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Prevalence and predictors of burnout among nurses during COVID-19: a cross-sectional study in hospitals in central Uganda

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ABSTRACT

Objective To determine the prevalence of burnout and associated factors among nurses during COVID-19 in central Uganda.

Design A cross-sectional design.

Setting Nurse from one referral and four general hospitals. These were reception centres and cared for patients with COVID-19 in central Uganda.

Participants 395 nurses.

Main outcome measures Burnout scores.

Results Of the total 395 participants, 65.1% (n=257) were female; 40% (n=158) had a diploma; 47.1% (n=186) were single; and 39.2% (n=155) had worked for 11–15 years. The results show that 40% (n=158), 41.77% (n=165) and 18.23% (n=77) reported high, average and low levels of burnout, respectively. The results show that the predictors of nurses' burnout were personal protective equipment (PPE) (OR: 7.1, 95% CI 4.08 to 12.31) and increased workload (OR 4.3, 95% CI 2.43 to 7.93).

Conclusion This study of nurses working in hospitals dealing with patients with COVID-19 in central Uganda reported high rates of burnout, and it was associated with PPE and workload. Interventions like contracting new nurses to reduce workload, the WHO guidelines on PPE, adjusting working hours and ensuring hours of effective rest should be adapted.

INTRODUCTION

The virus named COVID-19 was first reported in Wuhan, China, in December 2019.[1] It later quickly spread to the rest of the world, leading to a global major health issue.[2] The disease has presented unique challenges leading to elevated mental health issues among healthcare professionals.[2] Nurses in particular are at a greater risk because they are directly involved in the treatment and care of patients and thus are directly exposed to the threat of COVID-19 infections.[3] Statistics show that 1500 nurses have succumbed to COVID-19 in 44 countries as of 28 October 2020.[4] A meta-analysis indicated that 25.3% of deaths from COVID-19 among healthcare professionals were nurses.[5] Similarly, reports of the mental burden on nurses have appeared during

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Strengths and limitations of this study

► This is the first study to report burnout among nurses during COVID-19 in Uganda.

► This study was conducted in Kampala, the most burdened city both in terms of infections and death.

► The study design, however, does not allow establishment of causality between variables.

► The study did not select participants from other regions of the country.

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this global health predicament.[6] Since the second wave is hitting Uganda, healthcare facilities with already exhausted nurses may be the worst scenario to handle the pandemic and are likely to experience burnout. While the nursing workforce is at the forefront in handling patients with COVID-19, there is limited evidence on their well-being during the pandemic; rather, there is a preoccupation with concerns of flattening the curve.

Burnout is a phenomenon comprising chronic stress and is characterised by depersonalisation, emotional exhaustion and reduced personal accomplishment.[7] The consequences of burnout are enormous and include low productivity, clinical errors, higher absenteeism, decreased empathy, poor relationship with patients, alcohol and substance abuse, professional misconduct, depression, suicide, and decreased quality of care and patient satisfaction, as well as staff turnover.[8–10] Burnout in nurses is a serious health problem with serious adverse implications not only to nurses but patients and healthcare institutions.

Recent studies especially in high-income countries show that nurses had moderate to high levels of burnout during COVID-19.[11 12] A systematic review and meta-analysis of 16 studies including 18 935 nurses showed that the overall prevalence of emotional exhaustion, depersonalisation and personal

accomplishment was 34.1%, 12.6% and 15.2%, respectively.[11] Another meta-analysis involving 49 countries revealed that the overall prevalence of burnout out was 11.23%.[12] In a study in the USA, 49% of 20 947 respondents reported burnout.[11] In China, studies have given conflicting results, some showing a high prevalence of burnout[13] and others revealing low levels of burnout among nurses.[13] The varying burnout levels necessitate other studies from other regions.

