

Assessment of Occupational Hazard Awareness and Safety Practices among Workers at Al-Shinafia Oil Refinery

Ali Hadi Waheed, MScN¹, Wissam Jabar Qassim, PhD^{2*}

¹ Clinical Nurse Specialist, Al-Qadysia Health Directorate, Ministry of Health

² Professor, Community Health Nursing Department, College of Nursing, University of Baghdad, Iraq

ABSTRACT

Background: Occupational hazards in oil refineries pose significant health and safety risks to workers, necessitating proper awareness and adherence to preventive measures. Assessing workers' performance in handling occupational hazards is essential for improving workplace safety and minimizing occupational health risks. **Objective:** This study aimed to evaluate workers' performance regarding occupational hazard management at Al-Shinafia Oil Refinery in Al-Diwaniyah Directorate. **Methods:** A descriptive, observational study was conducted to assess occupational safety practices among refinery workers. A purposive sample of 40 workers was selected, and their performance was evaluated using a structured observational checklist consisting of 10 items. The study instrument underwent validity and reliability testing. Data collection was carried out through direct observation, and statistical analyses included both descriptive and inferential methods to identify associations between worker performance and demographic variables. **Results:** The findings revealed that the overall performance of workers in managing occupational hazards was inadequate. Significant associations were observed between workers' performance and their age, years of experience, and level of education ($p < 0.001$). However, no significant correlation was found between workers' performance and gender ($p > 0.001$). **Conclusion:** The study concludes that the overall occupational safety performance of refinery workers is suboptimal, highlighting the need for targeted interventions to enhance workplace safety practices. **Recommendations:** The study recommends implementing regular occupational safety training programs and educational workshops to improve workers' knowledge and adherence to safety protocols. Additionally, further research with a larger sample size and across multiple settings is encouraged to gain a more comprehensive understanding of occupational hazard management in oil refineries.

Keywords: Evaluation, Workers' Performance, Occupational Hazards, Oil Refinery

INTRODUCTION

Occupational hazards are defined as workplace issues that have likely to raise the hazard of our health, which can be categorized as biological and non-biological. Health professionals are challenges with physical, chemical, and psychological hazards. For example, moving the immobilized patients exposes workers to back injury and back pain. Moreover, during high workload and insufficient resources and equipment, healthcare professionals are faced with psychological hazards such as stress and depression [1]. An occupational hazard is a hazard experienced in the workplace. This encompasses many types of hazards, including chemical hazards, biological hazards (biohazards), psychosocial hazards, and physical hazards. In the United States, the National Institute for Occupational Safety and Health (NIOSH) conducts workplace investigations and research addressing workplace health and safety hazards resulting in guidelines. The Occupational Safety and Health Administration (OSHA) establishes enforceable standards to prevent workplace injuries and illnesses [2]. It has been noted in the literature that most of workers have experienced poor performance towards occupational hazards. Such evidence has been documented in a descriptive study to assess safety practices of (178) sawmill workers towards occupational hazards in Egor Local Government Area, Edo State, in Nigeria. The study findings indicate that three fifth 103 (57.9%) of the respondents have poor safety practices towards occupational hazards [3]. Another descriptive study is carried out a convenient sample of (485) health staff to assess their practices toward occupational hazards. Findings of the study have depict that respondents have "accepted" and "poor" practices toward occupational hazards in the work environment [4]. Other descriptive study, of (208) gas station worker, has evaluated

workers' performance towards occupational hazards in China. The study findings reveal that these workers have the lowest performance, and need to be prioritized for improvement. Furthermore, this study argues that the occupational health of gas station workers can be safeguard through appropriate risk management strategies [5]. Based on the early stated facts, the present study ought to evaluate workers' performance towards occupational hazards at Al-Shinafia Oil Refinery in Al-Diwanyia Directortae.

Methodology

A descriptive study using the evaluation approach is employed throughout the present study to evaluate workers' performance towards occupational hazards at Al-Shinafia Oil Refinery in Al-Diwanyia Directorate. A purposive sample of (40) oil refinery worker is selected for the study. All workers, who have participated in the study, have signed a consent form for their agreements for the enrollment in the study and the maintenance of their anonymity and confidentiality. An evaluation observational checklist is constructed for the purpose of the study.

It is comprised of two parts (safe practices) and (personal protective equipment) and is consisted of (10) items. Construct validity is determined for the study instrument through panel of (10) expert and the reliability of the study instrument is obtained through the application of test-retest reliability approach. Data are collected through the utilization of the study instrument and analyzed through the application of the descriptive and inferential statistical data analysis approaches.

