

## KNOWLEDGE, AWARENESS, AND ATTITUDES OF RADIOLOGY STAFF TOWARD WORKPLACE VIOLENCE

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### Abstract

**Background:** The rising patient load in health care facilities, notably for diagnostic radiographic examinations like MRI and CT, has increased the workload for radiology staff. This heightened workload is a potential primary cause of workplace violence in radiology departments. This study assesses the knowledge, awareness, and attitudes of Sudanese radiology department staff towards workplace violence.

**Methods:** A qualitative survey using a comprehensive questionnaire was distributed via email to radiology staff in various Sudanese hospitals. The questionnaire, developed with insights from scientific literature, focused on understanding the staff's knowledge, awareness, and attitudes towards workplace violence.

**Results:** Key findings revealed that only 13% of participants had received training on handling violence, despite two-thirds being aware of the Occupational Safety and Health Administration (OSHA) guidelines. A significant 64% believed they had a good understanding of workplace violence, yet only 69.2% felt prepared to handle violent situations. Additionally, 35% of the staff identified lower employee morale as a significant impact of workplace violence.

**Conclusion:** The study highlights a fair level of awareness but a gap in preparedness among radiology staff in Sudan regarding workplace violence. It underscores the necessity for

comprehensive strategies encompassing training, policy modifications, and psychosocial support to better manage and prevent workplace violence in radiology departments.

**Keywords:** Awareness; Workplace; Violence; Radiology; Healthcare

## 1.- INTRODUCTION

Workplace violence is a major issue. Workplace violence has been defined in various ways by various organizations. Workplace violence is defined by the National Institute for Occupational Safety and Health (NIOSH) as “violent acts, including physical assaults and threats of physical assault, directed toward persons at work or on duty.” Physical assaults or threats that result in or threaten serious physical harm are typically the focus of enforcement activities. Many people who study this issue, however, believe that the workplace prevention programs highlighted here include verbal violence threats, verbal abuse, hostility, harassment, and the like, which can cause significant psychological trauma and stress even if no physical injury occurs. Physical violence can result from verbal assaults [Sabak *et al.*, 2021; Noorana and Feng, 2018; Abdellah and Salama, 2017; Kumar *et al.*, 2016].

An important source of stress is the rise in workplace violence against healthcare workers. Many incidents of workplace violence against healthcare workers have been reported in the past and continue to be reported from various parts of the country and around the world among these healthcare workers [Hou *et al.*, 2022; George *et al.*, 2020]. In a healthcare setting, a wide range of emotions can be witnessed in a short period of time, from joy at having a baby to grief at the loss of a loved one. However, as the world has changed, hospitals have become more commercialized. Out-of-pocket spending has hampered the relationship between healthcare workers and patients. The draft 2015 national health policy depicted an increasing number of households facing catastrophic expenditures due to health costs (18% of all households in 2011-12, up from 15% in 2004-05) [George *et al.*, 2020]. As a result, hospital violence (verbal, physical, and emotional) has been identified as a significant issue for health service providers in developing countries where individuals are expected to pay for their health expenses, which can be abnormally high at times. However, the problem is not limited to developing countries; the incidence of violence is significantly higher even in developed and prosperous countries where health is a state subject and money is not an issue [Bingöl and İnce, 2021; George *et al.*, 2020; Spelten *et al.*, 2020].

Patients’ growing awareness, increased access to information via modern information and technology, and the ease with which the courts can be approached have made the conditions of healthcare professionals pitiful, and such beneficiaries tend to take healthcare workers for granted, resulting in increased clashes between them. Hospital violence falls under the broad definition of workplace violence, which is defined as “incidents in which staff is abused, threatened, or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being, or health.”

The objective of this study was to shed light on the prevalence of workplace violence in this regard. This study examines Sudanese radiology departments’ knowledge, awareness, and attitude toward violence.

