



The Status of Occupational Health and Safety among Nurses in Kapkatet Sub County Hospital in Kericho County

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Abstract

INTRODUCTION

Occupational health and safety in the health sector relates to the safety, health, and welfare, of the various cadres of health care workers, in their workplace. It is, therefore, important to identify and reduce hazardous exposures in the hospital environment as it influences both the health of nurses and also affects the care of the patients. We sought to determine the occupational safety and health status of nurses in Kapkatet sub-county hospital in Kericho County, Kenya.

MATERIALS AND METHODS

This was a cross-sectional descriptive study focusing on nurses working at Kapkatet sub-county hospital. We used the Census sampling method and involved all the nurses in the facility. We used a structured questionnaire with both close-ended and open-ended questions to collect data from both nurses on duty and off duty. This questionnaire was pre-tested at the Kericho county referral hospital and data was analysed using Statistical Package for Social Science (SPSS) version 25.0. Statistical significance was set at a p-value of 0.05.

RESULTS

The prevalence of work-related illnesses was 64% with back pain being the most common at 46%, needle prick illnesses being 27% and latex allergy affecting 15% of nurses. Hospital safety measures and working hours were associated with occupational illnesses yet individual factors were not associated with the development of occupational illnesses.

CONCLUSION

The prevalence of occupational and safety illnesses was high at 64%. There was adherence to occupational health and safety precautions although there was poor adherence to lifting techniques and proper sharps disposal. Hospital safety measures and working hours were associated with occupational illnesses. Individual factors were not associated with occupational health illness.

Recommendations

We recommend that the stakeholders in the health fraternity provide nurses with adequate personal protective equipment; nurses adhere to safety protocols and attend continuous refresher courses on lifting techniques. Hospitals should also employ porters to assist nurses in the movement of patients and medical supplies.

Keywords: Occupational Health, Health and Safety, Nurses

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Introduction

Occupational health and safety is a diverse field stressed over the security, well-being, health and safety of individuals at work. Such work-related injuries and diseases among medical caretakers, specifically nurses are ubiquitous in developing nations. The key well-being issues affecting this workforce include needle stick injuries, work environment brutality, and musculoskeletal wounds identified with patient handling (1). There are concerns about the amount of work, working hours, job strain, and exhaustion faced by this group of workers (1). This concern is significant for nurses because it may cause them to quit the profession adding to labour force deficiencies.

A World Health Organization (WHO) study on the most dominant work-related risk factors confirmed that unhealthy working settings contribute to at least 1.6% of the burden of disease in the European region (3).

Notable findings from North America and Europe indicate that 41% of respondents had experienced work-related injuries in the preceding year while 48% had experienced an illness resulting from nursing duties. Nearly half (44%) of them felt only somewhat safe or not safe at all in their work environment, and 38% reported not being adequately informed by employers about work hazards (2).

Nurses in Africa are likely to suffer needle prick injuries two to four times per year on average. For instance, countries like Nigeria, Tanzania and South Africa report 2.10 injuries per health worker in the workplace (4). In Kenya, despite the existence of labour laws such as the Health and Occupational Safety Act, of 2007, the health and safety situation has been less than satisfactory (5). Unfortunately, the idea of health and safety in the workplace seems to be emphasized only in organizational policy statements while non-existent in practice.

While studying occupational hazards is critical in enhancing the safety of nurses while at the workplace, limited studies have been carried out in hospitals in Bureti, hence the need of carrying out this study, particularly in Bureti.

Therefore, the researcher sought to find out the prevalence of occupational health hazards among nurses and what predisposed them to the increasing burden of backache among other occupational health hazards. The results of the study will give guidance on reducing the growing burden of backache and other occupational health hazards among nurses.

Materials and Methods

Study design and area

This was a cross-sectional descriptive study. It was conducted in Kapkatet sub-county hospital. This hospital is a large government-managed hospital located in Kapkatet town in Kericho county along Kericho –Sotik highway. Currently, it is an accredited teaching and referral hospital.

Study population

There is a total population of 103 nurses working at Kapkatet sub-county hospital. We employed the Census sampling method which ensured that all the nurses were involved in this study. We included all nurses whether on duty or off-duty at the time of data collection while excluding nurses with less than three months of work experience in a hospital set-up.

Data collection tool and procedure

The data was collected with the help of two research assistants who were former nurse interns. A semi-structured questionnaire was distributed to participants, collecting data on gender, department of work, working hours, incidences of injury at work and hospital safety measures among others. We observed the nurses in the hospital and completed a checklist of the nurses' practices across the facility. The



participant observation focused on four main areas including hand hygiene, use of PPEs, instrument processing and waste management.

Data quality assurance

The questionnaire was pre-tested in Kericho county referral hospital to ensure that it was yielding the required results consistently.

