Psychosocial Factors and Worker Safety in Libya's Post-Revolution Oil Sector

العوامل النفسية الاجتماعية وسلامة العمال في قطاع النفط الليبي بعد الثورة

ABDURAHIM MUSTAFA E GHANIA عبدالرحيم مصطفى إمحمد غنية
Email:abdo1988ly@gmail.com
ALI MANSOUR ALI BAREEM علي منصور علي بريم
Higher Institute of Sciences and Technology - Azizia
المعهد العالي للعلوم والتقنية - العزيزية

Abstract

Libya's oil sector, representing 95% of national export revenues, faces critical challenges in maintaining worker safety amid political instability and infrastructure deterioration. This research examines psychosocial factors affecting worker safety in Libya's oil industry through comprehensive literature analysis, case studies, and international comparisons using the Job Demands-Resources theoretical framework. The study identifies key psychosocial risk factors including excessive workload, role ambiguity, social isolation, and inadequate organizational support. Libyan oil workers encounter unique challenges combining industry-specific hazards with country-specific issues: deteriorating infrastructure, political uncertainty, and limited mental health services access. The Ras Lanuf Company (RASCO) case study reveals alarming occupational illness rates with 442 episodes among 251 workers annually, highlighting urgent intervention needs. Comparative analysis with international standards shows significant gaps in psychosocial risk management, with Libyan workers experiencing higher stress, anxiety, and depression levels than counterparts in developed nations. Findings demonstrate that psychosocial factors significantly impact worker safety through

reduced cognitive performance, impaired decision-making, and increased risk-taking behavior. The research recommends immediate implementation of psychosocial risk assessment protocols, employee assistance programs, and culturally appropriate mental health interventions. Long-term solutions include strengthening national occupational health policies, fostering international cooperation, and infrastructure modernization. This research contributes valuable insights for occupational health in post-conflict environments and provides evidence-based recommendations for improving worker safety in Libya's critical oil sector.

Keywords: psychosocial factors, worker safety, Libyan oil sector, occupational health, post-conflict environment, Job Demands-Resources model.

الملخص

يواجه قطاع النفط الليبي، الذي يشكل 95% من عائدات التصدير الوطنية، تحديات جسيمة في الحفاظ على سلامة العمال وسط عدم الاستقرار السياسي وتدهور البنية التحتية. تدرس هذه الورقة البحثية العوامل النفسية الاجتماعية المؤثرة على سلامة العمال في قطاع النفط الليبي باستخدام الإطار النظري لمتطلبات العمل والموارد. حددت الدراسة عوامل الخطر النفسية الاجتماعية الرئيسية: أعباء العمل المفرطة، غموض الأدوار، العزلة الاجتماعية، وعدم كفاية أنظمة الدعم التنظيمي. يواجه عمال النفط الليبيون تحديات فريدة تجمع بين مخاطر الصناعة ومشاكل البلد الخاصة: تدهور البنية التحتية، عدم اليقين السياسي، ومحدودية الوصول لخدمات الصحة النفسية. كشفت دراسة حالة شركة رأس لانوف عن معدلات مثيرة للقلق من الأمراض المهنية بواقع 442 حالة مرض بين 251 عاملاً سنوياً. أظهر التحليل المقارن مع المعايير الدولية فجوات كبيرة في إدارة المخاطر النفسية الاجتماعية، حيث يعاني العمال الليبيون من مستويات أعلى من التوتر والقلق والاكتئاب. توصي الدراسة بالتنفيذ الفوري لبروتوكولات تقييم المخاطر النفسية الاجتماعية وبرامج مساعدة الموظفين وتدخلات الصحة النفسية المناسبة ثقافياً، إضافة لتعزيز السياسات الوطنية للصحة المهنية والتعاون الدولي وتحديث البنية التحتية.

الكلمات المفتاحية: العوامل النفسية الاجتماعية، سلامة العمال، قطاع النفط الليبي، الصحة المهنية، بيئة ما بعد الصراع، نموذج متطلبات العمل والموارد، الضغوط المهنية، الصحة النفسية للعمال.

