

*Contribution Of Industrial Security In Reducing Psychosocial Risks:
A Field Study In The Directorate Of Public Works In Oum El Bouaghi*

إسهام الأمن الصناعي في الحد من المخاطر النفسية الاجتماعية
(دراسة ميدانية في مديرية الأشغال العمومية بأم البواقي)

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ملخص:

هدفت الدراسة الى معرفة مدى تطبيق أنظمة ولوائح الامن الصناعي ومعرفة مدى توفير وسائل الامن الصناعي في الحد من المخاطر النفسية الاجتماعية في مديرية الاشغال العمومية من وجهة نظر العاملين، وتم اعتماد المنهج الوصفي التحليلي الذي يخدم موضوع الدراسة، وشملت الدراسة عينة قوامها 40 عاملا في مديرية الاشغال العمومية بأم البواقي، وتوصلت النتائج الى ان تطبيق أنظمة ولوائح الامن الصناعي يساهم في الحد من المخاطر النفسية الاجتماعية، كذلك توفر وسائل الامن الصناعي يساهم في الحد من المخاطر النفسية الاجتماعية في المؤسسة.

الكلمات المفتاحية:

الامن؛ الامن الصناعي؛ المخاطر؛ المخاطر النفسية الاجتماعية؛ مديرية الاشغال العمومية.

Abstract:

This study aimed to assess the implementation of industrial security systems and determine the extent to which they provide means to mitigate social psychological risks among employees in the Public Works Directorate. The research utilized a descriptive-analytical methodology tailored to the study's subject. The sample consisted of 40 workers in the Public Works Directorate in Oum El Bouaghi.

The results indicated that the application of industrial security systems contributes to reducing social psychological risks. Additionally, the availability of industrial security measures plays a crucial role in mitigating social psychological risks within the organization.

Keywords:

Industrial Security; Security; Social Psychological Risks; Risks; Public Works Directorate.

INTRODUCTION

Today, the world is witnessing technological development across various fields, most notably in the industrial sector, which is a cornerstone of human and societal life due to its significant role in effective economic development. This progress has brought modern work methods into industrial establishments to keep pace with advancements and meet the needs of individuals and societies. Throughout history, the need for safety has been one of humanity's fundamental desires in all stages of life.

Although there has been overall progress and the comfort it has provided, risks within the human environment persist, posing threats to safety and, at times, life itself. Protecting human resources from workplace hazards has become essential, as safeguarding this resource ensures the preservation of the national economy at large and the community and production specifically.

Therefore, an increasing need has emerged to reevaluate various aspects and to give greater priority to workers' well-being, especially within industrial establishments, as they represent the cornerstone of the production process. In recent times, most institutions have adopted this focus as a strategic approach to address challenges that impede the achievement of their objectives.

To prevent the escalation of psychosocial risks and workplace accidents in industrial institutions, including public works organizations, many countries have adopted occupational safety policies. These policies aim to provide favorable working conditions and implement safety and prevention measures to prevent occupational diseases and workplace accidents. This underscores the significant importance of the current study, which examines the contribution of industrial safety in reducing psychosocial risks.

1. Problem

The concept of collective responsibility for risks and accidents was developed between 1930 and 1960, during this period, three major domains of accident prevention and workplace safety emerged. The first domain is the mechanical aspect, which concentrates on ensuring the safety of work tools and machinery. The second focuses on human-machine interaction, derived from the Human Relations School of the 1930s, emphasizing the careful selection of workers and the avoidance of hiring individuals susceptible to accidents. The third is the psychosocial approach, which recognizes the multifaceted nature of accident causes and aims to develop comprehensive preventive solutions.

Today, collective responsibility for workplace risk prevention has gained prominence, especially in developed and developed countries. Workers receive compensation after accidents, are rehabilitated to return to work, and enjoy rights and duties that contribute to their personal safety. The focus has shifted from promoting health to prevention, prompting institutions to establish specific safety principles and conditions in workplace environments.

To mitigate negative outcomes and minimize workplace accidents and psychosocial risks, it is crucial to adopt both technical and administrative tools and strategies for effective risk management.

These include ergonomic studies in equipment and machinery design and providing safe working conditions that align with individual capacities. This enables workers to perform their tasks in a safe and comfortable environment, ensuring safety and health at all times.

