How to Cite:

Alenezi, Abdulrahman R., Aldhafeeri, F. S., Alharbi, Sanad S., Alotaibi, Bader N., Alenezi, Meshal F., Almutairi, Saif H., Alshmari, Ahmed S., Alanazi, Mohammed A., & Alanzi, A. A. N. (2021). Emergency department overcrowding: Causes, impacts, and strategies for effective management. *International Journal of Health Sciences*, *5*(S1), 1219–1236. https://doi.org/10.53730/ijhs.v5nS1.15170

Emergency department overcrowding: Causes, impacts, and strategies for effective management

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> **Abstract---Background:** Emergency department (ED) overcrowding arises from an imbalance between patient demand and hospital capacity, significantly affecting hospital systems and patient care. Overcrowding, characterized by a mismatch between healthcare demand and available resources, leads to delays in diagnostic processes and treatment initiation, negatively impacting patient

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International Journal of Health Sciences E-ISSN 2550-696X © 2021.
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Manuscript submitted: 01 Jan 2021, Manuscript revised: 09 Jan 2021, Accepted for publication: 15 Jan 2021
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outcomes and hospital efficiency. Aim: This narrative review aims to analyze the causes, impacts, and strategies for managing ED overcrowding. It seeks to provide a comprehensive understanding of the contributing factors and propose solutions to mitigate the issue effectively. Methods: The review employs a narrative analysis input-throughput-output model approach, examining the to understand the dynamics of ED overcrowding. It categorizes factors into input, throughput, and output, exploring their interconnections and influence on overcrowding. The review also assesses signs of overcrowding, including delays in treatment and the impact of exit block and boarding. Results: The analysis identifies key causes of overcrowding, such as limited hospital bed availability, exit block, and boarding. It highlights how these factors lead to extended waiting times, increased mortality rates, and reduced patient satisfaction. The review also examines the impact of the COVID-19 pandemic on overcrowding, emphasizing the role of output and throughput factors. **Conclusion:** Effective management of ED overcrowding requires a combination of microlevel and macrolevel strategies. Microlevel strategies focus on internal ED improvements, such as standardized diagnostic pathways and home care systems. Macrolevel strategies involve broader systemic changes, including streamlined admission processes and enhanced outpatient services. Addressing these factors is crucial for reducing overcrowding and improving patient outcomes and hospital efficiency.

Keywords---Emergency Department, Overcrowding, Exit Block, Boarding, Healthcare Management, Patient Outcomes.

Introduction

To conduct a narrative analysis on overcrowding, it is beneficial to present some definitions, although defining and measuring overcrowding is complex [1,2]. Overcrowding arises from the imbalance between the demand for emergency care and the hospital's capacity to deliver the service [3,4]. This issue affects not only the emergency department (ED) but the entire hospital system [5,6]. In this context, the pivotal role of the hospital, beyond just the ED, is emphasized by the American College of Emergency Physicians' definition, which describes overcrowding as "a situation that occurs when the identified need for emergency services exceeds available resources for patient care in ED, hospital, or both" [7]. Similarly, the Australasian College for Emergency Medicine states that when inpatient wards can no longer accommodate patients, a mismatch between patient demand and the services the hospital system is expected to provide occurs. This results in ED overcrowding and access block, which are indicators of dysfunction within the hospital system [8]. Another definition describes overcrowding as the condition leading to ED dysfunction when the number of patients (awaiting assessment, transfer, or undergoing diagnosis and treatment) exceeds the ED's physical or staffing capacity [9]. Overcrowding is thus simply characterized by the mismatch between rising healthcare demand and limited hospital bed availability, affecting both individual departments and the ED [1]. It

is also linked to factors that hinder the proper functioning of an ED, such as the number of patients awaiting assessment, transfer, diagnosis, treatment, and, crucially, hospitalization.

Despite various approaches and attempts to define it using different criteria, no universal and effective measure exists to quantify overcrowding [10,11]. Multiple studies have demonstrated that hospital overcrowding leads to delays in diagnostic processes and treatment initiation, perpetuating a vicious cycle that exacerbates overcrowding [12,13,14,15]. Additionally, overcrowding negatively impacts triage, increasing the number of patients who do not undergo triage, lengthening triage times, and prolonging length of stay (LOS) [16,17,18]. Several studies and meta-analyses have also identified a growing trend of patients leaving the ED before receiving medical examination or treatment due to overcrowding [19]. This narrative review will summarize the various challenges related to this phenomenon and propose solutions to reduce hospital workload, as overcrowding can lead to increased wait times, delays in care, longer LOS, higher morbidity and mortality rates, reduced quality of care, and decreased patient satisfaction, thus having negative consequences across all levels of the emergency healthcare system [20,21].

