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OCCUPATIONAL STRESS AMONG NURSES WORKING IN THE OPERATING THEATRES AT KENYATTA NATIONAL HOSPITAL

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ABSTRACT

The purpose of this study was to determine occupational stress levels and contributing factors among nurses working in the operating theatres at Kenyatta National Hospital. Occupational stress reflects an undesirable response to an imbalance between job demands, and coping abilities of persons involved leading to burn out. The operating theatres have recorded steady increases in workload against a declining number of nurses in post thus posing higher risk for occupational stress. The particular objectives of the study were to determine the levels of occupational stress and the influence of individual, organizational and job factors. The study design was a descriptive cross-sectional where data was obtained at a point in time. Fisher's formula was used to calculate the sample size from the current 180 nurses. Data was collected using a structured questionnaire. Pretesting was done in prime care theatre. Data was analyzed using SPSS version 25. Analysis entailed descriptive measures and tests of hypotheses including correlation analysis and ANOVA, at a confidence of 95% and significance level of 0.05. Results were presented in form of tables. The study found mixed findings on the association between individual factors and occupational stress. There was a difference in occupational stress between the gender, the education and age groups. However, there was no difference in occupational stress between marital status groups. There was no statistically significant relationship between individual internal factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital ($r=-.110$, $p=.269$). There was a statistically significant relationship between organizational factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital ($r=.716$, $p=.000$). The study established a serious staff shortage that has adverse effects on the nurses' occupational stress. There is a statistically significant relationship between job factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital ($r=.874$, $p=.000$). The study recommends that the Hospital management carries out a workload analysis in an effort to address the staffing shortage and thus reduce the occupational related stress. The study also recommends adoption of measures to enhance staff retention. These measures can include access to appropriate social welfare facilities, and performance evaluations leading to job enlargement, opportunities for promotions and other forms of recognition.

Keywords: *Individual Factors, Organizational Factors, Job Factors, Occupational Stress*

1.0 INTRODUCTION

Stress, in general and outside of the workplace, is complex and multi-dimensional. Both the excessive stimulus and the reaction to that stimulus may be thought of as stress. Stress can also be thought of as an intermediate variable between the source of stress and the response it elicits (Vats et al., 2020). Any circumstance where the adaptive resources of a person, social system, or tissue system are taxed or exceeded is considered a stressor. Dynamic stress reflects an underlying reality (Kula, 2017; Vats et al., 2020).

Not all stress is detrimental. There exists good stress called “eustress” which motivates persons to perform better at various tasks for instance managing emergencies or accomplishing academic tasks. However, when the eustress goes and exceeds a limit, it becomes distress and hampers the performance of the individual (Vasanthi & Santhi, 2020). The experience and meaning of stress are individualized and contextual. An individual's assessment of his or her capacity to cope with stress is affected by his or her level of excitability or arousal, the intensity of his or her dislike for the stressful situation, and the feeling that he or she has little power over the situation (du Plessis & Martins, 2019). People experience occupational stress when there is a mismatch between their skills and the demands of their jobs (Beheshtifar & Nazarian, 2013). Specific stress sources may include work design, the organization and management of work and workers, career decisions, role conflict and ambiguity, too much or too little responsibility and toxic interpersonal interactions.

Physical dangers, psychological hazards such workplace unfairness, a toxic work environment, a lack of autonomy in decision making, weak management, an absence of inspiration, and an unfair pay-for-performance ratio are some others (Bailey et al., 2020; Elovainio & Virtanen, 2020). Because of the reciprocal nature of the relationships between the individual and the environment, occupational stress develops as a transactional process comprising assessments, coping, and emotions (du Plessis, 2020). As people are constantly modifying their thoughts and behaviors and regulating their emotions to alter their perceptions of the stressor, they may exhibit maladaptive responses or coping attempts leading to self-regulation (du Plessis & Martins, 2019; du Plessis, 2020). Maladaptive consequences include anxiety, fear, depression, and Post Traumatic Stress disorder on the milder side, (TSD) but may also herald physical illnesses like hypertension and major mental disorders such as bipolar disorder and schizophrenia (Beheshtifar & Nazarian, 2013; Fink, 2016; Nagpal & Chalana, 2018).

Studies have demonstrated the untoward consequences of occupational stress where it has been linked to poor mental health (Kolstad et al., 2011; Madsen et al., 2017; Milner et al., 2014) increased health impairing behaviors e.g., increased smoking and alcoholism (Roberto & Taylor, 2020); poor physical health e.g. diseases including obesity, heart disease, and high blood pressure (Heikkilä, 2020), as well as on measures of organizational health like absenteeism, sick leave, productivity, work satisfaction, and quit attempts (Leka et al., 2010). It has also been associated with financial losses on account of lost productivity and adverse health consequences (Hassard et al., 2018).

There is no denying that stress at work and the possibility of emotional or mental harm are still major issues in today's workplaces (Leka et al., 2010). Indeed, work stress has not only been identified as one of the most significant phenomena in any culture, but it has been labeled the "Health Epidemic of the 21st Century" by the World Health Organization (Eurofound, 2012; Fink, 2016). However, it's better documented in developed than in developing countries (Kortum, Leka, & Cox, 2010).

Each day, the effects of occupational stress cause one million people to call in sick. Human contact jobs are more stressful than others because of the interpersonal demands. One study

in USA showed 50% of workers felt work related stress impacted negatively on their productivity(Fink, 2016). According to the Fifth European Working Conditions Survey(Eurofound, 2012), many workers have reported being subjected to a variety of psychosocial risks, such as: working under tight deadlines (62% of surveyed workers); working at a fast pace (59% of surveyed workers); experiencing organizational change (51%) and working more than 40 hours per week (24% of surveyed workers). Forty percent of employees in 31 European nations said that stress was not adequately addressed or controlled (EU-OSHA, 2013).

