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A CROSS-SECTIONAL STUDY ON PREVALENCE AND FACTORS ASSOCIATED WITH BURNOUT AMONG NURSES IN MULAGO NATIONAL REFERRAL HOSPITAL, KAMPALA-UGANDA.

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Abstract

Background.

Burnout is a condition that results from chronic stress characterized by depersonalization, emotional exhaustion, and diminished personal accomplishment. It has been a big hindrance to planning for health care services. Research has found that burnout causes poor performance on the job characterized by being absent and unexplained poor health status. This study determined the Prevalence and factors associated with burnout among Nurses in Mulago National Referral Hospital, Kampala-Uganda.

Methodology.

A descriptive cross-sectional survey was conducted among 273 randomly selected nurses from Mulago National Referral Hospital, Kampala. Quantitative data were collected using a self-administered questionnaire. Data analysis consisted of descriptive statistics and logistic regression at a 95% level of significance in Stata version 17.

Results.

The majority of the respondents were female 190(69.9%), 76.6% (209/273) of the respondents were aged 30 years and above, 52.0% (142/273) of the participants were Assistant nursing officers by profession and 87.9% (240/273) were Christians. More than half 54.2% (148) of respondents had high levels of burnout (≥42 Score) and most of them 117 (59.4%) agreed that ward arrangement and patient numbers are breaking. While 45.8% (125) reported low levels of burnout. The factors were: inappropriate Nurse-physician relationship (aOR 3.04, p Value 0.009) feeling that the job is controlled by administrators (aOR 2.26, p value 0.035), and Unsuitable working environment (aOR 2.44 (95%, p value 0.018).

Conclusion

More than a half of nurses in Mulago National Referral Hospital experienced high levels of burnout due to factors like Unsuitable working environment and inappropriate Nurse-physician relationship.

Recommendations.

The Ministry of Health should consider recruiting more nurses to reduce workload, especially in emergency units, improve on nurse-physician relationship, and assure nurses of their job security for those who feel threatened by the administrators.

Keywords: *Prevalence of Burnout, Mulago National Referral Hospital Nurses, Work-related factors, Kampala.*
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Background

Burnout is a condition that results from chronic stress characterized by depersonalization, emotional exhaustion, and diminished personal accomplishment (Kabunga A, 2021). It has been a big hindrance to planning for health care services (Aheebwa and Omona, 2020). Research has found that burnout causes poor performance on the job characterized by being absent and unexplained poor health status (Shanafelt et al., 2016). While many studies have investigated the level and related causes of burnout in other areas, many have ignored the examination of burnout levels and factors associated with it in National Referral Hospitals. Globally, studies have reported burnout among Nurses at 15-60% in the emergency departments. The high levels of burnout have been attributed to the personal characteristics of the nurse, working environment, patients, caregivers, and grief associated with patient death (Liselotte et al 2019).

In Africa, especially Sub-Saharan Africa; most Intensive Care units are characterized by low staffing levels with nurse-to-patient ratios much lower than 1:2 (0.5), which aggravates the occurrence of burnout (Kifle et al., 2022). This is lower than the ideal Nurse to patient safety of 1:2 patients in developed countries (Kluwer, 2019). A recent study also revealed most sub-Saharan African countries have less than 2.0 critical care beds per 100,000, except Eswatini, Gabon, Namibia, and South Africa where the bed capacity is 8.9 per 100,000 people (Ayebale et al., 2020).

Burnout levels among emergency nurses have been reported at levels ranging from 40 – 80%. High levels of burnout have been linked to personal, unfavorable terms of work, overwhelming workstation needs, and Unsatisfying job conditions (Dubale, et al., 2019). This results in work-related conflicts, decreased quality of care, hospital-acquired infections, high patient mortality rates, and nurse turnover (Cishahayo, et al, 2019; Manzano-Garcia, Ayala 2017 & Bhagavathula et al, 2019). In Uganda, studies have found burnout prevalence to be over 60% (Nabadda, 2012); ICU understaffing is one of the major limitations to operating ICUs in Uganda (Wabulyu, 2019). Most public ICUs have a nurse-patient ratio of 1:8 compared to 1:2 in private hospitals (Atumanya et al., 2020). Likewise, only 7.6% of all nurses in the ICU have some formal training in critical care nursing (Ashaba & Kizito, 2020). This has been attributed to nurse characteristics, working environment, patient and caregiver, and patient factors. However, not much has been documented on the relationship between burnout and the safety of patients admitted in the three national Referral Hospitals. So, the main aim of this research is to establish the prevalence of and factors associated with burnout among nurses, at Mulago National Referral Hospital-Uganda.

In Mulago National Referral Hospital, the work demand outweighs the number of nurses, especially in emergency, patient, and ICU areas, and yet no formal training in critical care has been offered to most of these nurses (Atumanya et al., 2020); the majority of Nurses learn on the job (Nawagi et al., 2023). This situation is worsened by long working hours resulting from staff shortages (Mwine et al., 2023); the prevalence, likely factors leading to the development of burnout, and its impact on patient care in that setting have not been documented yet some events happen in these hospitals that may be resulting from nurse burnout. It's against this background that, this study this study determined the Prevalence and factors associated with burnout among Nurses in Mulago National Referral Hospital, Kampala-Uganda.

Methodology.

Research Design

A quantitative approach was utilized to achieve the objectives of this study. The Researcher applied descriptive cross-sectional design to assess Prevalence and Factors associated with burnout among Nurses working in Mulago National Referral Hospital. These Nurses were found in different units and in-patient wards that handle patients who require Critical Care. This is a design that allows data to be gathered at a particular point in time (Creswell and Creswell, 2017). This design was used for the following reasons; it is effective and inexpensive in terms of data collection. Easily identified factors associated with burnout, allowed comparison of different segments within a large sample, offered large data sets with numerous variables that can be analyzed for insights using advanced statistical procedures, and had the potential for establishing plausible generalizability (Suhonen et al., 2015, Badu et al., 2019).

