



The Quality of Occupational Health and Safety Among Community in Riyadh, Saudi Arabia

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Abstract

Background: This study evaluated workplace hazards and safety practices among selected workers in various facilities in Riyadh, Saudi Arabia. The research aimed to assess hazards exposure, workplace policies, worker awareness of occupational health and safety (OHS) rights and responsibilities, and worker empowerment in injury and illness prevention. **Methods:** A cross-sectional study was conducted in 2017 using a structured, self-administered questionnaire. The questionnaire assessed workers' knowledge of workplace hazards, policies, and participation in preventive measures. The study also explored the sources of workers' knowledge about OHS. **Results:** A strong relationship was observed between workers' knowledge of hazards and their compliance with personal protective equipment (44.6%). About 52% of workers reported receiving essential training before starting their jobs, with the majority gaining knowledge from workplace courses during their employment. Information sources included the internet (38.5%) and workplace courses (18.4%). A significant proportion (72.9%) of respondents reported performing their jobs safely, and 66.7% had sufficient awareness of health and safety hazards. Additionally, 53.7% demonstrated knowledge of health and safety concerns, and 63.7% agreed on the necessity of taking proper precautions at work. **Conclusion:** Workers in Riyadh exhibit high levels of knowledge and awareness about OHS, and most are clear about their workplace rights and responsibilities. However, gaps remain in providing essential training, which highlights an area for improvement. Addressing these gaps through enhanced training programs could further strengthen workplace safety and health practices.

Keywords: Occupational health and safety, Occupational hazards, safety practices Workplace, worker awareness.

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Introduction

Occupational health plays a pivotal role in ensuring the safety and well-being of workers across various industries. It encompasses the prevention, management, and mitigation of hazards that may arise in the workplace, aiming to protect workers' physical, mental, and social health. The Occupational Safety and Health Act (OSHA) underscores the importance of fostering a safe and healthy work environment, not only for employees and employers but also for co-workers, families, and individuals who may be indirectly affected by workplace conditions. By addressing risks effectively, occupational health contributes to a more resilient workforce and a healthier society.

The World Health Organization (WHO) identifies several determinants of workers' health, including occupational risk factors such as chemical exposures, physical hazards, ergonomic issues, and psychosocial stressors. These risks have been linked to a range of health conditions, including musculoskeletal disorders, respiratory diseases, hearing loss, circulatory problems, and stress-related illnesses (WHO, 2017). Effective occupational health and safety (OHS) measures are essential to mitigate these risks and prevent adverse outcomes. Moreover, the benefits of promoting occupational health extend beyond individual safety, as it enhances productivity, reduces absenteeism, and lowers healthcare costs.

In Saudi Arabia, particularly in Riyadh, occupational health challenges are evident across multiple sectors. High incidences of workplace injuries and hazards point to systemic issues, such as inadequate compliance with safety regulations, technical errors, and insufficient use of personal protective equipment (PPE). These shortcomings not only jeopardize workers' health but also compromise their overall well-being, encompassing physical, mental, and social dimensions. The Saudi Ministry of Health has acknowledged the need for comprehensive occupational health systems that prioritize hazard identification, risk management, and the dissemination of relevant safety information (Khasawneh, 2014).

Despite existing guidelines, many employers in Saudi Arabia fail to meet their legal and ethical obligations to implement adequate workplace safety measures, either due to negligence or lack of awareness. This gap highlights the need for enhanced education and awareness regarding occupational health and safety among workers and employers alike. A robust OHS framework, aligned with international standards, is essential to address these challenges and ensure a safer work environment for all.