Among nurses, studies have showed various levels of occupational stress. One study observed a high; 70.85% prevalence of occupational stress among Iranian midwives that was potentially harmful for them and patients(Rezaei et al., 2020) and similar high index; 71.8% of occupational stress among nurses in a University hospital in Brazil(Santana et al., 2020). In Vietnam, relatively low levels of occupational stress were recorded; 6.4% with a higher proportion among nurses compared to doctors (8.0% vs. 2.2%), more concentrated in some departments such as surgery (11.9%)(Nguyen Ngoc et al., 2020).

In Africa, a systematic review showed burnout; a response to chronic work-related stress at 87%(Owuor et al., 2020) and another meta-analysis estimated the prevalence rate of low back pain among nurses ranged between 44.1% to 82.7% with an average of 64.07%(Kasa et al., 2020). Empirically, a study in Nigeria showed a higher prevalence;71.4% of low back pain which was attributable to the physical strain ;54.1% and stress 76.5 % from nursing duties while 90.9% identified prolonged standing as a risk factor for low back pain(Adetoun & Oluwatosin, 2020). Comparing the findings of the Africa region against those of another review of pooled global prevalence of burnout among nurses of 11.23% shows Africa as being the most affected with occupational stress(Woo et al., 2020).

The Kenyan scenario, though with limited studies seems no different from the African region. A cross sectional study in one of Kenya's busy maternity hospital; Pumwani hospital, showed (88.6%) of the respondents were experiencing burn out(Muriithi & Kariuki, 2020). A similar study on burn out among medical workers was done in Kenyatta National Hospital which showed the crude prevalence rate of burnout syndrome was 95.4% and another in a comparable Hospital; Moi Teaching and referral Hospital found moderate levels of burnout among nurses, about 40%(Gichara, 2017).

Nurses who specialize in perioperative care assist patients from the time they are admitted until they leave the post-anesthesia care unit after surgery. Perioperative nurses are responsible for several things, including making sure patients are safe during surgery and receiving high-quality perioperative care. However, occupational stress coupled with other stresses undermine nurses' ability to offer high quality patient care (Garrett, 2008; Sillero & Zabalegui, 2018).

Factors related to occupational stress with its consequent burnout and physical symptoms span the spectrum of the individual, the workplace and the general surrounding. Studies have elucidated specific factors responsible for occupational stress in the perioperative work environment including high workloads, with tight timelines, ensuring patient safety, inadequate communication among team members, feelings of unpreparedness for procedures, and demands for continuous learning(Sillero & Zabalegui, 2018; Van Bogaert et al., 2017; Vats et al., 2020).

The many factors operate differently in different contexts, and most of the studies have been done in developed countries. The levels and attendant factors for occupational stress have not been studied in Kenyatta National Hospital operating theatres thus the need for this study.

1.1 Problem Statement

Nurses and particularly those working in operating rooms in Kenya just like sub-Saharan Africa region are more vulnerable to occupational stress and its consequent burnout manifestations (Kokonya et al., 2014; Sillero & Zabalegui, 2018; Vats et al., 2020; Woo et al., 2020). The factors contributing to the stress often reflect context, temporal and spatial variations. The operating rooms in Kenyatta National Hospital have witnessed an increase in the workload, with average operations per month rising steadily in the last four years from 1397 in 2018, 1688 in 2019, 1398 in 2020 and 1771 in 2021 (Wanjau et al., 2012). The Hospital does not have a workload policy in the operating theatres but utilizes daily duty allocation where two nurses and one TSA (theatre service assistant) are allocated to run the theatre. Theatres are all specialized and so the above team with their surgeon and anesthetist run their day's list based on the number of booked patients for the day. Day shifts run from 8am to 5.30pm for a regular list but are many occasions when the day's list can run late into the night thereby delaying the team.

The entry of Covid 19 pandemic has complicated matters with extra demands for safety of clients and staff. The covid19 pandemic in 2020 forced KNH management to scale down the number of operations as protective measures were being put in place. This is against a background of a general freeze on the employment of nurses, in post declining from 220 in 2018 to the current 180 according to Kenyatta National Hospital staff returns of December 2021.

The hospital was chosen because it's the main referral in the country for highly specialized surgeries, running twenty-seven theatres daily and without a similar study done on operating room nurses. The Hospital runs a total of twenty-seven theatres distributed as follows- Twelve in main theatre, two trauma, two maternity, two ophthalmology, two ENT, two SOPC, one endoscopy, two 66(reproductive health) theatres and two prime care theatres. All of the above-mentioned theatres handle both emergency and electives surgeries of their specialty namely, ENT, Orthopedic, Maxillofacial, General Surgery, Plastic, Ophthalmology, Neurosurgery, Gynecology and cardiovascular surgeries.

Studies have shown various numbers of occupational stress. In Kakamega, 76% of nurses had major musculoskeletal problem when dealing with high number of patients, and 81.5% had major problem when they did not have time to pause (Olutende et al., 2022). The Covid 19 situation has seen an increase in mental illnesses among health workers in Kenya, demonstrated by a study in three hospitals in Kenya where depression, anxiety, insomnia, distress and burnout were reported in 53.6%, 44.3%, 41.1%, 31.0% and 45.8% of all participants, respectively (Shah et al., 2021).

The nurses in post have generally been complaining of stress, burn out, physical symptoms like backache and demotivation. However, these occupational stress levels and their attendant factors have not been systematically studied. This study addresses this knowledge gap by investigating occupational stress levels and their contributing factors.

