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Pharmacist and nurse collaboration in managing emergency department crowding and resource allocation

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***Abstract*---Background:** Overcrowding in Emergency Departments (EDs) is a global challenge that compromises patient safety and care quality. Efficient collaboration between pharmacists and nurses is essential in managing resources and improving patient flow during

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peak times. **Methods:** This scoping study systematically reviewed literature from databases including Cochrane, Scopus, and PubMed to identify effective interventions aimed at enhancing ED performance. A comprehensive search strategy utilized medical topic headings and keywords related to performance metrics, interventions, and patient engagement. The review focused on publications from 2012 to 2020, emphasizing interventions involving pharmacists and nurses. **Results:** Seventy-four articles were included, revealing diverse interventions categorized into practice and process changes, as well as team composition enhancements. Key findings indicated that triage systems, care transitions, and the inclusion of advanced nursing roles significantly improved patient throughput and satisfaction. The study highlighted the importance of utilizing performance metrics such as wait times, length of stay, and patient satisfaction scores to evaluate intervention efficacy. **Conclusion:** The collaboration between pharmacists and nurses is crucial in addressing ED overcrowding. Interventions that enhance communication, streamline care transitions and incorporate multidisciplinary teams show promise in improving patient outcomes. Future research should focus on longitudinal studies to assess the long-term impacts of these collaborative practices on ED performance and patient care.

***Keywords*---**Emergency Department, Overcrowding, Pharmacist-Nurse Collaboration, Performance Metrics, Patient Outcomes.

1. Introduction

In the last two decades, Emergency Department (ED) overcrowding has been a prevalent issue globally [1]. Emergency departments must persist in delivering treatment throughout times of congestion and adapt to both predicted fluctuations (e.g., seasonal demand surges) and unforeseen variations (e.g., unexpected incidents and inconsistent demand) [2]. Nonetheless, overcrowding hinders emergency department staff's ability to provide prompt, safe, and high-quality treatment. It prolongs the duration patients remain in the Emergency Department and jeopardizes patient outcomes [3].

Crowding in emergency departments results from input, throughput, and output variables, including the influx of patients seeking care, the duration required for assessment and treatment, and the availability of hospital ward beds [4]. Interventions, such as decision-making frameworks, resource distribution, and procedural modifications, have been extensively executed to tackle these variables, with varied outcomes [5-8]. Recognizing successful initiatives that have enhanced care might facilitate their adoption in many situations. Comprehending the attributes of these treatments and their constraints might guide the formulation of novel ways to tackle prevalent patient flow issues [9-13].

The design and selection of performance metrics should ideally correspond with the system's objectives and enhancement plan to ascertain the effectiveness of the system. Consequently, it is expected that metrics like wait time, duration of stay,

and patient satisfaction will be used to evaluate the effectiveness of emergency departments. Comprehending the historical assessment of ED performance will facilitate the selection of metrics and guide the creation of new measures to rectify deficiencies in performance knowledge. This scoping study aimed to delineate the research findings from evaluations of techniques to assess and enhance emergency department performance.

2. Methods

We developed an extensive search strategy including medical topic headings and keywords related to performance measurements, therapies, and patient engagement to discover eligible research. The Cochrane Database of Systematic Reviews, Scopus, Embase, CINAHL, and PubMed were examined in 2020. No temporal constraints were used. Only publications in English were examined. An updated search was conducted on 9 July 2019, with a date filter for publications from 2012 to 2020.

3. Interventions used to enhance Emergency Department performance and their attributes

Seventy-four publications focused on treatments aimed at enhancing emergency department performance. Interventions aimed at enhancing emergency department performance focus on either practices and procedures or team makeup. Interventions focused on task execution in the ED were classified as practice and process interventions. Interventions focused on the discipline or training of professionals working in emergency departments were categorized as team composition interventions [14].

Six dimensions of clinical practice and procedures have been identified for intervention. The components include triage, care transitions, process redesign, point-of-care testing, observation units, and technology [15-18].

Triage methods are designed to speed treatment by categorizing patients based on urgency or desired service type [15]. Twelve reviews analyzed interventions concerning triage systems and procedures. Triage interventions encompassed the presence of a physician, referred to as a triage liaison physician, a triage team comprising a minimum of two medical personnel (nurse or physician), dedicated triage resources (such as an ECG machine and technician), triage education, variations of fundamental triage, established triage protocols, and nurse-led triage services [19-25].