Based on the above, the study problem can be summarized in the following research questions:

How effective is the implementation of industrial safety systems and regulations in preventing psychosocial risks in the public works organization?

What is the impact of providing industrial safety tools on the prevention of psychosocial risks in public works organizations?

2. Objectives

To examine the effectiveness of implementing industrial safety systems and regulations in reducing psychosocial risks within the public works organization.

To determine the impact of providing industrial safety tools on the prevention of psychosocial risks within the public works organization.

3. Hypotheses

The implementation of industrial safety systems and regulations significantly contributes to the prevention of psychosocial risks in the public works organization.

The provision of industrial safety tools has a positive and significant effect on preventing psychosocial risks in the public works organization.

4. Significance of the Study

This study aims to identify industrial safety procedures and their role in reducing psychosocial risks among employees of the public works organization in Oum El Bouaghi. It provides valuable information to enrich theoretical perspectives on industrial safety and psychosocial risks. Additionally, it serves as a reference in libraries and helps researchers explore the study's findings and recommendations, encouraging similar research on other samples.

The study also aims to increase knowledge and influence worker behavior while drawing the attention of organizational leaders to the importance of awareness in these areas. Furthermore, it provides decision-makers in the organization with insights into programs that enhance occupational safety.

5. Boundaries

5. 1.Temporal Boundaries:

The study was conducted during the first semester of the 2023–2024 academic year.

5. 2.Spatial Boundaries:

The study took place in the public works organization in Oum El Bouaghi.

5. 3.Human Boundaries:

The research focused on personnel employed within the Public Works Organization of Oum El Bouaghi Province.

6. Key Terminologies

6. 1.Industrial Safety:

Industrial safety refers to the set of procedures and regulations related to maintaining security, order, safety, and firefighting within vital facilities and their utilities (Al-Kayed, 2015).

6. 2.Psychosocial Risks:

Psychosocial risks are pressures that can affect a person's position at work. Some define them as situations negatively impacting a person's life or mental health in the workplace, such as discomfort, loss of self-esteem, stress, addiction, collapse, suicide, harassment, violence, and discrimination (Skil, 2023). They are also seen as unhealthy organizational practices that affect workers' psychological balance and social climate (Naqbil et al., 2023).

6. 3.Public Works Directorate:

The Public Works Directorate was established during the administrative division of 1975 and has had various names, including Public Works and Construction Directorate, Infrastructure and Equipment Directorate, and Public Works Directorate. The directorate operates semi-independently from its overseeing authority and functions as a public service to meet the general public's needs. Its role includes:

Collecting, organizing, and analyzing data to ensure the development, management, and maintenance of infrastructure.

Monitoring compliance with standards for managing, designing, implementing, and maintaining infrastructure.

Ensuring the safety of public spaces on land and at sea (excluding ports).

Proposing road classifications.

Providing technical assistance to municipalities for road and drainage maintenance.

Setting up traffic signs (Dhaif & Kaheeri, 2017).

7. Literature Review

7.1.Devich's Study (2006)

Preventive Awareness Among Workers and Its Relationship to Work Accidents in Algerian Industrial Enterprises.

This study aimed to highlight the importance of preventive awareness in reducing workplace accidents. The researcher used the descriptive–analytical method to explore the phenomenon and verify existing findings. The study sample consisted of 54 workers from the mechanics department across its workshops, and data were collected through a questionnaire. The operational hypothesis proposed that higher preventive awareness among workers would lead to fewer workplace accidents. The results indicated that 21 workers had experienced workplace accidents mainly due to personal and organizational factors, such as lack of attention and inappropriate physical conditions, rather than low preventive awareness. These findings, supported by observations and interviews, confirmed the partial hypothesis. The general conclusion showed a high level of preventive awareness among workers, reflected in their adherence to safety guidelines and preventive measures (Devich, 2006).

7.2.Doubaikh's Study (2008)

The Contribution of Industrial Safety in Preventing Workplace Accidents and Occupational Diseases – A Field Study in a Cable Manufacturing Company in Biskra.

This study aimed to assess the state of industrial safety in the selected enterprise and to compare it with theoretical frameworks. It sought to identify strengths and weaknesses in safety practices and to examine the role of specialized training and preventive awareness in reducing workplace accidents and occupational diseases. Using a descriptive approach and a simple random sample from the company, the study revealed the actual state of industrial safety measures, their role in accident and disease prevention, and the functioning of the committee responsible for implementing the safety policy (Doubaikh, 2008).