1.2 Objectives

- i. To determine the influence of individual factors on occupational stress among nurses working in the operating theatres at Kenyatta National Hospital
- ii. To demonstrate the contribution of organizational factors on occupational stress among nurses working in the operating theatres at Kenyatta National Hospital
- iii. To demonstrate the association between job factors and occupational stress among nurses working in operating theatres at Kenyatta National Hospital

1.3 Research Hypothesis

- i. H₀: There is no statistically significant relationship between individual factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital
- ii. H₀: There is no statistically significant relationship between organizational factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital
- iii. H₀: There is no statistically significant relationship between job factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital

2.0 LITERATURE REVIEW

2.1 Occupational Stress

People experience occupational stress when there is a mismatch between their skills and the demands of their jobs (Beheshtifar & Nazarian, 2013). It emanates from job issues involving the interplay of the organizational structure, employer and employees (Vasantha & Santhi, 2020). Specific stressors may include work design, the organization and management of work and workers, career decisions, role conflict and ambiguity, too much or too little responsibility and toxic interpersonal interactions. In addition to this, there are the dangers of bodily harm, psychological hazards such workplace injustice, a toxic work environment, a lack of autonomy in decision-making, an unbalanced leadership effort to reward ratio, and a homework interface that discourages learning (Bailey et al., 2020; Elovainio & Virtanen, 2020).

Workplace stress arises when an individual's coping abilities are tested or overwhelmed by the demands of their job. It is possible that people who experience occupational stress are able to self-regulate by making constant adjustments to their thoughts, behaviors, and emotional responses in order to alter their perceptions of the stressor. However, others may adjust in negative ways leading to psychopathology (du Plessis & Martins, 2019; du Plessis, 2020).

Occupational stress does affect all the players involved. It undermines the organization in productivity, drains profits, and causes disruptions of normal operations. The employees are also affected due to bad physical and mental health. Studies have corroborated evidence of the undesirable consequences of occupational stress for instance leading to poor mental health (Kolstad et al., 2011; Madsen et al., 2017; Milner et al., 2014) increased health impairing behaviors e.g., increased smoking and alcoholism (Roberto & Taylor, 2020); poor physical health e.g. Obesity, coronary heart disease and hypertension (Heikkilä, 2020) and on organizational health indices (such as absenteeism, sickness absence, productivity, job satisfaction and intention to quit (Leka et al., 2010). Occupational stress has also been associated with financial losses on account of lost productivity and adverse health consequences (Hassard et al., 2018).

Occupational stress among nurses may depend in part on the medical specialty in which they are deployed. The stresses of working in an operating room are compounded by the complexity of the procedures, the need to take extra precautions to ensure patient safety, the inherent dangers of the environment (such as excessive noise, light, radiation, heat, and humidity), the volume of work to be done, the scarcity of available personnel, and the high stakes involved (Soltanmoradi et al., 2017). One study found in Iran 62% of the nurses were exposed to high stress levels (Asadi Fakhri & Asadi, 2017).

2.2 Factors Contributing to Occupational Stress

2.2.1 Individual factors

Socio demographic factors like age, sex, marital status, educational levels and work experience have variations on their effect on occupational stress. A study among nurses in Jordan revealed that high levels of burnout, as represented were positively associated with increases in age and nursing experience(Mudallal et al., 2017). However, in Iranian midwives, a systematic review showed that the experience of occupational stress was not related to mean age ($p = 0.653$), work experience ($p = 0.863$)(Rezaei et al., 2020).

On the aspect of sex differences, two studies in Iran observed two sides of the divide. In one the sex differences did not affect occupational stress levels significantly(Faraji et al., 2019) though mean occupational stress was more in male while in another, the difference in occupational stress in both sexes was significant(Sabzi et al., 2017). Other studies have found Perceived occupational stress was significantly associated with age, (Chatzigianni et al., 2018; Lee & Wang, 2002; Shen et al., 2005; Wu et al., 2007; Zhou et al., 2016).

Marital status too has been found to influence occupational stress among nurses' where the widowed/divorced/separated marital status have had significant association with stress level(Shen et al., 2005). General health score, years of experience and educational levels have been demonstrated to affect occupational stress(Chatzigianni et al., 2018; Lee & Wang, 2002; Sabzi et al., 2017; Wu et al., 2007).In KNH, socio-demographic factors were found to be strongly contributing to their burnout syndrome of all medical workers(Kokonya et al., 2014).

2.2.2 Organizational factors

The organizational factors reflect those factors that arise out of the organization structure, leadership, job processes and the environment of work. Such issues as empowerment, justice perceptions and job demands do contribute to occupational stress(Madsen et al., 2017; McVicar, 2003; Mudallal et al., 2017; Muriithi & Kariuki, 2020).Several frameworks categorize the organizational factors contributing to occupational stress. For instance the model by (Mosadeghrad, 2014) identifies seven organizational factors as organizational structure, policies and procedures, Pay and benefit, Promotion and recognition, job security, leadership style, training programs, organizational justice and shift work. A study on nurse staffing indicated that their shortages led to adverse patient outcomes and increased nurse burnout(Garrett, 2008). Another study in Iranian hospital showed that organizational factors were second only to job related factors in accounting for occupational stress. The study found strong correlation between total occupational stress and occupational stressors related to organizational policies(Mosadeghrad, 2014). Managerial issues too like leadership/management style, low relational justice and a high effort–reward imbalance, professional conflict have been the main sources of distress for nurses for many years,(McVicar, 2003) but there is disagreement as to the magnitude of their impact.

Organizational characteristics including "Nurse Manager Ability, leadership, and support of nurses," "Staffing and resources adequacy," and "Nursing foundations of quality care" were linked to all three types of burnout in a cross-sectional survey of nurses in a Spanish perioperative care unit (Sillero & Zabalegui, 2018).

Studies conducted in other hospitals in Brazil also shown that stress in this group is multidimensional. Inflexible hierarchical structures, shift work, conflicts with other healthcare professionals, a lack of adequate human and material resources, increased workload and responsibilities, ambiguous and conflicting roles, the severity of the patients, and regular exposure to suffering and death are organizational aspects related to the scope of practice that predominate (Zhou et al. 2016).

