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Evaluation of Worker's Knowledge about Occupational Hazards in AL-shinafia oil Refinery

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Abstract

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. Because it is complex issue, managing it involves an adequate knowledge of the occupational hazards.

Aim :The study aimed to assess the level of knowledge of workers about occupational hazards.

Methods :A quantitative study was conducted among workers with occupational hazards at the aldiwaniyah oil refinery in aldiwaniyah government for, Self-reporting questionnaires were used to collect data from 80 participants. The data were analyzed SPSS version 26 and Pearson Correlation Coefficient was used to analyze the possible associations among variables. Results :The study findings indicated that the respondents were aged between (29-38) years with (Mean ±SD33.3.6±0.88). A majority of patients were male (52.5%) and (72.5.0%) were single. (66.7%) the participants were having low level education. Most participants have (5-10) years of experience.

Conclusion :The results of this study showed a decrease in the worker's knowledge concerning level knowledge occupational hazards in most items. Also, in addition, there are statistically significant differences between the knowledge with demographic characteristics of the study participants.

Keywords: Knowledge, Workers, occupational Hazards

Introduction

The prevalence of workplace safety hazards is a global phenomena that is particularly severe in developing nations. Working in an unsafe workplace can have a negative impact on many employees' physical and mental health, which can have an impact on their family and close social groups. An injury or illness that arises from one's employment or the environment in which one works is referred to as an occupational hazard[1].

When they are young, male, or female, employees might nominate themselves for jobs where they can perform duties and activities effectively. There were 6.6 million

workers in the United States in 1995, and the majority of them were between the ages of 25 and 30.[2]

Heat, noise, vibration, electricity, and contact with or being struck by an instrument isjust a few of the common physical dangers in healthcare environments. Physical agents used on patients, including as lasers[3].

Biological and non-biological workplace problems that have the potential to endanger human health are referred to as occupational hazards. There are risks to health professionals on the physical, chemical, and psychological levels. For instance, staff run the risk of suffering back pain and injuries when transferring immobilized patients. Furthermore, psychological risks like stress and depression are present for healthcare workers in the face of a heavy workload and inadequate supplies and equipment[4].

Waste needs to be prevented, separated, handled, transported, and disposed of appropriately to reduce threats to patients' health, staff members' safety, the public's safety, and environment.

Personal hygiene includes things like body hygiene (skin care), mouth hygiene (oral care), hand cleaning (hand hygiene), facial hygiene, fingernail and toenail care (nail care), ear, hair, and foot care, armpit and bottom care, and clothing care. Impact on the dangers of biological agents Numerous research indicate that maintaining proper personal hygiene[6].

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[7] establish enforceable standards to prevent workplace injuries and illnesses[8].

Workload has been found to be negatively correlated with a number of mental health conditions, including an increased risk of anxiety, sadness, low self-esteem, alexithymia (difficulty detecting or expressing emotions), stress, self-harm, and suicidality[9].

Because occupational health safety has such a big impact on the workplace, it's seen as essential to public health. Preventing illnesses, infections, injuries, deaths, and any other type of bodily harm that could be brought on by work-related activities is the main goal of occupational health safety[10].

In the 1980s and 1990s of past century, several developing nations started to step up and implement infection control measures in healthcare facilities. Over the previous 25 years, numerous American hospitals contain reports of nosocomial infection cases)11). A positive concept that characterizes work habits is job satisfaction. It is defined as the degree of attitude toward a task and its fundamental components[12].

Occupational health and safety in the oil and gas sector: case studies from around the world and factual data The oil and gas sector is a large employer that has expanded dramatically in recent years, underscoring the necessity of enacting substantial reforms to preserve worker safety[13].

In the oil and gas sector, occupational health and safety: regional, international, and factual proof. Since the oil and gas sector employs a large number of people and has expanded significantly in recent years, it is imperative that significant modifications be made in order to preserve worker safety[14].

Materials and Method

The present study was carried out through the application of quantitative design (descriptive study) to assess

Workers knowledge about occupational hazards. The research was carried out between (2022-2023) after obtaining the consent of the ethics Committee at the nursing College in Baghdad University. Informed agreement was gained before any data collection from participants, each workers was informed about its aim, method, and possibility of withdrawal at any stage of the research. The participants were also assured full anonymity and the voluntary nature of the study.