Study Setting

In particular, the study was conducted in identified wards at "Mulago National Referral Hospital" located three kilometres from Kampala City Centre, the largest and capital city of Uganda located in Central Uganda (Owolabi et al., 2020, Nakalema et al., 2019). Mulago is a public health facility that handles a lot of referred patients who are admitted already in a critical state; The nurses in that hospital are attached to Medical-Surgical emergency and Ward work on patients who need Critical Care at every stage of their illness; nurses here are also supposed to prevent patients from deteriorating and entering a state requiring admission into intensive care; such different wards handle overwhelming number of patients who need critical care and yet providers are often few- that results into burn out. The hospital is one of the four (4) national Referral Hospitals in Uganda (Sadigh et al., 2016). Mulago Hospital Handles over 654,000 patients per annum with 15,000 visiting medical emergency, 36, 000 admissions to medical wards, and 14,400 patients' admissions in the Surgical department annually (Bukenya et al., 2022, Atumanya et al., 2020, Nakiganda et al., 2022). Mulago National Referral Hospital has a bed capacity of 1500; services rendered include both in-patient and outpatient; also offers specialized surgical adult and pediatric services to the population (Tran et al., 2015). The study was conducted from the following units and wards; Accident and emergency, Intensive Care Units for both children and adults, medical emergency ward, Medical Ward, Surgical Emergency, Neurosurgery ward, Spine ward, orthopaedic ward, Gastrointestinal ward, Infectious diseases ward, HDU and trauma ward. These units were chosen because they handle many critically ill patients who need specialized care which is very demanding hence predisposing nurses to burnout.

The adult Intensive care unit has a capacity of 16-18 beds (Osman et al., 2023). Accident and emergency departments handle about 300 patients every day with an estimated catchment of more than 2 million people (Ssekitooleko et al., 2022). Medical emergency has a bed capacity of 25 beds handling about 30 patients per day and an estimated 900 patients monthly; the Medical ward has a bed capacity of 70 patients (Mangat et al., 2018, Kiguba et al., 2021). The Neurosurgery ward has a capacity of 24 beds with an annex of 2 High Dependency Unit (HDU) beds (Vaca et al., 2018, Wekesa et al., 2020). Infectious disease and Gastrointestinal wards have a capacity of 54 beds respectively and can make 70 to 80 admissions daily (Kiguba et al., 2021). Orthopedic units fall under the Department of Trauma and have a capacity of 100-120 beds and receive about 10 cases daily (Bizimana et al., 2023).

Study Population.

The study population comprised Nurses working at Surgical- Medical emergency, intensive care units, HDU, and Surgical and Medical wards of Mulago National Referral Hospital. This implies that the research targeted all the nurses Working in the ICU, Emergency, and

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inpatient departments of Mulago National Referral Hospital. To participate in the Study, participants were expected to have officially registered by the Uganda Nurses and Midwives Council; be directly involved in Providing critical care services in Units requiring Critical Care, and be employed at the hospital for at least the past 6 months. The researcher ensured that routine work was not disrupted by offering questionnaires outside the official working hours of nurses. Recruitment to participate in the study was done either 1 hour before starting duty or 1 hour after completion of duty.

Sample Size Determination.

A sampling frame comprised the 865 nurses in Mulago Hospital (Nakiganda et al., 2022). The Sample size was determined using Yamane's (1967) formula. According to this formula, Sample Size (n) = N/1+N(e) 2 where 'n' is the sample size, 'N' is the population size, and 'e' is the level of precision at 0.05.

Using the formula, the sample size for the study was calculated as follows; "n = N/ [1+N (0.05)]"
= 865/1+865(0.0025)
= 273 Nurses.

Sampling Procedure

Simple random sampling was used to give all these nurses an equal chance of being selected to participate in the Study. The lottery method was used where names were written on pieces of paper and mixed up and 273 were randomly selected to participate in the study.

Inclusion Criteria

The Study included all registered and licensed Nurses who work in busy wards and Units of Mulago National Referral Hospital, only those who consented to participate in the study and were available at the time of the Study.

Exclusion Criteria

Nurses under study placements, nursing assistants, and Nurses who are not directly involved in the care of patients. Respondents whom the researcher knows personally were excluded from the study to avoid feedback bias. Those who were not willing to participate in the Study were also excluded.

Data Collection Tools

The tool was adapted and customized to suit this research from the study conducted by Udho and Kabunga; permission to use the tool was granted. Out of 30 items that make up the PrOQOL V-5 only 10 items measuring and particular to burnout were considered.

In this study, data was obtained using a self-administered questionnaire written in English. Nurses in Uganda are educated in English (the official language of instruction at all levels of education) and English is the official national language used for all official business and in all healthcare settings.

The questionnaire had three sections, Section A: This sought demographic information on the participants like Age, Sex, Marital Status, Unit of Work, and number of household members as indicated in Appendix II section A. Section B (Objective 1): Sought information on burnout prevalence; "Stamm's Professional Quality of Life Scale (ProQOL) version 5 (2009)" were applied to find out burn out level among Nurses working in Emergency, ICU, HDU & inpatient wards at Mulago National Referral Hospital. ProQOL V-5 is made up of 30 items measuring Compassion fatigue, Compassion satisfaction, and Burnout, but only 10 items measuring burnout were analyzed. High scores on this scale implied a higher risk for burnout.

As of now, the ProQOL is in its 5th revision of the original tool termed as "Compassion Fatigue Self-Test Survey Tool developed by Figley in 1995" (Figley, 2013). This research tool contains rigorous psychometric assessment to improve subscale validity and reliability (Kabunga and Okalo, 2021). This burnout scale contains an alpha scale reliability of 0.75 (Stamm, 2010). The "ProQOL" scale was used because it is applicable in the Ugandan context; its validity and reliability have been ascertained (Muliira and Ssendikadiwa, 2016). "The ProQOL V-5 is a 5- point Likert scale ranging from 1 to 5". A low level of burnout was indicated by a percentage Score- of less than 22, 23-42 was denoted by average burnout level and a score of 42 and above indicated a significantly high level of burnout.

The scoring system was summarised in the table below as guided by a study conducted by Kabunga (Udho and Kabunga, 2022).

Section C (Objective 2): Sequential Questions were developed by the researcher to assess factors associated with burnout among nurses. This approach has worked in different Studies assessing factors associated with burnout.

Data Collection Procedure

Data collection happened through several steps as described in the section below.

Pre-visiting.