## 2.- MATERIALS AND METHODS

A descriptive qualitative survey was conducted among 138 participants working in radiology departments in fifteen Sudanese hospitals (governmental, general, university, and private) from November 2021 to March 2022. Researchers created this survey questionnaire with the help of recent scientific literature to cover key areas of prevalence in radiology departments, as well as knowledge, awareness, and attitude toward the model proposed by the World Health Organization (WHO) guidelines. The questionnaire was divided into three sections. The first section dealt with sociodemographic and occupational variables such as participant gender, age, specialty, years of experience, type of institution, and radiology department. The second section discussed the prevalence of workplace violence in the radiology department. The third section includes questions about workplace violence knowledge, awareness, and attitude.

Data was entered using a Google form. Microsoft Excel 2016 was used to analyze the data, and percentages were calculated for all variables. The study was carried out in accordance with the Declaration of Helsinki's ethical standards and was approved by the National Ribat University-Faculty of Radiology and Nuclear Medicine Sciences Research Committee whenever necessary. The participants were informed that their participation in the study was entirely voluntary and confidential and that they could opt out at any time without explanation. By completing the questionnaires, they provided informed consent to the study.

## 3.- RESULTS

According to the current survey results, there were 57 males and 81 females from the field of medical radiology who participated in the current study. The study's participants ranged in age from the second to sixth decades of life, with educational degrees ranging from diplomas to bachelor's, master's, and doctoral degrees in various medical radiology specialties. It was also revealed that the study was carried out in both public and private sector hospitals, in radiology departments that receive emergency cases or radiology departments that receive medical cases, with no regard for the patients. Specialists in X-ray, ultrasound, MRI, nuclear medicine (NM), and radiologists were among those who responded to the research questions. It is also worth noting that the survey participants' practical experience in medical radiology ranged from six to twenty years (Table 1).

Table 1.- Demographic information and the general characteristics of the study group.

Questions	Response (n; %)
<b>Gender</b>	
Male	(57; 41.3%)
Female	(81; 58.7%)
<b>Age</b>	
20-24 years	(30; 21.7%)
25-29 years	(39; 28.3%)
30-34 years	(41; 29.7%)

35-39 years	(18; 13%)
40-44 years	(6; 4.3%)
45-49 years	(3; 2.2%)
50-54 years	(0; 0%)
55-59 years	(1; 0.8%)
<b>Education</b>	
Diploma	(0; 0%)
B.Sc.	(73; 52.9%)
M.Sc.	(53; 38.4%)
PhD	(12; 8.7%)
<b>Hospital</b>	
Public	(74; 53.6%)
Private	(64; 46.4%)
<b>Radiology department type</b>	
ER Department	(69; 50%)
General Department	(69; 50%)
<b>Specialty</b>	
X-Ray Technologist	(84; 60.8%)
Ultrasound Technologist	(23; 16.7%)
MRI Technologist	(15; 10.9%)
NM Technologist	(1; 0.7%)
Radiologist	(15; 10.9%)
<b>Years of experience in the field of radiology</b>	
≤6 years	(74; 53.6%)
6-10 years	(41; 29.7%)
11-15 years	(15; 10.9%)
16-20 years	(5; 3.6%)
≥20 years	(3; 2.2%)

The study was able to identify the percentage of radiology employees' knowledge of violence in the workplace and volatile people among radiology departments, where the percentage of knowledge described above was determined based on the yes or no answer to inquiries related to sufficient knowledge of violence in the workplace (64%; 36%), receiving training on how to deal with Violence (13%; 87%), accountability that the radiology employees' in direct contact with the patient (64%; 36%), and accountability that the radiology employees' in direct contact with the patient (93%;7%), and that working with volatile people is regarded as a risk factor (96%;4%), respectively (Table 2).

Table 2.- Radiology staff knowledge of workplace violence and volatile people in radiology departments.

