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Evaluation of occupational health and safety systems in accordance with the international standard ISO45001:2018 A case study in Al-Yarmouk Teaching Hospital (Research extracted from a master's thesis)

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Abstract:

The current research aims to evaluate the occupational health and safety systems in Al-Yarmouk Teaching Hospital because of their vital role in serving the citizen and community service, in addition to that, it aims to analyze the gap between the actual reality of this hospital and the requirements of the standard of the International Standards Organization (ISO45001: 2018).

The research problem was diagnosed through the main question (what is the availability of a system for occupational health and safety management in Yarmouk Teaching Hospital? Does it meet the requirements of the international standard ISO 45001: 2018?). In order to achieve the objectives of the research, the case study approach was relied on and a special checklist was prepared for this purpose to answer the questions raised in the research problem, which were prepared based on the standards approved in the research. Statistical methods (weighted arithmetic mean, percentage, gap measurement) were used to express the extent of difference and conformity with the requirements of the standard. As for the most prominent findings of the researcher, it is the existence of gaps between the actual reality and the requirements of the occupational health and safety management system according to the standard (ISO 45001: 2018) in the hospital, the field of research.

Keywords: occupational health and safety, ISO 45001:2018.

1. the introduction

The health sector is one of the vital and very important sectors in human life, and it is also dangerous due to the presence of many risk factors and weaknesses such as laboratories and various medical and biological wastes, in addition to evacuations and emergencies that may occur without planning for them and alternative mechanisms, procedures and plans have not been developed. Develop scenarios and forecasts for all cases that hospitals and health centers may be exposed to.

The hospital departments are always striving to build a system for managing occupational health and safety in accordance with modern standards to maintain the health and safety of their employees and improve their workplace, so many international and international



systems, standards and specifications have been exported to provide safe and healthy working conditions, which has become the international standard (ISO 45001: 2018) one of the most important of these specifications at present.

For the purpose of demonstrating the research methodology, the literary references that dealt with the concept of occupational health and safety, its definition, importance, objectives and benefits of application were reviewed, and the terms of the international standard (ISO45001: 2018) were reviewed, and the research problem, its importance and purpose, the research community and the sample were presented. Evaluation of occupational health and safety systems in Yarmouk Teaching Hospital according to the international standard (ISO45001: 2018), presentation of the analysis of the checklist data, discussion of the results, evaluation of the extent of application and documentation of the requirements of the standard, and statement of the most important conclusions and recommendations reached by the researchers.

2. Methodology

2.1 Research problem

The research problem was diagnosed about the existence of a weakness in occupational health and safety procedures at Al-Yarmouk Hospital through injuries and accidents faced by employees as a result of lack of awareness of the importance of occupational health and safety methods. Through this president, the research problem lies in a number of questions, including the following:

- a. To what extent can the occupational health and safety management system be applied in Al-Yarmouk Teaching Hospital, and does it meet the requirements of the international standard (ISO 45001: 2018) for occupational health and safety?
- b. What is the extent of the gap between the actual reality of occupational health and safety in the Al-Yarmouk Teaching Hospital surveyed and the requirements of the international standard (ISO 45001: 2018) for occupational health and safety? What are the measures taken to close that gap?

2.2 research importance

The importance of the research stems from the importance of the title and its vitality, as it is related to health and safety for humans in general and for workers in particular, and it is related to that professionally. Thus, the researchers was able to determine the importance of the research as follows:

- a. An attempt to identify the gap between the actual reality of Yarmouk Teaching Hospital and the requirements of the international standard (ISO 45001: 2018) and work to reduce it.
- b. Reducing work accidents and injuries and upgrading the Yarmouk Teaching Hospital to the ranks of its counterparts in developed countries.
- c. Occupational health and safety is a manifestation of concern for the human aspect, which must be taken care of in order for societies to rise and nations to develop, as a healthy mind resides in a healthy body.

2.3 Research objectives

The research aims to achieve the following objectives:

- a. Measuring and evaluating occupational health and safety management systems in Al-Yarmouk Teaching Hospital, and comparing them with the requirements of international standards (ISO 45001: 2018).



b. Determine some of the suggestion procedures for hospitals in the field of research to identify how to apply occupational health and safety systems according to the standard (ISO 45001: 2018).

