) were support staff, 14% were doctors, and 9% were clinical officers (Table 1). Approximately half reported ever providing direct care to suspected (57%) or confirmed (46%) COVID-19 cases (Table 1).



Table 1: Socio-demographic characteristics of respondents during a study to assess psychological impact of COVID-19 on hospital-based healthcare workers in the early phase of COVID-19 epidemic, Uganda

Characteristic	Total (N=328) Frequency (%)
Health facility location	
Jinja	88 (27)
Entebbe	81 (25)
Arua	72 (22)
Kabale	57 (17)
Mulago	30 (9.1)
Age in years, mean (SD)	36 (9.9)
Sex	
Male	172 (52)
Female	156 (48)
Cadre of healthcare workers	
Nurse	116 (35)
Support staff	86 (26)
Doctor	52 (14)
Clinical officer	30 (9.0)
Midwife	21 (6.4)
Laboratory personnel	17 (5.2)
Pharmacist	5 (1.5)
Radiographer	1 (0.3)
Category by patient contact	
Direct contact group	242 (74)
Indirect contact group	86 (26)
Years of experience, median (IQR)	8 (2-16)
Hours worked per week, mean (SD)	52 (±17)
Highest level of qualification	
None	11 (3.4)
Certificate	77 (23)
Diploma	101 (31)
Degree	110 (34)
Masters	15 (4.6)
Others (Post-Masters' and PhD Fellowships)	14 (4.3)
Marital status	
Single	120 (36)
Married/living with a partner	199 (61)
Separated/divorced	9 (2.7)
Number of children, median (IQR)	2 (0-4)
With whom the healthcare worker stays at home	
Family	212 (65)
Alone	90 (27)
Others	26 (7.9)
Had provided direct care to suspected COVID-19 case	186 (57)
Had provided direct care to confirmed COVID-19 case	151 (46)



Level of perceived risk towards COVID-19 among healthcare workers in tertiary referral hospitals during the early phase of COVID-19 epidemic in Uganda, April-May 2020

The mean risk perception score derived from the concern statements was 42 (SD±12) and ranged from 4-79 points (Figure 1). For the direct contact group (n=242), the mean score was 42 (SD±12) while for the indirect contact group the mean score was 43 (SD±11).

