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Scientific Article Entitled: The Role of The Emergency Medicine Paramedic in The Government Health Sector in The Kingdom of Saudi Arabia

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Abstract

This research article explores the role of paramedics in primary care, particularly in the United Kingdom, Australia, Canada, and the Americas. The study aims to understand how paramedics contribute to the primary care workforce and the factors that influence their effectiveness in this setting. The researchers conducted a realist review, which involves analyzing the context, mechanisms, and outcomes to provide causal explanations.

The findings suggest that paramedics are more likely to be effective in primary care when they receive formal education and clinical supervision to expand their existing role. Integration into primary care services is crucial for them to build trusting relationships with patients and physicians. Patients need information about the paramedic's role and its

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implications for their care from a trusted source in order to accept their presence in primary care.

The review highlights the complexity of introducing paramedics into primary care roles and provides insights into their professional identity. It also discusses the expectations placed on paramedics by patients, general practitioners (family physicians), and the paramedics themselves during the transition to primary care. This research offers valuable insights into the impact of paramedics on the international primary care workforce and provides guidance for their optimal deployment.

Keywords: *Primary health care, Paramedic, Realist review, Ambulatory care.*

Introduction

A hospital consists of various components that work together to provide medical services to patients. One crucial component is the emergency department (ED), which plays a unique and vital role in providing comprehensive care to individuals requiring immediate medical attention. Managing the ED is of utmost importance due to its responsibilities and functions.

The field of out-of-hospital emergency healthcare is experiencing changes and advancements in care models and responses on an international scale. These developments are influenced by various factors, including demographic challenges such as aging populations and transient populations, as well as the attendance trends in emergency departments(Román et al., 2005). There are several factors driving these role developments, including increased expectations and demands for health services, response and waiting time criteria, funding mechanisms for ambulance services, evolving working practices and hours, cost-effective advanced roles, and the need to address professional boundaries(Doctors and Nurses in Emergency Care: Where Are the Boundaries Now? - Simon Brook, Robert Crouch, 2004, n.d.).

Although different countries may use different terminology, the overall objectives are similar. The aim is to create a seamless service that breaks down professional boundaries, enhances the clinical skills of paramedics, promotes new ways of working, fosters closer partnerships, and ultimately improves outcomes for patients. Collaborative working and networks have been emphasized in various healthcare policies, with an emphasis on providing the right response to patients in a timely manner(Mason et al., 2006).

Examples of role developments can be seen in different countries. For instance, in Lithuania, a trial replaced the personnel in ambulances with paramedics, replacing the traditional composition of nurses, doctors, and ambulance drivers(Vaitkaitis, 2008). Nurse practitioner roles have been developed and implemented in emergency care settings globally, including Australia and the USA(Buchanan & Powers, 1996; Cole & Ramirez, 2002). In the UK, Community Matron roles were introduced but were not successful in reducing hospital admissions(Gravelle et al., 2007). Telephone triage systems like NHS Direct in the UK and alternative models of telephone responses to poisoning have been implemented in the USA(Kearney et al., 2007). Telemedicine has also been developed and utilized in various settings, such as the British Antarctic Survey Medical Unit in the Antarctic and rural hospitals in the USA(TelEmergency: A Novel System for Delivering Emergency Care to Rural Hospitals - PubMed, n.d.).

Overall, the international trends in out-of-hospital emergency healthcare involve ongoing developments in roles and care models, driven by a range of factors and objectives aimed at providing improved and more efficient services to patients.

EDs face ongoing and significant demands on their resources. Factors such as overcrowding in hospitals, the presence of inpatients awaiting admission in the ED, higher patient numbers and severity, and limited availability of primary and secondary care contribute to these challenges. Moreover, there is a shortage of trained emergency care providers, exacerbating the situation. To address these demands, several strategies have been employed. These include relocating boarded patients to other hospital areas, diverting patients away from the ED, and utilizing mid-level care providers with specific skills and evolving roles(S. G. Campbell & Froese, 2014; Klauer, 2013). These mid-level providers, which include nurse practitioners, physician assistants, and paramedics, work alongside ED physicians and nurses.

Paramedics are healthcare professionals who traditionally focus on prehospital care, such as managing and transporting acutely ill or injured patients. However, their utilization in non-traditional settings is growing in countries like the UK, the United States, and Canada(S. Campbell et al., 2008; New Rural Emergency Centres Rely on Nurses and Paramedics at Night | National Post, n.d.; Oglesby, 2007). In these atypical settings, the scope of their practice and level of training may vary.