Overcrowding: The Input-Throughput-Output Model

The factors contributing to overcrowding can be categorized into three primary groups: input, throughput, and output factors. Although these parameters function independently, they are interconnected and shaped by underlying variables, making overcrowding a multifaceted and complex issue [2,22,23]. To thoroughly understand overcrowding, and to explore methods of quantifying and mitigating it, a comprehensive analysis of these three factors is essential [24]. The input-throughput-output model is a valuable framework for understanding the dynamics governing ED flow and capacity. Moreover, it serves as a conceptual guide for interpreting these parameters in the broader context of hospital operations and the healthcare system as a whole [23,24,25,26].

The input, throughput, and output factors are defined as follows:

- **Input factors:** These factors determine patient access to the ED and include the waiting time, the volume of patients arriving at the ED, and their clinical severity and complexity. Input factors contribute to crowding, though they are considered the least significant cause [5,27,28,29,30,31].
- **Throughput factors (internal factors):** These encompass the time required for the patient's care, from initial evaluation to final outcome (diagnosis and the decision to discharge, hospitalize, or transfer). This category includes all diagnostic procedures performed in the ED, such as laboratory tests and imaging. Healthcare personnel also influence throughput factors, including the quality of their work, shift management, burnout, performance decline, adherence to work schedules, and availability during holidays [3,6].
- **Output factors:** These include patients being boarded in the ED, the availability of hospital beds, and delays in internal and external transport. A shortage of hospital beds is a critical cause of overcrowding, along with the insufficient availability of home care services. Over the past 20 years, the reduction of hospital beds (by more than 50% in some areas) has

become a global issue, leading to exit block and limiting the capacity for patient admissions. Regarding output factors, overcrowding is clearly influenced when patients remain in the ED due to the inability to transfer them to wards, requiring ongoing medical attention [3,5,6].

It is important to note the following points:

- EDs have no control over input factors [32,33].
- The high volume of patients with non-critical conditions is not a primary cause of overcrowding [2,22].
- **Boarding is a significant factor contributing to overcrowding.** It drains resources such as space, beds, imaging services, and healthcare personnel, reducing their availability for new patients. This prolongs the length of stay (LOS) and negatively affects output factors, perpetuating overcrowding [23,34,35]. While many studies propose solutions to limit boarding, addressing it alone will not fully resolve overcrowding. However, its resolution is crucial in reducing the phenomenon [21].
- **Exit block strongly impacts overcrowding** and is closely tied to output factors. Solutions to alleviate exit block must ensure that patient outcomes are not compromised [36].

All the challenges outlined above can also negatively affect the healthcare workforce, making emergency medicine less appealing as a career choice. Factors like overcrowding, boarding, and exit block can also diminish the quality of training for medical residents [37,38]. Overcrowding can be conceptualized using the metaphor of a funnel: the wider section represents the catchment area and input factors (e.g., patient volume and modes of presentation). The body of the funnel corresponds to throughput factors, where patient processing occurs. The narrow neck represents output factors. During overcrowding, it is as though the wide section of the funnel expands, accommodating more patients, while the body and neck contract due to increased process workloads (throughput factors) or insufficient output capacity, leading to stagnation and congestion in patient flow.

Signs of Overcrowding

<u>Signs of ED overcrowding are numerous and include the following indicators</u> [9]:

- Delays in patient treatment due to the lack of appropriate treatment spaces.
- Patients being treated in unconventional spaces, such as corridors.
- Prolonged stays in the emergency room after treatment completion, while awaiting transfer to the ward.
- Inability to accommodate patients arriving via ambulance.
- Obstruction of entry and exit routes in the ED.

Exit Block: Definition

Exit block occurs when "**patients in the Emergency Department (ED) requiring** inpatient care are unable to gain access to appropriate hospital beds within a reasonable time frame" [39]. Exit block exacerbates overcrowding since a hospital operating at full capacity cannot admit additional patients [40]. As a result, patients remain in the ED longer than necessary. Research shows that exit block significantly increases waiting times, contributing up to 60% of the total transit time in the ED [41]. The consequences of exit block include extended waiting times, longer patient boarding, negative impacts on staff workload, and adverse patient outcomes. For instance, exit block can delay surgery, even for emergencies, and has a particularly negative effect on psychiatric patients needing urgent care [40,42,43]. It also contributes to patients leaving the ED before receiving treatment, potentially worsening their outcomes depending on their condition [44]. Multiple studies link exit block to the shortage of hospital beds, which, combined with ward reluctance to admit patients, is a major cause of long boarding and extended LOS (Length of Stay). Increased hospital bed occupancy correlates with higher rates of ED overcrowding and exit block [36,45,46,47]. Exit block is thus a key indicator of hospital dysfunction [42].

