

## Original Research Article

# The occurrence of occupational health hazards in districts health facilities in Kigali, Rwanda

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## ABSTRACT

**Background:** Health workers are constantly exposed to chemical, physical, psychological and biological agents that affect their health. Regular information is critical for setting priorities necessary to enhance workers health and safety. The study determined the occurrence of occupational health hazards among health care worker in the three selected district health facilities in Kigali, Rwanda (July-December 2016).

**Methods:** It adopted a cross-sectional design involving both qualitative and quantitative data collection approaches. A total of 249 healthcare workers were selected systematically for interviewing. Data were collected using semi structured questionnaires, a focus group discussion guide and an observational checklist. Data analysis involves descriptive and inferential statistics. The observed differences in the parameter of estimate were considered significantly different at  $p < 0.05$ .

**Results:** Back-ache and accidents experienced while working contributed majority of occupational hazards, thus; 151 (60.6%, 95% CI=54.28–66.75) and 139 (55.8%, 95% CI=49.42–62.09), respectively. Health hazards from violence and molestation contributed 8 (3.2%, 95% CI=0.139–6.23) of the cases, furthermore, lack of hospital management commitment to policy, poor policy enforcement, health facility safety activities, employees' participation in safety programs and post exposure compliance were associated with occurrence occupational hazard among healthcare workers ( $p < 0.05$ ). Qualitatively, the process of waste collection, sorting, marking, storage and transportation were not in line with policy regulations and contributed further to the hazard cases.

**Conclusions:** Finally, direct job supervision, proper job placement, training and effective safety communication and reporting can enhance work safety and risk aversion.

**Keywords:** Occurrences, Occupational health hazards, District health facility

## INTRODUCTION

Work environment in most cases are not safe and health care workers constantly carry out their jobs and the multiplicity of tasks while exposed to great variety of hazards.<sup>1</sup> Several studies have indicated the need to identify major critical areas that have more likelihood of causing hazards, to help design control strategies.<sup>2</sup> Occupational exposure to health risks is common in the

developing world especially in relation to work overload, lack of task control and role ambiguity. There are other factors including poor organization, unfair management practices, human and economic factors.<sup>3,4</sup>

Health care workplace harbours most hazardous disease provoking agents' especially biological, chemical, physical, psychological and social stressors. The estimate of the global number of work-related fatal and non-fatal

accidents and diseases does not seem to have changed significantly during the past 10 years.<sup>5</sup> This is linked to recent globalization process and rapid industrialization common in poor countries that are not capable of maintaining effective OSH systems. So is the call on the need to focus on health and safety are as paramount as ever, given the fact that “the traditional hazard and risk prevention and control tools are still effective but need to be completed by strategies designed to address the consequences of a continuous adaptation to a rapidly changing world of work”.

Findings from some studies on different cadres of health care workers showed higher prevalence of exposure to blood or other body fluids. Common influencing factors include, personal behavioural factors, environmental and organizational managerial factors.<sup>6,7</sup> Infection control is key component of practice for all healthcare professionals, not only for their health but also to reduce hospital induced infections, especially for patient's safety.<sup>8-11</sup>

Some common occurring health conditions which health workers are constantly exposed to while they are discharge of their duty includes; blood-borne pathogens, such as hepatitis B and C and human immunodeficiency virus respiratory pathogens like influenza, tuberculosis, diphtheria and varicella and most recent discovered severe acute respiratory syndrome (SARS).<sup>12</sup>

The health organizations often allocate limited resources towards occupational health and safety interventions (OHS interventions), in worksite, health promotion and health and safety interventions, and are forced by combination of legal, financial, and moral factors.<sup>13</sup> The National Institute for Occupational Safety and Health (NIOSH) estimates that each year about 100, 000 people die of occupational illnesses and about 400,000 new cases, recognized annually among the workers.<sup>14</sup> It was not just medical professionals that are at risk, other workers may sustain injuries especially the auxiliary staff including cleaners, morticians and laundry staff. Providing high-quality health care in safe and healthy environment is paramount in our society.<sup>14,15</sup>

This study provides information the prevalence and most common types of occupational health hazards among the study health care workers in Kigali district health facilities (Muhima, Kibagaba and Kicukiro).