2.4 Research community

The research community is represented by government hospitals in Iraq in general, while the research sample is represented by the administrative levels working in the Yarmouk Teaching Hospital in the capital, Baghdad, as it is one of the most important teaching hospitals in it.

3. Literary references

3.1 The concept of occupational health and safety systems

The concept of occupational health and safety began with the start of the industrial revolution and its renaissance, especially with the advent and expansion of technology, as it entered various aspects of life, whether economic, social or political. Especially since the focus was on economic activity regardless of what the working individual suffers from unhealthy conditions or long working hours, which led to many injuries and accidents to which working individuals were exposed (Al-Shaheen, 2007: 41).

3.2 Define occupational health and safety systems

The International Labor Organization and the World Health Organization define occupational health as “the promotion and maintenance of the highest degree physical, mental and social well-being of workers in all occupations” and the World Health Organization considers that the occupational health service is responsible for the whole worker and, if possible, his family. Occupational health is a diverse science applied by professionals, whether occupational engineers, health professionals, environmental health practitioners, chemists, toxicologists, physicians, nurses, safety professionals, and others who have an interest in protecting the health of workers in the workplace (Tadesse & Admassu, 2006:4).

3.3 The importance of occupational health and safety systems

One of the most important reasons for concern for occupational health and safety is the presence of the human factor, which focuses on the human being as the most important resource and energies, as he is the entity of society, and accordingly the importance of occupational health and safety is highlighted in the following: (Al-Mughni, 2006: 17) (Aqili, 2005: 575-576)

- a. Encouraging human relations between workers and management: through the role of management in providing protection and care for workers.
- b. Providing a healthy work environment and reducing the risk factor through the management responsible for providing this environment, as the management's responsibility has become high in light of the technology used.
- c. Reducing work costs: as the responsible and rational administration avoids the organization from many problems that may occur at work as a result of accidents and injuries, and thus reduces the side of expenses as material and moral compensation for the damages that may occur and which may be paid to working individuals and their families.
- d. Good management encourages the development of the good reputation of the organization and its management towards its competitors, which contributes to attracting and retaining qualified and skilled individuals.
- e. Improving the psychological state that the individual worker may be exposed to as a result of work accidents, which may include the feelings of workers and even their clients.



Also, the importance of occupational health and safety emerges through the contribution of senior management to the promotion of occupational health and safety activities and events, and thus has a positive impact on increasing worker productivity (Hussein, 2009:80).

3.4 Occupational Health and Safety Objectives

Among the most important goals that occupational health and safety systems seek to achieve is preserving the health and lives of workers and the property of organizations and safety, achieving a safe and risk-free work environment and developing and educating the individual about the importance of the occupational health and safety system and the need to implement a quality management system based on international standards (Hussein, 2008: 22). Occupational health and safety management systems aim to protect production elements and employees from harm caused to them as a result of work injuries and accidents, by applying a set of preventive measures and precautions in order to secure a safe work environment free from risks and occupational diseases, whether for employees or the community that surrounds the organization by creating Awareness of employees regarding safe methods and ways to perform work.

3.5 Benefits of applying occupational health and safety systems:

There are many benefits that can be obtained when applying occupational health and safety systems such as improving occupational health and safety performance on a permanent basis, as well as fulfilling legal requirements in addition to implementing occupational health and safety goals. Occupational health and safety management systems can also reduce the burden of risks associated with accidents and injuries, reduce expenses, define and organize the processes and procedures of institutions and organizations, and ensure the implementation, review and continuity of their plans (1062: Serenay Çalış et al., 2019).

The benefits of occupational health and safety management systems are also identified by the International Standards Organization in 2019. My agencies: (www.iso.org)

- a. Reducing occupational accidents.
- b. Growth in productivity, decrease in employee loss and absenteeism.
- c. Reducing insurance costs.
- d. Establishing a culture of health and safety.
- e. Involving employees in the occupational health and safety system.
- f. Strong leadership to manage the process.
- g. Gaining the ability to carry out legal procedures.
- h. Good reputation of the enterprise.
- i. Ensure that employees feel safe.