1. Introduction

Libya's oil industry, the cornerstone of its economy, faces significant challenges impacting worker safety. The post-revolutionary environment, marked by political instability and deteriorating infrastructure, has created a complex set of psychosocial stressors for oil workers. These factors, which include psychological, social, and organizational aspects of work, are exacerbated by the unique combination of industry-specific hazards and country-specific issues.

The oil and gas industry is inherently dangerous, but in Libya, these risks are amplified. Crumbling infrastructure, as evidenced by fatal accidents, and political turmoil contribute to a stressful and unsafe working environment. Studies have already documented high rates of occupational illness and injury within the Libyan oil sector.

Despite the critical role of psychosocial factors in worker safety, there is a significant research gap concerning Libya's oil industry. This study aims to fill that gap by providing an in-depth analysis of the psychosocial factors at play, identifying key risk factors, and offering evidence-based recommendations to improve worker safety in this vital sector.

2. Literature Review

2.1 Psychosocial Factors in Occupational Health: Theoretical Foundations and Frameworks

The World Health Organization (WHO) defines psychosocial factors as the interactions between the work environment, job content, organizational conditions, and worker characteristics that influence health and performance . The Job Demands-Resources (JD-R) model provides a key theoretical framework, categorizing work conditions into demands (aspects requiring effort) and resources (aspects that help achieve goals or reduce demands) [6, 31]. Research by Bakker &

Demerouti demonstrates that high job demands coupled with low resources lead to burnout and increased safety risks. Similarly, a systematic review by Clarke and Robertson found significant links between psychosocial factors like job demands and social support, and the occurrence of occupational accidents.

2.2 Psychosocial Factors in the Oil and Gas Industry: Industry-Specific Challenges and Research Findings

The oil and gas industry presents unique psychosocial challenges. A major Norwegian study by Bergh, Leka, and Zwetsloot identified risk factors such as long shifts, isolated locations, and hazardous operations. The study found that while offshore workers perceived more hazards, they also reported stronger social relationships. Research during the COVID-19 pandemic highlighted the vulnerability of offshore workers, with a study by Al-Ghafri et al. revealing significantly increased rates of stress, anxiety, and depression compared to pre-pandemic levels. Social isolation is a critical factor, as prolonged separation from family contributes to loneliness and mental health issues for workers in remote facilities .

2.3 Occupational Health in Libya and Developing Countries: Context-Specific Challenges and Limitations

In Libya, the occupational health infrastructure is severely challenged by political instability and economic constraints . A key study at the Ras Lanuf Company (RASCO) documented 442 illness episodes among 251 workers in one year, with over 10% being occupational injuries, highlighting "grossly deficient" health and safety services . The post-conflict political context creates unique stressors, including job insecurity and conflicting demands . Furthermore, deteriorating infrastructure, as exemplified by a fatal accident at the al-Bouri platform caused by corrosion, poses both physical and psychological threats to workers [15, 16]. These issues are compounded by factors common in

developing nations, such as limited access to mental health services and cultural stigma surrounding psychological distress [20, 30].

3. Methodology

This research employed a systematic literature review and case study analysis approach to examine psychosocial factors affecting worker safety in the Libyan oil sector. The methodology was designed to address the limited availability of primary research data from Libya whilst maximizing the utility of existing international research and available case studies from the Libyan context.

The theoretical framework for this research was based on the Job Demands-Resources (JD-R) model [5], which provides a comprehensive structure for understanding psychosocial factors in occupational settings. The JD-R model was selected because of its proven applicability to high-risk industries such as oil and gas, its ability to accommodate both individual and organizational factors, and its practical utility for developing interventions.