Studies especially in high-income countries have been conducted on risk factors for burnout among nurses during COVID-19. According to these studies, these factors include working in high-risk units, inadequate training, delayed diagnosis, inadequate or lack of personal protective equipment (PPE), prolonged exposure to patients with COVID-19, having children, changes in daily priorities, social support, irregular working hours, separation from families and friends, and increased workload.[14–16] Other demographic factors include gender, marital status and age.[17] Other studies show that clinical roles confer a greater risk for burnout compared with non-clinical roles.[18]

Despite record investment in recent years, Uganda's health system is ranked as one of the worst in the world.[19] To realise universal health coverage as per the Sustainable Developing Goals, the WHO recommended that a country needs at least 4.45 professional health workers per 1000 inhabitants. Following this recommendation, the total number of health professionals required in Uganda is 167 765. In 2019, however, the number stood at just 27 7612, a situation compounded by the outmigration of health professionals.[20] Remarkably, little is known about the burden of burnout and its associated factors among nurses in Uganda.[21 22] However, recent qualitative work conducted prior to the COVID-19 pandemic showed evidence suggestive of nursing workforce burnout, in both the public and private sectors.[22] The COVID-19 pandemic has further complicated the existing problem within the already overstrained health systems, thus increasing the impact of burnout. During the COVID-19 pandemic, burnout has been less studied especially in low-income countries. Therefore, the current study assessed the prevalence and associated factors of burnout in nurses during COVID-19 in central Uganda.

METHODS
Study design and settings
A cross-sectional study design was conducted in one survey covering nurses working in central Uganda. These nurses rotated in different clinical areas. The study was conducted in public (one referral and four general) hospitals. These are reception centres and care for patients with COVID-19 in central Uganda. The central region is the epic centre of the COVID-19 pandemic with the highest cases of infections, deaths and recovery.[23] The nurses in the region may be working with critical patients and thus susceptible to burnout. Uganda recorded its first case of COVID-19 on 22 March 2020. Since then,

the pandemic in Uganda has increased with 44 396 confirmed cases and 339 deaths as of 1 February 2021.[24] Despite record investment in recent years, Uganda's health system is ranked as one of the worst in the world.[19] The country continues to struggle with the rising cases of COVID-19 amidst limited resources and infrastructure, inadequate minimal intensive care unit and health workforce. Uganda has a shortage of resources with roughly one health professional for every 1000 people in 2019.[20]

Study participants
The target population in this study included nurses registered with the Uganda Nurses and Midwives Council from different health centres in central Uganda. The proportion of nurses with burnout syndrome in Uganda is not known. However, globally, the prevalence of burnout among nurses is reported to be 50%.[25 26] Thus, being the first prevalence study for nurses with 5% precision in estimating a proportion using 95% CI, assuming the proportion is 50% with a 10% addition for possible non-response rates,[27] it was required to include 422 participants in the study. Simple random sampling was used in the selection of eligible nurses to participate in the study.

Patients and public involvement
No patients or members of the public were involved in this study.

Study instruments
Stamm's Professional Quality of Life (ProQOL V-5) was used to assess the levels of burnout. ProQOL V-5 has 30 items measuring compassion fatigue, compassion satisfaction and burnout, but only 10 items measuring burnout were analysed. The ProQOL is currently in its fifth revision of the original tool called Compassion Fatigue Self-Test Survey tool developed by Figley in 1995.[28] The instrument has undergone a rigorous psychometric assessment to improve subscale validity and reliability.[29] The burnout subscale has an alpha scale reliability of 0.75.[30] The ProQOL was preferred because it has been used in Uganda and found to be valid and reliable.[31] The ProQOL V-5 is a 5-point Likert scale ranging from 1 to 5. A burnout score of 22 or less indicates a low level, 23–41 denotes average level, and 42 and above signifies high levels of burnout. The Cronbach α coefficient of burnout was 0.82. We also developed a set of demographic and contextual questions contributing to burnout.

Procedure
Study data were collected in February 2021. During this time, the scale and rapid spread of COVID-19 combined with inadequate preparedness impacted healthcare workers including nurses.[24] In Kampala alone, 16 healthcare workers died in a space of 2 weeks, while many others were in intensive care.[32] Besides, central Uganda accounts for 80% of the daily infections.[33] This may have contributed not only to increased workload but also burnout. Data were physically collected by four trained research nurses. The eligibility criteria required participants to be registered nurses working in central Uganda. One referral and four general hospitals agreed to

Table 1 Demographic information of the respondents (n=395)

Variables	Category	n	Per cent
Gender	Male	138	34.9
	Female	257	65.1
Education levels	Certificate	113	28.6
	Diploma	158	40.0
	Bachelor's degree	114	28.9
	Masters	10	2.5
Marital status	Single	186	47.1
	Married	152	38.5
	Widow/separated	57	14.4
Working experience (years)	1–5	84	21.3
	6–10	109	27.6
	11–15	155	39.2
	>15	47	11.9