7.3.Salama's Study (2017)

The Role of Safety Culture in Reducing Workplace Accidents in the Industrial Enterprise – A Case Study of a Cable Manufacturing Company in Biskra.

This study examined how safety culture contributes to minimizing workplace accidents. It focused on defining the concept of safety culture within the Algerian industrial context and analyzing the standards and foundations of industrial safety. Using the descriptive method, data were collected through questionnaires and interviews with employees of the cable manufacturing company. The results demonstrated that safety culture plays a vital role in reducing workplace accidents by integrating safety awareness into workers' behaviors through continuous guidance and awareness programs. Moreover, organizational measures, personality traits, professional safety practices, and healthcare mechanisms collectively contributed to reducing occupational risks (Salama, 2017).

7.4.Asly's Study (2022)

Diagnostic Study of the Levels of Application of the Industrial Security Program According to the Ergonomic Dimension from the Point of View of Workers in the Industrial Sector.

This study aimed to evaluate the level of application of industrial security programs from the perspective of workers in the industrial sector. The descriptive approach was adopted, and data were collected through a questionnaire distributed to a sample of 56 workers. The results revealed that the level of application of procedures related to health awareness and the provision of preventive and safety devices was moderate, with arithmetic means ranging between 2.18 and 2.27. These results indicate an average implementation level of ergonomic and safety procedures within the industrial sector (Asly, 2022).

7.5.Bezyou and Khanich's Study (2022)

The Role of Industrial Security in the Prevention of Occupational Diseases in Industrial Establishments.

This study addressed how the work environment exposes employees to stress, psychological exhaustion, and physical fatigue, which can lead to workplace accidents and occupational diseases. It emphasized that ensuring a safe and risk-free work environment is essential to improving workers' well-being and enhancing institutional performance. The researchers concluded that improving the efficiency of preventive measures and reinforcing safety programs are key strategies for minimizing occupational diseases and accidents (Bezyou & Khanich, 2022).

8. Methodological Study Procedures:

8. 1.Study Method:

The descriptive analytical method was adopted, as it serves the purpose of the study.

8. 2.Study Sample:

The study included 40 workers from the Public Works Institution in Oum El Bouaghi, who were selected through a purposive sampling method from the institution.

8. 3.Study Tools:

A questionnaire was used, which initially consisted of 25 items. After being reviewed by expert judges, it was reduced to 23 items, distributed across two axes as follows:

Axis 1: Application of occupational safety regulations, consisting of 12 items.

Axis 2: Availability of occupational safety tools, consisting of 11 items, with the following response alternatives:

Agree (3), Somewhat Agree (2), Disagree Totally (1)

8. 4.Psychometric Characteristics:

1. Validity:

Validity of Expert Judges:

To assess the validity of the study tool in measuring what it was designed to measure, the initial version of the questionnaire was presented to a group of expert judges. They provided their comments and suggestions on the content of the questionnaire, and evaluated the relevance and appropriateness of the items in terms of their alignment with the field they were meant to address. These suggestions were taken into account.

2. Reliability:

Split-Half Method:

The reliability value using the split-half method was found to be 0.80, indicating a high level of reliability for the questionnaire.

8. 5.Statistical Methods:

The mean and standard deviation were used for statistical analysis.

Here is a precise English translation for your article, formatted for inclusion in a results presentation and discussion table:

9. Presentation of the Results:

9. 1. Presentation of the Results of the First Hypothesis:

The hypothesis states that the application of industrial safety systems and regulations is effective in preventing psychosocial hazards in public works institutions, according to the employees' perspectives.

