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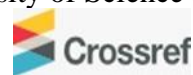


Healthcare Workers Training and Implementation of Occupational Health and Safety (OSH) Measures at Kitale County Referral Hospital, Kenya

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Abstract

Purpose: Many people, including healthcare workers, spend one-third of their adult lives in hazardous work environments. Despite significant advancements in safety management over the last few decades, occupational health continues to contribute to work-related health problems around the world, including in Kenya. The study's main goal was to investigate factors influencing the implementation of occupational health and safety measures at Kitale County Referral Hospital.

Methodology: The research was cross-sectional, descriptive, and mixed-methods. The targeted study population was 246 healthcare workers at Kitale County Referral Hospital, and 146 were randomly sampled. Key Informant Interview (KII) guidelines and a structured questionnaire were utilized to collect data. Data was coded, entered, and analyzed in STATA v15. A thematic method was utilized for analyzing KII qualitative data.

Findings: Spearman's correlation coefficients (0.687, $p < 0.05$) for training show a strong link between these HealthCare's training and OHS

implementation. This means that training directly affects hospital OHS implementation. Ordered regression results include age ($\Phi = 0.055$; $p < 0.01$), gender ($\Phi = 0.208$; $p < 0.05$), education ($\Phi = 0.105$; $p < 0.01$), cadre ($\Phi = 0.098$; $p < 0.1$), staff training ($\Phi = 0.090$, $p < 0.05$) confirmed that there existed a direct and positive relationship between the occupational health and safety implementation and some of the independent variables.

Unique Contribution to Theory, Practice and Policy: Thus, the study proposes that public hospitals teach staff to promote occupational health and safety. The facilities should also establish a management committee to drive OSH implementation, and the county government should guarantee that policies encourage OSH in county referral hospitals.

Keywords: *Occupational Health Safety, Implementation, Health Systems, Management, Health Facility, Kenya.*

1.0 INTRODUCTION

Globally, Occupational Health and Safety (OHS) protects the health and safety of healthcare workers who provide essential medical services. Professionals in the healthcare industry are exposed to numerous hazards, including biological, chemical, physical, and psychosocial risks, due to the nature of their work. The global health sector includes hospitals, clinics, laboratories, research institutions, and public health organizations, among other settings. OHS is essential for ensuring the safety and well-being of healthcare personnel, who are at the forefront of patient care and disease prevention. By prioritizing OHS, healthcare organizations can create safe workplaces that increase worker productivity, reduce absenteeism, and contribute to the overall quality of healthcare[1, 2].

Due to exposure to infectious diseases, hazardous chemicals, radiation, physical risks, ergonomic challenges, and psychosocial stressors, the global health sector poses unique dangers. Through direct contact with patients, handling contaminated materials, and exposure to airborne pathogens, healthcare workers are susceptible to contracting infectious diseases. In addition, they may encounter hazardous substances, such as disinfectants or drugs, that require proper handling and disposal. Additionally, healthcare professionals who work with radiation, such as those in radiology departments, are exposed to certain risks. Physical risks, such as ergonomic issues and patient handling, are what cause musculoskeletal injuries. In addition, psychosocial hazards, such as job-related stress, long working hours, and emotional demands, can negatively affect the mental health and well-being of healthcare workers[3, 4].

In order to promote OHS awareness and ensure that healthcare workers possess the necessary knowledge and skills to mitigate risks, training and education initiatives are also essential. International organizations, national health agencies, and professional associations provide healthcare workers with specialized training programs. These programs include infection prevention and control, safe handling of hazardous substances, radiation safety, ergonomic practices, stress management, and mental health support. Continuous training empowers healthcare workers to provide high-quality care in safe environments by keeping them abreast of the most recent OHS guidelines and best practices[1, 3-5].

Germany launched a countrywide cross-sectional online survey in March 2021 to assess occupational safety and health (OSH) measures among teachers at all schools[6]. The study examined whether OSH measures led to positive results and identified predictors. The study found that less than 10% of instructors (N = 31,089) said their institutions met the required occupational safety and health standards. Additional assessments have shown positive effects on physical and mental health. Focusing on systemic characteristics such as school locations in different federal states, several predictors of occupational safety and health (OSH) requirements were discovered. This study focused on German teachers, but this study targets Kenyan healthcare workers to solve contextual gaps.