This study aims to assess the awareness, knowledge, and quality of occupational health and safety practices among respondents in Riyadh. By identifying the extent of exposure to hazards and the effectiveness of current OHS measures, the research seeks to contribute to improving workplace safety and health outcomes in Saudi Arabia. The Royal

Decree No. M/21, dated 6 Ramadan 1389 (1969), underscores the commitment of the Saudi Ministries of Labor, Commerce, and Industry to minimize workplace injuries and improve occupational health and safety standards. This directive mandates Saudi employers to prioritize the health and safety of their workers by maintaining and enhancing workplace safety practices (Khasawneh, 2014). Despite these guidelines, challenges persist in implementing effective safety measures across various sectors in Saudi Arabia.

Several studies have highlighted gaps in occupational health and safety knowledge and practices in different settings. For example, Attia and Taha (2000) assessed the knowledge and practices of workers in small industries regarding preventive measures for occupational hazards. Their study, conducted in eight types of industries, revealed that 9% of workers lacked knowledge about preventive measures, and only 12% consistently used personal protective equipment (PPE). Furthermore, 60% of workers did not use any protective measures, exposing themselves to numerous occupational hazards, with injuries accounting for 39% of reported incidents. These findings highlight the inadequate awareness and practice of occupational health measures in small industries.

Chan, Ho, and Day (2008) investigated the knowledge, attitudes, and practices of operating room staff regarding standard and transmission-based precautions in a public hospital. Their study revealed two distinct clusters of participants: those with good knowledge, positive attitudes, and practices, and those with poor knowledge and negative practices. These disparities underscore the need for targeted training programs to improve compliance with standard precautions in healthcare settings.

Similarly, Ogoina et al. (2015) conducted a study in Nigeria to evaluate healthcare workers' knowledge, attitudes, and practices concerning infection control. Their findings indicated that while healthcare workers exhibited strong knowledge and positive attitudes, their practical compliance with standard precautions was suboptimal, with a median practice score of only 50.8%. Inadequate resources and training were cited as significant barriers to effective infection control practices.

In Iran, Sarani et al. (2015) examined the knowledge and practices of nurses regarding hospital-acquired infection control. Their study revealed that 43% of participants had poor knowledge, while 42% demonstrated average practices. These findings led to recommendations for training sessions and practical courses to enhance awareness and adherence to infection control protocols.

Awab Ali and Shamseldin (2016) explored medical students' awareness, knowledge, and attitudes toward infection prevention and control (IPC) guidelines at Weill Cornell Medical College in Qatar. The study highlighted significant gaps in knowledge and practices among students, emphasizing the importance of integrating IPC

education into medical training to reduce healthcare-associated infections.

In Japan, Mori, Kameda, and colleagues (2006) evaluated occupational health elements within occupational safety and health management systems (OSHMS). Their findings indicated that while safety programs were prevalent, major occupational health initiatives were often conducted outside formal OSHMS frameworks. The study concluded that balancing safety and health programs within OSHMS and training occupational health professionals is crucial for improving workplace safety standards.

Maheshwari et al. (2014) investigated hand hygiene practices among residents and nursing staff in a tertiary healthcare setting in India. The study found that nurses exhibited better attitudes toward hand hygiene compared to other healthcare workers. However, the results stressed the need for repeated training sessions to reinforce hand hygiene practices.

In another study, Aluko et al. (2016) assessed the knowledge, attitudes, and safety practices of healthcare workers in Nigeria. Their findings revealed that while 89% of respondents were knowledgeable about occupational hazards, only 52.1% consistently complied with standard procedures. Factors such as limited access to safety equipment and inadequate training were identified as barriers to compliance.

The work of Wang et al. (2017) on minimizing occupational exposure to ionizing radiation emphasized the importance of education and awareness. Their study outlined strategies such as maximizing distance from radiation sources and utilizing shielding techniques to reduce exposure risks.

Finally, Venables and Allender (2006) reviewed the occupational health needs of universities in the UK. Their findings revealed that universities face diverse occupational health challenges, necessitating updated sector-wide guidance and policies to address these needs effectively.

Collectively, these studies highlight the global challenges in occupational health and safety practices across various sectors. Addressing these challenges requires a comprehensive approach involving education, resource allocation, and adherence to international standards. In Saudi Arabia, adopting such measures is essential to ensure a safer and healthier work environment for all.