This study was conducted in the Al-shinafia oil refinery in AL-Diwaniyah government for 80 participants' workers include males and females ranging in age from 20-48 years.

The measures Instruments included a demographic form, included questions about gender, age, years of experience in oil refinay, education level, marital status.

The workers Knowledge physical, chemical, psychosocial, mechanical, biological hazards scale[10], has been used with samples of participants and with individuals from a variety of backgrounds. It is designed to be self-administered by respondents. The physical hazards questionnaire contains 10 items each related to a basic aspect of hazards. A score of 1is assigned for unknown response and 2 for uncertain response and 3 for I know.

The data were statistically described and analyzed through use of the descriptive (frequency, percentage, mean and standard deviation), statistical inferential (person correlation coefficient) and Statistical Package of Social Sciences (SPSS, 26).

Results

Participants were aged between (29-38) years with (Mean ±SD33.3.6±0.88). A majority of patients were male (52.5%) and (72.5%) were single. (66.7%). Most of the participants have diploma level of education. And most of participant has (5-10) years of experience Table 1 shows demographic characteristics of the study participants.

Table (2) show regarding workers knowledge about occupational hazards were responses poor in all items except (2and 6) is moderate.

Table (3) shows Workers knowledge that there are significant relationships between workers' knowledge about occupational hazards and their age, years of experience and education at p-value of less than 0.001.

Table (4). Table shows that there is no statistically significant difference between workers' knowledge about occupational hazards relative to their gender

Table 1: Distribution for Study Sample According Their Socio-demographic Characteristics

Demographic characteristics	Study group N=40	Frequency	Percent %	Control group N=40, frequency	Percent %
Age	20-28 29-38 48-39 Mean±SD 33.3	14 18 8 6±(0.88) 33.01±(0.07)	35 45 20	13 17 10	32.5 42.5 25
Gender	Male Female	21 19	52.5 47.5	22 18	55 45

Marital status	Single Married Discovered	29 10 1	72.5 25 2.5	29 11 0	72.5 27.5 0
Years of working in oil refinery	1-4 5-10 11-16 17 and more	15 5 8	37.5 12.5 20	13 8 8	32.5 20 20
Education level	Primary Secondary Diploma bacholar	18 8 6 8	45 20 15 20	4 9 11 16	10 22.5 27.5 40

Table 2

Sub domain	MS	SD	ASS
Physical hazards			
1.Places with high humidity may lead to physical hazards	1.17	0.384	Low
2.Poor lighting in the workplace can cause problem in eye and vision	1.07	0.266	Low
3.Inhaling the gas in the work environment may cause health problem in breathing	1.07	0.266	Low
4.Noise that results from refinery machines leads to hearing problem	1.07	0.266	Low
5.Poor ventilation resulting from overcrowding may lead to suffocation	1.17	0.384	Low
6.Severe colds may lead to physical health risk	1.02	0.158	Low
7.Exposure to extreme heat in excavations may increase exposure to fever	1.15	0.361	Low
8.Radiation hazards resulting from radioactive radium may lead to cancer	1.05	0.22	Low
9.Vibration resulting from drilling machines may cause health and physical problem	1.02	0.158	Low
10.Radiation hazard can lead to infertility	1.02	0.158	Low
2-chemical Hazards			
1.The gas associated with oil in the carrier lines may lead to fatal risk if it is not managed	1.13	0.335	Low
2.Direct contact with benzene may lead to skin rashes and eczema	1.20	0.464	Low
3.Inhalation of carbon monoxide and sulfur dioxide may increase	1.05	0.221	Low
4.Incidence of poising	1.15	0.362	Low
5. The entry of volatile liquids from oil easily into the lungs leads to lung cancer	1.10	0.379	Low
6. Poisonous gases may be absorbed through The eye and lead to irritation, redness, sensitivity and acute eye inflammation Absorption of toxins through the	1.10	0.267	Low
7.Gastrointestinal tract may lead to nausea and vomiting	1.15	0.335	Low