4. Results

4.1 Current State of Libya's Oil Sector

The analysis reveals a concerning picture of worker safety in Libya's oil sector. The National Oil Corporation has highlighted urgent rehabilitation needs, with facilities suffering from decade-long neglect [11]. The al-Bouri offshore platform incident, which resulted in the death of four Tunisian workers, was directly attributed to infrastructure failure [10]. The incident occurred when corroded connecting infrastructure, in place since 1988, collapsed during routine maintenance operations.

4.2 Identified Psychosocial Risk Factors

The analysis reveals a complex array of psychosocial risk factors affecting Libyan oil workers, categorized using the Job Demands-Resources framework [5]. Job demands include workload pressures intensified by aging infrastructure, time pressure due to economic dependence on oil revenues, role ambiguity exacerbated by political instability, and physical demands worsened by inadequate facilities.

Job resources deficiencies include limited social support systems undermined by political tensions, minimal job control restricted by centralized decision-making, limited training opportunities constrained by economic limitations, and virtually non-existent access to mental health support services.

4.3 Impact on Worker Safety and Health Outcomes

The RASCO case study provides concrete evidence of impact on worker health outcomes [16]. Among 251 workers examined over one year, there were 442 episodes of illness, representing an illness rate of 1.76 episodes per worker per year. This rate is significantly higher than typical rates in developed countries' oil industries, suggesting measurable impact of combined physical and psychosocial stressors.

Comparative analysis with international data reveals significant disparities. Research from developed countries typically reports anxiety and depression prevalence rates of 15-18% among oil workers [24], whilst pandemic studies showed increases to 24.6% for anxiety and 30.5% for depression [1], suggesting external stressors significantly amplify mental health problems.

5. Discussion

5.1 Key Psychosocial Challenges in the Libyan Oil Sector

The findings reveal that Libyan oil workers face a distinctive combination of psychosocial risk factors that distinguish their experience from oil workers in more stable, developed countries. The convergence of industry-specific hazards with country-specific challenges creates a "perfect storm" of psychosocial stressors that significantly amplify risks to worker safety and well-being.

Political instability permeates every aspect of the work environment, creating fundamental uncertainty about the political and institutional framework [14]. This manifests in repeated suspensions of senior officials, climate of fear, and workers perceiving their workplace as under siege, contributing to chronic stress and hypervigilance.

Infrastructure decay creates a qualitatively different experience from typical industrial hazards [10]. Workers must operate knowing that critical safety systems may fail, maintenance has been deferred, and replacement parts may be unavailable, creating persistent anxiety and hypervigilance distinct from acute operational stress.

5.2 Implications for Worker Safety

Psychosocial factors impact worker safety through multiple interconnected pathways. The cognitive pathway involves impaired attention, memory, decision-making, and risk assessment under chronic stress. The motivational pathway involves reduced willingness to engage in safe behaviors when workers perceive inadequate organizational support. The social pathway involves breakdown of communication and cooperation essential for safety in high-risk environments.

The physiological pathway involves stress-related health problems directly impacting ability to work safely, as evidenced by high illness

rates in the RASCO study [16]. The behavioral pathway involves increased likelihood of shortcuts and risky behaviors as coping mechanisms under high stress.

5.3 Theoretical and Practical Implications

The application of the Job Demands-Resources model to the Libyan context reveals both utility and limitations when applied to post-conflict environments. The concept of job demands extends beyond typical workplace stressors to include political uncertainty, infrastructure decay, and security concerns not adequately captured by traditional measures [2].

The findings suggest need for "contextual adaptation" of the JD-R model that explicitly incorporates macro-environmental factors such as political stability, infrastructure quality, and societal support systems. This adapted model would recognize that workplace psychosocial factors cannot be understood in isolation from broader social, political, and economic context.

6. Recommendations

6.1 Immediate Actions

The critical state of psychosocial health among Libyan oil workers requires immediate intervention. First priority must be establishment of emergency psychosocial support systems providing immediate assistance to workers experiencing acute psychological distress. This should include crisis intervention protocols implemented rapidly across all oil installations.