After approval of the Study by MUST- Research and Ethics Committee and before data collection, the researcher made an informal visit to the study area to meet the executive director; and officers in charge of individual study units at Mulago National Referral Hospital to explain the purpose of the Study. Another reason for the pre-visit was to review the duty schedules of the nurses and their availability on the units during the day, evening, and night shifts. The researcher sought administrative clearance from the Executive Director of Mulago National Referral Hospital. Permission was further sought from the Officers in charge of individual Study units; which helped to confirm acceptability and to understand any obstacles that would likely interfere with data collection. Through Pre-visiting, the researcher navigated and ascertained all protocol procedures needed to carry out the proposed study and obtained formal permission to carry out the proposed study.

Pretesting for Validity and Reliability

Validity and reliability were tested through piloting; involved Ten respondents with similar characteristics from another study area (Burns Ward, Kiruddu National Referral Hospital). That was done to assess whether the instruments were understandable, evaluate the quality of data they were to yield and explore interrelationships among Study variables. There was no change made in the questions.

Training of Research Assistants.

Research assistants are people who help in the research process and these can be assigned any or all duties of data collectors, data entrants, and data cleaners. Research assistants were important in reducing the burden of work and time taken to collect data, enter it, and other processes. Four research assistants were selected to help in the entire data collection process. The selection Criteria included having: a degree in nursing as those were knowledgeable about nursing and have at least the basic knowledge in research. The selected research assistants underwent 2 days of training offered by the researcher and an expert in data collection. The first day included training about the consent process and data collection tools and day two included training on ethical consideration and discussion of the entire data collection process of the study.

Data Management

This section describes the management plan for data; for data to be analyzed, a data template/tally sheet or a master sheet was constructed. This was in the Excel program. Having confirmed this tally sheet at pre-testing, it was further used in the main study in the field and had a coding frame for each question which facilitated electronic data entry. The entered data was protected with passwords only known to the researcher. The security of data was further ensured by saving the template on the researcher's email. On the evening of each day from the field, the questionnaires were safely kept in a lockable cupboard accessed only by the researcher. The whole research process had soft copies of data and the report was stored in soft copy by the researcher.

Data Storage

At the start of data collection, all empty (unfilled) questionnaires were stored and controlled by the researcher in a box labeled "empty questionnaires". At the start of each day, the researcher recorded the number of questionnaires dispatched for the field. All filled questionnaires were stored in a file labeled "filled questionnaires" on the evening of each day.

Data Entry:

Each filled questionnaire was entered in a constructed template. The codes per question aided data entry. A data template in the computer program of STATA version 17 was developed. Entered data was saved online and protected with passwords.

Data Cleaning:

Once data was entered; it was subjected to cleaning. This is the process of checking that there are no missing or repeated entries. It ensured that the data entered was appropriate. STATA has commands with the capacity to do data cleaning. Data cleaning was done and then prepared data for analysis and presentation.

Data Quality Control

Used pretested and Validated study tool and the tools were pretested.

Data Analysis and Presentation Plan

Data Collected were double entered by the Principal Investigator, into MS Excel and later were exported into STATA Version 17.0 software for data cleaning and Analysis. "A p-value less than 0.05 was considered statistically significant".

Objective 1: The level together with its 95% Confidence Interval of burnout was determined as a proportion by dividing the total number of participants with burnout by the total number of participants recruited. The prevalence was graphically represented using a pie chart.

Objective 2: "Factors Associated with Burnout among Nurses".

Multiple regression analysis was used to identify Various factors independently associated with burnout; multiple independent variables were compared with the outcome variable (burnout) at multivariate analysis. Measuring association was done using the Odds ratio together and their 95% confidence Interval plus p-value.

Any variable whose Odds Ratio had a p-value less than 0.2 and those variables that were not statistically significant but well documented in the literature to have a significant association with burnout were considered for multivariate logistic regression to adjust for confounding effects and identified those factors independently associated with burn out; statistically significant p-value were those > 0.05.

Ethical approval

Proposal approval was obtained from the Faculty Research Committee (FRC) of Mbarara University of Science and Technology; the Research and Ethics Committee (REC) MUST approve the protocol under REC no. MUST-2023-1274 to go for data collection; Permission to conduct the Study was sought from the director of Mulago National Referral Hospital where those Nurses are employed.

Informed consent.

Participants gave written consent after being briefed on the purpose of the study; those who consented were enrolled to participate in the study and also were free to withdraw from the study at any time if they wished so. Confidentiality was guaranteed by ensuring that no participant details were recorded or shared, thereby safeguarding their privacy to the fullest extent.

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Results.

Demographic Characteristics of Participants.

Table 1: Characteristics of The Study Participants n=273.

Variable	Frequency (Percentage)
Age Category	
<30years	64 (23.4%)
≥30years	209 (76.6%)
Gender	
Female	190 (69.6%)
Male	83 (30.4%)
Professional Title	
Assistant Nursing officer	142 (52.0%)
Nursing officer	110 (40.3%)
Enrolled nurse	21 (7.7%)
Religion	
Christian	240 (87.9%)
Non-Christian	33 (12.1%)
Level of Education	
≤Diploma	119 (43.6%)
>Diploma	154 (56.4%)
Marital Status	
Not married	106 (38.8%)
Married	167 (61.2%)
Number of People in the Household	
<4	137 (50.2%)
≥4	136 (49.8%)
Head or provider of the family	
Myself	199 (72.9%)
Not myself	74 (27.1%)
Working experience	
<6years	91 (33.3%)
≥6years	182 (66.7%)
Hours worked per week	
<50hours	175 (64.1%)
≥ 50hours	98 (35.9%)
Distance Moved from Hospital to Residence	
>1KM	171 (62.6%)
≤ 1KM	102 (37.4%)
Monthly Income	
<2 million	163 (59.7%)
> 2million	110 (40.3%)
Type of Work unit	
Emergency Unit	40 (14.7%)
High Dependency Unit	38 (13.9%)
Inpatient Ward	150 (54.9%)
Intensive Care Unit	45 (16.5%)

Table 1: shows that the majority of the Study participants were aged 30 years and above 209/273 (76.6%), females constituted 190/273 (69.9%), were assistant nursing officers by profession 142/273 (52.0%), Christians were 240/273 (87.9%), Level of education was a diploma and above 154/273 (56.4%).