Data analysis

The study generated quantitative data. The data were entered into the database excel sheet, and then imported to Statistical Package for Social Science (SPSS) version 25.0. We used Chi-square to analyse relationships between categorical variables in our data set.

Binary logistic regression was used to analyze the association between health system factors and occupational health safety and to analyse the relationship between individual factors and occupational health safety. A p-value of below 0.05 meant that the null hypothesis was discarded.

Ethical consideration

Ethical Approval to conduct this study was obtained from the Ethics and research committee of the Kenyatta National Hospital/the University of Nairobi and from the Kapkatet sub-county hospital to conduct the study in said hospital.

Table 1:
Demographic Information

Variable N=100	Frequency (%) or Mean (SD)
Participants Age	34.45 (8.03)
Participant's working years	9.91 (8.45)
Number of working hours per week	41.4 (9.01)
Participant's Sex	
Male	20 (20%)
Female	80 (80%)
Participant's marital status	
Single-never married	12 (12%)
Married	84 (84%)
Divorced	1 (1%)
Widowed	3 (3%)
Participant's nursing cadre	
Enrolled nurse	2 (2%)
Diploma nurse	88 (88%)
Degree nurse	7 (7%)
Other	3 (3%)
Participant's nursing cadre other	
General cadre	97 (97%)
Higher Diploma in Oncology	1 (1%)
KRNA	1 (1%)
Nephrology (Higher Diploma)	1 (1%)
Participant's unit	
Maternity	25 (25%)
General ward	21 (21%)
Surgical unit	2 (80%)
Paediatrics	16 (16%)
Casualty	8 (8%)
Theatre	14 (14%)
Outpatient department	12 (12%)
Dental unit	1 (1%)
Psychiatric clinic	1 (1%)



Results

Response rate

Out of the 103 nurses working at Kapkatet sub-county hospital, 100 completed the survey questionnaire giving a response rate of 97%.

Demographic Characteristics

A majority (80%) of the respondents were female with a mean age of 34.45 years

(95% CI; 32.9 to 36.0). The working experience ranged from 0-to 38 years with a mean of 38 approximately ten years (9.9; 95% CI: 8.2 to 11.6). The mean working hours per week was 41.4 (95% CI: 39.3 to 43.5). The majority (84%) of the respondents were married and had diploma qualifications (88; 88%). Three had specialized diploma specializations in oncology, nephrology and anesthesiology, respectively. Table 1

Table 2:
Awareness of Occupational Health Safety

Variable N=100		Frequency (Percentage%)
Participant's awareness of occupational health and safety	Yes	90 (90%)
	No	10 (10%)
Participant's awareness of occupational health and safety elements	Yes	53 (20%)
	No	47 (20%)
Trained in occupational health and safety	Yes	20 (20%)
	No	80 (20%)
	2012	1 (1%)
	2013	1 (1%)
	2015	2 (2%)
	2016	2 (2%)
	2017	2 (2%)
	2018	2 (2%)
	2019	1 (%)
	2020	5 (5%)

Table 3:
Hand washing Practice

Hand hygiene by washing with water and soap or using an alcohol-based hand rub is done N=100		Frequency (Percentage%)
Before and after any procedure	Yes	100 (100%)
	No	0 (0%)
Before putting on gloves and after removing them	Yes	96 (96%)
	No	4 (4%)
After handling contaminated objects i.e. used instruments	Yes	99 (99%)
	No	1 (1%)
Before preparing medication	Yes	97 (97%)
	No	3 (3%)
Before feeding the patient	Yes	98 (98%)
	No	2 (2%)



Awareness of occupational health and safety

The majority 90% of the respondents indicated that they were aware of occupational health and safety; 53% were aware of the Occupational Health and Safety elements and a fifth of the respondents (20%) had undergone training on Occupational Health and safety. The average number of nurses undergoing training in occupational Health and Safety per year was two (2). Table 2.

Occupational health and safety practices

Hand washing

On observation, all the nurses were practising hand washing before and after every procedure. The majority of them (96%) washed their hands before putting on gloves and removing them; after handling contaminated

objects (used instruments); before preparing medication; and before feeding a patient. Table 3.

Use of Personal Protective Equipment

The use of personal protective equipment was noted to be very good. The majority of the nurses (99; 99%) wore gloves when in contact with blood or body fluids; wore gowns during procedures; protected their mouths, noses and eyes during splash procedures; and decontaminated instruments after use. Table 4.

Waste Management

There was good practice in waste management. Needles were not recapped nor bent after use and were disposed of immediately. The practice was seen in 98% of the respondents. However, 63% did not dispose of sharps boxes at $\frac{3}{4}$ full as required. Table 5.