In some EDs, paramedics primarily rely on their prehospital training. For instance, in Oklahoma, paramedics administer IVs, draw blood, and provide basic emergency care(Oglesby, 2007). In rural areas of Nova Scotia, Canada, paramedics are employed in "collaborative emergency centers" staffed solely by paramedics and registered nurses, with online physician oversight(New Rural Emergency Centres Rely on Nurses and Paramedics at Night | National Post, n.d.). In other centers, paramedics receive additional training, such as in urinary catheterization, patient transport, and point-of-care testing, as seen in North Carolina, USA.

In Saudi Arabia, the role of ED paramedics has evolved over the past three decades. Paramedics are involved in triage, act as "physician extenders" in an area catering to patients with less severe complaints, and work in an area where patients are directly referred to a consultant service within the hospital.

The focus of a particular study was to describe the role of emergency medicine paramedic in the government of health in Saudi Arabia. The authors aimed to showcase why paramedics are well suited to meet the needs of this ED, highlight the significant impact they have in various areas, and identify interprofessional challenges associated with implementing this paramedic role. The study employed qualitative methods and gathered insights from paramedics themselves.

In Saudi Arabia, paramedics have traditionally been associated with providing emergency care through the emergency medicine paramedic service for life-threatening situations. However, changes in healthcare access have led to a sociocultural reliance on emergency medicine paramedic, with a large number of patients accessing it for lower acuity presentations. As a result, the role of paramedics has evolved beyond advanced life support to include managing long-term conditions, acute mental health presentations, social care assessments, and various urgent care situations.

Saudi Arabia has been at the forefront of professionalizing paramedics globally, with the introduction of degree-level pre-registration programs and career frameworks for paramedics to specialize in urgent or critical care before progressing to advanced roles through postgraduate study(Post Graduate Curriculum Guidance, n.d.). Similar changes have occurred in other high-income countries like Australia(The Australasian College of Paramedicine, n.d.), Canada(Batt, 2019), and the United States, where the paramedic role has expanded to include urgent care provision alongside emergency response.

At the same time, primary care workforces are facing significant challenges, including increased demand for services and complex case management in the community(Montgomery et al., 2017). This has led to recruitment and retention issues for

primary care doctors, necessitating workforce changes and opportunities for other clinicians to support general practitioner roles(Majeed, 2017). Paramedics, equipped with their evolving skills and attracted to regular hours and professional development opportunities, are well-suited to work in primary care settings(Mahtani et al., 2018).

In countries like Australia, Canada, and the USA, there are examples of paramedics being employed by local EMS to provide primary care services(Bowles et al., 2017; O'Meara et al., 2012). These activities may include community outreach, first aid posts, preventative or rehabilitation services for vulnerable patient groups, or expanding healthcare access to medically underserved populations. While these activities were traditionally performed by existing primary care professionals like GPs or nurses, recruitment difficulties have led to the employment of paramedics in these roles.

As paramedics transition into primary care roles, their knowledge and skillset undergo changes. A recent review of evidence highlighted that paramedics can safely apply their extended skills in assessing and treating patients in primary care(Eaton et al., 2020). However, there is a lack of standardization and complexity in defining the role of paramedics in primary care, and it is considered a complex intervention. Understanding how paramedics can effectively work in primary care depends on various factors and contexts(Developing and Evaluating Complex Interventions: The New Medical Research Council Guidance | The BMJ, n.d.).

To gain a deeper understanding of how paramedics can contribute to primary care, a realist review is being conducted(Mahtani et al., 2018). Realist reviews are theory-driven and focus on understanding how interventions work in specific contexts(Pawson, 2006, p. 196). By examining the evidence on paramedics in primary care, this review aims to identify the contributing components, mechanisms, and outcomes that optimize the role of paramedics in this setting.

Aim of the study

The focus of this study is to describe the role of emergency medicine paramedic in the government of health in Saudi Arabia. The authors aimed to showcase why paramedics are well suited to meet the needs of this ED, highlight the significant impact they have in various areas, and identify interprofessional challenges associated with implementing this paramedic role. The study employed qualitative methods and gathered insights from paramedics themselves.

Description of emergency medicine paramedic roles

Although the role of paramedics is well established in certain healthcare systems like the UK NHS, it is important to understand how paramedics can contribute and function within primary care. The literature emphasizes the significance of considering expectations from various perspectives, including patients, general practitioners (GPs), and paramedics themselves. It is also essential to frame the role of paramedics within the context of local healthcare workforces(Eaton et al., 2021).