Prevalence of Burn out among Nurses in Mulago National Referral Hospital

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Figure 1: Prevalence of High Burnout Levels among Study participants (Nurses) at Mulago National Referral Hospital

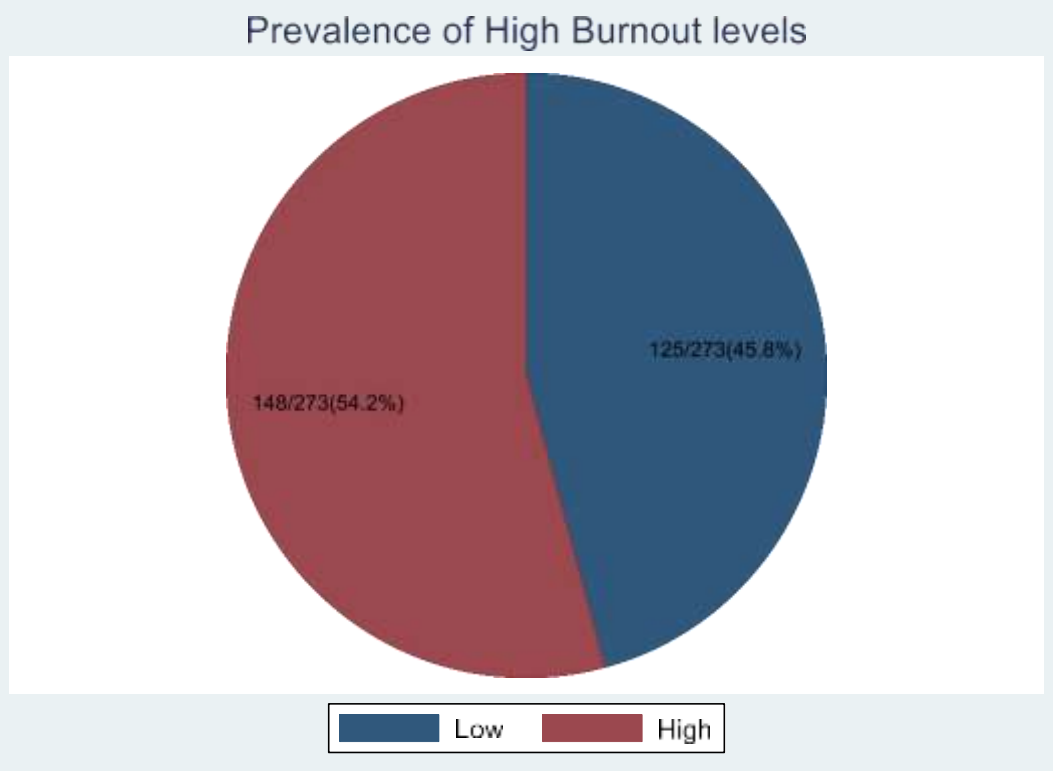

Figure 1: shows that, out of 273 study participants, 148 had high levels of burnout giving an overall burnout prevalence of 54.2% (95%CI: 48.2% - 60.1%). We observed significant differences in the distribution of high levels of burnout prevalence by the level of education; ≤diploma 73/119(61.3%) vs >diploma 75/154 (48.7%) p-value 0.038, Marital Status; Not married 66/106 (62.3%) vs Married 82/167(49.1%) p-value 0.033, number of hours worked per week; < 50 Hours 85/175 (48.6%) vs ≥ 50 hours 63/98 (64.3%) p-value 0.012, monthly income <2 million 97/163 (59.5%) vs > 2million 51/110 (46.4%) p-value 0.032, Type of work unit Emergency Unit 30/40 (75.0%) vs High Dependency Unit 19/38 (50.0%) vs Inpatient Ward 80/150 (53.3%) vs Intensive Care Unit 19/45 (42.2%) p-value 0.020. We did not observe significant differences in the distribution of high levels of burnout prevalence across the different levels of other sociodemographic categorical variables as indicated in Table 2.

According to PrOQOL manual guidelines, the total burns score was categorized into three categories (Low, average & High levels of burnout) 45/273 (16.5%) had low levels of burnout (≤22 scores), 224/273 (82.0%) reported average levels of burnout (23-41 score); 4/273 (1.5%) reported high levels of burn out ≥42.

The level of burnout (Outcome variable) was recategorized as a binary of low and high burnout based on scores below and above the mean score. Out of 273 who were studied, based on the PrOQOL manual guidelines, 54.2% (n=148) had a high level of burnout (≥42 Score), and 45.8% (n=125) had a low level of burnout (≤22 scores).

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Table 2: Distribution of Prevalence of High Burn Out Levels Across Different Levels of Socio-Demographics Characteristics.

Variable	Frequency (Percentage)	Burnout Level Low	s High	p-value
	n=273	**n=125**	**n=148**	
		(45.8%)	**(54.2%)**	
Age category				0.44
<30years	64 (23.4%)	32 (50.0%)	32 (50.0%)	
≥30years	209 (76.6%)	93 (44.5%)	116 (55.5%)	
Gender				0.60
Female	190 (69.6%)	85 (44.7%)	105 (55.3%)	
Male	83 (30.4%)	40 (48.2%)	43 (51.8%)	
Professional Title				0.099
Assistant	142 (52.0%)	58 (40.8%)	84 (59.2%)	
Nursing officer				
Nursing officer	110 (40.3%)	59 (53.6%)	51 (46.4%)	
Enrolled nurse	21 (7.7%)	8 (38.1%)	13 (61.9%)	
Religion				0.15
Christian	240 (87.9%)	106 (44.2%)	134 (55.8%)	
Non-Christian	33 (12.1%)	19 (57.6%)	14 (42.4%)	
Education level				**0.038***
Completed				
≤Diploma	119 (43.6%)	46 (38.7%)	73 (61.3%)	
>Diploma	154 (56.4%)	79 (51.3%)	75 (48.7%)	
Marital status				**0.033***
Not married	106 (38.8%)	40 (37.7%)	66 (62.3%)	
Married	167 (61.2%)	85 (50.9%)	82 (49.1%)	
Number of People				0.060
in Household				
<4	137 (50.2%)	55 (40.1%)	82 (59.9%)	
≥4	136 (49.8%)	70 (51.5%)	66 (48.5%)	
Head or Provider to				0.61
the Family				
Myself	199 (72.9%)	93 (46.7%)	106 (53.3%)	
Not myself	74 (27.1%)	32 (43.2%)	42 (56.8%)	
Working				0.49
Experience				
<6years	91 (33.3%)	39 (42.9%)	52 (57.1%)	
≥ 6years	182 (66.7%)	86 (47.3%)	96 (52.7%)	
Hours Worked Per				**0.012***
Week				
<50hours	175 (64.1%)	90 (51.4%)	85 (48.6%)	
≥50hours	98 (35.9%)	35 (35.7%)	63 (64.3%)	
Distance moved				0.94