## METHODS

This study was undertaken in Kigali district hospitals (2014 – 2016), Muhima Hospital in Nyarugenge District, Kibagabaga Hospital in Gasabo District and Masaka Hospital in Kicukiro District, Kigali, Rwanda. Kibagabaga District Hospital receives an average of 230 patients every day and has 120 beds. It has 5 medical specialists, 11 general physicians, 54 nurses, 27 midwives and 89 support staff. Masaka district hospital is located in Kicukiro District serves a population of 355,195 people.

The hospital has a bed capacity of 148. It receives a patient load of about 110 patients per day and 787 in-patients per month. The hospital has one medical specialist, 12 general physicians, 103 nurses, 29 midwives and 92 support staff. On the other hand, Muhima District Hospital is located in Nyarugenge District and serves about 326,478 people. This hospital receives an average of 201 out-patients daily. It 5 medical specialists, 17 general physicians, 45 nurses, 52 midwives and 59 support staff.

A cross-sectional design was adopted utilizing both quantitative and qualitative approaches.

The sample was calculated using Slovene's formula.<sup>16</sup>

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

n= sample size, N= Population

e= marginal of error, e = 0.05

$$n = 631 / (1 + 631 * 0.05^2); n = 249$$

To work out sample size for each stratum in the health facilities, stratification sampling by weight was used to calculate specific sample sizes. Sample size for medical Doctors in Muhima district hospital; Note:  $n_h = nN_h / N$

$$n_1 = 249(22) / 631 = 9$$

Purposive sampling technique was used to determine the study site and study samples drawn based on the size and threshold of health care workers. Stratified sampling technique was used to select different categories of health care workers due to their heterogeneity. While systematic sampling technique was used to select participants for the study.

Data collection was through interviewer administered questionnaires, focused group discussion with guide and observational technique with checklists to help improve the quality of the generated information for better understanding of the problem.

The first part of the questionnaire sort information on respondent demographic profile, the second part seeks questions related to the independent variable (IV) and the third part covering the dependent variable (DV).

The instruments validity was ensured using Content Validity obtained through assessors/experts in the field of study who examined and rate the content in the questionnaire. They assisted in assessing the phrasing of the questions to avoid ambiguity and assessed the extent to which the questions were related to the study topic, objectives and methodology. The researcher compiled the responses from these experts and computed the content validity index (CVI)= 57/66= 0.86.

The questionnaire was further translated into the local language (Kinyarwanda) for ease of data collection. The

study instrument reliability was obtained through pre-testing in a similar population at Sante Da La Criux Hospital (a private hospital in Kigali). This was followed by correction of the instrument to eliminate ambiguity. Cronbach's alpha: number of items was 66 and test result was 0.723.

The data generated from the study was coded and entered into the computer programs EPI-Info data and exported to SPSS (version 21). Thematic analysis was used for the qualitative data while descriptive statistics (frequencies, 95% CI) were used for exploratory purposes. The variables were weighted using average score rating and the variables were further put into categories of three. Test for the degree of association between independent and dependent variables were done using the Pearson chi-squared test. Differences between the parameter of estimates were deemed significantly different at  $p < 0.05$ .

Ethical consent of participation in the research was obtained from each study participants by endorsement. While authorization to conduct the study was obtained from the Ministry of Health the Rwandan National Ethical Board gave the ethical clearance. The researcher strictly ensured that the information obtained from the

respondents was handled with utmost confidentiality and that no harm was allowed on them.

## RESULTS

Out of the 249 study participants, 105 (42.2%, 95% CI=36.96–48.57) were males while 144 (57.8%, 95% CI=51.43–64.03) were females. The predominant age category of the study participants were those in the age cohort of 30-39 accounting for 137 (55%) of the study participants. Persons aged 18-29 years constituted 76 (30.5%) of the study participants. With regard to level of education, 107 (43%, 95% CI=36.74–49.37) of participants possessed diploma certificates, 33 (13.3%, 95% CI=9.30–18.11) had degree certificates while about 9 (3.6%, 95% CI=0.67–6.75) had attained postgraduate degrees.