Care transitions include patient handover, the act of passing accountability, and duty for patient care to another individual [26,27]. Seven evaluations analyzed treatments concerning patient handover procedures and care transitions. Patient handover processes and transitions in care interventions encompass handover tools, bedside registration, discharge planning, discharge communication, process protocols and guidelines, handover training, a dedicated offload nurse for triaging and assessing EMS patients, and nurse discharge coordinators [27-33].

4. Interventions for team composition

Various functions and expertise have been included within the Emergency Department. This included advanced nursing positions, physiotherapy, general practitioners, medical scribes, physician assistants, pharmacy, mental health services, and the enhancement of professional competencies [34]. Seven evaluations analyzed treatments aimed at enhancing nurse responsibilities in the emergency department [35-41]. Advanced nursing interventions predominantly encompass the nurse practitioner role, occasionally referred to as advanced nurse practitioner, advanced clinical practitioner, advanced practice nurse, clinical nurse specialist, certified registered nurse anesthetist, and Clinical Initiatives Nurse (CIN). Advanced nursing positions often need more schooling and a minimum of two years of experience in emergency care.

5. Physical therapy

Three evaluations analyzed interventions concerning physiotherapy responsibilities in the emergency department [42-44]. Physiotherapists in the Emergency Department (ED) are responsible for assessing and managing acute and subacute musculoskeletal conditions, recent burns, and diabetic wounds. They provide in-service training to ED personnel, collaborate with nursing, medical, and allied health staff, and facilitate safe discharges from the ED, including the arrangement of community services. Physiotherapists are educated to interpret and requisition imaging, as well as to prescribe a restricted range of drugs [42, 43].

Two evaluations analyzed initiatives concerning the duties of general practitioners in emergency departments [45,46]. Various strategies have been used to integrate general practitioners into emergency departments. General practitioners have been used to staff non-urgent streams when patients are categorized into distinct streams. General practitioner services are accessible onsite next to the emergency department, and patients either self-refer or are routed to these services from the emergency department. General practitioners have participated in the triage of patients arriving at the emergency department [45,46]. General practitioners have been completely incorporated into the emergency department, collaborating with ED personnel to address various primary care and high-acuity emergencies [47,48].

Four evaluations analyzed treatments concerning care models that use support personnel, including scribes and physician assistants, in the emergency department [8, 18, 49-51].

6. Discussion

This study sought to delineate the scientific data about ways to measure and enhance emergency department performance. There was significant congruence among the metrics for evaluating ED performance, the categories of ED interventions executed, and the outcome measures used to gauge the efficacy of those treatments. Although emergency departments globally may have a unified objective, the disparities and intricacies within each emergency department

system are evident in the multitude of metrics used to assess various facets of emergency department effectiveness. Likewise, the various classifications of these metrics indicate divergent interpretations of the same objective. The selection of performance metrics is essential for emergency departments and the communities they serve to provide a thorough, accurate, and exact assessment of emergency department performance. It is crucial to have a mutual comprehension of the methodology for collecting ED performance data to guarantee the validity of the metrics used for performance evaluation or comparison.

The findings of our research indicate that the provision of care in the Emergency Department has progressed over the last 20 years due to the introduction of several interventions aimed at enhancing ED performance. This analysis identifies treatments that focus on certain elements of care delivery in the emergency department, indicating a lack of application of a systems viewpoint. Emergency departments are intricate adaptive systems, and any intervention aimed at enhancing performance is likely affected by prevailing care models and several contextual circumstances, including money, labor availability, and physical space constraints.

The alteration of patient engagement in care delivery also influences emergency department performance. The few evaluations reviewed in this analysis indicate that emergency department care delivery is mostly influenced by doctors and procedures, rendering patients as passive recipients of treatment. In the congested and tumultuous emergency department environment, delivering patient-centered care is certainly a formidable endeavor [33]. Our results indicate that facilitating active patient engagement in emergency department care delivery is feasible; however, more study is required to understand the consequences for emergency department performance and patients' clinical and psychological outcomes.