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from the Hospital to the Residence				
>1KM	171 (62.6%)	78 (45.6%)	93 (54.4%)	
≤1KM	102 (37.4%)	47 (46.1%)	55 (53.9%)	
Monthly Income				**0.032***
<2 million	163 (59.7%)	66 (40.5%)	97 (59.5%)	
> 2million	110 (40.3%)	59 (53.6%)	51 (46.4%)	
Type of Work Unit				**0.020***
Emergency Unit	40 (14.7%)	10 (25.0%)	30 (75.0%)	
High Dependency Unit	38 (13.9%)	19 (50.0%)	19 (50.0%)	
Inpatient Ward	150 (54.9%)	70 (46.7%)	80 (53.3%)	
Intensive Care Unit	45 (16.5%)	26 (57.8%)	19 (42.2%)	

Table 2: indicating how Bio demographic factors associated with burnout were considered according to their p Value and these were indicated as follows; Education level (p<0.038), Marital Status (p<0.033), Hours worked per week (p<0.012), Monthly Income (p<0.032) and Type of Work Unit (p<0.020).

Table 3: Distribution of prevalence of High burn levels across different levels of work-related characteristics

Variable	Total n=273	Burnout levels		p-value
		Low n1=125(45.8%)	**High n2=148(54.2%)**	
In this work setting, the nurse The staffing level is Low.				0.51
Agree	240(87.9%)	108 (45.0%)	132 (55.0%)	
Disagree	20 (7.3%)	9 (45.0%)	11 (55.0%)	
Neutral	13 (4.8%)	8 (61.5%)	5 (38.5%)	
In this work setting, there is heavy workload				0.47
Agree	248(90.8%)	112 (45.2%)	136 (54.8%)	
Disagree	11 (4.0%)	7 (63.6%)	4 (36.4%)	
Neutral	14 (5.1%)	6 (42.9%)	8 (57.1%)	
In this workplace, there is time pressure with a lot of deadlines to meet				**0.021***
Agree	160(58.6%)	62 (38.8%)	98 (61.3%)	
Disagree	49 (17.9%)	27 (55.1%)	22 (44.9%)	
Neutral	64 (23.4%)	36 (56.3%)	28 (43.8%)	
The work environment is suitable for me to work				***<0.001**
Agree	126(46.2%)	79 (62.7%)	47 (37.3%)	
Disagree	100(36.6%)	30 (30.0%)	70 (70.0%)	
Neutral	47 (17.2%)	16 (34.0%)	31 (66.0%)	
In this work setting, nurses are allowed to participate in hospital affairs				**<0.001***
Agree	121(44.3%)	71 (58.7%)	50 (41.3%)	
Disagree	82 (30.0%)	27 (32.9%)	55 (67.1%)	
Neutral	70 (25.6%)	27 (38.6%)	43 (61.4%)	
I feel dissatisfied with the the salary that is given				**0.019***

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Agree	179(65.6%)	71 (39.7%)	108 (60.3%)	
Disagree	53 (19.4%)	31 (58.5%)	22 (41.5%)	
Neutral	41 (15.0%)	23 (56.1%)	18 (43.9%)	
My job security feels threatened by the facility administration				**<0.001***
Agree	75 (27.5%)	22 (29.3%)	53 (70.7%)	
Disagree	129(47.3%)	76 (58.9%)	53 (41.1%)	
Neutral	69 (25.3%)	27 (39.1%)	42 (60.9%)	
The ward arrangement and patient numbers are breaking Me				**0.014***
Agree	197(72.2%)	80 (40.6%)	117 (59.4%)	
Disagree	49 (17.9%)	31 (63.3%)	18 (36.7%)	
Neutral	27 (9.9%)	14 (51.9%)	13 (48.1%)	
In this facility, the nurse-physician relationship is inappropriate				**<0.001***
Agree	115(42.1%)	36 (31.3%)	79 (68.7%)	
Disagree	106(38.8%)	69 (65.1%)	37 (34.9%)	
Neutral	52 (19.0%)	20 (38.5%)	32 (61.5%)	
There is a low supervisor or leader support in this facility				**<0.001***
Agree	117(42.9%)	49 (41.9%)	68 (58.1%)	
Disagree	104(38.1%)	64 (61.5%)	40 (38.5%)	
Neutral	52 (19.0%)	12 (23.1%)	40 (76.9%)	
There is a lack of flexibility in the work schedule in this workplace				**<0.001***
Agree	134(49.1%)	54 (40.3%)	80 (59.7%)	
Disagree	91 (33.3%)	56 (61.5%)	35 (38.5%)	
Neutral	48 (17.6%)	15 (31.3%)	33 (68.8%)	
In this work setting, I am given many night duties, not paid overtime allows				**<0.001***
Agree	122(44.7%)	45 (36.9%)	77 (63.1%)	
Disagree	88 (32.2%)	56 (63.6%)	32 (36.4%)	
Neutral	63 (23.1%)	24 (38.1%)	39 (61.9%)	
In this work setting, we work 12-hour shift with few off duties which stresses me				**<0.001***
Agree	102(37.4%)	30 (29.4%)	72 (70.6%)	
Disagree	113(41.4%)	74 (65.5%)	39 (34.5%)	
Neutral	58 (21.2%)	21 (36.2%)	37 (63.8%)	
The number of weekly hours worked is more than Normal				**<0.001***
Agree	152(55.7%)	55 (36.2%)	97 (63.8%)	
Disagree	77 (28.2%)	52 (67.5%)	25 (32.5%)	
Neutral	44 (16.1%)	18 (40.9%)	26 (59.1%)	

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There are no rewards, instead the setting is full of blame only				**<0.001***
Agree	169(61.9%)	65 (38.5%)	104 (61.5%)	
Disagree	58 (21.2%)	42 (72.4%)	16 (27.6%)	
Neutral	46 (16.8%)	18 (39.1%)	28 (60.9%)	
There is a lack of control over my job; mainly controlled by the administration				**<0.001***
Agree	122(44.7%)	43 (35.2%)	79 (64.8%)	
Disagree	91 (33.3%)	62 (68.1%)	29 (31.9%)	
Neutral	60 (22.0%)	20 (33.3%)	(66.7%)	

Significant differences in the distribution of high levels of burnout prevalence across the different levels of each of the investigated workplace contextual factors were observed; p-value <0.05 except level of nurse staffing and the nature of the workload.