Questions	Response (n; %)	
	Yes	No
Do you have a thorough understanding of workplace violence?	(88; 64%)	(50; 36%)
Have you ever been trained to deal with violence?	(18; 13%)	(120; 87%)
Is it true that the person who has direct contact with the patient is more vulnerable to workplace violence?	(128; 93%)	(10; 7%)
Working with volatile people (e.g., those under the influence of alcohol/drugs, those with a history of violence, or those diagnosed as psychotic) is a risk factor?	(133; 96%)	(5; 4%)

The knowledge of radiology staff about strategies to prevent violence within the health care system and, of course, what strategies to prevent violence within radiology departments are two important points whose percentages were measured and found to be (23%;77%) for both expected knowledge or not (Table 3). Without a doubt, the described method was used to assess radiology staff awareness of violence prevention strategies in the health care system and radiology departments. In addition, the current research revealed the radiology staff's knowledge and attitude toward the situation of violence, as well as demonstrated the radiology staff's knowledge of the availability of comprehensive written regulations and a violence prevention program by the employer for reporting and responding to violence, as shown by the results in Tables 4 and 5.

Table 3.- Healthcare system and radiology department awareness of violence prevention strategies for radiology personnel.

Questions	Response (n; %)	
	Yes	No
Are you familiar with the health-care system's violence-prevention strategies?	(32; 23%)	(106; 77%)
Are you familiar with the Radiology Departments' violence prevention strategies?	(32; 23%)	(106; 77%)

Table 4.- Knowledge and attitude of radiology personnel regarding violence.

Questions	Response (n; %)	
	Yes	No
Do you believe you are prepared to handle a violent situation, a threat, or responsive and escalating behaviors displayed by a patient or another person at work?	(85;62%)	(53;38%)
Is it advised that radiology staff report any violent situations to hospital administration in order to protect themselves and their rights?	(137;99%)	(1;1%)
Is it recommended that radiology staff avoid any potentially violent situations?	(130;94%)	(8;6%)

Table 5.- The radiology staff's knowledge about the availability of comprehensive, written regulations and violence prevention programs by the employer to report and respond the violence.

Questions	Response ( <i>n</i> ; %)	
	Yes	No
Is there a comprehensive set of written procedures in place for reporting and responding to violence at the workplace?	(9; 6.5%)	(76; 55.1%)
Is there a program in place to prevent violence at the workplace?	(22; 15.9%)	(76; 55.1%)

The current study was also able to calculate the negative effects of workplace violence on radiology staff, revealing a decrease in productivity (42%), an increase in employee turnover (25.4%), absenteeism (45.7%), and a decrease in employee morale (60.1%) in the study sample (Figure 1). The study's findings, on the other hand, revealed that flushed or pale face (4; 2.9%), trembling or shaking (5; 3.6%), loud talking or chanting (81; 58.7%), shallow, rapid breathing (3; 2.2%), and glaring or avoiding eye contact (5; 3.6%) enhanced the radiology staff's knowledge about personal characteristics associated with potential workplace violence (Figure 2).