Methodology

This study employed a cross-sectional design to evaluate the knowledge of work-related hazards, workplace policies, and preventive practices among Saudi and non-Saudi workers, as well as university students in Riyadh. Participants were selected randomly through an electronic survey distributed to individuals aged 18 years or older from various occupational settings and educational institutions

in both the governmental and private sectors. The total sample size comprised 1,625 respondents.

Data collection took place between April 1 and April 20, utilizing a structured questionnaire developed by adapting and modifying validated instruments, including those from Venables (2006), Taha (2000), and the Institute for Work & Health (2017). The questionnaire was designed to capture demographic information, assess knowledge about workplace hazards, and evaluate awareness and participation in occupational health and safety measures. Questions were divided into demographic data (Q1–Q9), knowledge about workplace hazards (Q10–Q21), and a Likert scale-based section (Q22–Q40) focused on workplace policies and procedures, occupational health and safety awareness, and participation in preventive measures. Responses were measured using a five-point Likert scale ranging from "1 - Strongly Agree" to "5 - Strongly Disagree."

The validity of the questionnaire was ensured through a review by experts from King Saud University, who clarified and refined the translated instrument. Reliability testing was conducted using the Occupational Health and Safety (OHS) Vulnerability Measure, developed by the Institute for Work & Health (IWH). Data analysis was performed using the Statistical Package for the Social Sciences (SPSS), with frequencies calculated to summarize participant responses.

The study faced several limitations. The research was conducted over a three-month period during the second semester of the academic year (1437–1438H / 2017), which imposed constraints on data collection and analysis. Additionally, the availability of recent research was limited, with much of the foundational literature dating back to 2000 or earlier. Within the Saudi context, only two relevant studies were identified: Taha (2000), focusing on improving occupational health and safety, and Khasawneh (2014), examining knowledge and practices of preventive measures in small industries in Al Khobar. Despite these challenges, the study provides valuable insights into occupational health and safety awareness in Riyadh.

Results

The socio-demographic characteristics of the respondents are summarized in Table 1. The study targeted 1,624 respondents, of which 1,137 (70%) were female and 487 (30%) were male. The majority of participants (53.7%) were aged 18–24 years, followed by 23% aged 25–34 years. Most respondents held a bachelor's degree (71.5%). In terms of occupation, 52% were students, while 35% were employees. The predominant workplace settings were universities and schools (52.4%), followed by the governmental sector (21.2%) and the private sector (12.8%). Office workers accounted for the majority of respondents (73.6%), with 45.9% having more than five years of work experience.

The survey provided critical insights into occupational health and safety (OHS) practices and awareness. Nearly half of the respondents (47%) reported exposure to workplace hazards, while 33.7% indicated no exposure, and 7% were unsure. Awareness of hazard sources was moderate, with 53.8% of respondents indicating knowledge of such sources, while 28.1% lacked this understanding.

Table No. (1) shows the demographic data of the study sample.

Description of variables	Frequency (n)	Percentage (%)
Age		
Less than 18	43	2.6%
18-24 years old	872	53.7%
25-34 years old	380	23.4%
35-44 years old	202	12.4%
45-55 years old	106	6.5%
55-64	21	1.3%
Nationality		
Saudi	1480	91.1%
Non-Saudi	144	8.9%
Gender		
Male	487	30.0%
Female	1137	70.0%
Marital status		
Single	1083	66.7%
Married	522	32.1%
Divorced	15	0.9%
Widow	4	0.2%
Educational qualification		
High school or less	367	22.6%
Bachelor degree	1161	71.5%
Master's degree	80	4.9%
PhD	16	1.0%
Occupation		
Student	845	52.0%
Employee	569	35.0%
Retired or unemployed	210	12.9%
Workplace		
Governmental sector	344	21.2%
Privet sector	208	12.8%
Owned business	55	3.4%
Governmental hospital	54	3.3%
Private hospital	12	0.7%
University or school	851	52.4%
Factory	12	0.7
Unemployed	88	5.4
Job description		
Field work	253	15.6
Office work	1195	73.6
Handicraft work	31	1.9
Home business	54	3.3
Unemployed	82	5.0
Field and office work	9	0.6
Years of working experience		
Less than 2 years	243	15.0
2-5 years	636	39.2