Results

Table 1: Overall Evaluation of Workers' Performance towards Occupational Hazards (Personal Protective Equipment)

Items	Pre-Test Observation				Assess.
	1 st M.S	2 nd M.S	3 rd M.S	Total M.S	
1. Worker Wears Chemical Resistance Glasses.	1.13	1.25	1.21	1.20	Inadequate
2. Worker Wears Face Shield.	1.22	1.19	1.14	1.18	Inadequate
3. Worker Uses Protective Clothing.	1.01	1.3	1.2	1.17	Inadequate
4. Workers Use Cover Shoes	1.05	1.23	1.13	1.14	Inadequate
5. Wears Adequate Respiratory Equipment (I.E., Mask).	1.33	1.20	1.23	1.25	Inadequate
Total	1.15	1.23	1.18	1.18	Inadequate

Inadequate Performance (mean=1-1.33); Fair Performance (mean=1.34-1.67), Adequate Performance (mean=1.68 and more)

The table 1 confirms that the evaluation of workers' performance (personal protective equipment) is inadequate on all items (mean=1-

1.33). The table 2 presents the evaluation of workers' performance (safe practices) is inadequate performance (mean=1-1.33).

Table 2: Overall Evaluation of Workers' Performance towards Occupational Hazards (Safe Practices)

Items	Pre-Test Observation				Assess.
	1 st M.S	2 nd M.S	3 rd M.S	Total M.S	
1. Workers Reduce Duration of Exposure To Hazard	1.18	1.15	1.20	1.18	Inadequate
2. Workers Use Machine to Heavy Materials	1.33	1.18	1.08	1.20	Inadequate
3. Workers Isolate Chemical Substance	1.23	1.13	1.13	1.16	Inadequate
4. Workers Takes Breaks Between Tasks	1.25	1.05	1.13	1.14	Inadequate
5. Workers Washes Hands Frequently with Water and Soap After Tasks	1.28	1.08	1.15	1.17	Inadequate
Total	1.25	1.11	1.13	1.17	Inadequate

Inadequate Performance (mean=1-1.33); Fair Performance (mean=1.34-1.67), Adequate Performance (mean=1.68 and more)

Table 3: Relationships between Workers' Performance and Their Age, Years of Experience and Education

Demographic Data		Mean	F	p-value
Age	<= 28	1.885	4.365	0.020
	29 – 38	1.751		
	39 – 48	1.916		
	1-4	1.847		
Years of Working	5-10	1.877	4.299	0.011
	11-16	1.526		
	17 and more	1.850		
	Primary	1.909		
Education	Secondary	1.691	3.358	0.029
	Diploma	1.933		
	Bachelor	1.558		

**sig. = ≤0.05*

The table 3 shows that there are significant relationships between workers' performance and their age; years of experience and education at p-value of less than 0.001.

The table 4 shows that there is no significant comparison between workers' performance relative to their gender at p-value less than 0.001.

Table 4: Comparative Difference between Workers' Performance Relative to their Gender

Demographic Data		Mean	Sd	Df	T-Value	P-Value
Gender	Male	1.827	0.113	38	1.494	0.143
	Female	1.875	0.088			

**sig. = ≤0.05*

Discussion

Part I: Discussion of Overall Evaluation of Workers' Performance about Occupational Hazards: Analysis of such overall evaluation indicates that workers have presented inadequate performance about occupational hazards. Such finding has been apparent in the low mean of scores on the workers' performance items.

A descriptive study is conducted on convenient sample of (162) worker, shows that (79%) of the workers have unsatisfactory practices

regarding prevention of occupational health hazards [6]. Another supportive evidence is presented in a descriptive study, of (208) gas station worker, that has evaluated workers' performance towards occupational hazards in China. The study findings reveal that these workers have the lowest performance, and need to be prioritized for improvement [5].

Part II: Discussion of the Relationship about Occupational Hazards and their Demographic Characteristics: At the end of the course of data analysis, the relationship between workers' performance

about occupational hazards and their demographic characteristics has been investigated. Significant relationships are determined between workers' performance and their age; years of experience and education at p-value of less than 0.001. A descriptive study has examined whether the age and experience of the employees, as determined by the demographics, have significant differences in the mean scores of the compliance towards safety culture within the company [7]. Another descriptive study has confirmed that workers' performance has been significantly influenced by their education and experience [8]. Workers' performance about occupational hazards has not been impacted by gender incongruities which is apparent by the study findings.

Remarkably, structural survey finds out that female employees are found to be more compliant with occupational health and safety practices than their male counterparts [9]. A descriptive study is conducted on a convenient sample of (285) participants. The findings of this study indicate that effective use and implementation of OHS guidelines, program and administration are crucial in reducing workplace accidents, injuries, damages and work-related diseases. It

also increases the capability of workers to improve their performance towards occupational health and safety measures [10].

Conclusion

The present study can conclude that: 1. Workers have presented inadequate performance about occupational hazards.

2. Workers' performance about occupational hazards has been impacted by age, years of experience and education but not gender incongruities which are apparent by the study findings.

Recommendations

1. In-service continuing education and training programs can be designed, structured and implemented on topics related to occupational health-related issues for the benefits of oil refineries' workers. 2. Workers can be encouraged and supported to have more opportunities to participate in occupational-related educational and training workshops. 3. Further research can be conducted on the same topic with wide-range sample size and different settings.

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