To verify the hypothesis, the mean, standard deviation, and results were calculated, as shown in the following table:

N	Item	Standard Deviation	Mean	Grade
01	The Directorate strictly ensures the application of occupational health and safety laws and regulations	0.81	3.83	High
02	Workers apply occupational health and safety laws and regulations	1.14	3.31	Moderate
03	There is a commitment to using personal protective equipment	1.36	3.37	High
04	The Directorate relies on publications to guide workers on how to use protective measures	1.14	3.74	High
05	The institutional legislative system includes laws regarding compensation and employee insurance	1.02	3.71	High
06	The workplace provides security during task performance	1.09	3.69	High
07	Employees adhere to applying regulations and laws related to occupational safety rules	1.40	3.31	High
08	Occupational safety laws are clear and specific	1.47	3.80	High
09	The Directorate imposes deterrent penalties on those who fail to use protective measures	1.50	3.29	Moderate
10	The Directorate is interested in improving occupational health and safety procedures as a result of the commitment to applying internal safety systems.	1.16	3.40	High

11	Instructions are issued that obligate workers to take occupational safety measures while performing work	1.09	3.51	High
12	Adhering to the contents of preventive awareness methods helps avoid occupational diseases	1.20	3.77	High

Table 1:**Mean and Standard Deviation of Individual Responses on the First Axis**

From Table 1, it can be observed that the average ratings for the items were as follows:

Items with High Ratings:

Occupational safety laws are clear and specific: 3.80

Adherence to preventive awareness measures helps avoid occupational diseases: 3.77

Management relies on publications for guiding employees on how to use protective measures: 3.74

The institutional legislative system includes laws on compensation and worker insurance: 3.71

The workplace is safe during task performance: 3.69

Issuing instructions for employees to follow safety measures during work: 3.51

The management is concerned with improving health and safety procedures due to adherence to internal safety systems: 3.40

Compliance with the use of personal protective equipment: 3.37

Items with Moderate Ratings:

Employees adhere to health and safety regulations: 3.31

The management imposes punitive measures on those who fail to use protective equipment: 3.29

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9. 2.Presentation of Results for the Second Hypothesis:

The hypothesis states that providing effective industrial safety measures helps in the prevention of psychosocial hazards in the public works organization from the perspective of the employees.

To verify the validity of the hypothesis, the mean, standard deviation, and results were calculated and are shown in the table below:

N	Item	Standard Deviation	Mean	Grade
01	Personal protective equipment such as coats, helmets, gloves, goggles, and shoes are available at all times	0.58	3.60	High
02	There are alarm systems to warn workers of danger in the workplace	0.65	3.67	High
03	The workplace is well-designed: the walls, doors, and windows are made of non-flammable materials and resistant to chemicals and explosions	0.88	3.90	High
04	There is proper equipment for lighting, ventilation, and temperature control	0.33	3.35	High
05	Gas pipes are inspected properly	0.32	3.34	High
06	Periodic inspections of electrical wiring are adequate	0.26	3.28	Moderate
07	First aid is provided in the workplace	0.55	3.57	High
08	There are sufficient emergency exits in appropriate locations	0.52	3.54	High
09	There are enough fire extinguishers, both portable and fixed, of various types (powder, foam, liquid, or gas), and they are placed in suitable locations	0.77	3.79	High
10	The directorate relies on placing the right person in the right position	0.05	3.07	Moderate
11	The directorate relies on machines equipped with safety devices	0.51	3.53	High

Table 2:**Mean and Standard Deviation of Individuals' Responses on the Second Axis**

From Table 2, we observe that the average estimates for the items were as follows:

Items that received high ratings:

Fire extinguishers (powder, foam, liquid, or gas types) with a rating of 3.79

Alarm systems to warn workers of danger in the workplace with a rating of 3.67

Personal protective equipment (coat, helmet, gloves, glasses, shoes) with a rating of 3.60

First aid kits available in the workplace with a rating of 3.57

Sufficient and appropriately placed emergency exits with a rating of 3.54

Management relies on machines equipped with safety devices with a rating of 3.53

Facilities (lighting, ventilation, temperature, noise) with a rating of 3.35

Gas pipes are inspected properly with a rating of 3.34.

Items that received medium ratings:

Periodic inspection of electrical wires is sufficient with a rating of 3.28

Management relies on placing the right person in the right position with a rating of 2.90

10. Discussion of Results

10. 1.Discussion of the First Hypothesis Results:

The study results, based on the sample respondents' answers to items assessing the effectiveness of health and safety regulations in protecting them from occupational diseases and work accidents, showed that most respondents confirmed the effectiveness of health and safety systems in the institution. This is due to the management's conviction of the importance of health and safety programs, which include instructions for implementing these systems and regulations. The institution's internal regulations stipulate that workers are required to wear all necessary protective clothing for their work and that all candidates for any job position must undergo medical examinations by the occupational physician before starting their work.