A Japanese university teaching hospital's nurses were surveyed on safety climate, psychosocial issues, and needle and sharps injuries in a cross-sectional study[7]. The study discovered substantial relationships between NSIs and hospital safety climate parameters. These dimensions include mutual support among colleagues, management prioritizing staff protection against blood-borne diseases, active involvement of managers in safeguarding staff, prompt correction of unsafe work practices by supervisors, provision of safety equipment to prevent exposure, a clean and organized work environment, and minimal departmental conflict. This study has shown the

importance of hospital safety climate in Japanese healthcare, particularly in relation to NSI. The planned study shed light on healthcare worker OSH training and creating a positive safety culture, which is essential to addressing healthcare professionals' occupational health issues.

In a study by[3], Ugandan occupational safety and health (OSH) policies and their implementation challenges were studied. A complete review of OSH rules and key informant interviews with important stakeholders were used to collect data. Current occupational safety and health (OSH) standards were outdated compared to workplace needs, hindering OSH implementation. Legislative framework, public knowledge of OSH, planning, human resources, transparency, and accountability were the main issues. OSHA deficiencies in Uganda must be addressed in various ways. These activities include training, improving OSH laws and regulations, and prioritizing OSH improvement initiatives. These strategies should improve OSH in Uganda. This study filled a gap in the literature by examining how training affects OSH applications.

In Kenya, the health sector plays a crucial role in providing the population with essential medical services. Occupational Health and Safety (OHS) is of the utmost importance in this industry to ensure the health and safety of healthcare workers who tirelessly serve the public. Kenya's health sector includes hospitals, clinics, dispensaries, and other medical institutions, among others. OHS is essential for protecting the health and safety of healthcare employees, who are exposed to numerous hazards on a daily basis. By prioritizing OHS, the health sector can create a safe and healthy workplace, improve employee well-being, and enhance the quality of patient care[8-10].

In response, the Kenyan Government has developed and implemented numerous protective measures in the health sector. They include the use of personal protective equipment (PPE) such as gloves, masks, goggles, and gowns, as well as hand hygiene practices, to control and prevent infection. In order to reduce the risk of infection, healthcare facilities are required to adhere to stringent waste management, disinfection, and sterilization regulations. To reduce physical hazards and improve workplace ergonomics, engineering controls, such as ventilation systems and ergonomic equipment, have been implemented. Furthermore, psychosocial support programs, such as counseling services and employee assistance programs, are essential for the health of healthcare workers.

Various organizations, including the Ministry of Health, professional associations, and training institutions, have provided healthcare workers with OHS training programs on topics such as infection prevention and control, handling of hazardous substances, safe patient handling techniques, emergency planning, and psychosocial support. In addition, continuous training and refresher courses keep healthcare workers abreast of the most recent OHS regulations and best practices[8, 9, 11].

Despite these efforts to promote OHS in Kenya's health sector, a number of obstacles remain, including limited resources, including funding constraints, that impede the implementation of comprehensive OHS measures in healthcare facilities; inadequate staffing levels and high patient-to-worker ratios that contribute to increased workloads and fatigue among healthcare workers, potentially jeopardizing their safety; and the COVID-19 pandemic, which threatens the health and safety of healthcare workers.

Occupational health and safety (OHS) practices aren't widely used in hospitals because there isn't enough training and awareness, not enough personal protective equipment (PPE), ineffective infection prevention and control practices, less-than-ideal ergonomic conditions, and a lack of

access to occupational health services. Notwithstanding the acknowledgement of these challenges, there is a scarcity of scholarly literature that specifically investigates occupational health and safety occurrences among hospital healthcare professionals. The lack of knowledge in this area has hindered the understanding of the elements that impact the successful execution of occupational health and safety procedures within the hospital setting.

Heinrich's proposed hypotheses—the Safety and Domino theories—were the foundation for this investigation. Herbert William Heinrich developed Heinrich's Safety Theory in the 1930s, which states that there is a connection between serious workplace accidents that result in severe injuries or fatalities and a preceding string of minor incidents and near misses. The idea posits that these little mishaps, which may not have yielded substantial consequences, exhibit the same fundamental causes and underlying factors as the more severe accidents.