8.Hydrocarbons and other constituents of petroleum products are metabolized and excreted by the liver can lead to hepatotoxity	1.13	0.335	Low
9. Petroleum product from benzene overtime lead to esophageal regurgitation	1.10	0.267	Low
10. Direct inhalation to gas associated with petroleum lead to pneumonia	1.13	0.335	Low
3- Psychosocial Hazard			
1.Stress from work can lead to boredom	1.23	0.480	Low
2.Poor relationship with workers lead to burnout	1.08	0.267	Low
3.Lacofcommunication with manager lead to leave work	1.15	0.362	Low
4.The worker's failure to adapt to	1.08	0.267	Low
5.The work atmosphere causes the worker to feel loneliness Working in	1.10	0.304	Low
6.Remote and remote places leads to a feeling of alienation	1.15	0.362	Low
7. The worker's feeling of discomfort inside the oil refinery with the workers leads to a failure to failure to perform duties	1.03	0.158	Low
8.The use of verbal or physical violence by the work manager may lead to psychological problems	1.20	0.405	Low
9.Not caring or listening to worker's aspirations leads to frustration	1.15	0.362	Low
10.The shortage of the workers leads to shortage of workers	1.15	0.362	Low
4- Mechanical Hazards 1.Injuries caused by machines may be harmful and may cause sudden death	1.13	0.335	Low
2.Don't attain to sharp equipment lead to finger amputation	1.08	0.267	Low
3.Sudden movement during work may lead to back problems	1.05	0.221	Low
4.Refinery devices and machines are capable of causing pain in the body lead to fatigue	1.08	0.267	Low
5.Carrying heavy materials without using the tools for carrying leads to sciatica	1.08	0.267	Low
6.Failure to pay attention to welding machines and cutting machines may lead to amputation in the limbs	1.20	0.405	Low
7.Multiple accident from machine lead to foot amputation 8.Safe sharp machine in safe work after task reduce injury	1.20	0.405	Low
9.A part of the worker's body gets stuck between moving parts of the equipment lead to amputation of limbs	1.20	0.405	Low
10.Risks arising during maintenance operations lead to head fracture	1.18	0.385	Low

Table 3: Shows Workers knowledge that there are significant relationships between workers' knowledge about occupational hazards and their age, years of experience and education at p-value of less than 0.001

Demographic Data		Mean	F	P-value
Age	<=28 29-38	2.6706 2.5919	3.865	0.030

	39-48	2.6464		
Years of working in oil refinery	1-4 5-10 11-16 17 and more	2.6598 2.6598 2.5935 2.5591	3.601	0.023
Levels of Education	Primary Secondary Diploma Bachelor	2.6194 2.5755 2.6433 2.7002	3.448	0.027

Table 4: Table shows that there is no statistically significant difference between workers' knowledge about occupational hazards relative to their gender

Gender		Mean	SD	D.F	P-value
	Male	2.648	0.091	38	0.164
	Female	2.610	0.079	38	0.164

Discussion

Analysis of such characteristics depicts that most of the workers are at age group of (29-38) year, in the study and control groups, and they are accounted for (42.5% and 45%) respectively (Table 4-1). This can be interpreted in a fashion that workers at oil refineries are predominately young adults.

With regard to their gender, the study findings show that males are prevailed in of the study group and they are accounted for (52.5% and55%), respectively (Table 1). Such finding confirms that work at oil refineries is more appropriate for males rather than females.

A quasi-experimental study is carried out at Medical City Hospitals in Baghdad City to ascertain the efficacy of an educational program on improving nurses' awareness about occupational health hazards. The study uses a non-probability convenience sample of sixty nurses. The study's conclusions show that, throughout posttest I and II, there are statistically significant variations in the study group's nurses' knowledge of occupational health hazards, including mechanical, chemical, biological, psychological, and chemical dangers[16].

In terms of marital status, the majority of workers in the study groups are unmarried, accounting for 72.5% and 72.5% of them, respectively (Table4). Perhaps because they are young adults and lack the experience, the chance to tie the knot. Concerning their years of work in oil refinery, the study illustrates that most participants have (5-10) years of work at oil refineries and they are accounted for (32.5% and 37.5%) respectively (Table 1). This presents evidence that they are working for sufficient period of time and absolutely they have been exposed to occupational hazards.