Majority of the study participants 109 (43.8%, 95% CI= 37.51–50.18)) had worked for 3-6 years. With regard to risks behaviour such as smoking and alcohol use, 247 (99.2%, 95% CI= 97.13–99.90) were non- smokers while 226 (90.8%, 95% CI= 86.46–94.05), does not consumed alcohol (Table 1).

**Table 1: Distribution of study participants with regard to socio-demographic characteristics (n=249).**

Background characteristics (n=249)	Frequency	Proportion (%)	95% confidence intervals
<b>Sex</b>			
Male	105	42.2	36.96–48.57
Female	144	57.8	51.43–64.03
<b>District name/health facility</b>			
Nyarugenge (Muhima)	85	34.1	28.27–40.39
Gasabo (Kibagabaga)	74	29.7	24.11–35.81
Kicukiro (Masaka)	90	36.1	30.17–42.45
<b>Age group of the study participants</b>			
18 to 29 years	76	30.5	24.86–36.65
30 to 39 years	137	55	48.61–61.30
40 to 49 years	31	12.5	8.61–17.20
50 years and above	5	2.0	0.65–4.66
<b>Duration in service/length of years of service</b>			
Less than 3 years	66	26.5	21.13–32.45
Between 3 and 6 years	109	43.8	37.51–50.18
Between 7 to 9 years	46	18.5	13.85–23.86
10 years and above	28	11.2	7.60–15.84
<b>Participants education</b>			
None	3	1.2	0.24–3.48
Primary	39	15.7	11.38–20.78
Secondary	58	23.3	18.19–29.04
Diploma/certificate	107	43	36.74–49.37
Degree	33	13.3	9.30–18.11
Post graduate	9	3.6	0.67–6.75
<b>Smoking</b>			
Yes	2	0.8	0.09–2.87
No	247	99.2	97.13–99.90
<b>Alcohol</b>			
Yes	23	9.2	5.95–13.54
No	226	90.8	86.46–94.05

**Table 2: Distribution of types of health hazards occurrence among workers in the health facility in the 2014–2015 (n=249).**

Types of occupational hazards	Yes freq.	Yes (%)	95% confidence intervals	No freq.	No (%)	95% confidence intervals
1. Backache	151	60.6	54.28–66.75	98	39.4	33.25–45.72
2. Working accidents	139	55.80	49.42–62.09	110	44.2	37.91–50.58
3. Slips and falls	83	33.30	27.50–39.56	166	66.7	60.44–72.49
4. Blood-borne pathogens	81	32.50	26.75–38.73	168	67.5	61.27–73.25
5. Lung disease	51	20.50	15.65–26.03	198	79.5	73.97–84.35
6. Hazardous waste contamination	51	20.50	15.65–26.03	198	79.5	73.97–84.35
7. Confined spaces	41	16.50	12.83–21.67	208	83.5	78.33–87.92
8. Over time with stress	38	15.30	11.03–20.33	211	84.7	79.66–88.97
9. High blood pressure, heart attack	37	14.90	10.63–19.89	212	85.1	80.10–89.32
10. Chemicals splash	20	8.00	04.98–12.13	229	92	87.86–95.02
11. AIDS	14	5.60	03.11–9.25	235	94.4	90.75–96.89
12. Cancer	12	5.20	02.51–8.21	237	94.8	91.73–97.49
13. Asthma	12	4.80	02.51–8.21	237	95.2	91.73–97.49
14. Violence and molestation	8	3.2	01.39–6.23	241	96.8	93.77–98.60

**Table 3: Distribution of multi-nominal regression analysis of variables influencing health hazards cases in the health facility.**