Boarding: Definition

Boarding is defined as the practice of keeping patients in the ED after they have been admitted to the hospital but are waiting for inpatient beds to become available [48,49]. Boarding is a direct result of exit block. A major consequence of boarding is that ED staff and resources, such as physical space and personnel, become overburdened, as patients who should be in an inpatient setting continue to require care from ED staff [50,51]. In large EDs, up to 40% of staff time may be spent caring for patients who have been admitted but are waiting for a bed, reducing attention to newly admitted patients [52]. Studies indicate a link between delayed hospitalization and increased mortality [53]. In one study, the rise in boarding did not coincide with an increase in ED patient numbers or acuity; instead, it was attributed to a higher hospital admission rate during the study period [54]. Another U.S. study found that reduced boarding was associated with lower admission rates and shorter LOS, though the authors noted that measures like treating patients in corridors might have skewed the results [55].

Access Block: Definition

Access block, as defined by the Australasian College for Emergency Medicine (ACEM), is the "situation where patients are unable to gain access to appropriate hospital beds within a reasonable amount of time, no greater than 8 hours" [56]. Access block also refers to cases where patients admitted or planned for admission spend more than 8 hours in the ED without being transferred to an inpatient bed, are transferred to another hospital, or die in the ED [9]. Access block is the main cause of ED overcrowding [5]. It results from issues in hospital inpatient throughput and bed occupancy, which are typically beyond the ED's control. Access block increases ED waiting times, contributing to overcrowding, and is associated with higher rates of morbidity and mortality. It may also lead to patients leaving the ED before receiving necessary treatment. Access block is a global issue and one of the primary challenges facing modern EDs [56,57,58,59].

Overcrowding: Consequences

Despite ongoing efforts to redefine and address overcrowding and blockages, the issue persists largely unresolved [60,61]. Overcrowding has significant consequences on multiple levels, influencing patient outcomes, staff well-being, and the overall efficiency of emergency departments (EDs). One of the major consequences of ED overcrowding is the increased risk of adverse events, including morbidity and mortality, along with prolonged waiting times for critical care. Numerous studies have highlighted the connection between overcrowding and higher mortality rates in both pediatric and adult populations. For instance, a Korean retrospective study revealed that 30-day mortality rates were higher for pediatric patients admitted to overcrowded EDs [62]. Similarly, a Canadian cohort study showed a 34% increase in the risk of death within 10 days for adults who experienced overcrowding during their hospitalization, compared to those who did not [63]. Additionally, an Australian retrospective analysis found that in-hospital deaths within 10 days of ED presentation were more common among patients admitted during overcrowded shifts [64]. In terms of adverse events, overcrowding has been linked to an increased incidence of serious cardiovascular complications. An American retrospective cohort study demonstrated that patients with both acute coronary syndrome (ACS) and non-ACS-related chest pain admitted during overcrowded periods faced a higher rate of adverse cardiovascular events compared to those treated in non-overcrowded conditions [14].

Overcrowding also disrupts the triage process, leading to longer waiting times and extended lengths of stay (LOS). These delays hinder timely diagnoses and treatment initiation, causing many patients to leave the ED without receiving care. Multiple studies confirm that patients are more likely to abandon the ED during periods of overcrowding [65,66,67,68,69]. Delayed treatment, even for patients requiring immediate attention, results in dissatisfaction with care [16,70,71,72]. The perception of longer wait times, decreased safety, and lower quality of care negatively impacts patient satisfaction, as demonstrated by a prospective cross-sectional study involving 644 participants, which found a strong correlation between ED crowding and perceived care compromise by both patients and providers [74]. A retrospective cohort study further highlighted that negative ED experiences—such as prolonged waiting room time, boarding after admission, and treatment location-were associated with lower overall satisfaction with the hospitalization experience. Moreover, patients who visited the ED during overcrowded periods were less likely to recommend the ED to others compared to those who experienced less crowded conditions [75]. Finally, overcrowding has detrimental effects on healthcare personnel. It is a significant workplace stressor, negatively impacting staff well-being and contributing to burnout [76].