An analysis of this overall evaluation shows that, for both study group, workers' understanding of occupational dangers was inadequate during the pretest event. This conclusion is supported by the low mean score on the knowledge items completed by the workers, but as a result of the instructional program's implementation, their knowledge increased at the posttest I and II episodes (Table 2 and -3). The high mean scores on a large number of items indicate that the workers' knowledge has improved.

Descriptive study of 355 healthcare workers at several hospitals in the Iraqi governorate of Thi-Qar is being done. The findings indicate that the health care personnel have a moderate understanding of workplace dangers[17].

A convenient sample of 162 workers participated in another descriptive study, which revealed that 53.1% of the workers had inadequate overall knowledge on the prevention of occupational health hazards[18].

According to the results of the structural survey, the majority of workers are highly knowledgeable about reducing occupational health risks. But the study also shows that the impact of workers' awareness of hazardous Health risks do not equate to the implementation of all-encompassing safety procedures[19].

In terms of educational attainment, the majority of individuals in the research group hold a primary school diploma (45%) and a diploma degree (27.5%) (Table 1-4). This disparity in the groups' educational attainment has arisen as a result of the technique and/or procedure used for sample selection.

According to reports, the average age of workers in petroleum refineries is (40+). Years old, making up (67%) of the workforce in petroleum refineries; women make up 16.2% of this group, and petroleum refinery workers are men. The most common degree for petroleum refinery workers is high school diploma, with (54%) of petroleum refinery workers earning that degree. The second and third most common degree levels are diploma degree at (23%) and Diploma Degree at (15%) [20].The current study used a quasi-experimental (pre posttest) design ran from November 2, 2016, to April 24, 2017.current investigation being carried out at the Babylon Battery Factory in the capital of Baghdad.A purposive sample of fifty employees is chosen from the Babylon Battery Factory located in the capital of Baghdad.

Two groups, one for research and the other for control, ea ch cTonsisting of twenty-five workers, make up this sample. The present study constructs two assessments and an Occupational Health Education Program based on a survey of pertinent literature and studies. Sociodemographic Features and Workers' Knowledge of Lead Poisoning make up these instruments[21].

A survey of (133) oil and gas industries workers reveals interesting insights relating to participants' experience levels, decision making practices and perceptions on the importance of various information and knowledge sources in different operating circumstances. The data show differences in the sources of knowledge relied upon by experienced and less experienced workers. Experienced workers rely on their own knowledge in both routine and potentially high-impact scenarios. Less experienced workers also rely on their own knowledge for routine decisions however they reported seeking out external knowledge and information in potentially high-impact scenarios[22].

A descriptive study is conducted on a convenient sample of (231) worker. Findings indicate that the workers have a good level of knowledge of occupational health and safety practices (66.7%)[23].

At the end of the course of data analysis, the relationship between workers' knowledge about occupational hazards and their demographic characteristics has been investigated.

Findings out of this relationship depict that young age, well-educated and long-time working workers at the oil refineries have acquired better knowledge about occupational hazards than those who have not been exposed to the instructional program.

Workers' knowledge about occupational hazards has not been influenced by gender discrepancies. It is evident by the study findings that workers regardless of their gender

have benefited out of the instructional program on the topic of occupational hazards.

A descriptive study is conducted on (355) health workers at some hospitals of Thi-Qar governorate in Iraq. The results show that there is impact of health care workers' education level, the years of age and years of experience upon their knowledge about occupational hazards[24].

Conclusion

The study's findings demonstrated a decrease in the workers regarding their level of knowledge about occupational hazards in most of the items. . Furthermore, there are significant differences between the study participants' demographic features and their knowledge and their no significant differences between workers knowledge and their gender.

Recommendation

1. The Instructional Program can be utilized as mean by the Ministry of Oil to augment workers' knowledge and performance at oil refineries to minimize and/or eradicate occupational hazards.
2. In-service continuing education and training programs can be designed, structure and implemented on topics related to occupational health-related issues for the benefits of oil refineries' workers.
3. Workers can be encouraged and supported to have more opportunities to participate in occupational-related educational and training workshops.

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