Factors Associated with Burnout among Nurses at Mulago National Referral Hospital.

Table 4: Bivariate analysis of Socio-demographic factors associated with high burnout.

Variable	Bivariate analysis	
	cOR(95%CI)	**P-value**
Age category		
<30 years	1.00	
≥30 years	1.25(0.71-2.19)	0.440
Gender		
Male	1.00	
Female	1.15(0.69-1.93)	0.598
Religion		
Non-Christian	1.00	
Christian	1.72(0.82-3.58)	0.151
Education		
>Diploma	1.00	
≤Diploma	**1.67(1.03-2.72)**	**0.038***
Professional title		
Nursing officer	1.00	
Assistant nursing officer	**1.68(1.01-2.77)**	**0.044***
Enrolled nurse	1.88(0.72-4.90)	0.196
Marital status		
Not married	1.00	
Married	**0.58(0.36-0.96)**	**0.034***
No. of people in a household		
< 4	1.00	
≥4	0.63(0.39-1.02)	0.061
Head/Provider of the family		
Not Myself	1.00	

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Myself	0.87(0.51-1.49)	0.607
Monthly income		
>2 million	1.00	
<2 million	**1.70(1.04-2.77)**	**0.033***
Work experience		
≥ 6 years	1.00	
< 6 years	1.19(0.72-1.98)	0.492
Hours worked per week		
<50 hours	1.00	
≥ 50 hours	**1.91 (1.15-3.17)**	**0.013***
Hospital-to-residence distance		
≤1km	1.00	
>1km	1.02(0.62-1.67)	0.941
Work unit		
Inpatient ward	1.00	
Emergency unit	**2.63 (1.20-5.75)**	**0.016***
High dependency unit	0.88(0.43-1.78)	0.713
Intensive care unit	0.64(0.33-1.25)	0.193

Table 5: Multivariate analysis of socio-demographic factors associated with high burnout.

Variable	Multivariate analysis	
	aOR(95%CI)	**P-values**
Age category		
<30 years	1.00	
≥30 years	**2.61(1.01-6.77)**	**0.049***
Gender		
Male	1.00	
Female	1.07(0.60-1.90)	0.824
Education		
>Diploma	1.00	
≤Diploma	1.03(0.50-2.11)	0.941
Professional title		
Nursing officer	1.00	
Assistant nursing officer	1.42 (0.73-2.78)	0.305
Enrolled nurse	1.65 (0.49-5.54)	0.417
Marital status		
Not married	1.00	
Married	0.55 (0.30-1.01)	0.053
Work experience		
≥ 6 years	1.00	
< 6 years	1.80 (0.78-4.18)	0.170
Hours worked per week		
<50 hours	1.00	
≥ 50 hours	1.55 (0.89-2.70)	0.118
Work unit		
Inpatient ward	1.00	
Emergency unit	**2.44 (1.06-5.59)**	**0.035***
High dependency unit	0.88 (0.42-1.86)	0.739
Intensive care unit	0.72 (0.35-1.46)	0.361

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Table 5: shows that, after adjustment for confounding effects, Age of 30 years and above (aOR: 2.61(95% CI: 1.01- 6.77, P value 0.049), and working in emergency unit; aOR: 2.44(95% CI: 1.06-5.59, P value 0.035) were significantly associated with high levels of burn out.

Table 6: Bivariate analysis of Workplace contextual factors associated with high levels of burnout among study participants.

Variable	Bivariate analysis	
	cOR (95%CI)	**P-value**
Age category		
<30 years	1.00	
≥30 years	1.25 (0.71-2.19)	0.440
Work unit		
Inpatient ward	1.00	
Emergency unit	**2.63 (1.20-5.75)**	**0.016***
High dependency unit	0.88 (0.43-1.78)	0.713
Intensive care unit	0.64 (0.33-1.25)	0.193
In this work setting, the nurse Staffing level is Low.		
Disagree	1.00	
Agree	1.00 (0.40-2.)	1.00
Neutral	0.51 (0.12-2.12)	0.356
In this work setting, there is a heavy workload.		
Disagree	1.00	
Agree	2.13 (0.61-7.44)	0.239
Neutral	2.33 (0.46-11.81)	0.306
In this workplace, there is time pressure with a lot of deadlines to meet.		
Disagree	1.00	
Agree	**1.94 (1.02-3.70)**	**0.045***
Neutral	0.95(0.45-2.02)	0.903
The work environment is suitable for me to work.		
Agree	1.00	
Disagree	**3.92 (2.24-6.86)**	**<0.001***
Neutral	**3.26 (1.61-6.58)**	**0.001***
In this work setting, nurses are allowed to participate in hospital affairs.		
Agree	1.00	
Disagree	**2.89 (1.61-5.20)**	**<0.001***
Neutral	**2.26 (1.24-4.13)**	**0.008***
I feel dissatisfied with the salary that is given.		
Disagree	1.00	
Agree	**2.14 (1.15-4.00)**	**0.016***
Neutral	1.10 (0.48-2.51)	0.816
My job security feels threatened by the facility administration.		
Disagree	1.00	
Agree	**3.45 (1.88-6.35)**	**<0.001***
Neutral	**2.23 (1.23-4.05)**	**0.008***
The ward arrangement and patient numbers are breaking me.		
Disagree	1.00	
Agree	**2.52 (1.32-4.81)**	**0.005***
Neutral	1.60 (0.62-4.15)	0.334
In this facility, the nurse-physician relationship is inappropriate.		
Disagree	1.00	
Agree	**4.09 (2.34-7.17)**	**<0.001***
Neutral	**2.98 (1.50-5.93)**	**0.002***