2.0 METHODOLOGY

Study Area

This study was undertaken in Trans Nzoia County, Kenya, between the Nzoia River and Mount Elgon, 380 kilometers northwest of Nairobi in the former Rift Valley Province. Kitale, the capital and largest town, covers 2,470 km² and has a population of 990,341[12]. The famous Kitale County Referral Hospital in Kitale town provides expert medical services to the locals and nearby areas. However, numerous difficulties prevent the hospital from providing excellent healthcare. One of these impediments is inadequate OHS implementation, which endangers healthcare personnel. This threatens staff health and patient care. The hospital's low OHS implementation is due to inadequate training and awareness, Personal Protective Equipment (PPEs), infection prevention and control, ergonomics, and occupational health services. There is little scholarly literature on hospital healthcare employees' occupational health and safety accidents despite these challenges. This knowledge gap has hindered understanding of hospital OHS implementation aspects. This study intended to investigate the factors that hinder occupational health and safety implementation at Kenya's Kitale County Referral Hospital to fill this gap in the literature.

Research design

This study used a cross-sectional descriptive design with a mixed-methods approach. Descriptive study design comprises monitoring and summarizing a subject's behavior without interfering in any way[13]. This design helped the researcher investigate factors influencing the implementation of work health and safety measures at Kitale County Referral Hospitals. The study was done in the between August to December 2022.

Study Population

The population from which the researcher concludes is referred to as target population. This population should theoretically be countable and exist within a specific time frame. The study target population was 246 healthcare workers, at Kitale County Referral Hospital in Trans Nzoia County and are directly providing clinical care to patients.

Table 1: Target Population

Cadre	Total Number
Doctors	31
Nurses	185
Clinical Officers	30
Total	246

Inclusion criteria

The researcher included health workers working at Kitale County Referral Hospital and providing direct clinical care to patients and consented for the study.

Exclusion criteria

The researcher excluded health workers who are not working at Kitale County Referral Hospital and are not providing direct care to patients, health workers who decline to consent into the study were excluded.

Quantitative Sampling

Yamane's (1967:886) simplified technique for estimating sample size for proportions was used to calculate the number of health professionals included in the study, algebraically as:

$$n = \frac{N}{(1 + N(e)^2)}$$

Where:

n = the sample size.

N = the total population

e = the margin error at 0.05

$$n = 246 / (1 + 246(0.05)^2)$$

$$n = 153$$

Table 2: Sampling Frame

Cadre	Total Number	Sampling Frame (%)	Sample Size
Doctors	31	12	19
Nurses	185	76	116
Clinical Officers	30	12	18
Total	246	100	153

On the other hand, a purposive sampling technique was used to identify study respondents in the KII.

Data Collection Instruments

This study utilized a questionnaire to collect the primary data on factors affecting implementation of occupational health and safety measures at Kitale County Referral Hospital. Structured questionnaires provided the study with an easy platform to standardize questions so that they maximize the number and depth of the insights of the stratified random sample. The questionnaires were administered to the 153 healthcare workers in Kitale County Referral Hospital. On the other

hand, Key Informant Interview (KII) guide was used to obtain data and complement the data collected through questionnaires and was administered to Kitale County Referral Hospital HMT members involved in implementation of OHS in hospital. The guide provided opinions about factors influencing occupational safety in public hospitals within Trans-Nzoia County. The procedure involved face to face interviews on occupational safety policies.

Reliability of the Research Instruments

The researcher pre-tested the instruments using 1 Sub County Hospital in the neighboring County, which has similar characteristics as those existing in the study area. The reliability of the instruments was estimated after the pretest study using Cronbach’s reliability coefficient, which is a measure of internal consistency. The reliability test was done through Cronbach's coefficient which was found to be 0.8362 greater than 0.6. The closer the coefficient is to 1.0, the greater is the internal consistency of the items in the scale[14].

Data analysis

Using the statistical software, STATA version 15, the study data was cleaned, transformed, and then subjected to the Persons' Product Moment Correlational statistics and the Chi Square tests to assess if there were significant relationships between the independent and dependent variables. Moreover, the ordered logit model was also fitted into the data owing to the ordered nature of the dependent variable to draw useful inferences that could aid decision-making. Algebraically, the statistical model for ordered logit regression was specified as:

$$OHS\ implementation = \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \dots + \beta_nx_n + \epsilon$$

where DV = OHS implementation; IVs = likert scaled X_s with 1 = strongly disagree and 5= strongly agree; β_i = model coefficients; ϵ = model error term. The final empirical model estimated in the study was thus expressed as:

$$OHS\ implementation = \beta_1age + \beta_2gender + \beta_3education + \beta_5cadre + \beta_6staff\ training$$

A thematic method was utilized for analyzing KII qualitative data.