Table 4:
Use of Personal Protective Equipment

Variable	N=100	Frequency (Percentage %)
Gloves are worn when contact with blood or body fluids	Yes	99 (99%)
	No	1 (1%)
Gowns are worn during procedures	Yes	98 (98%)
	No	2 (2%)
Mouth, nose and eye protection is used during splash procedures	Yes	94 (94%)
	No	6 (6%)
Instrument Processing		
Variable	N=39	
Used instruments are decontaminated after use	Yes	39(39%)
	No	0 (%)

Table 5:
Sharps

Variable	N=100	Frequency (Percentage %)
Needles are not recapped or bent after use and needle and syringe are disposed of immediately after use	Yes	98 (98%)
	No	2 (2%)
Puncture-resistant containers for sharps are disposed of when $\frac{3}{4}$ full	Yes	37 (37%)
	No	63 (63%)



Patient Handling

All the nurses present during the time of observation (26%; n=26) observed proper body mechanics while moving and lifting the patients (knee bending, keeping straight back and keeping feet apart). Only 48% (n=48) of the nurses indicated that the stretchers and wheelchairs were in good working condition. There were no porters in the hospital. Lifting devices were not available in the hospital. Ninety-eight per cent of the health workers indicated that safety signs were available and well displayed in the hospital. Table 6.

Injection Safety

Injection safety was well observed in the hospital. The nurses indicated that sharp receivers were available (98%) and patients were prepared adequately before they received injections (97%).

Prevalence of work-related illnesses

The prevalence of occupational illnesses was 64%. Back pain was the most common illness at 46%. Needle prick injuries were 27%, latex allergy 15% and 2% acquired Tuberculosis during the course of duty. Two respondents

reported drug contamination while none of the respondents acquired Hepatitis. Twenty respondents indicated they acquired work-related illness once, seventeen respondents indicated twice, eleven respondents indicated thrice and twenty reported having acquired work-related illnesses more than thrice. The hospital had recorded five cases of COVID-19 infections among nurses. Table 8.

Health system factors affecting occupational health and safety

Slightly less than half of the respondents did not report to the hospital management (44%; n=44) and (56%; n=56) reported to the hospital management. Over half of the respondents (57% n=57) received treatment for the illness while (43%; n=43) did not receive treatment. Respondents were asked to rate the treatment on a scale of 1 to 10, the majority rated the treatment as average at 36%, another 36% rated it low, and those who rated it high were 36%. The majority 74% of the respondents had Hepatitis B vaccination and 26% had not.

Table 6:
Patient Handling Practices

Variable N=100	Frequency (Percentage %)	
Observed proper body mechanics while moving and lifting patients-knee bending	Yes	26 (26%)
	No	0 (%)
Observed proper body mechanics while moving and lifting patients-keeping straight back	Yes	26 (52%)
	No	0 (0%)
Observed proper body mechanics while moving and lifting patients-Feet apart	Yes	26 (52%)
	No	0 (0%)
Stretchers and wheelchairs in good working condition	Yes	48 (48%)
	No	52 (52%)
Are there porters in the hospital	No	100 (100%)
Presence of lifting devices	No	100 (100%)
Presence of safety signs	Yes	98 (98%)
	No	2 (98%)



On the availability of hospital surveillance systems, slightly over half (51%) said it was available and 49% said no. Respondents were also asked to rate the hospital's safety measures, the majority said it was average, 41%, those who rated high were 32%, and 27% rated as low.

Association between Health facility factors and development of Occupational illness

Development of occupational health illness was not significantly associated with the number of working hours per week (OR: 0.991; 95%CI: 0.953 to 1.031; p-value 0.665). The department/unit of deployment was not significantly associated with the development of occupational health illness (p-value 0.792). Training on health and safety did not significantly affect ODDS of developing the

illnesses (p-value 0.917; OR: 0.947; 95%CI: 0.34 to 2.641).

Individual factors associated with work-related illnesses

There was no statistical significance between the social demographic characteristics of the respondents and work-related illness as shown in table 4.11.

Discussion

We sought to determine the occupational safety and health status of nurses in Kapkatet sub-county hospital in Kericho County, Kenya. According to our findings, the majority of the nurses were female and young in age although most had more than 10 years of working experience. This is perhaps because, in Kenya, female nurse comprises more than 70% of the professional health workers and the majority are youths (6).