Overcrowding and the COVID-19 Pandemic

Recent studies indicate that during the COVID-19 pandemic, input factors played a relatively minor or ambivalent role in ED crowding, while output and throughput factors were the primary contributors [3,6,74]. Among these, output factors, particularly exit block, were significant. This occurred as a result of the overwhelming demand for care in medium- and high-intensity wards. Prior to the pandemic, tabletop simulations of potential emergencies conducted by our research group had predicted such a scenario, specifically highlighting that boarding times and access block would be most influenced by high- and mediumintensity care wards. The increase in access block during the pandemic is primarily attributed to the discrepancy between the sudden need for intensive care unit (ICU) beds and the availability of ICU beds based on historical data. However, it is not just ICU patients who experienced delays; those needing lowintensity care also struggled due to bed shortages. Essentially, ED crowding correlated directly with overall hospital crowding. Additionally, the screening process to determine whether patients should be placed in "clean" versus COVIDunit beds further prolonged hospitalization wait times. This precautionary measure was essential to prevent asymptomatic or infected patients from being admitted to wards that required a low infection risk. Throughput factors also played a role, as the function of emergency physicians and EDs changed during the pandemic. EDs were no longer just points of patient triage but became spaces where patients were treated, stabilized, and underwent differential diagnostic tests.

Overcrowding: Possible Solutions

Solving overcrowding requires actions beyond medical interventions, extending to administrative and structural changes. One solution is to improve access to care. Other strategies include increasing transitional beds and enhancing working conditions for hospital staff, both physically and psychologically [59,77]. Although overcrowding stems from a mismatch between healthcare supply and demand, simply increasing hospital beds and staff may not be a straightforward solution. In some cases, expanding ED space or improving care pathways has exacerbated overcrowding [78]. To tackle overcrowding, solutions can be divided into **microlevel** and **macrolevel** strategies, both of which should work synergistically [21].

Microlevel Strategies

Microlevel strategies focus on modifications within the ED itself. One useful intervention is the implementation of standardized diagnostic pathways based on clinical presentations. These protocols help streamline care, reduce waiting times, minimize errors, and improve patient outcomes, including a reduction in adverse events and mortality [1,79]. Integrating care within the ED can also help by connecting patients to alternative healthcare services. Many patients seek ED care because they cannot navigate the healthcare system, a problem especially prevalent among socially disadvantaged groups, such as those with lower literacy levels or those facing stigma [80,81]. Devolving non-critical imaging procedures to external facilities and implementing a follow-up system for discharged patients can help reduce overcrowding.

Another microlevel approach is home care. Well-structured home care systems allow patients, especially the elderly, to continue treatment at home in a familiar and comfortable setting, which can reduce ED admissions [79]. Additionally, observation and short-stay units bridge micro- and macrolevel strategies. These

units help alleviate ED crowding by providing temporary care for patients who need monitoring after treatment or require additional tests but do not need longterm hospitalization. Short-stay units reduce ED LOS while still ensuring patient care and monitoring [80]. An Italian research group demonstrated the effectiveness of short-stay units (osservazione breve intensiva or OBI) in stabilizing boarding and exit block, despite an increase in ED visits and hospitalization needs. Their research showed shorter LOS and better patient outcomes [81,82,83,84,85,86,87,88]. These results align with findings from other studies conducted in Europe and the United States [89,90,91,92,93,94].

Macrolevel Strategies

Macrolevel strategies focus on broader, systemic solutions aimed at addressing overcrowding and boarding within the hospital or healthcare system. These strategies include simplifying admission processes, establishing flow management centers, enhancing outpatient services, and improving patient transfer and coordination within the hospital. Effective implementation of these strategies requires commitment from hospital leadership and institutional awareness [21,22].

- 1. Simplification of Admission Processes and Flow Management Centers: Streamlining the admission process can help reduce delays by ensuring a more efficient patient flow. The creation of a flow management center allows better scheduling of patient transfers and reduces waiting times, leading to a more organized emergency department (ED) even during overcrowded periods [95].
- 2. **Intensification of Outpatient Care:** Expanding outpatient services can help redirect non-emergent and elective patients away from the ED. This includes establishing strong patient navigation programs and assistance coordination to facilitate patient transfer and minimize unnecessary ED admissions.
- 3. **Reverse Triage:** Reverse triage involves identifying stable hospitalized patients who no longer require intensive care and can be safely discharged with little risk [96]. By applying standardized discharge criteria and collaborating with out-of-hospital facilities like hospices, rehabilitation centers, and home care programs, reverse triage can quickly create inpatient surge capacity, giving priority to ED patients needing urgent hospitalization.
- 4. **Hospital Leadership Commitment:** For any of these strategies to succeed, active involvement from hospital leadership is crucial. Leaders must recognize the severity of the overcrowding problem and allocate resources, restructure workflows, and support programs to alleviate ED congestion [97].
- 5. **Regulation and Legislation:** If systemic changes and leadership efforts do not resolve overcrowding, enhanced regulations and guidelines at the national or regional level may be necessary. These regulations would enforce clear guidelines to manage hospital overcrowding, ensuring that hospitals implement the appropriate strategies effectively [22].