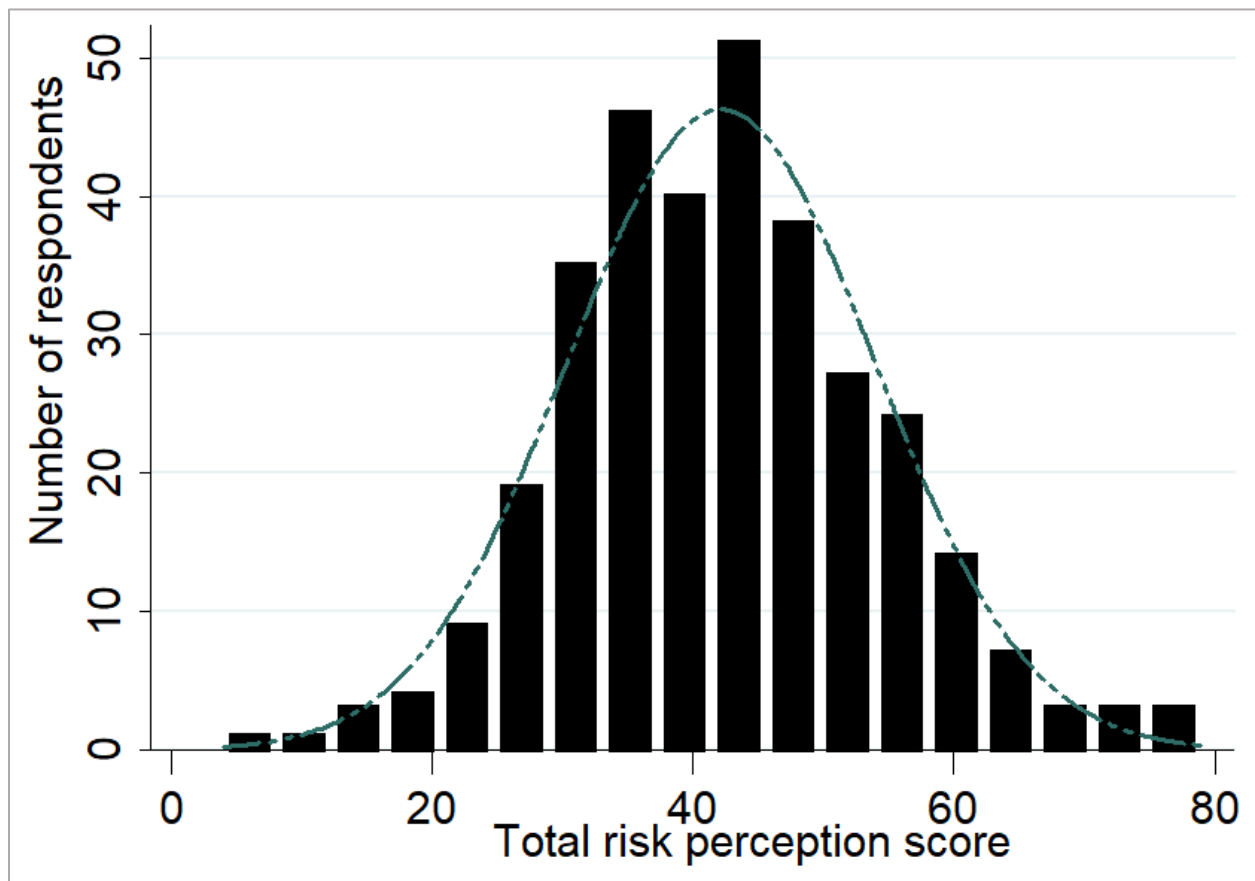


Figure 1: Distribution of total risk perception score derived from concern statements (N=328)

Of the 328 respondents, 293 (89%) said they would feel endangered if a colleague contracted COVID-19, 265 (81%) felt they were at risk of contracting COVID-19 at the workplace, 233 (71%) felt anxious at workplace, and 194 (59%) felt the outbreak had increased their workload (Table 2).

With regard to training and PPE, 139 (42%) reported not receiving adequate training on infection prevention and control (IPC) at their workplace, while 185 (56%) felt there was not enough PPE available at the workplace. Thirty-nine percent felt being absent from the workplace would reduce their risk of contracting COVID-19, while 23% contemplated changing their jobs due to COVID-19 risk.



With regard to social aspects of COVID-19 and healthcare work, 196 (60%) were worried about transmitting the infection to their family members; 175 (53%) felt family members would not look after them if they contracted the infection; and 147 (48%) felt family members were avoiding them because they were HCWs. Of note, three-quarters (76%) felt they could easily disclose to family members if they contracted COVID-19, compared with only 21% who were comfortable disclosing to colleagues at work (Table 2).

Table 2: Concerns of healthcare workers (HCWs) with regard to COVID-19 outbreak during the early phase of the epidemic, Uganda, April-May 2020

Concern Question/Statement	Responses to concern statements, n (%)	
	High concern	Low concern
Fear of contracting COVID-19		
I would feel endangered if a colleague contracted COVID-19	293 (89)	35 (11)
I am at risk of contracting COVID-19 at workplace	265 (81)	63 (19)
I am unsafe at my workplace	232 (71)	96 (21)
I am anxious at my workplace	233 (71)	95 (29)
I will eventually get COVID-19 at work	137 (42)	191 (58)
Being absent will reduce my chances of contracting COVID-19 at workplace	127 (39)	201 (61)
I feel helpless about contracting COVID-19 at workplace	109 (33)	213 (67)
I feel I should avoid going to work to avoid contracting COVID-19	98 (30)	230 (70)
I do not feel safe even when I use standard IPC measures	83 (25)	245 (75)
I feel I should change my job in future due to COVID-19 risk	75 (23)	253 (77)
Fear of spreading COVID-19		
I feel I should practice more social distance compared to non-HCWs	246 (75)	82 (25)
I will likely transmit COVID-19 to family members	196 (60)	132 (40)
Perceived workplace risks and conditions		
My workplace would support me if I contracted COVID-19	208 (63)	120 (37)
COVID-19 outbreak has increased my workload	194 (59)	134 (41)
Workload is not matched with staffing needs	191 (58)	137 (42)
There is no adequate PPE at workplace	185 (56)	143 (44)
I have not received adequate training on infection prevention and control (IPC) at workplace	139 (42)	189 (58)
I am overwhelmed by new COVID-19 regulations at my workplace	135 (41)	193 (49)
There is no clear outbreak response plan at my workplace	85 (26)	243 (74)
I am not confident about IPC measures at my workplace	112 (34)	216 (66)
Stigma against self (internal) and others (external)		
I feel forced to care for COVID-19 patients	155 (47)	173 (53)
I would feel ashamed disclosing to my colleagues if I contracted COVID-19	259 (79)	69 (21)
Family will not look after me if I contract COVID-19	175 (53)	153 (47)
I would feel ashamed disclosing to my family if I contracted COVID-19	79 (24)	249 (76)

