



Review Article

Science of Life Saving Through Paramedical Care: A Comprehensive Review

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Abstract

The science of life-saving through paramedical care is a vital component of modern healthcare. This review encompasses various aspects, including the role of paramedics, emergency medical technicians, and other healthcare professionals, in delivering immediate and pre-hospital care. By addressing various dimensions of paramedical care, this review sheds light on the crucial role this discipline plays in safeguarding lives and ensuring the best possible outcomes for patients. Paramedical care significantly benefits society. Paramedics play a crucial role in providing rapid medical assistance during emergencies. This study explores the vital societal impact of paramedical care and its indispensable role in emergency healthcare. The field of paramedical care presents difficulties due to its intricate and ever-changing nature, requiring continual adaptation to technological advancements, regulatory modifications, and a wide range of patient requirements. Addressing these challenges calls for a dynamic and comprehensive approach to ensure the provision of effective and high-quality healthcare. Paramedical care which extends beyond traditional practices to encompass a variety of medical services demanding innovative solutions to ensure favorable patient outcomes. Given that paramedical services represent one of the most intimately interconnected industries, touching upon our emotional, physical, mental, and financial well-being, it is imperative to promptly address the influence of the new economy and healthcare technology to meet the challenges posed by paramedics. Paramedical care not only saves lives in emergencies but also acts as an essential for preventive healthcare, public health education, and community resilience. This study highlights the far-reaching positive effects of paramedical care on society, shedding light on the science behind its lifesaving impact and its potential to improve overall community health and resilience.

Keywords: Paramedical, Paramedics, Challenges, Preparedness

1. Introduction

A paramedic is a healthcare practitioner known for their swift response, emergency medical evaluation, treatment, and care within a hospital setting. These dedicated individuals make invaluable contributions to the medical field through their specialized paramedical expertise. A paramedic is a medical specialist with a primary focus on emergency medical interventions [1].

The term "paramedic" is derived from the fusion of two words, "para" signifying "next to," and "medic," indicating a medical professional. Consequently, a paramedic is an individual extensively trained to administer emergency medical treatment and support medical professionals, offering crucial assistance during critical healthcare situations [2,3].

Paramedics play a key role in saving lives, it is a hands-on job that requires various instances of face-to-face interactions with patients. Paramedics work in a unique environment that is full of risks and uncertainties. Effective patient care can be achieved only when a paramedic knows how to manage these [4] risks and is capable of dealing with uncertainties, implementing useful communication skills is extremely important [5]. The realm of life-saving through paramedical care stands as an indispensable cornerstone in modern healthcare. It is a field of utmost importance, encompassing a comprehensive review of critical elements essential for preserving human life in

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emergencies. This domain encompasses the crucial roles fulfilled by paramedics, emergency medical technicians, and other healthcare professionals in providing immediate and pre-hospital care. It also explores the latest advancements in paramedical techniques, equipment, and protocols that significantly enhance patient outcomes [6,7]. Timely and efficient responses to medical emergencies, facilitated by well-trained paramedical personnel, are the requirement of this life-saving science, underscoring its significance in safeguarding lives and optimizing patient well-being [7].

2. METHODOLOGY

In this paper, I explore the tools and techniques commonly working in prominent bibliographic databases to target information relevant to paramedics in the field of emergency medical services. This study specifically delves into four major academic databases: Google Scholar, PubMed, Scopus, and Web of Science. Within these databases, comprehensive searches were conducted, encompassing paramedics' practice resources, the Journal of Paramedic Practice, and articles that provide insights into the roles, scope of practice, clinician and patient satisfaction, as well as the economic aspects of paramedics in primary and urgent care settings. The search criteria included a combination of free-text keywords and subject headings, focusing on two fundamental concepts: "paramedic" and Paramedical care."

