

Health Care Workers' Safety Perception And Its Relation To Accidents, Near Accidents And Physical Complaints.

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Abstract: Background: Health care workers in developing countries are at greater risk of injuries and ill-health from Hepatitis B and HIV/AIDs which impact on individual employee's health and well-being. **Objective:** To measure the correlations of health workers' safety perception and the occurrence of accident, near accident and physical complaint in secondary health facilities in The Gambia. **Method:** Institution based cross sectional study among a selected sample size of 285 health workers. Data were collected using structured validated questionnaire developed by Hayes et al. Approval to conduct the study was obtained from the Ministry of Health of The Gambia. **Results:** From the selected sample size, 245 responded for a response rate of 89%. Among the respondents, numbers of victims of accident, near accident and physical complaint were 82, 49 and 100 respectively. The multiple regression showed predictor of accident was program safety ($p < .005$); near accident predictors were supervisor safety ($p < .006$) and management safety ($p < .030$) whilst predictors for physical complaint was program safety ($p < .047$). **Conclusion:** The study found the correlation between employees' safety perception and workplace accident, so we suggest for formulating workplace safety polices aimed at creating safe working environment and improving the well-being of health workers.

Keywords: Health care worker, Safety perception, Work safety scale, Work related accidents

Introduction

Health care is a dynamic industry marked by dramatic change, scarce resources, and high stress levels [1]. Greater demands, heavier caseloads, higher patient acuity, and fewer personnel result in increased health care worker stress levels, higher incidents of burnout, injuries/accidents and poor coping mechanism to unsafe workplaces [2]. Accident/injuries associated with health care work mostly arise from biological hazards (such as HIV, Hepatitis B virus, Hepatitis C virus and Tuberculosis), physical hazards (such as radiation, lasers, noise,), chemical hazards (such as detergents, hazardous drugs), physiological hazards (upper back pain, lower back pain, neck pain and □shoulder pain) and environmental hazards (such as accident, injury, strain

and discomfort). The mentioned challenges characterize the health care industries as associated with varying degrees of risk of occupational injuries and ill-health. The occurrence of these work related accidents/injuries affect mostly health care workers whose work involve coming in direct contact with infectious materials such sharps, blood and its products or patients who can be a source of infection. For instance, there are about 16,000 hepatitis C, 66,000 hepatitis B, and 200 to 5000 human immunodeficiency virus (HIV) infections among health care workers on an annual basis[3]. Nurses and their aides in particular, are the subgroups with the highest injury rates and workdays lost as a result of these illnesses and injuries [4]. World Health Organization [5] estimated that of the 35 million health care

workers worldwide, approximately 3 million experience needle stick injuries each year. These injuries exposed the health care workers to blood borne viruses [6]. The risk of injuries and infections is greater in developing countries where there is inadequate supply of gloves, gowns, masks, and goggles to protect the workers from contact with blood. It was reported that in Tanzania birth attendants cover their hands with plastic bags to protect themselves from exposure to HIV during deliveries because there are no gloves available [7]. Safety climate described as the shared assessments of safety policies, procedures, and practices in work organizations and the perceptions and expectations employees have of safety in their workplace. These can be viewed as the environment that drives worker behaviour with respect to safety practices. Consequently, in the past years several studies have been conducted to investigate the hypothesis that improved safety climate should increase compliance with safety practices and decrease work related injuries. Thus the enforcement of safety regulations and training of workers on accident prevention can result to less injury and consequently reduced workday's loss, injury compensation by employers and less burden for families from caring for their injured members.