To summarize the information provided, the role of emergency medicine specialists as they see it is:

- The ED as Showcase: EDs are the 'showcase' of hospitals – where new patients entering the hospital have their first and most impressionable encounter, affecting their perception of the hospital as a whole.
- Severe and Undiagnosed Patients: Urgent Cases: The most severe, anxious, undiagnosed cases and those most likely to die are cared for by emergency medicine specialists.
- Symbolic Impact and Media Attention Attributes of the ED experience (eg, crowding, aggressive patient behavior, and media attention) make it a symbol in the

healthcare system. Their ED experience has symbolic impact on patients' satisfaction with the hospital as a whole.

- Specialized Expertise: The specialist in emergency medicine has unique skills and experience in emergency patients, systematically evaluating patients with difficult or prosperous expectations, identifying and stabilizing high-risk patients and performing mandatory life-saving procedures with decision-making that prevents death and disability.

- Managerial Responsibilities: Skills include the medical director's responsibility for quality control of emergency services, access to subspeciality care, stewardship of ED functioning, and resident and patient training and education.

- Economic Implication: Establishment, quite cost-effectively, of emergency medicine as a specialty was an effective means of improving the quality and efficacy of service provided in the ED, preventing unnecessary ED stays, surgery and elevated health care costs; and enhancing hospital revenue through optimal patient flow, accurate accounting of service and improved customer satisfaction. Patient Satisfaction: Patient satisfaction relates to the specialty of emergency medicine.

- Patient satisfaction is one of the most important key performance indicators in emergency medicine. In fact, the establishment of this specialty has significantly improved patient satisfaction mainly because it has reduced waiting times and improved patients' experiences. In addition, patients are more likely to receive the care they want and need when they need it.

- critical care transport of unstable patients throughout the hospital.

- Assisting in the resuscitation.

- Airway management of critically ill patients.

- Provision of procedural sedation to patients who require short and unpleasant emergency procedures.

- Manage and maintain an advanced airway cart.

- Part of the hospital trauma team and code blue team.

Their practice is guided by standard operating procedures, but they do have significant autonomy, especially with regards to procedural sedation. part of the hospital trauma team and code blue team.

In conclusion, emergency medicine specialist has an important role in a range of skill-based, evidence-based, patient satisfaction and operational and managerial tasks in the emergency department.

Procedural sedation

At this center, paramedics in the department are trained to independently perform procedural sedation for various procedures, such as cardioversion, chest tube placement, endoscopy, imaging, incision and drainage, lumbar puncture, wound care, and orthopedic reductions(Butler et al., 2017; S. Campbell et al., 2008; S. G. Campbell et al., 2006). Before administering the sedation, paramedics assess the patient's airway and obtain consent for the procedure. In collaboration with the emergency physician, they select and administer appropriate medications for sedation and monitor the patient throughout the procedure until they have fully recovered. Commonly used sedation agents include fentanyl, midazolam, propofol, and ketamine, with the combination of fentanyl and propofol being the most frequently chosen. Paramedics in this role solely focus on the sedation process and do not assist with the actual procedure. After recovery, they assist with providing discharge information and arranging any necessary follow-up.

Paramedics receive comprehensive training in procedural sedation, which includes theoretical knowledge and practical application. They study the pharmacology and risk factors associated with sedative agents and learn how to manage different patient scenarios. High-fidelity simulations are used to test their ability to handle adverse events that may occur during sedation, such as anaphylaxis, pulmonary aspiration, cardiac infarction, decompensation, and unexpected airway loss. Competency evaluation involves a multiple-choice exam with a passing score requirement of 80% and a peer assessment where trainees perform sedation procedures under the supervision of a senior paramedic. Trainees must complete a minimum of 50 witnessed sedations before they can work independently. If the senior paramedic feels the trainee is not confident in their abilities after 50 sedations, they may continue to work under supervision until the senior paramedic is confident in their skills(Wiemer et al., 2019).

The expertise of paramedics in procedural sedation and the existence of a procedural sedation registry have led to significant research conducted by paramedics in this field. This research includes randomized trials and retrospective studies utilizing the registry data.