Categories of health hazards		B	Std. Error	d.f.	Sig.	Exp (B)	95% confidence interval for exp (B)	
							Lower bound	Upper bound
Moderate level health hazards	Intercept	0.593	1.788	1	0.740			
	Hazard knowledge	-0.495	0.263	1	0.059	0.609	0.364	1.020
	Management policy commitment	0.736	0.276	1	0.008	2.088	1.216	3.584
	Respondent opinion of workplace hazards	-0.070	0.267	1	0.794	0.933	0.553	1.574
	Factors influencing poor policy enforcement	-0.511	0.240	1	0.034	0.600	0.375	0.961
	Individual level influencing factors	0.395	0.496	1	0.426	1.484	0.561	3.925
	Hospital hazards prevention strategies	-0.222	0.291	1	0.445	0.801	0.452	1.417
	Health facility level influencing factors	0.014	0.486	1	0.977	1.014	0.391	2.632
	Hazards reports system	-0.334	0.215	1	0.120	0.716	0.469	1.091
	Health facility safety activities	1.253	0.419	1	0.003	3.501	1.540	7.958
	Employee participation in safety program.	-1.026	0.308	1	0.001	0.359	0.196	0.656
	Post exposure compliance	0.630	0.317	1	0.047	1.877	1.009	3.492
	Safety compliance program	0.054	0.231	1	0.814	1.056	0.672	1.660

Note. The reference category is: high level health hazards.

Out of the 249 study participants 85 (33.7%, 95% CI=27.89–739.98) admitted to the existence of occupational health and safety chief in the health Facility. However, 165 (66.3%, 95% CI=60.02–72.13) denied knowledge of existence of occupational health and safety chief in the health facility.

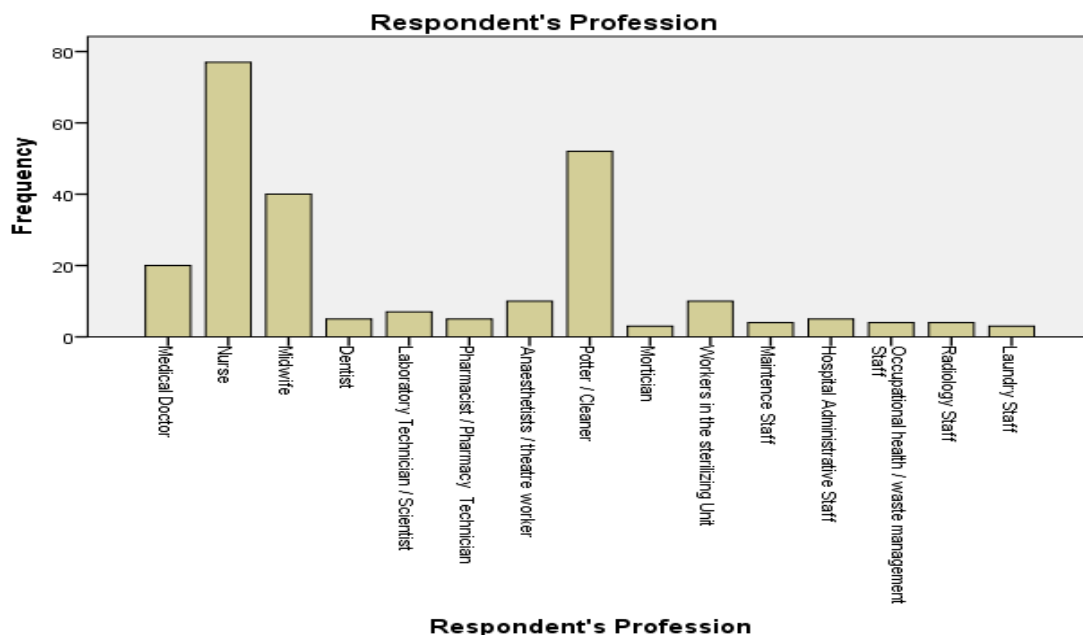
The 249 study participants professional include; about 77 (30.9%, 95% CI=25.24–37.07) were nurses; 52 (20.9%, 95% CI=16.09–26.47) were potters and cleaners, while 40 (16.1%, 95% CI=11.73–21.23) were midwives. Meanwhile, the category of healthcare workers with the least number in the study was laundry staff, 3 (1.2%, 95% CI=00.25–03.48) and morticians, 3 (1.2%, 95% CI=00.25–03.48) (Figure 1).

A total of 178 (71.5%, 95% CI= 65.44-77.01) study participants carried out their duties in the night, while 154 (61.8%, 95% CI=55.50-67.91) worked for 5 days per week and 83 (33.3%, 95% CI=27.50-39.56) worked for 6 days per week, while 182 (73.1%, 95% CI=67.13-78.49) of the study participants worked for 9 hours per day.