Health Care System in The Gambia

The Gambia has a three tier health care system namely: primary, secondary and tertiary health facilities. The secondary health facilities are where majority of the people go for basic medical services. Most of the health workers' activities in these facilities involve the use of needles and other sharps which has the potential to cause injuries and infections. Moreover, the health care workers are barely trained purposely on safety issues and there is inadequate supply of gloves, gowns, mask to protect workers from injuries or infections. Working in this kind of potentially unsafe environment without knowing the prevalence of work related accident and perception of health workers becomes a critical issues and the reason for selecting the secondary health facilities. To our knowledge, this is the first study exploring the relation between safety perception and the occurrence of work related accidents among health

workers in The Gambia. The aim of this study was to study the relationship between health care workers' safety perception and the occurrence of accidents, near accident and physical complaint among health workers in secondary health facilities

Methods

A cross sectional study was conducted from July to August, 2011 in the secondary health facilities in the Western Health Region (WHR) of The Gambia. The population of this study includes secondary health facilities' employees in both public and private facilities. WHR is by far the biggest and most populated where 55% of Gambia's 1.7 million population lives. The secondary facilities were selected because they are the secondary level care institutions in which majority of Gambian seek for medical care as a first point of call. Majority of the health workers are also found in these health facilities and they come in contact with more patients than any other hospital in the case of The Gambia. All health care workers in the health institutions, who consented irrespective of age and sex, were included in the study. The sample size estimation for the participants was arrived using proportionate sampling by targeting 25% of the health workers in the secondary health facilities. Sampling frame consisting of all health care workers in each health institution was constructed with assistance from the management of the respective institutions and proportionate sampling was utilized to select the 285 study subjects. For the purpose of this study, accident was defined and measured as the number of self-reported injuries experienced in the previous two years due to the following: needlesticks, cuts, splashes or fall resulting in injuries. Similarly near accident was defined and measured as reported fail unintentional events which could have resulted to accidents/injuries among health professionals had it occurred such as miss fall due to slippery floor, miss needle prick etc. during the previous two years. Physical complaints was defined and measured as reported pain or discomfort that occurs to employees during the course of their work such as back pain due to continuous bending or inadequate sleep due to night work during the previous two

years. The data were collected by using a structured questionnaire: 50-item Work Safety Scale (WSS) developed by Hayes et al. [8] This instrument assesses employees' perceptions of work safety and measures five distinct constructs: (a) job safety, (b) co-worker safety, (c) supervisor safety, (d) management safety and (e) program safety. For each item, respondents were asked to indicate the extent to which they agreed that the item described its respective content domain. A five-point rating scale was used for each of the ten items in the WSS (1 = strongly disagree, 2= Disagree, 3 = neither agree nor disagree, 4 = Agree, 5 = strongly agree). 50-item Work Safety Scale (WSS) assesses employees' perceptions of work safety and measures five distinct constructs: (a) job safety, (b) co-worker safety, (c) supervisor safety, (d) management safety and (e) program safety. Reliability analysis of the respective scales: accident, near accident and physical complaint, showed a Cronbach Alpha of 0.854, 0.830 and 0.827 respectively. Information on the variables accidents, near-accidents and physical complaints were measured by using two items: Have you had any accident near-accidents or physical complaints while at work during the last 2 years? What was the nature of the accident (e.g. needle stick, fall), near-accidents (e.g. miss needle stick, miss fall) or physical complaints (e.g. lower back pain, upper back pain, neck pain)? Reliabilities of these two items: Cronbach's Alpha is 0.854 and 0.827 respectively. Ethical approval was obtained from the Ministry of Health of The Gambia. Confidentiality of the data was strictly maintained in the study period. Collected data were analyzed using Statistical Package of Social Sciences version 18.0. A reliability analysis was performed on each of the work safety scales to ensure their reliability and internal consistency. Job safety, coworker safety, supervisor safety, management safety and program safety had a coefficient of 0.88, 0.91, 0.81, 0.90 and 0.85 respectively. Constructs considered being significant contributors to the occurrence of accident, near accident and physical complaint was investigated.

Results

Out of 285 health care workers selected, 245 participated in the study; resulting in a response rate of 89%. Of the total participants 131 (53.5%) were females and 92 (37.6%) of the respondents were within the age bracket of 20-29 years. Registered nurses represented 77(31.4%). Table 1 shows the socio-demographic characteristics of participants.