More than 5 years	745	45.9
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Workplace injuries were reported by 22.6% of respondents, but only 13.1% of those injured received appropriate medical care, highlighting gaps in workplace support systems.

The use of personal protective equipment (PPE) was inconsistent; 39.1% reported using PPE, while 33.4% were unaware of its availability. Participation in OHS programs was low, with only 27.8% engaging in such initiatives. Similarly, only 27.6% held first aid certification, indicating limited preparedness for emergencies. Fire extinguisher usage was also limited, with only 30.6% of respondents having practiced using one.

Training and communication in OHS emerged as areas for improvement. Fewer than 30% of respondents agreed they received adequate OHS training, and 33.3% were uncertain about communication between employees and management. While 52.1% believed there were systems to manage workplace hazards, 22.8% were unsure. Awareness of workplace safety guidelines was reported by 39.8%, but 16.1% were uncertain about their clarity.

Understanding and implementing workplace rights and responsibilities showed mixed results. Approximately 44.2% of respondents felt clear about their own rights and responsibilities, while 20.1% were uncertain. Similarly, 39.8% understood the rights of others, but 25.9% expressed uncertainty. Despite these challenges, 72.9% believed they performed their jobs safely, and 66.7% were aware of hazards that could affect their work.

The study also explored respondents' willingness to engage in safety-related actions. About 52.2% felt free to voice safety concerns, and 76.8% stated they would report workplace hazards to management. However, only 58.6% felt empowered to stop work if conditions were unsafe. A total of 66.9% believed they had enough time to complete tasks safely, and those exposed to hazards were generally more aware of their sources.

The cross-tabulation of systems to identify, prevent, and deal with hazards with injury experience revealed that 1,058 respondents had no prior injuries, while 367 had experienced injuries. Among the injured, 209 indicated the presence of such systems. This suggests that while these systems are prevalent, their effectiveness in injury prevention requires improvement.

Table 2: Systems to identify, prevent and deal with hazards * experience injuries Cross-tabulation.

		experience injuries		Total
		Yes	No	
Systems to identify, prevent and deal	Strongly agree	65	203	268
	Agree	144	434	578
	I don't know	85	285	370

with hazards	Dis-agree	45	89	134	Total	367	1058	1425
	Strongly Dis-agree	28	47	75				

Table 3: Correlation between awareness of rights and responsibilities and reporting workplace hazards

			Clear about my rights and responsibilities	Notice a workplace hazard, I would point it out to management.
Spearman's rho	Clear about my rights and responsibilities	Correlation Coefficient	1	.288**
		Sig. (2-tailed)	.	0
		N	1425	1425
	Notice a workplace hazard, I would point it out to management.	Correlation Coefficient	.288**	1
		Sig. (2-tailed)	0	.
		N	1425	1425

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4: Age * aware of a health or safety hazard to perform safely Crosstabulation

	Aware of a health or safety hazard to perform safely					Total
	Strongly agree	agree	I don't know	Dis-agree	Strongly Dis-agree	
Age Less than 18	5	25	5	7	1	43
18 - 24 years old	165	446	119	86	12	828
25-34 years old	90	150	42	21	6	309
35- 44 years old	53	92	21	10	5	181
45-55 years old	11	39	4	4	0	58
55-64 years old	2	4	0	0	0	6
Total	326	756	191	128	24	1425

A Spearman's rank-order correlation between awareness of rights and responsibilities and reporting workplace hazards showed a statistically significant moderate positive correlation ($r_s = 0.288$, $p < 0.001$). This indicates that individuals who are aware of their rights are more likely to report hazards, underscoring the importance of enhancing OHS education and awareness.