3.0 FINDINGS

Proportion of Health Workers by Gender

According to the results in Table3, 97 (66.4%) of the respondents were female, while 33.6% were male. These findings indicated that a greater proportion of female workers in the health sector may be exposed to occupational health hazards than male workers

Table 3: Respondents’ gender

Gender	Number	Percentage (%)
Male	49	33.6
Female	97	66.4
Total	146	100

Proportion of Health Workers by Age

The age of respondents at the level of the health facility was clustered into four classes, with a ten-year gap between each class. According to Table 4.5, the ages of health workers ranged from twenty-one to sixty years old (21-36). Among the respondents, 66 (45.21%) were between the ages

of 21 and 30 years; 30 (20.55%) were between the ages of 31 and 40 years; 29 (19%) were between the ages of 41 and 50 years; and 21 (14.38%) were over the age of forty (50) years. According to the Kenya National Youth Policy (2006), approximately 65 percent of the health care workers in the facilities belonged to the younger age group.

Table 4: Age of Healthcare Workers

Designations	Number	Percentage (%)
21-30	66	45.21
31-40	30	20.55
41-50	29	19.86
51-60	21	14.38
Total	146	100

These findings suggested that the risk of occupational exposures and injuries was likely to be higher among health workers than among Health Management personnel. According to the ILO (2018), the rate of occupational injuries among young workers is significantly higher than among older workers. MOH (2016a) demonstrates that, of the 1,665 exposed health workers between 2011 and 2014, the highest exposure rate, 37.1%, occurred in workers younger than 25 years old.

Highest completed qualification certificate

Respondents were asked to identify their highest level of professional qualification. As shown in table 4.7, 110 (75.3%) of the health workers indicated they held diplomas in their respective fields, while 19 (13.1%) held bachelor's degrees. There were 17 (11.7%) individuals who held a higher national diploma, but none of them held a master's degree.

Table 5: Highest completed qualification certificate

Designations	Number	Percentage (%)
Diploma	110	75.3
Higher National Diploma	17	11.7
Degree	19	13
Total	146	100

Implementation of Occupational Health and Safety

Table 6 displays the percentage of health care professionals who agree with the implementation of occupational health and safety measures. From table 6, only 5% of respondents strongly agreed that injury rates have decreased, while 18% strongly disagreed.

Table 6: Implementation of Occupational Health and Safety

Statements	SD		D		N		A		SA	
	F	%	F	%	F	%	F	%	F	%
1. There are low or reduced injury rates reported	27	18	85	58	19	13	8	5	7	5
2. There is low/minimal loss of working hours or days due to work-related injuries/illnesses	16	11	99	68	9	6	7	5	15	10
3. I am usually away from work due to work-induced illness or injuries.	24	16	101	69	10	7	6	4	5	3

4. I got an accident at the workplace	17	12	90	62	13	9	16	11	10	7
5. I am satisfied with the working environment at my workplace	16	11	20	14	7	5	33	23	70	48
6. Leadership attitudes and commitment affect the implementation of health and safety measures.	19	13	31	21	6	4	25	17	65	45
7. Workers' training on health and safety issues exists	10	7	23	16	3	2	23	16	87	60
8. Employees are involved in the health and safety implementation	15	10	22	15	7	5	34	23	68	47
9. There is feedback on the implementation of health and safety measures.	13	9	17	12	4	3	45	31	67	46
10. Introducing rewarding safe behavior is done for the promotion of health and safety measures.	5	3	21	14	9	6	24	16	87	60
11. Provision of sufficient resources for work health and safety is done at the implementation of health and safety measures.	10	7	16	11	10	7	34	23	76	52
12. There are devices for the safe handling of loads, such as patient handling, lifting, pushing, and pulling of loads that are regularly serviced.	12	8	14	10	6	4	35	24	79	54
13. There is policy prevention of violence and harassment at the workplace, including gender-based violence and harassment	11	8	13	9	2	1	39	27	81	55
14. The facility has adequate hand washing facilities	18	12	20	14	9	6	24	16	75	51
15. There is a policy for the management of staffing, workload, working hours, shifts, rest, and recuperation with the purpose to prevent fatigue	12	8	13	9	11	8	41	28	69	47