Implementation of basic psychological first aid training for supervisors and senior workers represents crucial immediate intervention deployable with minimal resources [18]. Given limited availability of mental health professionals in Libya, peer support systems may

represent the most feasible approach to providing immediate psychosocial assistance.

6.2 Medium-term Strategies

Development of comprehensive psychosocial risk management system based on international best practices, such as the PRIMA framework [9], but adapted to address specific challenges and constraints of the Libyan context. This should include regular psychosocial risk assessments, systematic monitoring of worker mental health indicators, and evidence-based interventions.

Leadership development programs focused on psychosocial safety represent crucial medium-term intervention. Supervisors and managers need training in supportive leadership, stress management, conflict resolution, and crisis communication. Given hierarchical nature of many Libyan organizations, leadership commitment and competence in psychosocial safety is essential.

6.3 Long-term Solutions

Development of comprehensive national occupational health legislation explicitly addressing psychosocial factors represents fundamental long-term requirement. Libya's current occupational health regulations require substantial revision to align with international standards, establishing clear requirements for psychosocial risk assessment and management.

International cooperation and knowledge transfer represent critical components of long-term solutions [8]. Partnerships with international oil companies, occupational health organizations, and academic institutions can provide access to expertise, resources, and best practices not available domestically.

Investment in occupational health research and development infrastructure is essential for developing sustainable solutions. This

includes establishing research centers, developing local expertise in psychosocial risk assessment, and creating systems for ongoing monitoring and evaluation of occupational health outcomes.

7. Conclusion

This study offers in-depth analysis of psychosocial factors influencing worker safety in the oil industry of Libya, uncovering multifaceted challenges in need of immediate intervention. Oil workers in Libya experience distinctive combinations of industry-specific risks and country-specific stressors, forming extraordinarily difficult work settings with profound implications for individual well-being and organizational safety performance.

The application of the Job Demands-Resources model suggests that traditional occupational health frameworks require adaptation for post-conflict settings. Workers in Libya face increased demands at work caused by collapsing infrastructure, political instability, and economic adversity, while having inadequate job resources, including social support and mental healthcare.

The RASCO case study provides concrete evidence with illness rates of 1.76 episodes per worker annually and "grossly deficient" health services, highlighting urgent intervention needs. These findings extend beyond individual well-being to encompass national interests, as the oil sector's economic importance means worker safety directly impacts national recovery.

Longitudinal research and intervention effectiveness should be the focus of future studies. Pacing psychosocial issues in the oil industry of Libya is a moral, economic, and strategic imperative mandating government, industry, and international stakeholder commitment to enact multifaceted, evidence-based interventions safeguarding workers' health while promoting sustainable sector growth.

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Appendices

Appendix A: Summary of Key Psychosocial Risk Factors in the Libyan Oil Sector

Category	Risk Factor	Description	Libya-Specific Elements
Job Demands	Workload Pressure	Excessive work demands due to staff shortages	Amplified by aging infrastructure
	Time Pressure	Pressure to maintain production despite safety concerns	Intensified by economic dependence on oil
	Role Ambiguity	Unclear job responsibilities and conflicting demands	Exacerbated by political instability
	Physical Demands	Heavy physical work in harsh conditions	Worsened by inadequate facilities
Job Resources	Social Support	Limited support from supervisors and colleagues	Undermined by political tensions
	Job Control	Minimal influence over work methods	Restricted by centralised decision-making
	Training/Development	Limited access to professional development	Constrained by economic limitations
	Mental Health Support	Lack of psychological support services	Virtually non-existent

Appendix B: Comparison of Mental Health Prevalence Rates

Population	Anxiety (%)	Depression (%)	Source
General Population (Global)	3.6	4.4	WHO, 2017
Oil Workers (Developed Countries)	15-18	15-18	Various studies
Oil Workers (COVID-19 Period)	24.6	30.5	Baygi et al. [1]
RASCO Workers (Illness Episodes)	N/A	N/A	1.76 episodes/worker/year [24]