2.2.3 Job related factors

The elements particular to a profession that call for knowledge, skills, mental and physical demands, and working circumstances are referred to as job- or work-related variables (Muriithi & Kariuki, 2020). They reflect issues related to duties, responsibilities and organizational role that produce adverse consequences for an individual. They include workload, responsibility, role ambiguity, role conflict, job demands, and job identity. Other factors that are quite close to the job and the environment include working space, equipment, job hazards (Mosadeghrad, 2014; Mudallal et al., 2017) and decision latitude. Among Iranian midwives, a systematic review showed heavy workload and very little room for error in the delivery unit contributed to increased stress levels (Rezaei et al., 2020).

One systematic review showed Job strain has been found to contribute to increased risk of clinical depression [relative risk (RR) = 1.77, 95% confidence interval (CI) 1.47–2.13] (Madsen et al., 2017). In Jordanians empirical study found high levels of burnout among Jordanian nurses could be related significantly to poor work conditions, such as work overload (Mudallal et al., 2017). In Kenya both Kokonya et al., (2014) and Muriithi & Kariuki, (2020) found association between job factors and occupational stress in KNH and Pumwani hospitals respectively. Very difficult jobs, overwhelming burden, insufficient time, and emotionally exhausting activities have all been identified as barriers to achieving organizational objectives in Kenyan referral hospitals (Chumba, 2020).

2.3 Theoretical Framework

This study was guided by the Psychological Stress and Coping Theory by Lazarus and Folkman, (1984) as cited in Cooper & Quick, (2017); referred to as The Transactional Theory Of Stress And Coping. The theory contends that people do continuously evaluate environmental cues. When stimuli are assessed as dangerous, difficult, or damaging (i.e., stressors), emotions are triggered, and the ensuing discomfort sparks coping mechanisms to control emotions or the stressor itself. Coping processes produce outcomes which may reflect changes in how the person relates with the environment. The results of the evaluation may be positive, negative, or unresolved. Positive emotions are evoked when stresses are addressed favorably, but negative feelings are evoked when stressors are left unresolved or resolved unfavorably, leading the person to pursue more coping mechanisms in an effort to alleviate the stressor.

The coping strategy adopted tends to reflect many variables including environmental circumstances and one's personality. Further, the consequences of either coping strategy vary. Those whose stressors are amenable to management will benefit most from problem-oriented coping strategies, and in particular from planned problem solving, which is the most popular coping strategy. This is followed by the emotion based strategy of positive reappraisal that has been shown to lead to higher emotional and behavioral competencies (Isa et al., 2019).

Contextually, the theatre environment is awash with what literature considers risk factors (Woo et al., 2020). But as to whether individuals develop occupational stress and the consequent burn out is highly dependent on how they appraise the risks and their adaptive mechanisms. The experience of stress may be influenced more by the perceived level of the stressor and the resilience than by the experience of the stressor itself. In similar fashion, this theoretical framework may be used to measure, intervene with, and evaluate an individual's dealing with psychological stress (Matthieu & Ivanoff, 2006). It offers a framework for a more holistic understanding of stress as a relationship between the mind and the body, as well as the nature of stress, its contributing variables, and the physiological and psychological

impacts. Thus, the study focused on the levels of occupational stress in relation to how individual nurses perceive the individual, organizational and job-related factors.

2.4 Conceptual Framework

The dependent variable was occupational stress levels measured by determining the level of manifestation of stress reflecting the affective domain, physical, behavioral domain and the levels of burnout which measures perceptions of performance effects understating of self and cynicism as a consequence of work demands.

The independent variables are the individual factors having the domains of socio-demographic variables like age, gender, religion, marital status, and residence; the professional factors including the highest qualification, experience and the internal factors that reflect issues of personality and coping. The organizational factors including the social environment, the physical factors and the organizational policies in regard to workload, duty assignment rewards and sanctions. The third independent variable is about the job demands which include workload pressure, the job risks, the duration of procedures, chemical and physical exposure and their consequent risks.

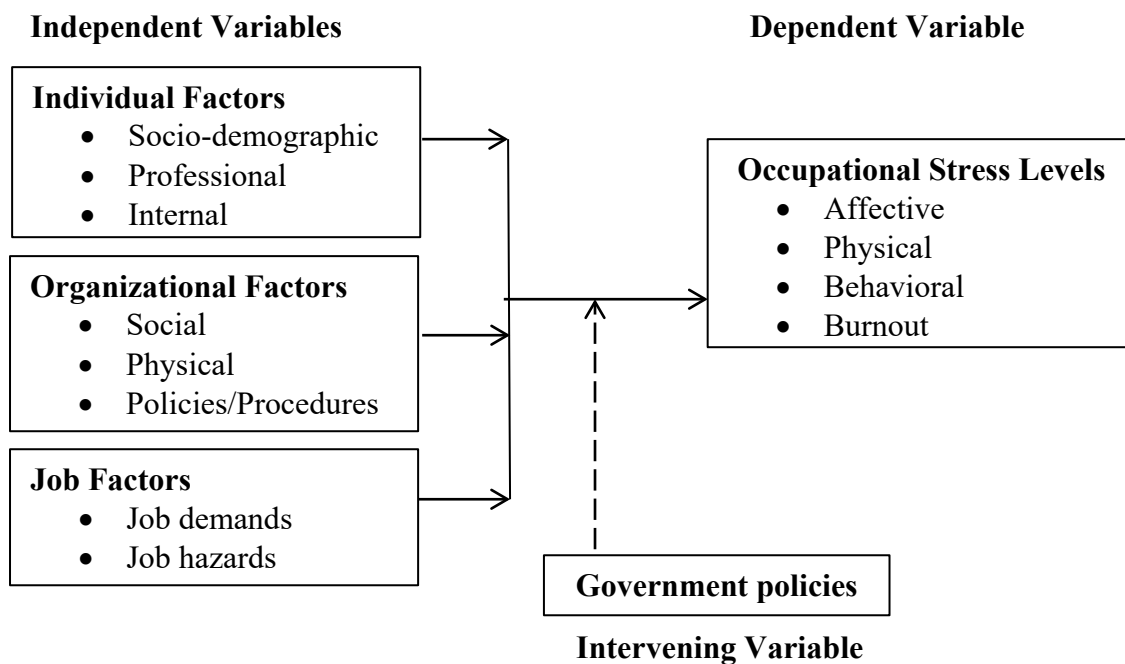


Figure 1: Conceptual Framework

Source: Researcher (2021)