Key: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

A higher percentage of 85 (58%) disagreed with the point that injury rates are either low or reduced with 8 (5%) and 19 (13%) agreed and remained neutral respectively. On whether there is low or minimal loss of working hours due to work related injuries, 15 (10%) of the respondents strongly agreed that there is minimal loss of working hours caused by work related injuries, while 16 (11%) strongly disagreed with this fact. A bigger percentage of the respondents, that is 99 (68%), disagreed while a lower percentage of 7 (5%) and 9 (6%) agreed and remained neutral respectively.

In responding to being away from work due to work induced illness, a higher percentage of the respondents, that is 101 (69%), disagreed that they are not always away from work due to work induced illness while 24 (16%) strongly agreed. A percentage of 5 (3%), 6 (4%) and 10 (7%) strongly agreed, agreed, and remained neutral respectively. On the other hand, in giving response to whether they got accident at the workplace, a bigger percentage of 90 (62%) disagreed indicating that they didn't get accident at the workplace while 17 (12%) strongly disagreed. Among those who indicated that they had an accident at workplace, 10 (7%) strongly agreed while 16 (11%) agreed. A percentage of 13 (9%) remained neutral.

In responding to a question on being satisfied with the working environment at the workplace, a bigger percentage of 70 (48%) indicted that they are satisfied with the working environment at the workplace by strongly agreeing while those who agreed are at 33 (23%). Among those who responded, 7 respondents representing (5%) chose to remain neutral while 20 (14%) and 16 (11%) disagreed and strongly disagreed respectively. Leadership attitude and commitments affecting health safety and implementation measures got a strong agreement of 65 (45%) while 19 (13%) strongly disagreed. 6 (4%) remained neutral while 25 (17%) and 31 (21%) agreed and disagreed respectively.

In another response, 87 (60%) indicated that they strongly agree that workers training on health and safety issues exist in the referral hospital while 10 (7%) strongly disagreed. An equal percentage of 23 (16%) each both agreed and disagreed while 3 (2%) indicated being neutral to the topic. Though a large percentage indicated they strongly agree and a smaller percentage strongly disagreeing. When asked on whether there is feedback on health and safety measures, 67 (46%) responded by strongly agreeing while 13 (9%) strongly disagreed. Those who agreed were 45 (31%) while 17 (12%) disagreed. 4 (3%) of the respondents were neutral.

A higher percentage of 87 (60%) strongly agreed that introducing rewarding of safe behavior is done for the promotion of health and safety measures, while the lowest percentage of 5 (3%) strongly disagreed. 24 (16%), 9 (6%) and 21(14%) agreed, remained neutral and disagreed respectively. Besides, 76 (52%) strongly agreed that provision of sufficient resources for work health and safety is done at the implementation of health and safety measures. 34 (23%) agreed, an equal percentage of 10 (7%) both remained neutral and strongly disagreed while 16(11%) disagreed.

From the analysis, in response to whether there are devices for handling loads, 79 (54%) of the respondents strongly agreed that the devices are available. A percentage of 12 (8%) strongly disagreed while 6 (4%) remained neutral. 35 (24%) and 14 (10%) agreed and disagreed respectively. On whether there is policy prevention of violence and harassment at the workplace including gender-based violence and harassment, those who strongly agreed were 81 (55%) while those who strongly disagreed were 11 (8%). 39 (27%) agreed as 13 (9%) disagreed. A smaller percentage of 2 (1%) remained neutral.

In a bid to know if the facility has hand washing facilities, 75 (51%) strongly agreed that the hand washing facilities are available while 18 (12%) strongly disagreed. 24 (16%) and 120 (14%) agreed and disagreed in that order at least percentage of 9 (6%) were neutral. The respondents who strongly agreed that there is a policy for the management of staffing, workload, working hours, shifts, rest, and recuperation with the purpose to prevent fatigue were 69 (47%) while those who strongly disagreed were 12 (8%). Those who agreed remained neutral and disagreed posted a percentage of 41 (28%), 11 (8%) and 13 (9%) respectively.