The study findings showed that the occupational health hazards that had the highest frequency of occurrence among the workers was back-ache and accidents experienced while working had the highest frequency at 151 (60.6%, 95% CI=54.28-66.75) and 139 (55.8%, 95% CI=49.42-62.09), respectively.

Other major occupational health hazards with higher frequency included slips and falls and risk for blood-borne diseases. However, it was observed that health hazard with the least frequencies were violence and molestation 8 (3.2%, 95% CI=01.39-6.23), and Asthma and cancer at 12 (4.8%, 95% CI=02.51-8.21), respectively (Table 2).

Another result findings on the types of hazards cases according to cadres of the health care workers that had higher cases of slips and falls health hazards showed that out 249 participants about 22 (22.5%) were nurses, about 27 (32.5%) were potters and cleaners, midwives 12 (14.5%) respectively (Figure 2).



**Figure 1: Distribution of study participants with regard to professions (n=249).**

### ***Focused group discussion***

*What likely health problems occur in workplace?*

P<sub>2</sub> “In medical profession, as midwives, we are engaged in prolonged task and works which may be overtime hours and night shifts.”

*What is the standard for working hours?*

P<sub>2</sub> “The normal working hours are eight hours per day, 180 hours per month, but you may find out that at times we are made to work for 200 and even 210 hour per week. In most cases due to shortage of staff.

*What do you think contributes to the health problems in your workplace?*

P<sub>3</sub> “On our side, we don’t have time for break or rest because of staff shortage.

*Why do people get infected with HIV while they use personal protective equipments?*

P<sub>3</sub> “At time workers are not fully aware that work demand and pressure increases risk of occupational hazards, when one person does a work to be handled by many others.”

P<sub>4</sub> “Another is poor incentives and motivation and lastly poor supply of personal protection equipment”.

*Tell me how occupational hazards and safety issues are handled in your workplace?*

P<sub>3</sub>: “At my working place, there is a person in charge of hygiene who has the responsibility of training other staff and handling hazards and safety related issues.”

P<sub>5</sub>: “We organize the training for our staff because of regular number of staff that leaves the service, so we need to train new ones on the waste management, how to



separate liquid wastes and solid wastes, we have health and safety committee.”

*Are there thing you consider very bad and threat to your job?*

P3: “At my working place, there should be incinerator; this could protect us from getting infected.”

P2: “Incinerator is there but it is new and has not yet been used.” There are newly purchased incinerator that are yet to be put in use to reduce occupational risks. There are no hazard leverage incentives to workers exposed to health risks in active service.

*What about participating in safety committee meetings and post exposure safety practices?*

P2: “The leaders/managers listen to our suggestions related to how we work money hours, they report to high level, but we don’t participate in safety meetings”

*Probe question: are there guidelines about precautions which are hung somewhere at your working place?*

P2: “There are some signs which indicate the hand washing steps.”

P2: “Suggestion is that there should be guidelines regarding incident cases of sticking oneself for us the nurses, midwives and cleaners. Another thing is about the working hours.”

There are no guidelines on risk aversions and procurement procedures for equipments replacement related to hygiene/waste management took a long time to be accomplished leaving the workers to carryout high risk tasks. In some cases new staffs are recruited to fill the gap created by staff that left without prior notice. In this case the new staffs are engaged in activities without prior training but he/she is given briefing on the job.

*What do you know about incident report in workplace?*

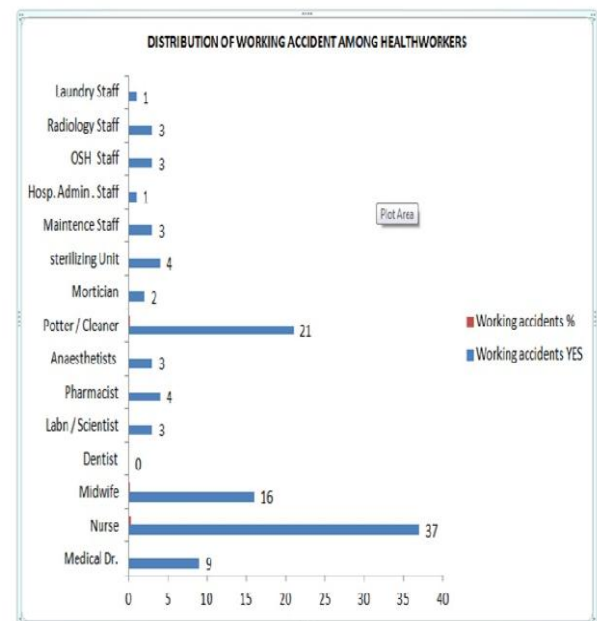
P1: “I don’t know, at my working place there are forms of incident cases report but the ones which are specific for someone who sticks himself/herself they do not exist, I am sure they do not exist”.