3.0 METHODOLOGY

This was a descriptive cross-sectional survey utilizing quantitative approaches because it involved gathering data at a point in time and did not involve any intervention or manipulation of respondents nor any control (Kumar, 2019). Research was conducted in the operating rooms at Kenyatta National Hospital. The target population were the operating room nurses totaling to one hundred and eighty nurses (180). The study included all qualified nurses working in the operating theatre at Kenyatta National Hospital and were willing to participate in the study and excluded student nurses and theatre nurses that were off duty, on leave during the data collection period and those unwilling to participate in the study. The sample size was arrived at through the utilization of Fisher's formula since the population size was less than 10,000 (180 nurses) as follows:-

$$nf = n/1 + n/N$$

Where nf = the desired sample size (population less than 10,000)

n = the desired sample size (population is more than 10,000)

N = target population

Desired sample size = 384

$$\frac{384}{1 + \frac{384}{180}} = \frac{384}{1 + 2.13} = \frac{384}{3.13}$$

= 122.68

= 122

Desired sample size was 122 Nurses.

Simple random sampling method was used to select the study subjects. A questionnaire was administered to all nurses working in the operating theatres. Cronbach's alpha coefficient was used to determine the consistency of quantitative test results; a reliability value of 0.7 or more is considered minimum acceptable for use in social science research. All the study variables achieved the reliability threshold of at least 0.7. Descriptive statistics were performed on the quantitative data and shown in tables with frequency counts using SPSS version 25. A correlation analysis was used to look for connections between free and fixed factors. Analysis of variations among different subsets of clients was done by one way ANOVA at 5% significance level ($\alpha=0.05$).

Approval for the conduct of the study was sought from the Mt Kenya University's Research and Ethics Committee, The Kenyatta National Hospital/ University of Nairobi Ethics Research Committee and NACOSTI. Permission to collect data was sought from the Senior Director Clinical Services KNH, HOD Anesthesia and theatres, HOU Theatres and Senior Assistant Chief Nurse in charge theatres. Respondents' informed written consent was sought individually by the research assistant.

4.0 FINDINGS AND DISCUSSIONS

The study sampled 122 nurses working in the operating theatre at Kenyatta National Hospital to whom questionnaires were administered. Of the 122 distributed questionnaires 103 were complete and obtained back making a response rate of 84.4%.

4.1 Individual Factors and Occupational Stress

The study sought to determine the influence of individual factors on occupational stress among nurses working in the operating theatres at Kenyatta National Hospital. The factors were either social demographic or internal factors.

4.1.1 Individual Social Demographic Factors

A one-way ANOVA was conducted to test the mean difference across the groups in the social demographic factors at a 5% significance level ($\alpha=0.05$).

Table 1: One Way ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Gender	Between Groups	16.366	1	16.366	37.009	.000
	Within Groups	44.664	101	.442		
	Total	61.030	102			
Marital status	Between Groups	.334	3	.111	.182	.909
	Within Groups	60.696	99	.613		
	Total	61.030	102			
Age	Between Groups	6.945	3	2.315	4.238	.007
	Within Groups	54.085	99	.546		
	Total	61.030	102			
Education	Between Groups	3.806	2	1.903	3.326	.040
	Within Groups	57.224	100	.572		
	Total	61.030	102			

Source: Field Data (2022)

A one-way ANOVA was done between gender and occupational stress. From the findings $F=37.009$, $P=0.00$. The mean gender is significantly different. There was a significant difference in occupational stress between the two genders.

The findings on the one-way ANOVA between marital and occupational stress show that $F=.182$, $P=0.909$. The mean between marital status groups is not significantly different. There was no difference in occupational stress between marital status groups.

The findings on the one way ANOVA between education and occupational stress show that $F=4.238$, $P=0.007$. The mean between age groups is significantly different. There was a difference in occupational stress between the age groups.

The findings on the one way ANOVA between age groups and occupational stress show that $F=3.326$, $P=0.040$. There is a difference across the means. Thus there was a difference in occupational stress between the education groups.

4.1.2 Individual Internal factors

The respondents were requested to rate their perception in regard to their job on provided aspects of individual internal factors. From the findings to a very great extent, the majority of the respondents (60.2%) would like to do a perfect job, their family is quite supportive (64.1%), and they care a lot about the department's performance (70.9%), they feel in control of their life (53.4%), they feel quite able at their job tasks (51.5%) and that they received the best training for this job (53.4%). To a very great extent, most of the respondents (45.6%) are deployed most appropriately and to a great extent, most respondents (49.5%) are quite satisfied with their job.