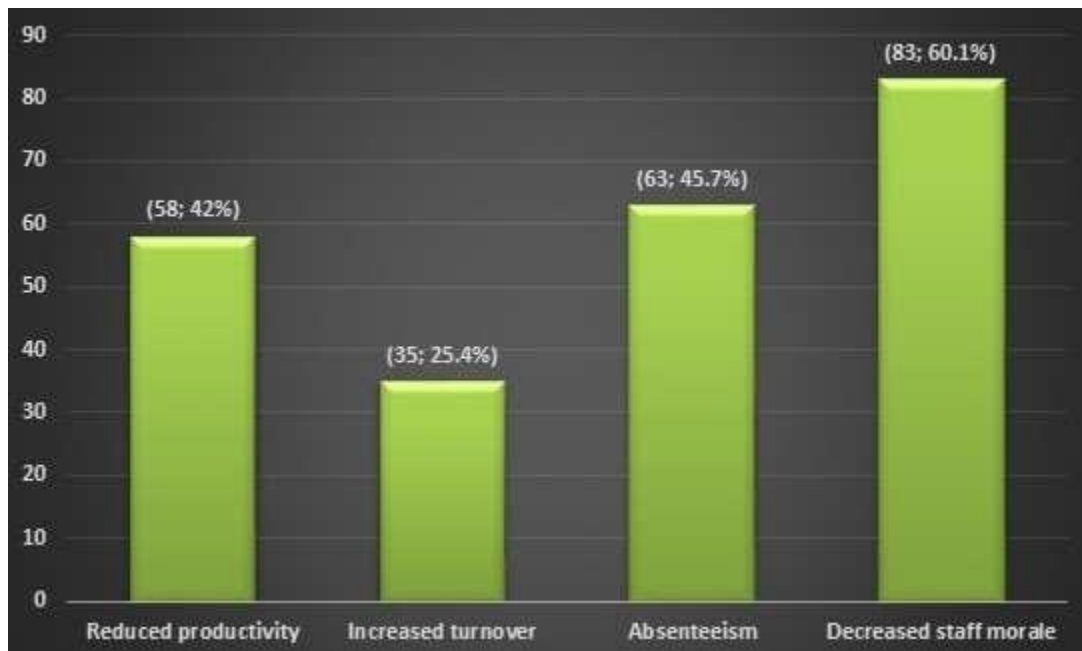


Figure 1.- The effect of workplace violence on radiology personnel.

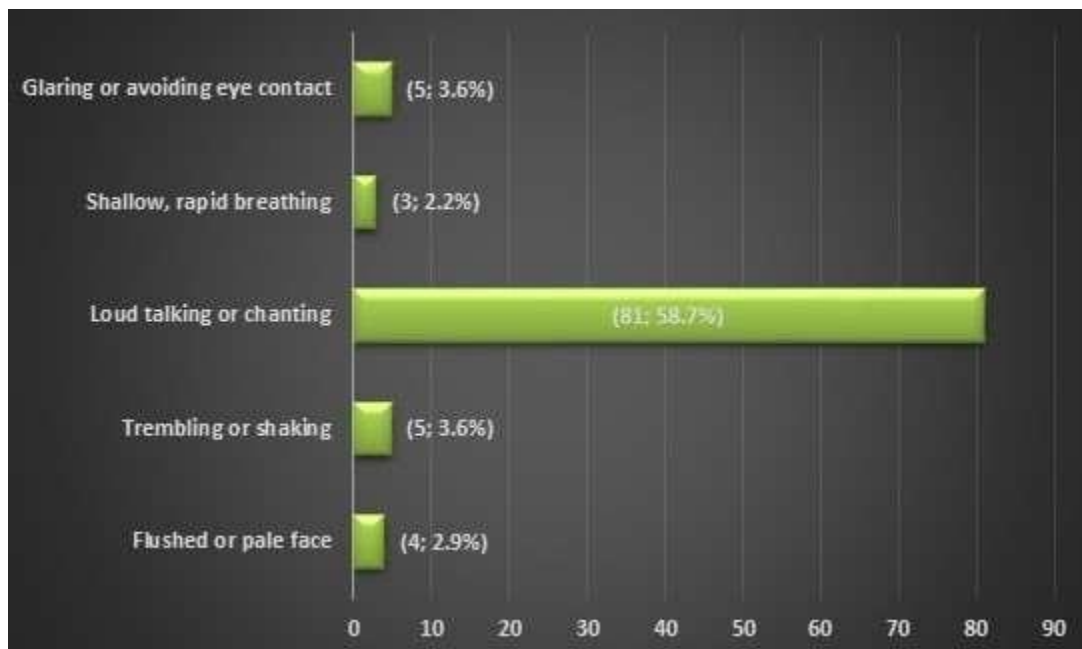


Figure 2.- Explain the knowledge of radiology staff for the signs of potential workplace violence.

#### 4.- DISCUSSION

Workplace violence awareness, knowledge, and practice attitudes are critical in the management of violence in a radiology department. Because of the reported rates of workplace violence in healthcare facilities, it was hypothesized that radiology staff's knowledge and practice of workplace violence would be inadequate. To prevent violence among radiology staff, the first step should be to estimate their knowledge, awareness, and practice regarding workplace violence, followed by an awareness and education program based on current evidence [Aljohani *et al.*; 2021; Cannavò *et al.*, 2019]. Furthermore, 138 responses were gathered from all 18 states in Sudan, and the findings of this study revealed the level of awareness of workplace violence among radiology staff (Table 1). Given that only 13% of the staff had prior training in handling workplace violence, there is a critical need for comprehensive, tailored training programs. Simulation-based training scenarios, including role-playing exercises, could significantly enhance the staff's ability to handle aggressive behavior and de-escalation techniques.

