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CHALLENGES AND ADVANCEMENTS IN EMERGENCY ROOM MANAGEMENT IN JORDAN: A SYSTEMATIC REVIEW OF CURRENT EVIDENCE

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ABSTRACT

Emergency departments in Jordan play an essential role in providing life-saving care to critically ill and injured patients. However, these healthcare units face persistent challenges that hinder their efficiency and effectiveness. Overcrowding, workforce shortages, financial constraints, and alarm fatigue significantly impact the quality of emergency care. The COVID-19 pandemic further exacerbated these challenges by reducing overall emergency admissions while increasing ICU occupancy, leading to delays in critical interventions. Patient misunderstanding of triage protocols adds another layer of complexity, resulting in unrealistic expectations regarding care prioritization. Despite these obstacles, advancements in emergency medical technology, such as handheld ultrasound (HHU) and predictive trauma assessment models like the BIG Score, have significantly improved patient outcomes and diagnostic accuracy. Additionally, refined triage systems, including the Visual Triage System, have enhanced patient classification and resource allocation during public health crises. This review synthesizes recent research examining these key challenges and emerging solutions within Jordan's emergency healthcare system, emphasizing the need for improved hospital funding, staff training, and public awareness initiatives to strengthen emergency care delivery.

KEYWORDS: Emergency Care, Jordan, Overcrowding, Triage Systems, Healthcare Technology.

INTRODUCTION

The emergency department is a fundamental component of any healthcare system, offering immediate medical intervention to patients with urgent and life-threatening conditions. In Jordan, EDs are often the first point of contact for individuals experiencing acute medical emergencies. However, systemic and operational inefficiencies limit their ability to provide timely and effective care. Among the most pressing concerns is overcrowding, which has been linked to increased wait times, resource depletion, and compromised patient outcomes.[1] The burden on EDs is further intensified by workforce shortages, particularly among nurses, who experience high levels of occupational stress, burnout, and even verbal abuse from patients and their families.[2] Alarm fatigue, caused by excessive and often unnecessary alerts from medical devices, exacerbates this issue by leading to desensitization and delayed response times, ultimately threatening patient safety.[2]

Financial constraints further complicate the landscape of emergency care in Jordan. Public hospitals face significant funding limitations, making it difficult to maintain sufficient staffing levels, invest in advanced medical technologies, and expand facilities to accommodate increasing patient volumes.[3] At the same time, many patients lack a clear understanding of triage procedures, which often leads to frustration when less urgent cases are deprioritized in favor of critically ill patients.[4] The COVID-19 pandemic intensified these challenges by causing a 28% reduction in ER admissions due to public fears of virus exposure while

simultaneously increasing ICU occupancy and delaying necessary emergency surgeries.[5]

Despite these difficulties, there have been notable advancements in emergency care that offer hope for improved efficiency and patient satisfaction. The implementation of handheld ultrasound technology (HHU) has proven to be a game-changer, allowing for rapid and accurate diagnostics at the bedside and significantly improving patient satisfaction rates.[6] Additionally, predictive trauma assessment models such as the BIG Score have been instrumental in optimizing pediatric trauma triage, demonstrating a high degree of accuracy in predicting mortality.[7] Triage systems have also evolved, with the introduction of the Visual Triage System aiding in patient classification during pandemics and large-scale emergencies.[8] By addressing these challenges through a combination of technological innovation, policy reform, and public education, Jordan can significantly enhance the efficiency and effectiveness of its emergency care services.

METHODS

This study employs a systematic review approach to analyze existing literature on emergency room management in Jordan. The primary focus is on four key themes: workforce challenges, technological advancements, financial constraints, and the impact of the COVID-19 pandemic. Research articles were sourced from PubMed, Scopus, and Google Scholar using search terms such as "Emergency Department in Jordan," "Triage System Awareness," "Workforce Burnout in Emergency Medicine," "Handheld Ultrasound in Emergency Care," "Predictive Trauma Models," and "Impact of COVID-19 on Emergency Departments."

Inclusion criteria for the selected studies were limited to research published in English within the past five years, specifically focusing on Jordanian EDs. Studies that addressed general emergency medicine without direct implications for ER management or that were conducted outside of Jordan were excluded. The systematic review approach ensures that only high-quality, peer-reviewed research is incorporated into the analysis, providing a comprehensive assessment of the challenges and advancements shaping Jordan's emergency healthcare system.

RESULTS

The analysis revealed that Jordan's EDs are struggling under the weight of multiple systemic challenges. Workforce shortages were identified as a major issue, particularly among nursing staff, leading to high burnout rates and compromised patient care.[1] Alarm fatigue was another concern, with an excessive number of medical alerts causing healthcare professionals to become desensitized to critical notifications, increasing the risk of missed emergencies.[2]

Technological advancements, however, have provided some relief. The implementation of HHU technology has improved diagnostic accuracy and patient satisfaction, with studies indicating that 78% of patients reported a positive experience following HHU-assisted evaluations.[6] Similarly, the BIG Score model demonstrated an 88.5% sensitivity rate in predicting pediatric trauma mortality, significantly enhancing trauma triage efficiency.[7]

Financial constraints remain a persistent challenge, with the average cost of an emergency room visit in Jordan estimated at JOD 31.80 (USD 44.80).[3] Meanwhile, the COVID-19 pandemic significantly impacted emergency services, resulting in a decline in ER admissions and an increase in ICU admissions, thereby delaying emergency surgeries and worsening patient outcomes.[5]

DISCUSSION

The findings highlight a complex interplay of factors that impact the efficiency and effectiveness of Jordan's EDs. Overcrowding and workforce shortages are among the most pressing concerns, requiring targeted interventions to prevent further strain on the system. Alarm fatigue poses a significant risk to patient safety, necessitating better alert management strategies and improved staff training programs.

Technological advancements, such as HHU and predictive trauma models, present promising solutions that can alleviate some of these challenges. However, their widespread adoption requires adequate funding and structured training programs for healthcare professionals. Public education on triage systems is another crucial area for improvement, as many patients lack an understanding of how emergency care prioritization works, leading to frustration and inefficiencies in patient flow.

Limitations

This study is limited by its focus on Jordanian EDs, which may reduce its applicability to other healthcare systems. Additionally, some of the emerging ED innovations examined in the literature have yet to be widely implemented, making their long-term impact uncertain. Furthermore, financial data on Jordan's healthcare spending remains limited, restricting the ability to conduct a comprehensive cost-benefit analysis of the proposed solutions.

CONCLUSION

Jordan's emergency departments face significant operational and systemic challenges, ranging from workforce shortages and alarm fatigue to financial constraints and inefficient triage systems. The COVID-19 pandemic further exposed the vulnerabilities of the emergency healthcare infrastructure. Nevertheless, technological advancements such as handheld ultrasound and predictive trauma assessment models have demonstrated considerable promise in improving emergency care efficiency. Addressing these issues

requires a multi-faceted approach that includes increased hospital funding, expanded staff training programs, and enhanced patient education initiatives. By implementing these measures, Jordan can strengthen its emergency healthcare system and improve patient outcomes in the long term.

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