Table 2 Levels of burnout

Levels of burnout	n	Percentage
≤22 (low)	72	18.23
23–41 (average)	165	41.77
≥42 (high)	158	40

Bivariate analysis of demographic and contextual factors associated with burnout

Table 3 shows that there is no significant association between burnout and sociodemographic characteristics. The study found a statistically significant association between burnout and PPE (χ^2=91.47, p<0.001), perceived support (χ^2=45.84, p<0.001), workload (χ^2=87.06, p<0.001) and COVID-19 training (χ^2=33.08, p<0.001).

Multivariable logistic regression analysis

We performed a multivariable analysis to identify factors associated with burnout (table 4). The results show that participants who did not have PPE were seven times more likely to experience burnout compared with their counterparts who had PPE (OR 7.1, 95% CI 4.08 to 12.31). Moreover, the results in table 4 show that respondents who had increased workload were four times more likely to experience burnout compared with respondents with less workload (OR 4.3, 95% CI 2.43 to 7.93).

participate in this study. This was after initial contact with hospital administration officers in central Uganda. Following the approval of the research protocol, potential participants were identified, informed about the study and asked to participate after signing the written consent forms. The nurses who volunteered completed the informed consent and questionnaires and the exercise took about 22 min to complete.

Data analysis

All statistics were performed with Stata V.15. In the analysis of the prevalence of burnout, we analysed the scale as a categorical variable. Descriptive analysis was conducted on demographic and burnout-related variables. Quantitative data were compared using the χ^2 test. We conducted bivariate and multivariate logistic regressions to identify factors associated with burnout. Multiple regression analysis was used to determine factors associated with burnout. The effects of these variables were expressed as ORs and associated with 95% CIs.

RESULTS

Overall, 409 participated, of which 12 questionnaires were excluded due to missing information, enabling 395 to be eligible for further analysis, and their characteristics are presented in table 1. Of the total 395 participants, 65.1% (n=257) were female; 40% (n=158), (n=158) had a diploma; 47.1% (n=186) were single; and 39.2% (n=155) had worked for 11–15 years.

Prevalence of burnout

Based on the ProQOL manual guidelines, the results show that 40% (n=158), 41.77% (n=165) and 18.23% (n=77) reported high, average and low levels of burnout, respectively (table 2).

DISCUSSION

Burnout continues to be a health concern for the nursing workforce, with 40% of the present sample reporting high levels of burnout. The result of the current study fills gaps in the literature by providing initial prevalence for burnout among nurses during COVID-19 and associated contextual factors in Uganda. Although there is limited literature assessing burnout during COVID-19, PPE concerns mirrored those observed in other studies.[34] The elevated levels of burnout observed within nurses in our study may not be surprising because the COVID-19 pandemic has greatly tested the Ugandan health system and pandemic preparedness. Therefore, the specific work-related burden posed by the COVID-19 pandemic may be responsible for the elevated levels of burnout in nurses. However, the small sample size in a few health centres reduces the generalisability of the results. Nonetheless, the finding is this study is comparable to studies in Italy,[17] Russia,[35] Saud Arabia[36] and America.[11] The 40% observed in this study is considerably higher than 19% reported in America,[37] 18.3% in Brazil,[38] 16.0% in China,[39] 35.7% in Portugal[40] and 31.0% in Italy[41] before the COVID-19 pandemic among nurses. However, the results of the current study were lower than the 53.6% observed in Iran.[42] The differences in results may be attributed to different samples, tools used, settings, departments, cultures and sample sizes.

Sociodemographic factors including gender, marital status, perceived support from leadership, education and working experience were not significantly associated with burnout. These results are not surprising because