Table 1: Demographic information of respondents

Variable	N	%
Gender		
Male	114	46.5
Female	131	53.5
Marital status		
Single	65	26.5
Married	144	58.8
Others*	36	14.7
Age group (years)		
20-29	92	37.6
30-39	58	23.7
40-49	58	23.7
50-59	33	13.5
>60	4	1.6
Profession		
Registered nurses	77	31.4
Nurses' aides	111	45.3
Other trained health workers	57	23.3
Years in service		
<5 years	166	67.8
5-10 years	42	17.1
10-15 years	13	5.3
>15 years	24	9.8

Others*(Divorce, widowed, separated)

Among the 245 respondents, 82 reported accident in the preceding two years. From the number of 82 reported accident cases, needle stick injuries was the highest accounting for 50(61.0%). On the other hand near accident was 49 of which miss needle stick was the highest accounting for 24 cases. About 100 physical complaint cases were reported with lower back pain being the highest

35 (Figure 1). The interaction effect between gender, age, profession, work experience and clinical department with the WSS was investigated and presented. As reflected, the table shows significant between gender and management safety ($p < .026$). Management safety ($p < .049$) and program safety ($p < .044$) were also found to have significant relationship with age. There was also a highly significant relationship between workers profession with program safety ($p < .001$), work experience with management safety ($p < .033$) and clinical department with program safety ($p < .046$). The main effect of profession and program indicated that train professionals were more compliant with the organization's safety policies. Similarly more experience workers valued commitment to management safety than those with less experience (Table

2).

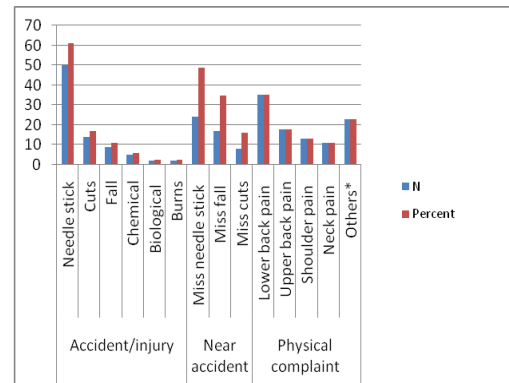


Fig. 1 Categories and frequencies of work related accidents

Note: Others* (arm pain, chest pain and fatigue)

Table 2: Results of work safety scales and demographic variables

Variable	Job safety		Coworker safety		Supervisor safety		Management safety		Program safety	
	t/F	P	t/F	P	t/F	P	t/F	P	t/F	P
Gender	-.96	.33	-.59	.55	-1.84	.06	-2.23	.026	.18	.85
Age	1.19	.31	1.00	.40	.58	.671	2.42	.049	2.48	.044
Profession										
1.Registered nurse										.001
2.Nurses' aides	.39	.67	.16	.84	.004	.99	.96	.38	7.56	2< 1
3.O.T.H.W										
Work experience	.83	.47	1.42	.23	1.61	.18	2.95	.033	1.18	.31
Clinical Dept.										
1.Inpatient										
2.Outpatient										.046
3.Labour	.05	.98	.36	.77	1.06	.36	1.41	.24	2.71	3< 1
4.Other*										

Others* (pharmacy, immunization, and laboratory), O.T.H.W (other trained health workers)

* $p < 0.05$, Scheffe test.

An examination of the correlation patterns shows the relationship between accidents with job safety was significant ($p < 0.001$) whilst all the other WSS showed no significant relationship. There was also significantly relationship between physical complaint and job safety. As

reflected in Table 3 while job safety and two of the dimensions are negatively correlated, the remaining correlations were positive. An explanation could be that job safety assesses workers' own safety practices, while the other dimensions assess others' (supervisors', co-workers',

managements', programs') safety practices.