Table 2: Individual Internal Factors

	N	Low extent	Mild extent	Moderate extent	Great extent	Very great extent
I would like to do a perfect job	103	0	0	1(1%)	40(38.8)	62(60.2%)
My family is quite supportive	103	0	1(1%)	8(7.8%)	28(27.2%)	66(64.1%)

I care a lot about the department performance	103	0	0	4(3.9%)	26(25.2%)	73(70.9%)
I feel in control of my life	103	1(1%)	3(2.9%)	8(7.8%)	36(35%)	55(53.4%)
I feel quite able at my job tasks	103	0	1(1%)	4(3.9%)	45(43.7%)	53(51.5%)
I received the best training for this job	103	0	0	11(10.7%)	37(35.9%)	55(53.4%)
I am deployed most appropriately	103	7(6.8%)	4(3.9%)	14(13.6%)	31(30.1%)	47(45.6%)
I am quite satisfied with my job	103	0	2(1.9%)	12(11.7%)	51(49.5%)	38(36.9%)

Source: Field Data (2022)

4.2 Contribution of Organizational Factors on Occupational Stress

The study sought to demonstrate the contribution of organizational factors on occupational stress among nurses working in the operating theatres at Kenyatta National Hospital.

Table 3: Organizational factors and occupational stress

	N	Not at all	Mild extent	Moderate extent	Great Extent	Very Great extent
There is a serious staff shortage	103	0(0%)	1(1%)	36(35%)	11(10.7%)	55(53.4%)
The staff shortages affect us badly	103	1(1%)	1(1%)	30(29.1%)	12(11.7%)	59(57.3%)
The management is unsupportive	103	40(38.8%)	8(7.8%)	34(33%)	21(20.4%)	0(0%)
The work shifts are planned unfairly	103	59(57.3%)	8(7.8%)	22(21.4%)	7(6.8%)	7(6.8%)
The hospital pay policies are unfair	103	34(33%)	17(16.5%)	23(22.3%)	10(9.7%)	19(18.4%)
The hospital Promotion policies are unfair	103	37(35.9%)	16(15.5%)	17(16.5%)	15(14.6%)	18(17.5%)
The departmental supervisors handle staff unfairly	103	53(51.5%)	15(14.6%)	21(20.4%)	11(10.7%)	3(2.9%)
There are no redress mechanisms	103	32(31.1%)	19(18.4%)	30(29.1%)	11(10.7%)	11(20.7%)
There are never debriefing sessions	103	37(35.9%)	15(14.6%)	14(13.6%)	14(13.6%)	23(22.3%)
There are never meetings to air our views	103	43(41.7%)	26(25.2%)	11(10.7%)	12(11.7%)	11(10.7%)
Our plight is never listened to	103	56(54.4%)	15(14.6%)	12(11.7%)	13(12.6%)	7(6.8%)
Disciplinary rules are unfair	103	44(42.7%)	24(23.3%)	18(17.5%)	10(9.7%)	7(6.8%)
Disciplinary processes are discriminatory	103	56(54.4%)	24(23.3%)	9(8.7%)	8(7.8%)	6(5.8%)
Managerial bullying is rampant	103	54(52.4%)	34(33%)	6(5.8%)	8(7.8%)	1(1%)

Gender discrimination is rife	103	67(65%)	17(16.5%)	3(2.9%)	6(5.8%)	10(9.7%)
I feel I have much to be proud of	103	28(27.2%)	6(5.8%)	12(22.7%)	40(38.8%)	17(16.5%)
I feel insecure in my job	103	62(60.2%)	24(23.3%)	5(4.9%)	3(2.9%)	9(8.7%)

Source: Field Data (2022)

The majority of the respondents perceived that to a very great extent there is a serious staff shortage (53.4) and that the staff shortages affect them badly (57.3). To a great extent, most of the respondents felt they have much to be proud of (38.8%). The majority of the respondents rated not at all that gender discrimination is rife (65%), they feel insecure in their job (60.2%), the work shifts are planned unfairly (57.3), and their plight is never listened to (54.4%), disciplinary processes are discriminatory (54.4%), the managerial bullying is rampant (52.4%) and the departmental supervisors handle staff unfairly (51.5%). In addition, most of the respondents felt not at all that disciplinary rules are unfair (42.7%), there are never meetings to air their views (41.7%), the management is unsupportive (38.8%), the hospital promotion policies are unfair (35.9%), there are never debriefing sessions (35.9%), the hospital pay policies are unfair (33%) and that there are no redress mechanisms (31.1%).

4.3 Job Factors and Occupational Stress

The study further sought to demonstrate the association between job factors and occupational stress among nurses working in operating theatres at Kenyatta National Hospital. The respondents rated their perception on provided aspects.

Table 4: Job factors and occupational stress

	N	Not at all	Mild extent	Moderate extent	Great Extent	Very Great extent
My job is quite demanding	103	4(3.9%)	11(10.7%)	13(12.6%)	20(19.4%)	55(53.4%)
My job is very exhausting	103	0(0%)	14(13.6%)	18(17.5%)	26(25.2%)	45(43.7%)
Our clients are quite demanding	103	16(15.5%)	15(14.6%)	27(26.2%)	20(19.4%)	25(24.3%)
Our clients are nagging	103	41(39.8%)	29(28.2%)	24(23.3%)	2(1.9%)	7(6.8%)
My job roles are unclear	103	59(57.3%)	7(6.8%)	14(13.6%)	8(7.8%)	15(14.6%)
I have no decision latitude	103	63(61.2%)	7(6.8%)	5(4.9%)	19(18.4%)	9(8.7%)
I have no professional power	103	56(54.4%)	12(11.7%)	19(18.4%)	7(6.8%)	9(8.7%)
My opinions are never respected	103	56(54.4%)	15(14.6%)	11(10.7%)	4(3.9%)	17(16.5%)
The work shifts are inconveniencing	103	68(66%)	12(22.7%)	5(4.9%)	9(8.7%)	9(8.7%)
The work shifts are planned unfairly	103	63(61.2%)	22(21.4%)	4(3.9%)	10(9.7%)	4(3.9%)
The working space is very limited	103	56(54.4%)	19(18.4%)	10(9.7%)	12(11.7%)	6(5.8%)
The working room temperatures are quite harsh	103	42(40.8%)	17(16.5%)	15(14.6%)	6(5.8%)	23(22.3%)