IPC: Infection control and Prevention; HCW: Healthcare worker; COVID-19: Coronavirus Disease
PPE: Personal Protective Equipment



Psychological distress assessment among healthcare workers in tertiary referral hospitals during the early phase of COVID-19 epidemic in Uganda, April-May 2020

The mean GHQ-12 distress score of the HCWs was 12 (± 7.2); 144 had a GHQ-12 score >12 , for a prevalence of psychological distress of 44% (95%CI: 38-49%). The most commonly-reported indicators from the GHQ-12 questionnaire with score >1 were not enjoying day-to-day activities (54%), being under stress (50%), not feeling reasonably happy (43%), and feeling unhappy and depressed (40%) (Table 3).

Table 3: Descriptive statistics for GHQ-12 items among healthcare workers in tertiary referral hospitals during the early phase of the epidemic, Uganda, April-May 2020 (N=328)

Item [‡]	Frequency of score responses, n (%)			
	0	1	2	3*
1. I am able to concentrate on whatever I was doing	128 (39)	98 (30)	66 (20)	36 (11)
2. I lost much sleep over worry about COVID-19	181 (55)	53 (16)	29 (8.8)	65 (20)
3. I feel I have been playing a useful part in society	241 (73)	62 (19)	11 (3.4)	14 (4.3)
4. I have been capable of making decisions	154 (47)	111 (34)	50 (15)	13 (4.0)
5. I have been feeling constantly under stress	121 (37)	45 (14)	71 (22)	91 (28)
6. I could not overcome difficulties	97 (30)	106 (32)	65 (20)	60 (18)
7. I have been enjoying my day-to-day activities	68 (21)	81 (25)	83 (25)	96 (29)
8. I have been able to face up to problems	135 (41)	110 (34)	51 (16)	32 (9.8)
9. I have been feeling unhappy and depressed	144 (44)	52 (16)	55 (17)	77 (23)
10. I felt I had lost confidence	200 (61)	49 (15)	38 (12)	41 (13)
11. I thought of myself as worthless	230 (70)	26 (7.9)	34 (10.4)	38 (11.6)
12. I have been feeling reasonably happy	67 (20)	120 (37)	70 (21)	71 (22)
Mean total GHQ-12[§] score (SD)	12 (± 7.2)			

*A higher score signifies psychologically-distressed state;

[‡] All items were asked about for the period of the past one month

[§]GHQ-12 items as proposed by Goldberg[6]



Factors associated with psychological distress among healthcare workers in tertiary referral hospitals during the early phase of COVID-19 epidemic in Uganda, April-May 2020

In bivariate analysis, compared to respondents with low risk perception, the prevalence of psychological distress was 2.3 (95% CI: 1.3-4.1) and 4.0 (95% CI: 2.2-7.4) times higher among those with moderate and high risk perception, respectively. None of the demographic factors including age, sex, duration in service, HCW category by patient contact (direct vs indirect contact), or working hours were significantly associated with psychological distress.

In the multivariate model, compared to HCWs with low risk perception, the prevalence of psychological distress was significantly higher among those with moderate (aPR=2.2, 95% CI: 1.2 – 4.0) and high (aPR=3.8, 95% CI: 2.0 - 7.0) risk perception towards COVID-19.