Patient perspective

Patients tend to view the presence of paramedics in primary care positively when they receive clear information from trusted sources like their own GP or national health system communications. However, confusion may arise if the role of the paramedic is not adequately explained, leading patients to expect a consultation with their regular GP and feeling disappointed if they see a paramedic instead. Some patients initially express concern that their condition is being treated as an emergency by seeing a paramedic in a primary care setting. However, as patients become more familiar with the paramedic's role and recognize their credibility as part of the primary care team, high levels of satisfaction are reported.

One notable finding in the literature is that paramedics tend to spend more time with patients during consultations compared to GPs. Patients appreciate this extended consultation time as it allows them to discuss their concerns without feeling rushed. This aspect of paramedic care is valued by patients, as it provides them with an opportunity to have a thorough discussion about their health issues.

GP perspective

Within the countries examined in the review, there were GPs who recognized the potential of paramedics in their traditional role to contribute to the primary care workforce. These GPs, considered "early adopters," had a positive view of paramedics and saw them as a means of reducing their workload and improving patient access to appointments. Some GPs even had the opportunity to work alongside local paramedics, gaining firsthand insight into their capabilities. As a result, these GPs offered employment to paramedics, recognizing the value of their skills to the team.

However, not all GPs held the same perspective. Some GPs viewed paramedics as having a limited role, primarily serving as "eyes and ears" for assessments. These GPs did not perceive paramedics as autonomous clinicians who could independently diagnose and manage patients but believed that they required clinical oversight from a GP. Deploying paramedics in such a manner did not effectively free up GP time and sometimes resulted in unintended consequences, such as patient frustration due to unnecessary duplication of consultations.

Contribution to primary care teams

The concept of paramedics being pluripotential, meaning they had the ability to handle a wide range of issues while also being adaptable to more specific roles, was seen as a valuable asset for primary care teams. In settings where the skills and competencies of

paramedics aligned with the needs of emergency care, they were considered a beneficial addition to the team.

Evidence indicated that paramedics working in primary care roles made a significant impact, particularly in areas where access to healthcare was limited or delayed, such as rural communities. For instance, in Saudi Arabia, paramedics employed by the government managed and operated first contact centers, allowing them to address both primary care conditions and more urgent presentations typically handled by emergency teams. These rotational models of workforce were highly valued by commissioners, employers, paramedics, and the patients who benefited from improved healthcare access.

In the context of the English literature published after the introduction of the Additional Roles Reimbursement Scheme in 2020, paramedics were increasingly considered a credible addition to the local primary care workforce. They gained credibility through endorsement from trusted organizations, further solidifying their role in primary care(Eaton et al., 2021).

Education

The literature emphasized the importance of enhancing the existing skills and competencies of paramedics to effectively work in primary care. It was recognized that there were certain clinical areas where paramedics needed to develop further expertise to successfully transition to primary care. These included biochemistry for understanding and interpreting blood tests, pharmacotherapy to support independent prescribing for long-term conditions or complex patient groups, and technical skills such as wound care, urinalysis, and imaging.

Across the literature, it was observed that higher levels of paramedic education were associated with increased pay, expanded scope of practice, and greater clinical responsibility. This higher level of education, typically at the master's level, served as a distinguishing factor between advanced paramedic roles and first contact/community/extended paramedic roles.

Working in a team

Achieving proper integration into the primary care team was identified as crucial in order to prevent role duplication or substitution. This was more likely to be successful when the professional role of paramedics in primary care did not overlap with those of existing healthcare professionals and when paramedics were fully aware of their own professional competencies. However, when role boundaries became unclear or when paramedics were perceived as being a "jack-of-all-trades," the literature suggests that resistance to paramedic roles emerged due to a lack of trust from other healthcare professionals. Additionally, some healthcare professionals may have felt threatened or disempowered by the implementation of these new roles alongside existing ones.

Interpersonal skills

The literature highlighted the significance of paramedics' ability to quickly establish rapport and build trusting relationships, a skill that is frequently required in emergency situations. This aspect was considered crucial to replicate in primary care. Patients expressed higher satisfaction when attended to by paramedics who possessed strong interpersonal skills and demonstrated enthusiasm. The patients perceived the ability to connect with these healthcare professionals as a key factor in the success of their experience in primary care.

General practitioners (GPs) also recognized the importance of these interpersonal skills and valued them as aligning with their own professional values. Consequently, specific interpersonal skills were integrated into the essential criteria outlined in job descriptions when advertising for paramedic roles in primary care.