Every worker should be aware of his or her surroundings at all times. It entails being constantly aware of how they work and being able to identify the risks they face. Safety awareness is critical for reducing safety-related risks. The majority of our respondents (88; 64%) claimed to be knowledgeable about workplace violence (Table 2). Moreover, the study found that radiology employees at various private and public hospitals lacked knowledge of the strategies needed to prevent violence within the healthcare system and radiology department (Table 3). This could be because a large proportion of the staff (74; 53.6%) had less than five years of experience (Table 1), but their awareness of workplace violence prevention strategies was low. The results underscore the necessity of clear, accessible reporting procedures for incidents of violence.

Furthermore, modifications in the work environment, such as secure waiting areas and surveillance systems, can significantly enhance staff safety.

To the best of our knowledge, the government's unprecedented actions and prompt response in taking stringent control and precautionary strategies against workplace violence, to safeguard healthcare professionals and ensure their well-being, can explain the positive attitudes and high confidence in the control of violent situations. Participants exhibited optimistic attitude toward workplace violence. Approximately ( $n=130$ ; 94%) of respondents believed that healthcare providers should avoid any violent situations. (Table 4). Institutions should prioritize the psychological well-being of staff by offering regular mental health check-ins and stress management workshops. Building a culture of mutual support can also be instrumental in mitigating the impact of workplace violence. Furthermore, (137; 99%) of respondents agreed that employees should report any violent incidents to hospital administration in order to protect themselves and their rights (Table 4). Our findings completely agree with the findings of a study conducted in Saudi Arabia to investigate the awareness of a violence reporting system among healthcare providers [Towhari 2020]. This study discovered that reporting violent incidents is considered an essential component of planning effective future violence prevention methods. Employers should develop a safety and health program that includes management commitment, employee participation, hazard identification, safety and health training, and hazard prevention, control, and reporting to prevent violence in hospitals. Employers should evaluate this program on a regular basis. In this study, 76 (55.1%) respondents confirmed that their departments do not have a prevention program or comprehensive written procedures for reporting or responding to workplace violence (Table 5). Developing educational materials for patients and families about the challenges faced by radiology staff could foster empathy and reduce aggression. Community outreach programs can extend this awareness beyond hospital premises, creating a supportive environment.

If the employer fails to provide an implementation prevention program or comprehensive and written procedures for reporting or responding to violence, radiology staff may feel unsafe at work. This directly affects the provision of high-quality health care. Furthermore, the presence of written procedures for reporting and responding to workplace violence that are integrated into an organization's overall safety and health provides an effective method to reduce or eliminate the risk of workplace violence [Meng *et al.*, 2023; Hu *et al.*, 2022].

Workplace violence, to the best of our knowledge, is one of the factors that can significantly reduce job satisfaction and the quality of healthcare workers' working lives. In terms of the impact of workplace violence, all participants agreed that it has a direct impact on employee performance and workflow, and their responses were as follows: (58; 42%) believe that violence reduces work productivity, and (63; 45.7%) believe that violence causes employees to miss a duty or obligation. While approximately (83; 60.1%) of respondents believe that workplace violence has a direct effect on lowering employee morale, only (35; 25.4%) believe that workplace violence has a direct effect on increasing the number of workers leaving work (Figure 1).



Our findings on the impact of violence were consistent with a study conducted to investigate the impact of workplace violence on job performance and quality of life of community healthcare workers. This study found that workplace violence had a negative impact on job performance and quality of life of Community Health Centers (CHCs') workers [Lin *et al.*, 2015]. According to the study, reducing workplace violence can improve the quality of life, which leads to increased work productivity. Furthermore, our findings on the impact of violence were consistent with the findings of [Acquadro 2020] and [Teymourzadeh *et al.* 2014], who discovered that workplace violence contributes to a lower level of efficiency and productivity in healthcare and has a negative impact on nurses' quality of working life, job satisfaction levels, and willingness to stay on the job. It may result in increased stress levels and absenteeism, can result in chronic fatigue and sleep disorders, and has a negative impact on nurses' willingness to stay on the job.