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There is little supervisor or leader support in this facility.		
Disagree	1.00	
Agree	**2.22 (1.29-3.81)**	**0.004***
Neutral	**5.33 (2.50-11.36)**	**<0.001***
There is a lack of flexibility in the work schedule in this workplace.		
Disagree	1.00	
Agree	**2.37 (1.37-4.09)**	**0.002***
Neutral	**3.52 (1.68-7.39)**	**0.001***
In this work setting, I am given many night duties, not paid overtime allow		
Disagree	1.00	
Agree	2.99 (1.69-5.29)	<0.001*
Neutral	2.84 (1.46-5.55)	0.002*
In this work setting, we work 12-hour shifts with few off duties which stresses me.		
Disagree	1.00	
Agree	**4.55 (2.56-8.10)**	**<0.001***
Neutral	**3.34 (1.72-6.58)**	**<0.001***
The number of weekly hours worked is more than the normal.		
Disagree	1.00	
Agree	**3.67 (2.05-6.56)**	**<0.001***
Neutral	**3.00 (1.39-6.47)**	**0.005***
There are no rewards, instead, the setting is full of blame only.		
Disagree	1.00	
Agree	**4.20 (2.18-8.08)**	**<0.001***
Neutral	**4.08 (1.79-9.33)**	**0.001***
There is a lack of control over my job; mainly controlled by the administration.		
Disagree	1.00	
Agree	**3.93 (2.21-6.99)**	**<0.001***
Neutral	**4.28 (2.13-8.56)**	**<0.001***

Table 7: Multivariate analysis of Workplace contextual factors associated with high levels of burnout among study participants.

Variable	Multivariate analysis	
	aOR (95%CI)	**P-values**
Age category		
<30 years	1.00	
≥30 years	1.63 (0.77-3.48)	0.204
Work unit		
Inpatient ward	1.00	
Emergency unit	**2.87 (1.05-7.88)**	**0.040***
High dependency unit	1.02 (0.42-2.48)	0.970
Intensive care unit	1.25 (0.50-3.16)	0.631
In this work setting, the nurse Staffing level is Low.		
Disagree	1.00	
Agree	0.56 (0.12-2.55)	0.450
Neutral	0.54 (0.07-4.20)	0.553
In this work setting, there is a heavy workload.		
Disagree	1.00	
Agree	1.66 (0.24-11.58)	0.610
Neutral	2.25 (0.24-19.71)	0.463
In this workplace, there is time pressure with a lot of deadlines to meet.		

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Disagree	1.00	
Agree	0.60 (0.24-1.56)	0.298
Neutral	0.46(0.16-1.32)	0.149
The work environment is suitable for me to work.		
Agree	1.00	
Disagree	**2.44 (1.17-5.06)**	**0.018***
Neutral	1.76 (0.68-4.57)	0.247
In this work setting, nurses are allowed to participate in hospital affairs.		
Agree	1.00	
Disagree	2.11(0.94-4.73)	0.069
Neutral	1.03(0.44-2.40)	0.943S
I feel dissatisfied with the salary that is given.		
Disagree	1.00	
Agree	1.15(0.47-2.79)	0.763
Neutral	0.45(0.14-1.47)	0.184
My job security feels threatened by the facility administration.		
Disagree	1.00	
Agree	1.62(0.72-3.63)	0.242
Neutral	1.16(0.52-2.57)	0.717
The ward arrangement and patient numbers are breaking me.		
Disagree	1.00	
Agree	0.99(0.40-2.49)	0.997
Neutral	0.80(0.20-3.18)	0.754
In this facility, the nurse-physician relationship is inappropriate.		
Disagree	1.00	
Agree	**3.04(1.32-7.01)**	**0.009***
Neutral	1.24(0.47-3.25)	0.666
There is little supervisor or leader support in this facility.		
Disagree	1.00	
Agree	0.93(0.43-2.01)	0.848
Neutral	**3.18(1.17-8.65)**	**0.024***
There is a lack of flexibility in the work schedule in this workplace.		
Disagree	1.00	
Agree	1.13(0.51-2.54)	0.759
Neutral	1.71(0.53-5.53)	0.371
In this work setting, I am given many night duties, not paid overtime allow		
Disagree	1.00	
Agree	1.71(0.74-3.96)	0.211
Neutral	1.43(0.54-3.81)	0.471
In this work setting, we work 12-hour shifts with few off duties which stresses me.		
Disagree	1.00	
Agree	1.84(0.79-4.28)	0.156
Neutral	2.03(0.68-6.01)	0.203
The number of weekly hours worked is more than the normal.		
Disagree	1.00	
Agree	1.48(0.63-3.48)	0.367
Neutral	1.11(0.37-3.33)	0.847
There are no rewards, instead, the setting is full of blame only.		

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Disagree	1.00	
Agree	0.93(0.36-2.37)	0.879
Neutral	1.17(0.33-4.14)	0.811
There is a lack of control over my job; mainly controlled by the administration.		
Disagree	1.00	
Agree	**2.26 (1.06-4.83)**	**0.035***
Neutral	2.63 (0.96-7.22)	0.061

Table 7: shows that, after adjustment for Age, Type of work unit, and effects of work-related contextual factors on each other, We found significantly higher Odds of burnout among nurses who felt the work environment unsuitable for them to work compared to nurses who felt the work environment is suitable to work; aOR 2.44 (95% CI:1.17-5.06, p-value 0.018). The odds of high burnout levels were also significantly higher among nurses who felt that the nurse-physician relationship was inappropriate compared to nurses who felt that the nurse-physician relationship was appropriate; aOR 3.04 (95% CI:1.32-7.01, p Value 0.009).

We also observed significantly Higher odds of burnout levels among study participants who felt that their job was controlled by administrators compared to those who felt that had control over their job aOR 2.26 (95%CI:1.06-4.83, p-value 0.035). The odds of high burnout levels also remained significantly higher among nurses who work in the Emergency unit compared to those who worked in Inpatient wards; aOR 2.87 (95%CI:1.05- 7.88, p-value 0.041) even after adjusting for effects of workplace contextual factors.

Discussion of results.

Prevalence of Burn Out among Nurses in Mulago National Referral Hospital.