1. Management Commitment to Occupational Health and Safety:

The study results reveal a strong commitment from the institution's management toward health and safety programs. This is evident through their active involvement in promoting a preventive approach to occupational risks. Management does not treat safety as a secondary concern but as an essential component of operational strategy. Resources are allocated for implementing safety instructions, and efforts are made to embed these programs into the organizational culture.

2. Compliance with Internal Policies and Legal Regulations:

The institution enforces internal regulations requiring all employees to wear appropriate protective clothing according to the nature of their work. Moreover, all candidates are subjected to mandatory medical examinations conducted by the occupational physician before starting employment. These preventive measures demonstrate a proactive approach to workplace safety, reducing the likelihood of occupational illnesses and injuries through early detection and risk mitigation.

3. Employee Perception of Regulation Effectiveness:

The majority of respondents confirmed that the existing health and safety regulations are effective in ensuring their protection. This indicates a high level of trust among workers toward the institutional safety system. Employees recognize the clarity and relevance of the implemented regulations, and they appear to find them easy to understand and follow, which contributes to their positive perception.

4. Impact on Safety Culture:

These regulations play a significant role in strengthening the institution's safety culture. A culture of prevention, responsibility, and awareness appears to be growing among employees. This is likely reflected in a reduction in the number of workplace incidents and in improved performance related to health and safety compliance indicators.

10. 2. Discussion of the Second Hypothesis Results:

The study results, based on the sample respondents' answers to items assessing the effectiveness of health and safety measures, indicated that most respondents confirmed the effectiveness of these measures. This is attributed to the ergonomic design of the work environment and suitable physical conditions such as lighting and moderate temperature. Additionally, regular maintenance of machinery is performed, and protective equipment like fire extinguishers and individual and collective protective devices are provided to protect workers from occupational hazards. The Directorate relies on the work permit system as the best method for managing risks and continuously assesses occupational risks to implement preventive and corrective measures.

1. Ergonomic Design of the Work Environment:

The findings emphasize that the institution has adopted ergonomic principles in the design of the work environment, such as providing adequate lighting, comfortable temperatures, and ergonomically arranged workspaces. These physical conditions reduce physical strain, enhance concentration, and promote overall wellbeing, thereby decreasing the risk of fatigue-related accidents.

2. Importance of Equipment Maintenance:

Regular and systematic maintenance of machinery and equipment is a key element of the safety strategy. The study highlights that these maintenance routines help prevent technical failures that could lead to accidents, ensuring the safe functioning of tools and machines used daily.

3. Provision of Personal and Collective Protective Equipment:

The institution provides both individual and collective protective equipment, including fire extinguishers, helmets, gloves, safety glasses, and collective barriers or alarms. These tools act as the first line of defense against unexpected hazards and reflect a comprehensive preventive strategy aimed at minimizing risks.

4. Risk Management Strategy through the Work Permit System:

The institution utilizes a work permit system for managing high-risk tasks. This system ensures that each potentially hazardous task undergoes a prior risk assessment, with appropriate preventive and corrective measures identified and applied. This procedural control enhances safety by reinforcing planning, responsibility, and vigilance before the execution of critical tasks.

5. Employee Engagement and Interaction with Preventive Measures:

The study also indicates that employees are not passive recipients of safety policies. Rather, they actively engage with and support preventive measures. This high level of participation enhances the practical effectiveness of safety protocols and indicates a matured organizational awareness regarding risk prevention.

11. Conclusion:

Based on the study's topic and field data on the contribution of industrial safety to reducing psychosocial risks at the Directorate of Public Works in Oum El Bouaghi, it is essential to emphasize the importance of industrial safety measures in safeguarding the workers and production elements. This highlights the importance of effective industrial safety systems and providing safety measures and medical care for workers. Based on these results, the following recommendations can be made:

1. Regulatory bodies should regularly inspect industrial facilities to ensure compliance with industrial safety laws and worker protection regulations.

2. Development of systems and regulations to increase the effectiveness of industrial safety measures, reducing work accidents and injuries.

3. Focus on local studies to improve regulations and ensure they align with industry needs, contributing to reducing risk rates.

4. Raising awareness and training workers to enhance their awareness of psychosocial risks at work and develop their skills and knowledge of safety.

5. Providing safe working conditions and personal protective equipment to reduce injuries.

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