According to the Occupational Safety and Health Administration (OSHA) of the United States (US), healthcare workers are at risk of being assaulted in the workplace, so it is recommended that healthcare providers be prepared for the possibility of facing violence on the job by providing training to deal with the violence [Guidelines for preventing workplace violence for health care and social service workers. 1997].

According to our findings, a total of (120; 87%) respondents confirmed that they had received no training in dealing with violent situations. This suggests that radiology personnel may be unprepared to deal with threats or physical violence (Table 2). A quasi-experimental study conducted by [Lamont and Brunero 2018] to examine the effects of a workplace violence training program revealed that after participants received training, the frequency of various forms of violence such as physical, psychological, sexual, and racial violence decreased. To the best of our knowledge, healthcare workers are at an increased risk of work-related assaults due to the violent behavior of their patients, clients, and/or residents. It is far easier to prevent violence by recognizing warning signs and attempting to prevent minor incidents than it is to deal with the aftermath of a major crisis. As a result, it is critical to recognize that there is a warning sign that this person may exhibit violent behavior. According to our participants' responses, the majority of 81 (58.7%) believe that loud talking or chanting is the primary indicator of potentially violent behavior (Figure 2).

Some radiographic examinations, to the best of our knowledge, require direct contact with the patient, which may contribute to an increased risk of physical or psychological violence. Furthermore, 128 (93%) of our participants believe that a person who has direct contact with a patient is more vulnerable to violence (Table 2). This is consistent with [Maran's 2020] finding that young women with little experience who have direct contact with the patient or caregiver are particularly vulnerable in the health sector. Understanding risk factors and applying basic ergonomic principles are thus the first lines of defense against potential violence. On the other hand, the majority of our participants (133; 96%) believe that working with violent people, such as those who are under the influence of alcohol or drugs, have a history of violence, or are diagnosed as psychotic, is a major risk factor for violence (Table 2). Our findings on workplace violence risk factors were consistent with the findings of [Acquadro 2020] and [Gillespie 2008],

who discovered that the perpetrator risk factors for patients and visitors in healthcare settings include mental health disorders, drug or alcohol use, inability to deal with situational crises, possession of weapons, and being a victim of violence.

This study is limited by the heterogeneity of the population as a result of the randomized selection process, which may influence the exactness of our outcomes and lessen the intensity of our conclusions if other age groups are used in future studies. Other limitations of this study included: i) a small cohort sample size; ii) poorly chosen distribution channels, which resulted in biased data; iii) low response rates; and a slew of other potential issues. However, to the best of our knowledge, this is the first study that assesses radiology staff's knowledge, awareness, and attitude toward the workplace in Sudan.

Ongoing research and feedback mechanisms are essential to understand the evolving nature of workplace violence and assess the effectiveness of implemented strategies. This approach allows for continuous improvement and adaptation of preventive measures.

## 5.- CONCLUSIONS

The study concludes that while the attitude of Sudanese radiology staff towards workplace violence is encouraging, a multi-faceted approach involving training, policy changes, environmental adjustments, psychological support, and community engagement is crucial. Regular research and feedback are necessary to ensure the long-term effectiveness of these measures. Such comprehensive strategies are vital for improving safety, morale, and the overall quality of care in radiology departments.

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## Contributions

Mogahid M.A Zidan: Data Collection and Curation, Formal Analysis, Writing – Review & Editing; Abdulrahman M. Alfuraih: Writing – Review & Editing, Funding Acquisition; Moram A. Fagiry: Formal Analysis, Visualization, Writing – Original Draft Preparation; Hamid Osman: Writing – Original Draft Preparation, Project Administration; Mayeen Udin Khandaker: Writing – Original Draft Preparation, Writing – Review & Editing; Mustafa Alhassen: Conceptualization, Writing – Review & Editing, Project Administration and supervision.

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