Age group analysis highlighted significant trends in awareness of health and safety hazards. Among respondents aged 18–24 years (828 individuals), 611 (74%) demonstrated awareness, while 240 (78%) aged 25–34 years and 145 (80%) aged 35–44 years reported similar levels. Awareness levels among the youngest group (less than 18 years) were lower, with only 30 out of 43 respondents (70%) showing awareness. These findings emphasize the need for targeted safety training, particularly for younger individuals.

The cross-tabulation of receiving medical care with injury experience revealed that of the 366 respondents who reported injuries, 171 (46.7%) received appropriate medical care, while 195 (53.3%) did not. Among the 226 respondents

without injuries, only 41 (18.1%) had received medical care. These results highlight gaps in medical support for injured individuals and the need for better access to healthcare resources to improve workplace safety outcomes.

Overall, the findings underscore the critical need for enhanced OHS systems, targeted training, and improved communication to address gaps in safety practices and injury prevention in Riyadh.

Discussion

As facing hazards is part of everyday work life, this study addresses that 47% of the targeted sample exposure to a large number of hazards, 26.5 of them were students while 20.4 were workers in different work places in governmental or private sectors like hospitals or universities and schools, or other sectors including companies, factories and owned business. Mental illness including anxiety, depression and stress was the highest option chosen with 28.4%, followed by the musculoskeletal disorders such as low back pain and muscles pain, and they occurred the most in university

and school. The respiratory diseases came third those seen in the percentages of 22.2%, 15.6% respectively. The injuries that result from exposing to radiation and electricity accidents were the least chosen with 0.3%.

while a percentage of 53.8% of the group who exposed to hazards, they know the hazard sources, and that could be strong reason for preventing or eliminating the work-related injuries as 65.1% answered the questionnaire.

And about using the personal protective equipment's, the study found that 33.4% of the respondents don't know what are the personal protective equipment's which could be caused by their lack or their interest in participation in the occupational health and safety programs unless it held in the work place, as well as it found as the second source of searching about the appropriate precaution to eliminate the risks associated with different kinds of jobs either its field or office work. The internet was the first source, while books, Social media and friends approximately got the same percentage of 13.0% as the third sources for searching information.

For the participation and the being responsible, its clearly seen in the positive moderate correlation with notifying the suspected hazard to the management. ($r_s=.288$, $p=0.000$). As well for feeling free to voice their concerns and suggestions about the work place conditions and environment for the health and safety and employee's health committee if its available. ($r_s=.3790$, $p=0.000$).

As the study covered almost all the employment period from 18 years old till the retirement age 64 years old. We noticed that the age group (18-24 years old) know how to perform their jobs in a safe manner to minimize the chance of risk, the age group (25-34 years old) came next while the age group (45-55 years old) been the least aware of health or safety hazards to perform safely with the percentages of 37.6%, 14.78% and 3.1% respectively.

A study was done in Al-Khobar showed that 61% don't use PPE, also it assessed the workers knowledge about the work related hazards and using the personal protective equipment's was insufficient to keep them away from injuries and accidents, while our study found that there is a strong relation between their knowledge about the hazards and their compliance with the PPE 44.6%, which means there is significantly difference in the knowledge of the workers in the past 17 years.

Unlike our study, another study was done in Nigeria among health care workers in a hospital which indicated that 91% heard about standard precautions of infection control. But that wasn't enough to comply with using standard precautions such as hand washing, wearing mask, etc. Also around 52% of the workers got the essential training before starting their work, and that led them to suggest determining Policies that foster training of health care workers in standard precautions and guarantee regular

provision of infection control and prevention resources in health facilities.