Table 3: Correlations between work related accidents and work safety scales (WSS)

Variables	1	2	3	4	5	6	7
1.Accident/injury	1						
2.Near accident	.287*	1					
3.Physical complaint	.159*	.055	1				
4.Job safety	.001	.057	.140*	1			
5.Coworker safety	-.115	-.014	.035	.200**	1		
6.Supervisor safety	-.056	-.022	-.025	-.034	.383*	1	
7.Management safety	-.067	-.100	-.043	-.083	.305*	.731*	1
8.Program safety	-.021	-.102	.055	.191**	.208*	.357*	.417*

* $p < 0.05$, ** $p < 0.01$

Multiple regression analyses was conducted to determine the unique contribution of the work safety scales in predicting accident, near accident and physical complaint. Only significant predictors are reported. The multiple regression analysis indicated that predictor of accident was program safety ($p < .005$); thus showing that a positive relationship was found between the two. On the other hand

near accident predictors were found to be supervisor safety ($p < .006$) and management safety ($p < .030$). These results therefore suggest that a positive relationship exist between near accident and management safety practices. For physical complaint, only program safety ($p < .047$) was found to be an important predictor, the results thus showed a positive relationship.

Table 4: Multiple regression results predicting work related accidents

Criterion	Variables entered	β	t	p	F	Adjusted R ²
Accident	Gender	0.266	2.036	.043	22.36	0.30
	Clinical department	0.361	2.192	.029		
	Program safety	0.235	2.827	.005		
Near accident	Supervisor safety	0.230	2.419	.016	12.37	0.19
	Management safety	-0.209	-2.190	.030		
Physical complaint	Age	0.700	6.182	.001	12.08	0.19
	Program safety	0.126	1.993	.047		

Discussion

The prevalence of needle stick injury among health care workers in the preceding two years was 61.0% which is lower than Saudi Arabia's 74%, Nepal's 74% and India's 79.5% [9, 10, 11] and much higher than Malaysia's 23.5% and Ethiopia's 32.4% [12, 13]. The high prevalence of needle stick in this study may be because most of the respondents about 76.7% were nurses and their aides who administer most of the injections and are responsible for intravenous fluid administration and other procedures which require the use of needles and other sharp objects. The findings in this present study indicate that needle stick injuries among health care workers in The Gambia are therefore important and critical issue for consideration. Injuries occurring to health workers especially among nurses are a common feature of studies around the world [14] because they administer most of the injections and are responsible for intravenous fluid administration and other procedures which involve the use of sharps [12]. In view of the findings in this study, preventing needle stick injuries and resulting infections among health care workers become necessary to provide quality health care. Thus safety training, use of protective gears, preparation of patients before procedures to reduce unexpected patient movement are crucial in reducing needle stick injuries among health care workers. Other significant findings in this study was near accident (occurrences that had the potential to become an injury but through chance, prevention, or mitigation did not result in injury). Miss needle stick was the most common near accident found. The occurrence of near accident especially miss needle stick or miss fall, raises concerns as they are a recipe for injuries and illness. Although not much is documented on the impact of near accident among health workers, its occurrence can have an implication on the wellbeing of workers and service delivery. Several authors support the view that health care organizations can improve performance as a result of lessons learned from near accidents [15]. The current study suggests that collective actions is required to enable better understanding of the nature and causes of near accident by unpacking the contrasting views as valuable opportunities

for better solution formulation and adoption. A total of 100 respondent representing 40.8% of the respondents, mentioned suffering from physical complaint. Lower back pain, upper back pain and shoulder pain were the most frequently reported complaints. The findings are similar to other studies which found low back pain to be common and associated with awkward posture and working for 7 or more hours [16]. Findings from this study implies that physical complaint and its impact is a cause for concern as a result of poor working conditions, intense work pressure and physically demanding jobs which are issues in many Gambian secondary health facilities. In this study it was found that the work safety scales were significant in predicting work related accidents. An explanation of the positive relationship with accident can be attributed to the fact that three of the safety program items: "Unclear, Does not apply to my work place and Does not work" were negative compared to 7 other positive items: "Worthwhile, Helps prevent accident, Useful, Good, First rate, Important and Effective in reducing injuries". We doubt that three negative items made a strong positive relationship between program safety and accidents. Similarly, we believe the same effect occur in the relationship between program safety and physical complaint. In view of our findings, we feel designing a safety program to address work related injuries has to be specific and suitable for workers' need which could work and reduce the accident and physical complaint. In addition, it can be means to education, training, promotion, inspection and legal compliance to regulations. For example provision, training, inspection and enforcement on the use of safety disposal boxes for used needles are a good practice and can greatly reduce work related injuries. On the other hand, although supervisor safety was a positive relationship in predicting near accident, we found that some items like "Keeps workers informed of safety rules, Update safety rules and Enforces safety rules" may cause negative effect. If safety program (policies) are Unclear, Does not apply to work place and Does not work" for health care workers, we believe even supervisors completed their jobs and the accident can't be reduced. Therefore, establish a feasible and meet workers'