The researchers believes that the benefits of applying occupational health and safety systems can contribute to the development of organizations and their employees, and lead to an increase in the sense of security, safety and stability at work, and thus higher worker productivity, and this contributes to the continuous improvement of the organization and the preservation of its human resources and competencies.

3.6 Concept and definition of work injuries and accidents

Injuries are the main cause of illness and death among workers, as thousands of people are killed or disabled in industrial accidents every year, and many workers may suffer from lost working hours, medical treatment, restricted movement, or having to transfer to another job as a



result of the injury. And that these injuries continue to claim many lives and cause physical and psychological damage among workers, and that work injuries and accidents are comparable to cancers and diseases of the heart and blood vessels (Jovanoviæ, J., and Jovanoviæ, M, 2004: 261).

The International Labor Organization has defined injuries as “the unexpected and unplanned accident, including acts of violence that may arise during or because of work, as a result of which one or more employees suffer and may suffer personal injury, illness or death, as well as travel, transportation and traffic accidents in which the employee is injured.” during or because of his work, or during the execution of his duties” (www.ilo.org).

3.7 Causes of work injuries and accidents

There are many causes that result in work injuries and accidents, but they can be grouped into two main groups as follows: (Omar and Khenish, 23: 2022)

a. Environmental and organizational reasons: which include the causes of injuries and accidents in the work environment, such as natural disasters, which are represented by earthquakes, floods, rain, etc., and the physical causes, which are represented by the unfair temperature, the lack of adequate ventilation, improper lighting, noise, lack of cleanliness in the workplace, and the lack of arrangement of machinery and equipment. Lack of maintenance, lack of safety equipment and conditions, poor organization and management, and other causes.

b. Human and professional reasons: These include actions that occur because of employees, including lack of experience and irregular work, in addition to the presence of defects in the senses and the inappropriateness of the gender and age of the employee for the job, in addition to the nature of the job itself and the seriousness of the work and the accompanying negative effects on the employee such as emissions of toxic gases and viruses And exposure to radiation, dealing with cutting and cutting machines, and non-compliance with safety procedures.

3.8 The international standard (ISO 45001:2018)

The provisions of ISO 45001: 2018 carefully define the requirements of the occupational health and safety management system with guidelines for achievement the standard in order to enable organizations in all their forms to provide healthy and safe workplaces, by providing an integrated system for the prevention of work injuries, and the prevention of ill health or bad diseases. The standard is suitable for any organization that wishes to establish and implement an occupational health and safety management system, with the aim of improving occupational safety and health, regardless of its size, type and type of activities. The standard also took care of important factors related to the organization, such as the context of the organization, and factors related to the needs and expectations of its customers and any parties related to it.

The ISO 45001: 2018 standard consists of ten main items, which will be presented in brief form: (www.iso.org)

a. Scope: This International Standard is intended to be applicable to any organization regardless of its size and type of business and applies to occupational health and safety risks under the organization's control, taking into account factors such as the context in which the organization operates and the needs and expectations of its workers and other interested parties.

b. Normative reference: There are no standard references.

c. Terms and definitions: This item contains 37 terms derive from which is a definition for each of the terms used in the organization.



d. The context of the organization: In this item, the challenges of occupational health and safety within the organization must be understood, the risks inherent in the activity or the field of work of the organization, the internal and external environment must be determined to determine the relevant issues, and the requirements and expectations of the parties concerned must be determined.

e. Leadership and worker participation: In this item, policy-making, organizational roles, responsibilities and powers, and proof of senior management's ability to lead, commit, and be accountable are involved.

f. Planning: This item is concerned with taking into account the risks and opportunities, whether in the organization or the concerned parties, and determining how to deal with these risks. Associated with changes in the organization or its operations in the case of planned permanent or temporary changes.

g. Support: The organization must determine the availability of the necessary resources to establish, improve, maintain and continuously improve the health and safety management system, taking into account all aspects of resources, efficiency, awareness, communication and documented information.

h. Operations: Operations are considered among the important items that have become more specific and clear, and include planning, operating control, change management, external sources, procurement, and emergency preparedness and response. Therefore, the organization must plan, implement and monitor the processes necessary to meet the requirements of the occupational health and safety management system.

i. Performance evaluation: The performance evaluation item includes monitoring, analysis, evaluation, compliance assessment, internal and external audit, and management review. Therefore, the organization must establish, implement, and maintain the monitoring, measurement, and evaluation process.

j. Improvement: The improvement item includes accidents, corrective actions for cases of non-conformity, and the process of continuous improvement objectives. The organization must plan, establish, implement, and maintain the continuous improvement process, taking into account the outputs of the activities described in this international standard, and that the organization transfers the results of continuous improvement to the concerned workers. and their representatives, and that the organization maintain documented information as evidence of the results of continuous improvement.