Training and Occupational Health and Safety Measures

Most 81 (55%) of the respondents strongly agreed that training on safety is included in Occupational Health and Safety Policy, another support was received from 29 (20%) of them who agreed while 11 (8%) and 15 (10%) strongly disagreed and disagreed respectively. Those who decided to remain neutral were 10 (7%). Still from the table, the analysis shows that 69 (47%) of the respondents strongly agreed that there is a person designated to be responsible for occupational safety and health in the health facility. Another 45 (31%) agreed while those who did not concur were 10 (7%) who strongly disagreed and 16 (11%) who disagreed. 6 (4%) were neutral. On whether the employer regularly provides information about health and safety issues, 76 (52%) of the respondents strongly agreed and 44 (30%) agreed while an equal percentage of 12 (8%) disagreed and strongly disagreed respectively. 2 (1%) were neutral.

Table 6: Training and Occupational Health and Safety Measures

Statements	SD		D		N		A		SA	
	F	%	F	%	F	%	F	%	F	%
1. Training on safety is included in Occupational Health & Safety Policy	11	8	15	10	10	7	29	20	81	55
2. There is a person designated to be responsible for occupational safety and health in the health facility	10	7	16	11	6	4	45	31	69	47
3. The employer regularly provides information about health and safety issues.	12	8	12	8	2	1	44	30	76	52
4. I am trained in safety measures at work	18	12	20	14	9	6	24	16	75	51
5. There is appropriate monitoring of the health of individual health workers in their jobs, such as regular preventive medical examinations	12	8	13	9	11	8	41	28	69	47
6. I usually participate in seminars on occupational health and safety matters/issues.	16	11	20	14	7	5	33	23	70	48
7. I consider OHS training very important.	19	13	31	21	6	4	25	17	65	45
8. I have a safety-conscious attitude at work	10	7	23	16	3	2	23	16	87	60
9. I am aware of safety rules and procedures	15	10	22	15	7	5	34	23	68	47
10. There is a system for health workers to report hazardous exposures and safety concerns (such as exposures to infections, incidents of violence, lack of protective measures) without risk of retaliation	13	9	17	12	4	3	45	31	67	46

Key: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

Moreover, 75 (51%) confirmed that they are trained in safety measures at work by strongly agreeing. 24 (16%) agreed while 9 (6%) chose not to comment on the matter. 20 (14%) and 18 (12%) disagreed and strongly disagreed respectively. Respondents were asked whether there is appropriate monitoring of the health of individual health workers in their jobs, such as regular preventive medical examinations. 69 (47%) strongly agreed and 41 (28%) agreed to the statement.

On the other hand, those who strongly disagreed were 12 (8%) while 13 (9%) disagreed. Those who indicated being neutral were 11 (8%). From the table, when asked whether they usually participate in seminars on occupational health and safety matters/issues, 70 (48%) strongly agreed as 33 (22%) agreed. Those who were on the contrary, 16 (11%) strongly disagreed while 20 (14%) disagreed. Those who chose not to comment were 7 (5%).

Additionally, 65 (45%) consider OHS training very important by strongly agreeing, and as well 25 (17%) agreed. 19 (13%) strongly disagreed while 31 (21%) disagreed. 6 (4%) were neutral. Most staff strongly agree that they have safety conscious attitude at work. This was supported at 87 (60%), while 23 (16%) agreed. Those who were on neither side were 3 (2%) while 23 (16%) disagreed and 10 (7%) strongly disagreed. 68 (47%) strongly agreed that they are aware of safety rules and procedures in the facility as 34 (23%) agreed. 22 (15%) disagreed and 15 (10%) strongly disagreed. Those who indicated neutral were 7 (5%). As well, 67 (46%) strongly agreed that there is a system for health workers to report hazardous exposures and safety concerns (such as exposures to infections, incidents of violence, and lack of protective measures) without risk of retaliation. 45 (31%) agreed while 4 (3%) were neutral. Those who disagreed and strongly disagreed were 17 (12%) and 13 (9%) respectively.