By integrating these macrolevel strategies, healthcare systems can reduce ED overcrowding, improving patient outcomes and overall hospital efficiency.

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Reduce boarding at Emergency Department:

Reducing **boarding** in emergency departments (EDs) involves implementing a range of strategies aimed at expediting the transfer of admitted patients to inpatient beds, improving hospital efficiency, and ensuring patient flow. Here are several effective approaches to reduce boarding:

1. Increase Inpatient Bed Capacity

- **Expanding bed availability**: Increase the number of inpatient beds, particularly in high-demand areas such as intensive care units (ICUs) and medical wards. This expansion could be temporary or permanent, depending on the hospital's needs.
- **Utilizing transitional beds**: Implement transitional or surge beds that can be used during peak periods to temporarily hold patients until inpatient beds are available.

2. Improve Hospital Discharge Processes

- **Early discharge planning**: Begin discharge planning as early as possible during a patient's hospitalization to free up beds more efficiently. Multidisciplinary rounds can identify patients suitable for discharge earlier in the day.
- **Weekend discharge protocols**: Implement discharge processes on weekends and holidays, where staffing and discharges are often slower. This reduces the backlog that can occur during the week.
- **Outpatient follow-up care**: Enhance outpatient care systems to allow earlier discharge of stable patients who can continue recovery at home or in rehabilitation centers.
- 3. Reverse Triage
 - **Prioritize stable patients for discharge**: Reverse triage involves discharging stable patients who do not require ongoing acute care to create space for newly admitted patients. These patients can be monitored in less intensive settings, such as home care or long-term care facilities.

4. Dedicated Observation Units

• Short-stay or observation units: Establish dedicated observation or short-stay units where patients can be monitored for a limited time (e.g., 24-48 hours) instead of being admitted to the hospital. This reduces the need for admission while allowing further observation for patients not ready to be discharged.

5. Streamline Admission Processes

- **Simplify admissions from the ED**: Streamlining the admission process from the ED to inpatient wards reduces bottlenecks. Having a centralized bed management or patient flow coordinator can expedite admissions by prioritizing ED patients who require hospitalization.
- **Direct admissions from primary care**: Encourage direct admissions from outpatient settings for certain conditions to bypass the ED entirely, reducing boarding.

6. Create a Flow Management or Capacity Center

• **Real-time bed management**: Implement a centralized flow management center to monitor bed availability in real time. This allows hospital staff to quickly identify and allocate available inpatient beds, minimizing delays in moving admitted patients out of the ED.

7. Improve Coordination with Other Care Facilities

- Collaboration with nursing homes, rehabilitation centers, and hospices: Strengthen partnerships with external facilities to create smoother transitions for patients who no longer require hospital-level care, particularly for elderly patients or those in long-term care.
- **Home care programs**: Develop home care services that allow stable patients to receive medical supervision at home, further reducing the need for prolonged hospitalization.

8. Efficient Use of Hospital Space

- **Repurposing non-traditional spaces**: During peak demand, consider temporarily repurposing non-traditional spaces (such as recovery rooms or procedure rooms) for inpatient use to accommodate admitted patients waiting in the ED.
- **Flexible staffing models**: Ensure that hospital staffing is adaptable to accommodate surges in patient volume, allowing for the opening of additional beds when needed.

9. Hospital-Wide Cultural Change

- **Commitment from leadership**: Hospital leadership needs to prioritize and actively manage patient flow and reduce boarding by emphasizing its impact on patient care and hospital efficiency.
- **Accountability for patient flow**: Hold all hospital departments accountable for patient flow and discharge planning to avoid the backup of patients in the ED.

By implementing these strategies, hospitals can improve the flow of admitted patients, reduce boarding times, and ultimately decrease ED overcrowding, resulting in better patient outcomes and a more efficient healthcare system.