The working room temperatures are quite high/low	103	44(42.7%)	16(25.5%)	21(20.4%)	7(6.8%)	15(14.6%)
The working room is high risk of infection	103	46(44.7%)	29(28.2%)	8(7.8%)	5(4.9%)	15(14.6%)
The chemical exposure risk is very high	103	49(47.6%)	24(23.3%)	5(4.9%)	16(25.5%)	9(8.7%)
My job tasks are boring	103	60(58.3%)	12(11.7%)	14(13.6%)	13(12.6%)	4(3.9%)
My job tasks are very strenuous	103	28(27.2%)	18(17.5%)	23(22.3%)	15(24.6%)	19(18.4%)

Source: Field Data (2022)

From the findings to a very great extent, the majority of the respondents' job is quite demanding (53.4%) and to most respondents (43.7%), their job is very exhausting. Most respondents (26.2%) indicated to a moderate extent that their clients are quite demanding.

The majority of the respondents noted not at all that; the work shifts are inconveniencing (66%), they have no decision latitude (61.2%), the work shifts are planned unfairly (61.2%), and their job tasks are boring (58.3%), their job roles are unclear (57.3%), they have no professional power, their opinions are never respected and that the working space is very limited (54.4% in each case).

In addition, most of the respondents indicated not at all that the chemical exposure risk is very high (47.6%), the working room is at high risk of infection (44.7%), the working room temperatures are quite high/low(42.7%), the working room temperatures are quite harsh (40.8%), their clients are nagging (39.8%) or their job tasks are very strenuous (27.2%).

4.4 Occupational Stress

The respondents rated some aspects relating to occupational stress among them in operating theatres at Kenyatta National Hospital.

Table 5: Occupational Stress

	N	Not at all	Mild extent	Moderate extent	Great Extent	Very Great extent
My work wears /exhausts me emotionally	103	36(35%)	12(11.7%)	21(20.4%)	20(19.4%)	14(13.6%)
I always have stressful days at work	103	43(41.7%)	20(19.4%)	17(16.5%)	19(18.4%)	4(3.9%)
I am always in a bad mood	103	73(70.9%)	10(9.7%)	9(8.7%)	11(10.7%)	0(0%)
I don't really care what happens to some patients	103	93 (90.3%)	6(5.8%)	0(0%)	0(0%)	4(3.9%)
I don't think this job is meant for me	103	91(88.3%)	12(11.7%)	0(0%)	0(0%)	0(0%)
These days I feel I don't understand myself well	103	81(78.6%)	6(5.8%)	5(4.9%)	11(10.7%)	0(0%)
I am only in this job because I have no alternative	103	83(80.6%)	17(16.5%)	0(0%)	0(0%)	3(2.9%)
I just work to end the day	103	86(83.5%)	9(8.7%)	0(0%)	0(0%)	8(7.8%)
My potential is not well utilized	103	55(53.4%)	18(17.5%)	8(7.8%)	11(10.7%)	11(10.7%)

My performance has waned due to job pressure	103	69(67%)	11(10.7%)	15(14.6%)	4(3.9%)	4(3.9%)
My job is quite depressing	103	58(56.3%)	24(23.3%)	13(12.6%)	2(1.9%)	6(5.8%)
My job makes me anxious always	103	69(67%)	21(20.4%)	7(6.8%)	4(3.9%)	2(1.9%)
My job has caused body aches	103	36(35%)	32(31.1%)	6(5.8%)	12(11.7%)	17(16.5%)
My job has badly affected my weight	103	61(59.2%)	9(8.7%)	23(22.3%)	6(5.8%)	4(3.9%)
My job badly affects my eating patterns	103	42(40.8%)	17(16.5%)	6(19.4%)	20(19.4%)	18(17.5%)
My job causes me to overfeed/underfeed	103	46(44.7%)	12(11.7%)	6(5.8%)	12(11.7%)	27(26.2%)

Source: Field Data (2022)

The majority of the respondents indicated not at all that they don't really care what happens to some patients (90.3%), they don't think this job is meant for them (88.3%), they just work to end the day (83.5%), they are only in this job because they have no alternative (80.6%), these days they feel they don't understand themselves well (78.6%), they are always in a bad mood (70.9%), their performance has waned due to job pressure (67%), their job makes them anxious always (67%), their job has badly affected their weight (59%) and that their job is quite depressing (56.3%) and their potential is not well utilized (53.4%). More so, from most of the respondents nor at all does their job causes them to overfeed/underfeed (44.7%), always have stressful days at work (41.7%), their job badly affects their eating patterns (40.8%), work wears /exhausts them emotionally (35%), their job has caused body aches (35%).

4.5 Correlation Analysis

To assess the association between each of the independent variables (individual factors, organizational factors and job factors) and the dependent variable (occupational stress level), a Pearson correlation analysis was conducted. The correlation outputs were also used to test the study hypothesis.

Table 6: Correlation Analysis

		Occupational Stress	Individual Factors	Organizational Factors	Job Factors
Occupational Stress	Pearson Correlation	1	-.110	.716**	.874**
	Sig. (2-tailed)		.269	.000	.000
	N	103	103	103	103
Individual Factors	Pearson Correlation	-.110	1	-.226*	-.213*
	Sig. (2-tailed)	.269		.022	.031
	N	103	103	103	103
Organizational Factors	Pearson Correlation	.716**	-.226*	1	.780**
	Sig. (2-tailed)	.000	.022		.000
	N	103	103	103	103
Job Factors	Pearson Correlation	.874**	-.213*	.780**	1

	Sig. (2-tailed)	.000	.031	.000	
	N	103	103	103	103

** . Correlation is significant at the 0.01 level (2-tailed).
* . Correlation is significant at the 0.05 level (2-tailed).