Intervention outcome metrics enable the assessment of whether the intervention aimed at enhancing ED performance was effective or resulted in undesired consequences. Although using all five categories of outcome measures analyzed in this analysis would provide the most comprehensive understanding of emergency department performance and intervention efficacy for physicians, hospital managers, and researchers, the complete application of these measures may be impractical in some circumstances. The majority of research indicated the use of three or fewer categories of outcome measures. Temporal measurements were often integrated with proportional or procedural metrics. The use of time, percentage, and process metrics offer insight into the efficiency of healthcare delivery, the volume of resources employed (e.g., diagnostic testing), and the caliber of patient management (e.g., clinical documentation). Nevertheless, choices about the execution of interventions are often determined by departmental budgets or the availability of financial resources. The incorporation of cost metrics is becoming more vital for guiding doctors and administrators in their evaluations of emergency department performance and the efficacy of interventions. Ultimately, clinical outcome metrics are crucial for evaluating the hypothesis that alterations in healthcare systems enhance patient safety and clinical results, an area often overlooked in several initiatives.

7. Constraints

This scoping review is, to our knowledge, the first to synthesize several review papers to completely delineate the many methodologies used to assess and enhance emergency department performance. The present study's limitations include our decision to only include reviews published in English and the possible biases inherent in the selected research. The published assessments assessing the efficacy of therapies in the emergency department environment may have been influenced by publication bias since negative findings are less often disseminated. This publication bias obscures the identification of ineffective therapies and the influence of certain contextual factors on intervention success or patient care outcomes.

8. Conclusions

In the last twenty years, the delivery of treatment in the Emergency Department has undergone significant transformation due to heightened demand and growing complexity, and this evolution will probably continue over the next twenty years. The methodology for assessing ED performance has evolved with our ability to gather and analyze data. We must rigorously evaluate the performance metrics used to describe emergency department performance to ensure we capture a comprehensive and dynamic representation that truly represents its efficacy. This research demonstrates that several tactics have been used to enhance ED performance. Given the increasing internal and external demands on the Emergency Department, future intervention activities are essential to prevent the dire repercussions of overcrowding. It is essential to use a wide array of significant outcome measures for treatments to correctly determine the efficacy of ED therapies and guide system modifications and decision-making.

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تعاون الصيادلة والممرضين في إدارة اكتظاظ أقسام الطوارئ وتوزيع الموارد

الملخص

الخلفية :يعد اكتظاظ أقسام الطوارئ (EDs) تحديًا عالميًا يهدد سلامة المرضى وجودة الرعاية. إن التعاون الفعال بين الصيادلة والممرضين أمر ضروري في إدارة الموارد وتحسين تدفق المرضى خلال أوقات الذروة.

طرق البحث :استعرضت هذه الدراسة الشاملة الأدبيات من قواعد بيانات مثل Cochrane و Scopusو PubMedلتحديد التدخلات الفعالة التي تهدف إلى تعزيز أداء قسم الطوارئ. استخدمت استراتيجية بحث شاملة عناوين موضوعات طبية وكلمات مفتاحية تتعلق بمقاييس الأداء، والتدخلات، ومشاركة المرضى. ركزت المراجعة على المنشورات من 2012 إلى 2020، مع التأكيد على التدخلات التي تشمل الصيادلة والممرضين.

النتائج :تم تضمين أربعة وسبعين مقالًا، كاشفة عن تدخلات متنوعة تم تصنيفها إلى تغييرات في الممارسات والعمليات، بالإضافة إلى تحسينات في تكوين الفرق. أظهرت النتائج الرئيسية أن أنظمة الفرز، وانتقالات الرعاية، وإدراج أدوار التمريض المتقدمة حسنت بشكل كبير من تدفق المرضى ورضاهم. وأبرزت الدراسة أهمية استخدام مقاييس الأداء مثل أوقات الانتظار، وطول الإقامة، ودرجات رضا المرضى لتقييم فعالية التدخلات.

الاستنتاج :يعتبر التعاون بين الصيادلة والممرضين أمرًا حيويًا في معالجة اكتظاظ أقسام الطوارئ. إن التدخلات التي تعزز الاتصال، وتبسط انتقالات الرعاية، وتدمج الفرق متعددة التخصصات تظهر وعودًا في تحسين نتائج المرضى. ينبغي أن تركز الأبحاث المستقبلية على الدراسات الطولية لتقييم التأثيرات طويلة الأمد لهذه الممارسات التعاونية على أداء قسم الطوارئ ورعاية المرضى.

الكلمات المفتاحية :قسم الطوارئ، الاكتظاظ، تعاون الصيدلي والممرض، مقاييس الأداء، نتائج المرضى.