need safety program (policies) will be the base for supervisors to follow. However, although a positive relationship has been found between near accident and supervisor safety, there is still need for further investigation since the results are inconclusive. In our study, these findings suggest that workers perception on the work safety will have an effect in the way workplace safety is perceived. If workers perceived their work place to be safe, they may engaged in unsafe acts and tend to incur more work related accidents. Thus workers' perceptions of injury risk and how likely it is that they will experience an injury in the workplace predicts their safety behavior and outcomes at work [17]. Several other studies supported this theory and demonstrated the relationship of perception with work related accident [18, 19]. Perception of risk has been shown to vary among individuals and has been recognized as a necessary precursor to protective behaviors. Also there is evidence supporting the relationship between risk perception and workplace injuries and accidents [20] whilst support from work colleagues has been found appropriate for work specific problems and can relieve work stress [21]. Moreover, supervisor safety practices can enhance employees' compliance with safety measures and reduces workplace injuries [22]. Furthermore, informal and formal feedback from managers on safety issues has a strong positive influence on overall job safety and reduced work related accidents [23]. Studies have showed that employees with high perception are more compliant with safety policies and subsequently registered relatively lower rates of accident involvement [24, 25]. This observation suggests that employees' perceptions of safety influence their compliance with safety-related practices [26]. The study findings have some implication for Gambian Health workers due largely to poor safety program since there is no Occupational Health and Safety policy to guide the implementation of safety practices. Furthermore, management and or supervisors rarely ensure continue safety practices by workers thus making the workers expose to unsafe practices and working environment. As a result of this study's findings, promoting Gambian health workers' safety perception becomes crucial as a way of

mitigating the occurrence of work related accidents. The study finding has great importance for planning preventive measures in a setting such as Gambia, where proper safety training is more practical objective than costly treatment of injured workers. Due to inadequate occupational health and safety training, health workers may not be familiar with the different mechanisms of prevention of work related accidents associated with their activities and may therefore be at risk for such injuries. A study carried out in Sub-Saharan Africa also supported the importance of training [27] as a practical way of minimizing workplace related accidents.

Research limitations

It was a cross-sectional study focused in secondary health facilities and as such, cannot be generalize to represent the entire health workers in the Gambia. However, efforts were made to ensure that all the different types' of health care workers in secondary health facilities participate in the study. The approach and collection of data through self-administered questionnaire could have led to recall-biased as a result; the respondents were urged to try to be accurate, fair and realistic in their responses.

Conclusions and recommendations

This study revealed high prevalence of needle stick injury, near accident and physical complaint among health care workers in the Gambia are exposed to. There is a correlation between employees' safety perception and workplace accident. Our findings suggest that attention need to be given to workers' safety because the occurrence of work-related illness and accidents can prove quite costly in terms of the potential for loss man-hours, and even human life. Inadequate training on occupational health hazards and safety issues, and lack of safety instructions were associated with needle stick injury. Management should address long work hours, lack of safety devices, and set standard precautions to reduce and prevent needle stick injury. Effective training and awareness to reduce risky behaviors, organizational strategies to prevent exposure are essential to reduce the risk of such injuries and

post-exposure prophylaxis, and follow-up to reduce the risk of possible infections among health care workers. Future research can look at the correlate of incidences of needle stick injuries and health workers' job satisfaction.

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