Professional role boundaries

Cultural sociologists argue that institutionalized definitions of cultural memberships shape group boundaries, including distinctions between professions. The concept of a "profession" initially emerged as a way to differentiate between "superior" occupations and ordinary ones. This differentiation was based on factors such as specialized knowledge, education, credentialing, and autonomy. This trait-based approach underscores the idea that social boundaries between different professional groups are exclusive, with each profession being a clearly defined unit developed around a specific specialization. In this closed model, there is a formal body of knowledge and skills that is developed, practiced, refined, and expanded within each profession.

However, professions also exist in an interdependent open system, where there is competition for jurisdictional monopolies and the legitimacy of claimed expertise. This dynamic leads to a constantly evolving system of professions, with ongoing disputes over the social boundaries between them. In the context of primary care, this results in a changing landscape of professions, with debates arising regarding the role substitution rather than addition of workforce. Such concerns were commonly expressed by GPs and other clinical staff within primary care, particularly in relation to the clinical role and contribution of paramedics compared to other "traditional" healthcare roles like nurses.

Discussion

Paramedics are incredibly well-suited for employment in the emergency department (ED). They bring a fresh approach to patient care, challenging the traditional belief that only emergency physicians or anesthesiologists can provide certain aspects of care such as procedural sedation and advanced airway management. The versatility and mobility of paramedics within the ED fill a specific need in emergency care, as they are fundamentally generalists—a key requirement for healthcare providers in the ED. Additionally, paramedics are extensively trained in managing critically ill patients, making them a valuable asset in any ED.

Moreover, their broad knowledge base makes them excellent candidates for further training(Wiemer et al., 2019). In fact, paramedics have already demonstrated success in expanding their scope of practice. For example, they have taken on roles such as providing procedural sedation for patients undergoing gastro-esophageal endoscopy, a responsibility previously handled by members of the gastroenterology team.

The presence of paramedics in the ED not only benefits the healthcare system by enhancing versatility and adaptability but also benefits the discipline of paramedicine itself. It provides paramedics with an opportunity to become active participants in the integrated network of care, extending their contribution beyond the hospital doors. This exposure to a more diverse clinical experience positions paramedics for academic and leadership roles in our evolving healthcare system. The robust research and quality assurance infrastructure, combined with a high-volume setting and diverse patient population, create ideal conditions for the further expansion of the paramedic scope.

Furthermore, the hospital-based role improves relations and understanding between paramedics and other healthcare professionals. Through involvement in non-traditional roles such as teaching or mentoring medical students and residents, paramedics enhance professional exposure and foster mutual understanding. This exchange of insights is often shared with ground-based paramedics through formal and informal means of communication.

Additionally, the interaction between hospital-based paramedics and medical students and residents from various regions can shape their perception and future interactions with paramedics in their own practice.

Paramedics are particularly well-suited for performing procedural sedation. They possess a solid foundation in pharmacology, which makes learning the pharmacology of sedation a natural extension of their skills. They also meet the requirement of having advanced life support skills and are experienced in recognizing and managing potential cardiorespiratory complications.

Introducing this paramedic role in the ED initially faced resistance, as any change in healthcare can be challenging. However, effective communication and education are essential in mitigating conflicts and addressing misunderstandings about the objectives of the new role.

Similar to the Saudi Arabian experience described in this paper, there are parallels in other countries such as the UK, where the College of Paramedics recognizes the versatility of paramedics and supports their continued development and expansion of their scope of practice. This includes opportunities for postgraduate training, research involvement, leadership/management roles, and education.

In summary, this paper showcases the success of a novel paramedic role with an expanded scope in meeting the specific needs of a Saudi Arabian ED. While this role may not be applicable to all EDs, it serves as a testament to the adaptability and versatility of paramedics in meeting the increasing and evolving demands of healthcare systems.

Conclusion

the current study conducted in Saudi Arabia revealed that emergency medicine paramedic is a crucial specialty both within hospitals and beyond, and has had positive impacts on various indicators such as medical effectiveness, managerial effectiveness, economic effectiveness, and patient satisfaction. However, the development of this specialty has encountered challenges, including collaboration with other specialists, the education process, professional issues, and the payment system.

While this study focused on the perspectives of emergency medicine paramedic, it is recommended to conduct further research to explore the viewpoints of specialists in other fields and policymakers within the healthcare system regarding the performance of the emergency medicine paramedic specialty. Obtaining a comprehensive understanding of the experiences and opinions of different stakeholders can provide valuable insights into the strengths, weaknesses, and opportunities for improvement in the field of emergency medicine. Such studies can contribute to refining and optimizing the EM specialty and its integration within the broader healthcare landscape.

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