Another study was done in Qatar among medical students agree with our study in that the sample of the study have high knowledge which presented in the percentage 85.48% about hand hygiene and practiced it on a routine basis, But Multifaceted training programs may have to target newly graduated medical practitioners or the training has to be included in the graduate medical curriculum to enable them to adopt and adhere to IPC guidelines.

Another study done in Nigeria was agree with this study said that the health care workers have high level of knowledge and awareness about the workplace hazards and safety practices and the possible hazards that they could face in their work place, but must of their knowledge came through the professional training while in this study must of their knowledge came from the courses they attend during their employment period.

The internet now is very important and successful source ether to obtain or publish an information as the study shows that the percentage who take knowledge from the Internet as Information sources is (38.5%), while (18.4%) from Courses in the workplace.

While there is an active communication between the responsive people in the workplace and the employment it will be easy to identify the accident and any other hazard in the workplace, whereas a proximal proportion between 'having communication between employees and management by (35.2%)' and 'the Incidents and accidents investigation by (37.7)', so that show the importance of have active communication with workers.

To prevent the possible workplace accident and hazards we need to train workers and make them know how to use personal precaution. unfortunately, (28.5%) of the study sample have training, although (52.1%) of them say that there is having Systems to identify, prevent and deal with hazards, and may be the problem of the workers understanding or having the knowledge in unclear way because (35.6%) of the study sample say that it was not clear for them. OHS very important and (45.5%) of the study sample are agree with that.

Know the workers about there right and other right as important as the knowing the political and roles in the workplace and clearing the Security and safety guidelines for them.

It is important to have the knowledge and full awareness about health and working safely to be able to perform the job without receiving any risks. The study found 72.9% of workers and students performing the job in a safely, 66.7% of them have the enough awareness about health and safety hazard and about 53.7% who have the knowledge of any concerns related to health and work safety. 63.7% of

respondents was agree about they need the necessary precautions and they should take while doing their work.

Workers and students should be free and voicing for concerns they exposed to it, that will help to notice a workplace hazard and manage it. The study found 52.2% who feel free to voice while 18.7% were not, that is why 73.2% of respondents can notice a workplace hazard to do the necessary management while 6.6% cannot. Also about 31.9% cannot say anything if the work environment was unsafe.

As the important to have enough time to perform the work safely and workers and students should know when they have to stop to protect them self, it is important to practice and being training for work safely. respondents who have the enough time were 66.9% while 6% have not. And 58.6% of respondents can stop if they received something unsafe while 16.4% do not know when they can stop, and respondents who have training were 28.5%.

Conclusion

At the end of the study result shows that The worker in Riyadh have high level of knowledge and awareness about occupation health and safety while The administrations are work hard for the occupational health and safety especially because they have good OHS policy but they lack of the important training for the employee before and during get the job and Most of administrations work to rise their employee health by give more attention to Occupation Health and Safety as their productivity which mean huge improve in knowledge and awareness of Riyadh population.

Most respondent are clear about their responsibilities in their workplaces and their right if they get any work related hazards before they begin work, the worker have the knowledge and awareness that make 72% of respondent able to perform their work in a safe manner and fortunately Most of respondent have the knowledge about necessary precautions while doing their job. The work places in Riyadh allow their employee to participate to improve their Occupational Health and Safety by able them to note every problem they faced and discuss it to take the best solution for it. 76% of respondents in Riyadh have enough time to work safely in their work places. The most common types of hazard are mental health especially in universities and schools, it followed by Musculoskeletal disorders in the same sector.

Recommendations

They need to be aware of safety code in Saudi Arabia to monitor health and safety requirements at workplace. The quality of any sector occupational health and safety should be examined. Training and health education in occupational health and safety for employers and workers through a joint program between the Ministry of Health and other. Periodic monitoring of physical and biological hazards by authority. A health care facility can be established at the industrial area to provide primary care for workers. Additional education should contribute to the prevention of work-related injuries. Provide the minimum essential safety equipment in workplace.

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