Source: Field Data (2022)

From the Pearson correlation, there was a weak negative insignificant association between internal individual factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital ($r=-.110$, $p=.269$). The study, therefore, fails to reject the null hypothesis and holds that there is no statistically significant relationship between individual internal factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital.

There was a strong positive significant association between organizational factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital ($r=.716$, $p=.000$). The study, therefore, rejects the null hypothesis and holds that there is a statistically significant relationship between organizational factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital.

There was a strong positive significant association between job factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital ($r=.874$, $p=.000$). The study, therefore, rejects the null hypothesis and holds that there is a statistically significant relationship between job factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital.

4.6 Discussion

The study revealed that there was a difference in occupational stress between the gender, education and age groups. However, there was no difference in occupational stress between marital status groups. The findings demonstrated that socio demographic characteristics like age, sex, marital status and educational attainment have varying effects on occupational stress. Corroborating with the study findings, a study by Mudallal et al. (2017) among nurses in Jordan revealed that high levels of burnout were positively associated with increases in age and nursing experience. However, inconsistent with the findings, a systematic review among Iranian midwives, showed that the experience of occupational stress was not related to mean age (Rezaei et al., 2020). The study found no association between occupational stress and marital status. This disagrees with a study by Shen et al. (2005) who established that marital status has been found to influence occupational stress among nurses' where the widowed/divorced/separated marital status have had a significant association with stress level.

The study found that there is no statistically significant relationship between individual internal factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital. These findings are inconsistent with the establishments by Kolstad et al. 2011) who support the idea that a key causative factor in the relationship between the workplace environment and depression is the individual worker's emotional and cognitive perception and processing of working conditions and contribute to workplace stress.

The study found that there is a statistically significant relationship between organizational factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital. Similarly, studies by Madsen et al. (2017); Muriithi and Kariuki, (2020) established that the organizational factors are those that originate from the organization's structure, leadership, job procedures, and work environment. Issues such as empowerment, views of fairness, and job expectations all contribute to occupational stress.

The results further revealed that there is no managerial bullying or unfair handling by the departmental supervisors. Similarly, research conducted in other Brazilian hospitals by Zhou et al. (2016) revealed that stress in this group is related to organizational aspects related to the scope of practice predominate, such as rigid hierarchical structure, shift duties, conflict with other health care workers, insufficient human and material resources.

The findings revealed that there is a serious staff shortage and that the staff shortages affect them adversely. The findings agree with Garrett, (2008) whose study on nurse staffing indicated that their shortages led to adverse patient outcomes and increased nurse burnout. The findings also show that the nurses have security in their job, the work shifts are fairly planned and the disciplinary processes are not discriminatory. The findings corroborate with the findings by Mosadeghrad, (2014) who identified that organizational factors such as organizational structure, policies and procedures, pay and benefit, promotion and recognition, job security, leadership style, training programs, organizational justice and shift work contribute to occupational stress.

The study established that nurses' jobs are quite demanding and to most, their job is very exhausting. To a moderate extent, most clients are quite demanding. The findings agree with Muriithi and Kariuki, (2020) that job-related factors are the aspects specific to a job that require knowledge, skills, mental and physical demands and working conditions.

The work shifts are convenient and fairly planned and job roles are clear. In addition, the opinions of the nurses are respected. In addition, there is no high chemical exposure risk or risk of infection in the working rooms. Similarly, other scholars such as Mosadeghrad, (2014) and Mudallal et al. (2017) reported that other factors that are quite close to the job and the environment include working space, equipment and job hazards.

The study found that there is a statistically significant relationship between job factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital. The findings concurs with the findings in a systematic review by Madsen et al. (2017) which showed that job strain contribute to increased risk of stress. Similarly, in a Jordanians empirical study by Mudallal et al. (2017) high levels of burnout among Jordanian nurses could be related significantly to job related factors such as poor work conditions and work overload. Further, in corroboration with the findings, Muriithi and Kariuki, (2020) found an association between job factors and occupational stress in Kenyan referral Hospitals characterized by heavy workload, inadequate time and emotionally draining duties.

5.0 CONCLUSIONS

The study concludes that there are mixed findings on the association between individual factors and occupational stress. There was a difference in occupational stress between the gender, education and age groups. However, there was no difference in occupational stress between marital status groups. There was no statistically significant relationship between individual internal factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital.

The study concludes that there was a statistically significant relationship between organizational factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital. There is a serious staff shortage which affects the nurses badly. The nurses have much to be proud of and there is no gender discrimination. In addition, the nurses feel secure in their job.

The study finally concludes that there is a statistically significant relationship between job factors and occupational stress among nurses working in the operating theatres at Kenyatta National Hospital. Nursing jobs are quite demanding and very exhausting. Moderately the clients are quite demanding. The study also concludes that the work shifts are convenient and

fairly planned and the nurses have decision latitude. The job tasks are not boring and are clear. The opinions of the nurses are respected and the working space is not limited. There are no high chemical exposure risks or high risk of infection in the working room.

6.0 RECOMMENDATIONS

The study recommends that the Management of Kenyatta National Hospital should facilitate and provide training programs for the nurses such as career seminars and mentorships. This will aid in the development of the nurses and equip them with more skills to perform their job tasks eventually reducing their occupational stress levels.

The KNH management should ensure that they provide professional development opportunities such as scholarship opportunities.

The Management of Kenyatta National Hospital should take measures to recruit more nurses to the facility. This will ease the work overload of the nurses and thus reduce occupational-related stress.

The study also recommends that to ensure that nurses' retention in the hospital remains high, the workload should be evenly distributed among nurses, they should have access to appropriate social welfare facilities, and performance evaluations should result in promotions or other forms of recognition.

The study further suggests that teamwork and collaboration between health professionals working within the same department should be encouraged to reduce job exhaustion and ease the job demands. In addition, the management should undertake wellness and retreat programs to ensure that the nurses have rest and restorations times.

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