3.9 Brief about hospitals in Iraq

The Ministry of Health was established in 1953 and now has a section in the regular budget, as the period preceding it was within the expenditures of the Ministry of Social Affairs from 1941 to 1952. In 1958 AD, a system for the Ministry of Health No. 7 of 1958 was drawn up. From here, the steps towards achieving a great health renaissance in Iraq began, as the number of hospitals at that time reached (123), but this number increased in 1962, when it reached (135) hospitals. Then it increased to become (153) hospitals in 1966. The Directorate of Public Health Protection was established and, since its inception, supervised all preventive services, as all institutions related to the provision of these services were associated with it and covered all parts of Iraq. All over Iraq. After that, the health system in general and Iraqi government hospitals in



particular began to suffer from a continuous decline, especially since the eighties of the last century due to the wars in which Iraq entered and the economic blockade in the nineties of the last century, which lasted for more than twelve years, as the budget allocated to hospitals in the Ministry of Health declined to what 90% from the previous one. In addition to the American occupation of Iraq in 2003 AD and the accompanying destruction and looting of health institutions and government hospitals, and the subsequent deterioration in the political and economic conditions of the country. The number of government hospitals in Iraq, according to the annual report of the Iraqi Ministry of Health until the end of 2021 AD, reached (312) government hospitals throughout Iraq (Abdul Aziz, 2022). As shown in the table below:

Table (1) Number of government hospitals in Iraq

No.	Governorate	No. of teaching hospitals	No. of public hospitals	Total
1	Baghdad	18	34	52
2	Basrah	6	10	16
3	Nineveh	5	15	20
4	Maysan	1	8	9
5	Diwaniyah	2	9	11
6	Diyala	2	7	9
7	Anbar	4	9	13
8	Babylon	4	14	18
9	Karbala	4	8	12
10	Kirkuk	1	8	9
11	Wasit	2	6	8
12	Dhi Qar	4	6	10
13	Muthana	2	3	5
14	Salahaddin	1	11	12
15	Najaf	4	13	17
16	Erbil	5	20	25
17	Dohuk	5	18	23
18	Sulaymaniyah	8	35	43
Total		78	234	312

Source: The general annual report of the Iraqi Ministry of Health for the year 2021.

4. Evaluation of occupational health and safety systems in Al-Yarmouk Teaching Hospital in accordance with international standards (ISO 45001:2018)

This aspect deals with diagnosing and analyzing the gap between the reality of the occupational health and safety management system in Iraqi hospitals and the requirements of the international standard ISO 45001: 2018 by comparing the reality of the procedures and operations of occupational health and safety iarmouk Teaching Hospital, which was chosen as a sample for research, and the requirements of this standard.

This is done through the results of the checklist used in gap analysis, and after diagnosing the gap for each requirement, the reasons leading to the emergence of this gap and the possibility



of overcoming it will be discussed. The researcher will adopt this specification to provide it with the required information through personal interviews and actual observations for the purpose of ensuring the accuracy of the information.

1. Analyze the checklist data

The main and sub-items in building the checklist were adopted according to the international standards (ISO 45001: 2018). Gaps will also be found in the hospital according to the following equations: (Salim, 2001: (92)

Equation (1) Arithmetic mean = sum of (weights * repetitions) / total repetitions

Equation (2) The percentage of the matching range = (weighted arithmetic mean) / the value of the highest weight in the scale

Equation (3) the size of the gap for each checklist = 1 - the percentage of the extent of conformity

The following is the percentage of application of the international standard (ISO45001: 2018) actually in Al-Yarmouk Teaching Hospital and the size of the gap for the requirements of the standards of that standard, which are shown in the table below:

Table (2) Results of the checklist, diagnosis and gap analysis, and the extent to which the actual implementation conforms to the requirements of the international standard (ISO 45001:2018) in Al-Yarmouk Teaching Hospital

No.	Standard number and name	Gap size to requirement	Percentage of application and documentation	Arithmetic mean weighted (average)
1	(4) The context of the organization	63.4%	%36.6	2.20
2	(5) Leadership	%42	%58	3.50
3	(6) Planning	%52	%48	2.88
4	(7) Support	%26.4	%73.6	4.42
5	(8) Operation	%38.4	%61.8	3.70
6	(9) Performance evaluation	%58.4	%41.6	2.50
7	(10) improvement	%40	%60	3.60
The sum total of the evaluation results		320.4	379.6	22.80
The upper limit of application and documentation		%100	%100	6
The default sum of the application and documentation		42		



The amount of gap in application and documentation	19.20
The ratio of the total actual results to the total assumed results	%54.3
The percentage of the amount of the gap	%45.7

2. discussing the results and evaluating the extent of application and documentation of the requirements of the international standard ISO 45001: 2018

Based on the results of the actual evaluation of the requirements of the international standard (ISO 45001: 2018)) and as shown in Table (2), the total rate, the total percentage, the extent of the level of application and the actual documentation of the requirements of the international standard under study in Yarmouk Teaching Hospital were concluded using the following mathematical equations:

- The assumed total of application and complete documentation = highest weight in the list x number of checklists.
- The amount of the gap in the application and documentation of the total requirements = the assumed total of application and complete documentation - the total sum of the evaluation results.
- The ratio of the total actual results to the total assumed results = the total of the evaluation results ÷ the total assumed total of the application and complete documentation.
- The percentage of the gap in the application and documentation of the international standard = 100% - the percentage of the total actual results.

5. Conclusion

Through diagnosing the strengths and weaknesses of the hospital, the research sample, observations and field visits, and analyzing and evaluating the requirements for implementing the international standard ISO 45001: 2018 through the evaluation results of the practical side, they reached a set of conclusions defined by the following points:

- There is no complete application in the research sample hospital of occupational health and safety procedures and controls. And what is found in it is considered relatively poor and does not meet the standards of international standard (ISO 45001: 2018).
- The research sample hospital has never obtained a certificate of occupational health and safety management system (ISO 45001: 2018) or any international certificate from any international organization in this field.
- The research sample hospital does not have a strategic plan aimed at achieving the application of the occupational health and safety management system in accordance with the international standard (ISO 45001: 2018).
- The general policies of the higher departments in the research sample hospital do not move towards the application of the occupational health and safety management system and are not concerned with the application of international standards (ISO 45001: 2018).
- Non-compliance of the employees in the research sample hospital with the application of occupational health and safety procedures, and the disparity in the percentages of their application.



f. There are occupational health and safety committees in the research sample hospital, but they do not operate in accordance with the controls and instructions included in the international standards (ISO 45001: 2018).

In light of the above conclusions, the researchers put a set of recommendations that can contribute to helping the research sample hospital to apply and implement the international standard ISO 45001: 2018 and obtain its certificate from the International Standards Organization. These recommendations will be defined by the following points:

- a. The need to pay attention to the field of occupational health and safety in the research sample hospital in line with the development and progress in this field to rise to the ranks of hospitals in developed countries and to develop plans and policies to ensure that.
- b. The hospital must prioritize its main strategies and objectives to obtain international certificates in the field of occupational health and safety, such as the certificate of the International Standards Organization for the Occupational Health and Safety Management System, the latest version (ISO 45001: 2018).
- c. The higher managements in the research sample hospital should pay attention to the field of occupational health and safety by setting clear policies for the application of occupational health and safety management in that hospital according to a modern and developed system.
- d. Develop deterrent methods for employees who violate the instructions and controls of the Occupational Health and Safety Management System and work to reward employees who comply and apply those instructions and controls to motivate them.
- e. Activating the role of the occupational health and safety committees in the hospital, the research sample, and carefully selecting the members of these committees with experience, competence and skill, and urging them to pay attention to the international standard (ISO 45001: 2018) and strive to implement it.

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