The key informants were asked about the extent to which OHS Training affects the implementation of occupational health and safety measures at Kitale County referral hospital. Their responses were as presented below:

“.....training on safety is included in Occupational Health & Safety Policy and there is a person designated to be responsible for occupational safety and health in the health facility.” (TOHS R3)

“.....the employer and managers regularly provide information about health and safety issues which are always relevant to me since I am trained in safety measures at work. In addition, there is appropriate monitoring of the health of individual health workers in their jobs, such as regular preventive medical examinations.” (TOHS R5)

“.....I usually participate in seminars on occupational health and safety matters/issues. Through such I learned that there is a system for health workers to report hazardous exposures and safety concerns (such as exposures to infections, incidents of violence, lack of protective measures) without risk of retaliation.” (TOHS R1)

The respective correlation coefficients (r) for OHS Training accounts for 0.687 indicating a statistically significant relationship between OHS Training and the implementation of Occupational Health and safety. Thus, each independent variable had a direct effect on the implementation of Occupational Health and Safety.

The marginal effects coefficients of the predictor variables were: age ($\Phi = 0.055$; $p < 0.01$), gender ($\Phi = 0.208$; $p < 0.05$), education ($\Phi = 0.105$; $p < 0.01$), cadre ($\Phi = 0.098$; $p < 0.1$), OHS Staff Training ($\Phi = 0.090$, $p < 0.05$). These variables indicated reasonably strong positive relationships and, therefore, all the independent variables were good predictors of hospital's implementation of the occupational health and safety measures.

As for the age, the results imply that a one-year increase in the age of the hospital staff was more likely to increase the implementation of the OHS measures in the hospital by 5.5%. In addition, female staff members were more likely to increase the implementation of the OHS measures in the hospital by 20.8% as opposed to the male staff. Higher education status of the hospital staff was also more likely to increase the implementation of the OHS measures in the facility by 10.5%

compared to lower educational status. On the cadre of the hospital staff, doctors were more likely to increase the implementation of the OHS measures in the facility by 9.8% in contrast to either the clinical staff or nurses. Finally, conducting staff training rules a higher probability of raising the implementation of the OHS measures by 9%.

Table 7: Ordered Logit Regression Results

Descriptions	Marginal Effects Coefficients (Φ)	Std. Error	P-Value
Implementation of OSH (y)			
Age (x1)	0.055***	0.019	0.001
Gender (x2)	0.208**	0.083	0.027
Education (x3)	0.105***	0.04	0.004
Cadre (x4)	0.098*	0.056	0.096
Staff training (x5)	0.090**	0.04	0.014
Model summary statistics			
Log-likelihood	-186.84		
LR chi-square (9 d.o.f.)	20.17		
Probability > chi2	0		
Pseudo R ²	0.1512		
Number of respondents	146		
Parameters	9		

Key: * denotes $p < 0.1$, ** denotes $p < 0.05$ and*** denotes $p < 0.01$; mfx – marginal effects (dy/dx)

Discussion

This study agrees with [1, 4, 15-17] that OHS measures protect workers and promote their well-being. Those recognizing dangers, implementing control measures, providing training, ensuring legal compliance, and promoting safety may create a safe, healthy, and productive workplace.

Management commitment is crucial to the successful implementation of Occupational Health and Safety (OHS) at Kitale County Referral Hospital because it creates a safe and healthy work environment and a positive safety culture where employees are encouraged to actively participate in hazard identification, reporting, and safety measure development. These findings support [18, 19] that management commitment ensures OHS practice implementation, reducing workplace incidents, improving employee morale, and improving safety performance at Kitale County Referral Hospital.

The study also found that staff participation significantly affects OHS implementation at Kitale County Referral Hospital because staff members' knowledge, experience, and perspectives improve OHS measures. These findings support [18, 20, 21] that staff participation in identifying hazards, suggesting improvements, and implementing safety protocols promotes OHS ownership and accountability. This involvement promotes danger reporting, preventing accidents and allowing quick correction. The adoption of OHS at Kitale County Referral Hospital requires staff

collaboration and shared responsibility to create a safer workplace, minimize injuries, and increase employee well-being.

The study found that comprehensive staff training programs equip employees with the knowledge, skills, and resources to identify and manage workplace hazards, follow safety protocols, and contribute to a safe work environment, which impacts Occupational Health and Safety (OHS) at Kitale County Referral Hospital. These findings agree with [18, 21, 22] that well-trained staff are more likely to follow safety guidelines, mitigate hazards, and respond to emergencies, reducing accidents, injuries, and illnesses. Staff training at Kitale County Referral Hospital improves OHS implementation, making the workplace safer and healthier for everyone.