P2: “For us, at our working place, we practice it, incident reports are made but we have started to do it recently. There is also a health safety committee.

Workplace incidents/occupational hazards reporting and notification system slowly emerging in practice in few health facility; damaged materials like broken stretcher or equipments, the damage of the building, dysfunctional lock of the door are not promptly reported on time until it cause problem. There are some occupational hazards

incidents cases that are not reported because they know that there is no feedback, they give only leave.

The main variables that influence the proportions of health hazards cases in the health facility through multinomial regression analysis showed that there were about five main influencing variables in this study that showed an observed statistical relationship, they include: hospital management policy commitment ( $0.008 < 0.05$ ), factors related to poor policy enforcement ( $0.034 < 0.05$ ), also are the health facility safety activities ( $0.003 < 0.05$ ), employee participation in safety program ( $0.001 < 0.05$ ). And lastly, is the post exposure safety compliance ( $0.047 < 0.05$ ) (Table 3).



**Figure 2: Distribution of the number of cases of working accident health hazards among cadre of health workers (n=249).**

## DISCUSSION

The study on the occurrences of occupational health hazards cases in the health facilities in Kigali Rwanda in the last two years (2014–2016) showed that gender ratio of the study participants, according to male to female was 105:144. The predominant age category of the study participants were those in the age cohort of 30–39. Majority of the study participants 107 (43%, 95% CI=36.74–49.37) possessed diploma certificates, while about 109 (43.8%, 95% CI= 37.51 – 50.18)) had worked for 3-6 years.

Findings on the prevalence of occupational health hazards showed that back ache and working accident had the highest proportion frequency of 151 (60.6%, 95% CI=54.28–66.75) and 139 (55.8%, 95% CI=49.42–62.09) respectively, this is similar to another study on occupational hazards among clinical dental staff, with

findings that showed backache as most frequently experienced hazard in 47% of the subjects.<sup>17</sup> Other studies with similar findings showing high incidence of musculoskeletal hazards among health care workers included.<sup>18-20</sup>

Another important finding was occupational health hazards related to blood borne disease, this is in line with study on perception and prevalence of work-related health hazards among health care workers in public health facilities in southern India. The study showed result that among the 81.5% who reported exposure to biological hazard, 93.9% had direct skin contact with infectious materials. Among HCWs reporting needle stick injury, 70.5% had at least one in the previous three months.<sup>21</sup> In another study by Lee, on occupational transmission of blood borne diseases to healthcare workers in developing countries: they observed that majority of occupational acquired blood borne diseases by HCWs were as a result of needle stick injuries.<sup>22</sup>

Further occupational health hazards revealed in the study were slips and falls as well as cuts from sharp objects and needle stick injuries. This also equally corresponds to study by Arasi whose findings showed that ergonomic hazards included lifting heavy objects (42%) and standing for long hours (37%). Psychological hazards included negative feelings (20.3%) and verbal or physical abuse during work (20.5%).<sup>21</sup>

Another occupational health hazard that occurred with significant proportion among study participants was stress related to over work and over time, (stressful work experience). This is just like study conducted in China on relationship between burnout and occupational stress among nurses that discovered occupational stress among HCWs has been argued to be responsible for high level of job burnout.<sup>23</sup>

When trying to determine the factors that influenced the types of hazards cases in the hospital variables workers opinion of the work place safety ( $0.00 < 0.05$ ), health facility factors associated with occupational hazards ( $0.045 < 0.05$ ), individual level influencing factors ( $0.045 < 0.05$ ) and the levels of compliance to safety regulations ( $0.001 < 0.05$ ) stood out strongly.