Discussion

We assessed risk perception and psychological state of HCWs based in referral hospitals designated to manage COVID-19 patients in the early phase of the COVID-19 epidemic in Uganda. We detected psychological distress in nearly half (44%) of the HCWs surveyed in the first two months of the epidemic. The level of risk perception towards COVID-19 was directly and independently associated with psychological distress among HCWs.

Reports of psychological distress among HCWs during the COVID-19 pandemic have varied. The prevalence of distress reported in the current study is comparable to the prevalence of psychological distress of 39% reported among HCWs in China in the early phase of the pandemic [5], but much lower than the 72% prevalence reported among HCWs in high-risk situations in China when the total confirmed cases had already surpassed 10,000 in the country[7]. The lower prevalence of psychological distress in our study compared to China may be due to the fact that none of the HCWs in Uganda had contracted the disease at the time of survey, which was early (first two months) in the epidemic in Uganda.

We found a strong association between risk perception towards COVID-19 and psychological distress among HCWs in Uganda. This is both expected and consistent with studies of HCW distress during outbreaks of other respiratory infectious diseases [5]. Similarly to these studies, we found that HCWs during the early phase of the COVID-19 epidemic in Uganda were mostly concerned about contracting COVID-19 and transmitting the virus to their family and friends. Concerns of contracting COVID-19 stemmed from concerns about availability of PPE, inadequate training, and anticipated lack of support from workplaces if they contracted the infection. Concerns about transmitting COVID-19 were likely exacerbated by anticipated stigma from community and colleagues, although most HCWs did not fear stigma from family. Additionally, HCWs' psychological distress can derive from managing the dynamics of challenges to personal safety, fear for others or oneself becoming infected, and altruism and professional responsibility. Concerns about safety of HCWs or their families and friends, changes in work dynamics, and being isolated can be major sources of distress. Notably, we found higher levels of psychological distress during the COVID-19 pandemic than the 7% and 29% prevalence reported in Hong Kong and Canada, respectively, during earlier SARS outbreaks [8, 9]. It is possible that the transmissibility of SARS-CoV-2 in the absence of symptoms, which prevents easy identification of infected persons, may have increased the level of concern among HCWs.



Our findings point towards potential interventions to address the concerns of HCWs in Uganda and improve their psychological well-being. Anticipated shortages of PPE may have heightened the fear for contracting infection among HCWs; adequate PPE supply and stock and ongoing training in infection prevention and control (IPC) and use of PPE should be assured to improve HCWs' well-being and safety. Some HCWs contemplated changing their jobs and being absent from duty because of the outbreak, suggesting the need to improve the morale of frontline HCWs, perhaps through setting shorter working hours for HCWs, rotating shifts for HCWs working in high-risk zones, and/or encouraging regular rest periods when possible[10].

Most respondents expressed perceived stigma from disclosing to colleagues. This may suggest a lack of support from colleagues and supervisors. Supervisors and employers should make deliberate efforts to render more psychosocial support to HCWs who may contract COVID-19 and to regard such as work-related injuries. Additionally, peer support systems for HCWs should be established and HCWs encouraged to utilize them for psychological distress to be identified and addressed in a timely manner without HCWs perceiving stigma or discrimination.

Our findings are subject to some limitations. We relied on self-report of psychological status and risk perception, so these findings may be prone to social desirability bias, although this was minimized by using self-administered questionnaires. We included only the day-shift employees available at our visits, which may not be representative of all employees at the hospitals. Despite these limitations, our survey provided useful information to the MoH on the psychological state of HCWs and highlighted their key concerns in the first two months of the outbreak in Uganda; this informed designing of evidence-based measures to improve HCWs' psychological well-being during the pandemic.

Conclusion

Nearly half of HCWs surveyed in the early phase of the COVID-19 epidemic in Uganda reported psychological distress. Attention needs to be given to the psychological health of HCWs and follow-up studies in different phases during and after the COVID-19 pandemic. Perceived personal risk of COVID-19 was associated with psychological distress; reducing risks might enhance HCWs' physical and psychological well-being. This might be accomplished by ensuring sufficient PPE and access to training on infection prevention and control, improving morale, addressing stigma in the workplace and in the community, and rendering more psychosocial support by employers and supervisors. Follow-up qualitative interviews might help further elucidate the nature and extent of the psychological impact of COVID-19 on HCWs.



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