Table 3 Demographic and contextual factors associated with burnout

Variables	n=395	n	(%)	X^2	P value
Personal factors	**Total**	**Prevalence**			
Gender					
Male	138	84	−60.87	0.0676	0.796
Female	257	153	−59.53		
Marital status					
Single	186	109	−56.6		
Married	152	95	−62.5	0.652	0.722
Widow	57	33	−57.89		
Education level					
Certificate	113	68	−60.18		
Diploma	158	98	−62.02	0.898	0.826
Bachelors	114	66	−57.89		
Masters	10	5	−50		
Work experience (years)					
1–5	84	54	−64.29		
6–10	109	64	−58.72	1.016	0.797
11–15	155	90	−58.06		
16+	47	29	−61.7		
Contextual factors					
PPE					
Yes	222	87	−39.19	91.47	0.001*
No	173	150	−98.03		
Perceived support from leadership					
Satisfactory	178	74	−41.57	45.84	0.001*
Less satisfactory	217	163	−75.11		
Workload					
Less workload	204	77	−37.75	87.06	0.001*
Increased workload	191	106	−55.5		
COVID-19 training					
Yes	195	89	−45.64	33.08	0.001*
No	200	148	−74		

*Statistically significant at p≤0.05.
PPE, personal protective equipment.

previous studies reveal inconsistent findings. Consistent with the current results, previous studies found no correlation between demographic factors and burnout among nurses.[43 44] The findings of the current study are inconsistent with the results of prior studies which indicate that gender, marital status, perceived support from leadership, education and working experience are significant predisposing factors for elevated levels of burnout.[42 45] The inconsistency in the results may be attributed to differences in the measurements, settings, sample size and conditions of work.

The results show that participants who felt that there was a lack of PPE were likely to experience burnout compared with their counterparts who did not feel a lack of PPE. These results are in tandem with the findings of a study conducted in Singapore.[46] PPE is vital for nurses who treat patients with COVID-19 which reduces the risk of COVID-19 transmission.[47] At the time of the survey, Uganda counted roughly 44 396 confirmed cases and 339 deaths. Despite this, PPE was not common practice probably due to the rising demand, misuse, hoarding, and panic buying.[48] The situation is critical, many healthcare workers including nurses worked without PPE.[49] This may account for increased infections of the healthcare workers. Nurses in Uganda have found themselves in an unprecedented situation making high-stake decisions for their personal lives and patients.[50] The nurses must be in a state of fear of COVID-19 infection due to concerns about inadequate PPE. The high number of COVID-19 cases among healthcare workers including death must have elevated this fear. Thus, inadequate PPE can be considered

Table 4 Predictors of burnout in nurses

Variables	Burnout	
	OR	95% CI
PPE		
Yes	1	
No	7.094	4.08 to 12.31*
Perceived support from leadership		
Satisfactory	1	
Less satisfactory	3.374	0.604 to 18.83
Workload		
Less workload	1	
Increased workload	4.393	2.43 to 7.93*
COVID-19 training		
Yes	1	
No	0.489	0.089 to 2.704

*P<0.01.
1, reference; PPE, personal protective equipment.

a principal stressor increasing the risk for burnout. Against the backdrop of this information, the Ugandan government should follow the WHO guidelines including appropriate use of PPE in healthcare settings and effective management supply chain.[51] Besides, the government should collaborate with the WHO and industries to boost production and secure allocations for critically infected regions like central Uganda.

The results of the present study show that nurses who had increased workload were more likely to experience burnout compared with respondents with less workload. The nurses' workload increased greatly due to the increase in the number of patients with COVID-19. Additionally, extra work depleted the energy of the nurses. They did not have time to rest or recover, leading to burnout. An earlier study indicated that each extra patient added to the workload of the nurse accounted for a 23% increase in burnout.[52] In line with the current results, a systematic review and meta-analysis reported that one of the main predictors of nurses' burnout was increased workload.[53] Other studies revealed findings similar to the current results.[54] Therefore, the hospital leadership needs to reduce workload as it may be the leading cause of burnout.[55]

CONCLUSION

This study of nurses working in hospitals dealing with patients with COVID-19 in central Uganda reported high rates of burnout, and it was associated with PPE and workload. Interventions like contracting new nurses to reduce workload, the WHO guidelines on PPE, adjusting working hours and ensuring hours of effective rest should be adapted. Also, it is of note that the factors associated with burnout in nurses are possibly directly related to the organisations. Therefore, further research is needed to confirm whether these factors are related to COVID-19.

This study has some limitations. The study is limited geographically because it was conducted in one referral and four general hospitals in central Uganda. The study did not select participants from other regions of the country. Therefore, the results may not be generalised to all nurses in Uganda. Second, due to the cross-sectional nature of the study, the causality between variables cannot be established. Nonetheless, the current study potentially expands previous research, suggesting that burnout is associated with PPE and workload.

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