This is in line with study findings by Shashi which revealed that potential biological hazards are infections through exposure to aerosols, spills and splashes during various activities, fungal infection due to wet clothes and environment and infections through hospital fomites, which is health facility associated factors.<sup>24</sup>

Other influencing factors to the hazards in the health facilities from multi-nominal regression analysis was hospital management policy commitment ( $P=0.008$ ), factors influencing poor policy enforcement ( $P=0.034$ ), Extent of Health Facility safety activities ( $P=0.003$ ) and employee participation in safety program ( $P=0.001$ ).

Lastly, post exposure compliance ( $P=0.047$ ). These finding were similar to another study that have findings that showed needle stick injuries among nurses in sub-Saharan Africa accounting for 57% of the nurses and midwives occupational health hazards in the one year. Only 18% had not experienced any of such injury in their entire career. In that study, the rate of needle stick injuries stood was 4.2 per person-year. Multiple logistic regression analysis showed that the most important risk factor for needle stick injuries was lack of training on such injuries (OR 5.72, 95% CI 3.41-9.62).<sup>25</sup> Another study on current status of occupational health and safety (OHS) in Tanzanian hospitals, identified that needle stick injuries accounted for the largest part of the most common accidents (52.9%); followed by splash of blood from patients (21.7%); burn injury from chemicals (10.6%); and slippery floors (5.9%).<sup>26</sup>

Findings on the classification of occupational health hazards with highest frequency as identified by the study participants among types of health hazards that occurred in the health facilities includes: needle stick injuries cuts and tissue damage neck and back pain and workload and overtime. This is not same with Manyele's study conducted in Tanzania that showed main occupational hazards health among workers: infection, accident, radiation, exposure to noxious chemicals, drug addiction and psychological problems, and assault.<sup>26</sup>

The most common variables that influences the existence of the occupational health hazards in the study includes factors related to knowledge of existence of safety program for practices in different units in the hospital, ( $p=0.032$ ) and factors related to person in charge of workers safety ( $p=0.003$ ). Other related factors are issues in the health facility ( $p=0.000$ ). Other studies with similar findings showed association with knowledge, health facility related factors.<sup>27,28</sup> Furthermore, Individual level associated factors ( $p=0.000$ ) as well as strategies for hazards prevention in hospital ( $0.001 < 0.05$ ) and employees participation on safety activities in the hospital ( $p=0.001$ ) were found to be among the major variables that influenced occupational health hazards among workers in the study. The findings are similar with another study that established gap in hazard prevention strategies with regards to provision of personal protective equipment (PPE) to health care worker.<sup>29</sup>

## CONCLUSION

In this study majority of respondent believe the health facilities have Moderate Level of hospital health safety programs and poor incident case report system. The occupational health hazards cases with highest frequencies in the study were back ache and working accident likewise slips and falls and blood borne diseases respectively. The most common variables in the study that influence the health hazards cases in the study site were hospital management policy commitment with regards to hazards prevention, factors influencing poor

policy enforcement, health facility safety activities, employee participation in safety program and post exposure compliance.

The study also showed that backache, working accident, blood borne disease, slips and falls as well as cuts from sharp objects and needle stick injuries are among the most common occurring and prevalent occupational hazard. Poor safety communications and guides, over time and stressful work experience were the most important risk factors.

Therefore occupational safety training programs could be developed to address these issues. There is need for improvement in safety information communications, training and job supervision and an establishment of a surveillance system for registering, reporting and management of occupational exposure. There is need for another study on the point and process of exposure to hazards on job performance and consequences of the hazards or may be a study on worsening effect on human resources shortage. Others could carry out study on the assessment of the effectiveness of safety training as measures countering occupational health hazards in workplace.

### ***Contribution of the current study to learning***

This study revealed major underlying employee and employers' factors like non motivation of workers, negligence, incident reporting/documentation gap, weak regulations and safety enforcement system.

It equally throws light on the prevalence of health hazards occurrence among different categories of health workers and short falls on hazard prevention and safety practices which provide data that are useful for various purposes.

Key issues and/or reforms that could help strengthen worker safety lies on hospital management policy commitment and ensuring employee participation in safety program.

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