The high level of burnout (54.2%) Observed in this study could be because the health system of Uganda is still developing characterized by a severe shortage of nurses and contextual workplace-related factors identified in this study; this could also be because nurses who provide intensive care in emergency units are few and overworked, that made them report increased threshold of burnout compared to nurses providing Critical Care in HDU, ICU and the Inpatient wards. This finding is in close agreement with (Traunmüller et al., 2019) who reported that there is an increased threshold of burnout among nurses in intensive care and emergency units compared to all other units. The findings of this study correlate to the 54.0% observed in the Brazilian state of Bahia and in the same range as 50% in Jordan, and 48% in Egypt(Prasad, 2021, Abdo S, 2016.) Compared to previous studies, findings from this study reported higher levels of burnout than 19% reported in America and 18.3% in Brazil (Merces. , 2020.). Relatedly, the 54.2% level of burnout observed in this study is much higher than the 16.0% reported in China, 35.7% in Portugal, and 31.0% in Italy (Giannini A and Borrani C, 2013.) However, these results were lower than 60% observed in Germany, 55.4% in the state of Sao Paulo Brazil, and 56.9% in Greece (Traunmüller et al., 2019, Aragão, 2021, Al-Turki, 2010). This difference could be attributed to the differences in health systems across countries and the composition of the sample where some studies involved all healthcare workers including doctors, nurses, midwives, and other cadres (Dubale 2019). These findings demonstrate the importance of promoting a supportive workplace environment among nurses to seek help when needed while recognizing burnout and its effects

Factors Associated with Burnout among Nurses at Mulago National Referral Hospital.

The findings showed that participants who were ≤30 years of age were two times more likely to experience burnout compared to their counterparts who were less than 30 years of age. This relationship seems to be in line with the observation that burnout increases with advancement in age as this comes with more responsibilities that are carried outside workstations; which makes them tired before even appearing for duty. This result is in agreement with previous research which shows a correlation between burnout and age (Ghazanfar, 2018, Dyrbye et al., 2019, Piotrowska et al., 2022).

This finding is contrally to study carried out in Iran which revealed that reduction in burn out in older and experienced nurses was as a result of development of better coping strategies as old age is associated with professional experience (Gómez-Urquiza, 2017, Rashedi, 2014).

Results also showed that the type of work unit has Significance in the level of burnout, the odds of high burnout levels also remained significantly higher among nurses who work in the Emergency unit compared to those who worked in other wards; aOR 2.87 (95%CI:1.05-7.88, p-value 0.041). This is in line with a Study carried out in Slovakia by Getahun et al. (2023) who found out that the kind of Department worked in and the work environment have an effect on the level of burnout among intensive care nurses (Moscu et al., 2022, Yousefi et al., 2023); Burn out level was also found to be high in oncology (Piotrowska et al., 2022); intensive care and emergency wards (Zaki et al., 2022, Akbarilakeh et al., 2019). We found significantly higher Odds of burnout among nurses who felt the work environment unsuitable for them to work compared to nurses who felt the work environment was suitable to work; (aOR 2.44 (95% CI:1.17-5.06, p-value 0.018). In the researcher's view, many factors like lack of enough equipment, heavy workload, unfavorable work schedules, and poor workplace relationships make the work environment unsuitable; this finding is in agreement with Abraham et al., (2022), Mohebbi et al.,

(2019) who revealed that Nurse burnout is a function of the working conditions, interpersonal factors, environmental factors and interactions at the workplace. The odds of high burnout levels were also significantly higher among nurses who felt that the physician relationship was inappropriate compared to nurses who felt that nurse physician relationship was appropriate; (aOR 3.04 (95% CI:1.32-7.01, p Value 0.009); this is in agreement with a study carried out by Fumis et al. (2017) in Sao Paulo Brazil which revealed that poor physician-nurse relationship can lead to moral distress among nurses which intern influence burn out levels among nurses. We also observed significantly Higher odds of burnout levels among study participants who felt that their jobs were controlled by administrators compared to those who felt that had control over their job (aOR 2.26 (95%CI:1.06-4.83, p-value 0.035). This could be because constant threats to the nurse regarding the warning of no promotion, forced transfers, and the notion of abscondment of duty plus denial of annual leave in December make many nurses feel threatened. After all, there is no say. This finding is in disagreement with a Study that was conducted by Udho and Kabunga (2022) among Hospital-based nurses in Northern Uganda which found that age category, level of social support, healthy diet, workload, and management responsibilities were the main causes of burnout among nurses working in hospitals in Northern Uganda.

Conclusions

Burnout among nurses in Mulago National Referral Hospital is High and the factors independently associated with such burnout were Age, Type of work unit (Emergency unit), nurses feeling that the work-environment was unsuitable for them to work, nurse-physician relationship was inappropriate and feeling that their job was being controlled by administrators and higher authorities. These findings Show that burnout among nurses is a major occupational and public health problem with diverse contributing factors that require urgent interventions, especially in areas that provide critical care nursing for instance emergency units.

Limitations of the Study

The study generated limited information since it was carried out only in Mulago National Referral Hospital. That was carried out by applying data triangulation method which was used to rectify this problem as well as a pre-test carried out on selected units at Kiruddu National Referral Hospital.

This study applied a questionnaire method which was not able to provide both quantitative and qualitative data for the study since a questionnaire is mainly suitable in providing quantitative data.

The researcher faced delays in obtaining information from some respondents who gave inadequate information due to the sensitive nature of the study. The researcher explained the objectives of the study to the participants so that they could be able to feel free to open up and give the required information.

Financial constraints as the study was not adequately sponsored. To minimize this, the researcher requested his family and friends for monetary and in-kind support for the study in advance.

Recommendations.

For Intensive care services to be effective, the Ministry of Health should consider recruiting more nurses to reduce workload especially in emergency units, improve on nurse-physician relationship and assure nurses of their job security for those who feels threatened by the administrators.

More research is needed to understand how burnout among nurses affects emotions; a manifestation through the rudeness of nurses.

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List of abbreviations

CDC: Centre for Disease Control
DRGT: Directorate of Research and Graduate Training
FRC: Faculty Research Committee
HDU: High Dependency Unit
ICU: Intensive Care Unit
JD-R Scale: The Job Demands Resources Model
MBI: The Maslach Burnout Inventory
MNRH: Mulago National Referral Hospital
MOH: Ministry of Health
MUST REC: Mbarara University of Science and Technology Research Ethics Committee
MUST: Mbarara University of Science and Technology
PrOQOL: Professional Quality of Life Scale
SAQ: Safety Attitudes Questionnaire
WHO: World Health Organisation

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Conflict of interest.

The authors declare no conflict of interest.

Availability of data.

Data used in this study is available upon request from the corresponding author.

Authors contribution

AT designed the study, conducted data collection, cleaned and analyzed data and draft the manuscript and VN supervised all stages of the study from conceptualization of the topic to manuscript writing.

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