This study also found that government policies affect Kitale County Referral Hospital's OHS implementation because they provide a legal framework and guidelines for a safe and healthy workplace. These findings support [23, 24] that government policies protect employees and avoid legal liabilities and penalties from negative workplace incidents by requiring organizations to comply with OHS standards, conduct risk assessments, and implement control measures to mitigate workplace hazards. Thus, Kitale County Referral Hospital can apply OHS procedures, develop a positive safety culture, and protect worker well-being by following government rules.

Finally, Heinrich's Safety Theory and Domino Theory provide a solid framework for Kitale County Referral Hospital's OHS implementation. Heinrich's Safety Theory helps the hospital identify hazards, assess risk, and implement controls to prevent accidents. The philosophy stresses addressing root causes to prevent major incidents. Regular danger evaluations and control techniques can help the hospital prevent accidents and make the workplace safer.

Domino Theory supplements Heinrich's Safety Theory by guiding hospital safety culture. It emphasizes employee participation, safety protocols, and training and the chain reaction aspect of incidents. Understanding the interconnection of social environment, risky acts, and situations allows the hospital to break the domino effect and avert accidents.

Kitale County Referral Hospital can implement a complete OHS strategy using Heinrich's Safety Theory and Domino Theory. This technique involves proactive hazard detection, addressing root causes, encouraging employee participation, and establishing effective safety measures. A safety culture, employee participation in safety programs, and frequent training may make the hospital a safe and healthy workplace for all staff. This integrated OHS approach would reduce accidents, protect healthcare workers, and improve patient care at the Kitale County Referral Hospital.

4.0 CONCLUSION AND RECOMMENDATIONS

Conclusion

Occupational safety and health implementation in Kitale County Referral Hospital is affected by several factors. Nonetheless, 58.22% of respondents reported that injury rates are either low or reduced. There is a loss of working hours due to work-related injuries, 67.81%. The staff has not been away from work because of work-induced illness. The Healthcare worker's training had a positive relationship with the implementation of Occupational Health and Safety. The study also established that training on safety is key in promoting the occupational health & safety policy implementation. This can be achieved by putting in place a person designated to be responsible for occupational safety and health in the health facility. They are trained in safety measures at work by regularly participating in seminars on occupational health and safety matters/issues. This study gives the following recommendations on the implementation of OHS measures:

- a) There is a need for every public hospital to train staff to take key roles in promoting the implementation of Occupational Safety and Health.
- b) The Health Management should promote training for the healthcare staff to bequeath them with the responsibilities of OSH responsibilities.

Ethical Consideration

Ethical approval for the study was obtained from the Ethical Committee of Kenya Methodist University and approval number KeMU/SERC/HSM/25/2022, and finally permission was obtained from National Commission for Science, Technology & Innovation Ref: NACOSTI/P/22/19644. The researcher met with prospective respondents to explain the intentions of the study and assured the respondents that the information to be collected from them was to be used only for the sole purpose of the study. Written informed consent from all the participating participants was obtained. The participants were informed that participation in the research was voluntary. The interviews were conducted in a private room, and they were assured that any information they gave to the researcher would be treated with confidentiality. An electronic transcript of the questionnaires was stored in a password-protected database. Other hard copy versions of study documents like consents and questionnaires were kept in a lockable cabinet. Questionnaires were assigned study numbers for identification only.

Abbreviations

AIDs- Acquired Immunodeficiency Disease; GOK- Government of Kenya; HCW- Health Care Worker; KII-Key Informant Interview; MOH- Ministry of Health; NACOSTI- National Commission for Science, Technology, and Innovation; OHS- Occupational Health and Safety; OHSA-Occupational Health and Safety Assessment; WHO- World Health Organization.

Competing interests

Authors have declared that there are no competing interests

Author contributions

The study was put together and designed by EON and the first author conducted the study in Trans Nzoia, County, Kitale County Referral Hospital, Kenya. OJO carried out data analysis. OJO also prepared the manuscript. LM and KN supervised and gave their technical input during the development of the study.

Disclaimer

The findings and conclusions presented in this manuscript are those of the authors and do not necessarily reflect the official position of Kenya Methodist University.

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