Conclusion

Emergency department (ED) overcrowding is a multifaceted issue resulting from the imbalance between patient demand and hospital capacity. The inputthroughput-output model provides a valuable framework for understanding the dynamics of overcrowding. Input factors, such as patient volume and clinical severity, contribute to the demand for emergency care. Throughput factors, including diagnostic procedures and healthcare personnel performance, influence the efficiency of patient processing. Output factors, such as boarding and the availability of hospital beds, significantly impact overcrowding and contribute to exit block—a major cause of prolonged waiting times and delayed patient care. The consequences of overcrowding are far-reaching, affecting patient outcomes, staff well-being, and overall hospital efficiency. Extended waiting times, increased mortality rates, and reduced patient satisfaction are among the adverse effects linked to overcrowding. Additionally, overcrowding disrupts the triage process, leading to delays in treatment and increased risk of patients leaving the ED before receiving care. The negative impact on healthcare personnel, including increased stress and burnout, further exacerbates the problem and contributes to a decline in the quality of care and training for medical residents. Addressing ED overcrowding requires a combination of microlevel and macrolevel strategies. Microlevel strategies involve improvements within the ED, such as implementing standardized diagnostic pathways, integrating care with external healthcare services, and utilizing short-stay units. Macrolevel strategies focus on systemic

changes, including streamlining admission processes, expanding outpatient services, and implementing reverse triage to manage patient flow more effectively. Active involvement from hospital leadership and potential regulatory changes are essential for successful implementation of these strategies. In conclusion, reducing ED overcrowding necessitates a comprehensive approach that addresses both internal ED processes and broader hospital system issues. By combining targeted interventions with systemic reforms, healthcare systems can enhance patient outcomes, improve staff well-being, and increase overall efficiency.

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ازدحام أقسام الطوارئ: الأسباب، التأثيرات، واستر اتيجيات الإدارة الفعالة

الملخص:

الخلفية :ينشأ ازدحام أقسام الطوارئ (ED) من عدم التوازن بين طلب المرضى وقدرة المستشفى، مما يؤثر بشكل كبير على أنظمة المستشفيات ورعاية المرضى. يتميز الازدحام بعدم التوافق بين الطلب على الرعاية الصحية والموارد المتاحة، مما يؤدي إلى تأخيرات في عمليات التشخيص وبدء العلاج، مما يؤثر سلبًا على نتائج المرضى وكفاءة المستشفى.

الهدف :تهدف هذه المراجعة السردية إلى تحليل الأسباب والتأثيرات والاستراتيجيات لإدارة ازدحام أقسام الطوارئ. تسعى لتوفير فهم شامل للعوامل المساهمة وتقديم حلول لتخفيف المشكلة بشكل فعال.

الطرق :تعتمد المراجعة على نبج التحليل السردي، حيث تستعرض نموذج الإدخال-المرور-الإخراج لفهم ديناميات ازدحام أقسام الطوارئ. تصنف العوامل إلى إدخال ومرور وإخراج، وتستكشف تداخلاتها وتأثيرها على الازدحام. كما تقيم المراجعة علامات الازدحام، بما في ذلك تأخيرات العلاج وتأثير انسداد الخروج والإيواء.

النتائج :يحدد التحليل الأسباب الرئيسية للازدحام، مثل محدودية توفر أسِرة المستشفى، انسداد الخروج، والإيواء. يبرز كيف تؤدي هذه العوامل إلى زيادة أوقات الانتظار، ارتفاع معدلات الوفيات، وانخفاض رضا المرضى. كما تفحص المراجعة تأثير جائحة COVID-19 على الازدحام، مع التركيز على دور العوامل المتعلقة بالإخراج والمرور.

الخاتمة :تتطلب إدارة فعالة لازدحام أقسام الطوارئ مزيجًا من الاستراتيجيات على المستوى الجزئي والكلي. تركز استراتيجيات المستوى الجزئي على تحسينات داخلية في القسم الطارئ، مثل مسارات التشخيص الموحدة وأنظمة الرعاية المنزلية. تشمل استراتيجيات المستوى الكلي تغييرات نظامية أوسع، بما في ذلك تبسيط عمليات القبول وتعزيز خدمات العيادات الخارجية. إن معالجة هذه العوامل أمر حاسم لتقليل الازدحام وتحسين نتائج المرضى وكفاءة المستشفى.

الكلمات المفتاحية •قسم الطوارئ، الازدحام، انسداد الخروج، الإيواء، إدارة الرعاية الصحية، نتائج المرضى