Table 8:
Prevalence of Work-Related Illnesses

Variable N=100		Frequency (Percentage %)
Have you had any occupational and safety illness	Yes	64 (64%)
	No	36 (36%)
Back Pain	Yes	46 (46%)
	No	54 (54%)
Needle Injury	Yes	27 (27%)
	No	73 (73%)
Drug Contamination	Yes	2 (2%)
	No	98 (98%)
Hepatitis	No	100 (100%)
	Yes	2 (2%)
Tuberculosis	No	98 (98%)
	Yes	15 (15%)
Latex Allergy	No	85 (85%)
	Yes	15 (15%)
Covid-19 cases	Total	5 (5%)
	How often do you encounter the illness	Once
	Twice	17 (17%)
	Thrice	11 (11%)
	More than three times	20 (20%)
	Never encountered illness	32 (32%)



Nurses practices occupational health and safety

We found that a majority of the nurses were aware of occupational health and safety and all nurses adhered to occupational safety and precautions through proper hand hygiene, use PPEs, proper processing and waste management. This finding is similar to those from studies conducted in Nigeria and Ghana (7, 8) which showed that most nurses were aware of the use of handwashing techniques to prevent hospital-acquired infections. On the question of compliance with instrument processing, the findings showed that the majority of 99% of the nurses decontaminated the instruments after use. Similarly, a study conducted in an Ethiopian hospital by (9) among 300 health workers reported 67% compliance with safety practices. It was also evident from the findings that nurses practised good waste management procedures as the majority of them disposed of sharps after use. The current study was done at the height of the Covid-19 pandemic and therefore the observed adherence to hand hygiene and proper use PPEs practices could be attributed to the increased awareness of hygienic practices that was heightened during this period. The utilization of handwashing as a safety precaution in the workplace is one of the ways to prevent occupational illnesses.

The observed high level of adherence to occupational health and safety in the current study is, however, contrary to the findings of a study among nursing students in New Zealand that showed only 25% compliance with PPE and safety regulations (10). This could be due to the difference in the study population where students' awareness of occupational health and safety may be low compared to that of practising nurses.

Prevalence of occupational health illness

The present study found a high prevalence (64%) of occupational health illnesses among nurses. The leading cause of morbidity due to occupational exposures were backache (47%) and needle pricks (27%). The high prevalence of backache could be attributed to the observed poor lifting techniques among many of the nurses, lack of lifting devices and lack of porters.

A study conducted in Saudi Arabia (11) had similar findings with a prevalence of occupational illness of 65%. The study also found that nearly one-third (34.5%) of participants experienced a needle stick injury during their work time. In contrast, findings by Omar *et al.* (12) report a low prevalence of 24%.

Facility factors associated with occupational health and safety

The development of occupational health illness was not significantly associated with the number of working hours per week. Hospital safety measures were rated as average by the majority of the nurses 41%. This implies that the hospital was neither well prepared nor equipped to handle any occupational hazards. Similar results were reported from Tanzania (13) concluding that the majority of the health facilities in Iringa lacked essential equipment.

The study also determined that the development of occupational illness was not significantly associated with the number of working hours per week or unit of deployment. Moreover, training on health and safety did not significantly affect the chances of developing the illnesses.

Individual factors associated with work-related illnesses

Our study found that sociodemographic factors were not associated with occupational



health and safety. However, the participant's lifting technique was associated with work-related illness. Our findings are similar to those from a survey conducted in Kampala, Uganda (14) which showed no significant association between socio-demographic factors and occupational health and safety. On the other hand, an older study from Ethiopia (9) concluded that a higher level of education goes in tandem with compliance with safety protocols. Perhaps this new development is because there is an improved curriculum for infection prevention and control, particularly on hand hygiene in higher learning. There was no relationship between the number of years worked and work-related illnesses.

Slightly more than half of the nurses 52% observed proper body mechanisms for patient handling while moving and lifting patients. A Canadian study (15) presented similar results with 79% of the participating nurses who observed proper body mechanics never reporting

any back ache.

Conclusion

The prevalence of occupational and safety illnesses was high at 64%. There was adherence to occupational health and safety precautions such as hand hygiene, use of PPEs, and instrument processing. However, there was poor adherence to lifting techniques and proper sharps disposal. Health facility factors associated with occupational health illness were hospital safety measures and working hours.

Recommendations

Based on the findings of the study, we recommend that health care workers, especially nurses who are exposed to several workplace hazards including serious infections like tuberculosis and COVID-19 be provided adequate personal protective equipment by the relevant stakeholders.

The nurses should on the other hand adhere to the laid down safety protocols to keep themselves safe in the hospital. We also recommend that the nurses should attend continuous refresher courses on lifting techniques and the hospital management to employ porters to assist nurses in the movement of patients and medical supplies.

Abbreviations and Acronyms

EBP –Evidenced Based Practice

ILO - International Labour Office

JKUAT –Jomo Kenyatta University of Science and Technology

MSD - Musculoskeletal disorders (MSDs)

NAs- Nurse Assistants

NNAS - National Nursing Assessment Service

NNHS - National Nursing Home Survey

OSHA - occupational safety and health administration

SPSS - Statistical Package for Social Science

WHO - World Health Organization

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Author Contribution

Janeth Too - Conception or design of the work, data collection, data analysis and interpretation, drafting of the manuscript, critical revision of the manuscript and final approval of the version to be published

Dr. Grace Mbutia and Dr. Elijah Mwangi - critical revision of the manuscript

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