3. AIMS & OBJECTIVES

- ✓ To provide an in-depth analysis of fatigue among paramedic. Its potential implications across various domains, and a definition of effective communication in healthcare.
- ✓ To advance and facilitate the progress of paramedics by charting a strategic course for the standardization of education and training throughout India.
- ✓ To enhance patient care and healthcare systems by documenting comprehensive studies that scrutinize the risk assessments associated with paramedic-involved communication during outbreaks, aiming for more effective communication.
- ✓ To examine the role of science communication in the context of potential risks faced by paramedics during contagious disease outbreaks.
- ✓ To address India's need for an expanded workforce of healthcare professionals by promoting further training and skill

development, fostering a robust healthcare infrastructure.

- ✓ To promote the development of paramedics through a strategic approach to education and training, including equitable access to funding and raising entry standards within the profession.
- ✓ To underscore the significance of paramedics and outline potential solutions for assessing and managing the risks associated with infections and contagious diseases. This involves comprehensive education and training for paramedics, considering the evolving healthcare landscape.
- ✓ To contribute to disaster preparedness plans for the future, with a specific focus on health and safety, information dissemination, and educational initiatives. This would also provide valuable insights for government authorities and policy planners in formulating emergency response plans.
- ✓



Figure-1 Training programs

4. Inadequate Training

Inadequate training can result in employee dissatisfaction and confusion regarding their roles and responsibilities. According to a study by Career Builder, paramedical staff prioritize job satisfaction and a conducive work environment over monetary compensation [8]. This underscores the importance of comprehensive training programs to enhance job performance and overall contentment (Fig-1).

Challenging Organizational Culture

Many healthcare professionals feel that their organizations do not effectively encourage innovation. Career Builder's research reveals that fostering innovation plays a significant role in attracting and retaining talent while also creating awareness of available opportunities. Discrepancies in perception regarding offered programs highlight the fact that numerous healthcare workers may not be aware of the development and incentive initiatives within their organizations [9,10].

Limited Advancement Opportunities

Delivering healthcare services to all especially underserved and economically disadvantaged communities, presents a range of challenges. One notable challenge is the lack of awareness within the Indian population about critical health issues [11]. This underscores the need for greater awareness and education to address healthcare disparities.

Inclusive Healthcare Policies

There is an imperative for the development of comprehensive and purposeful policies to integrate paramedical services into the broader healthcare system. These policies should encompass various service categories, including outdoor paramedical services, hospital indoor paramedical services, and specialized paramedical services [12]. Such an approach ensures the holistic functioning of the paramedical system within the healthcare framework.

Every challenge is an opportunity

Every challenge can be viewed as an opportunity. The establishment of a paramedical service system holds paramount importance for a nation's progress and advancement. Such a system can effectively cater to the evolving needs of society, foster specialization within the healthcare sector, and substantially broaden the spectrum of career prospects for healthcare professionals. It is imperative for governments to transcend the obstacles hindering healthcare sector development and give due attention to the growth and enhancement of the paramedical service system [13,14].

Education and Training

The hospital is committed to providing comprehensive education on infection prevention and control practices to a diverse audience and all hospital staffs, whenever their involvement in care necessitates it [15]. A meticulously designed awareness and training program is in place for all categories of paramedical professionals. This training program encompasses several crucial elements (Fig-2).

On-going Training: Continual education stands as a cornerstone of our training approach. It ensures that all staff members, including newcomers, remain well-informed and knowledgeable about infection control practices, serving as a constant reminder of their importance.

Keeping Well-informed of Trends: Staying updated on the latest developments and trends in the field is of

paramount significance. The educational curriculum provided to all staff, patients, and their families encompasses a wide-ranging of topics, including hand hygiene, biomedical waste management, personal protective equipment usage, and infection control policies and procedures [15,16]. Additionally, there is a need for organize special programs for patients and families on occasions such as Hand Hygiene Day or Infection Prevention Week. And if there is an observed increase in the rates of a specific risk factor, then dedicated infection prevention nurses and doctors need to conduct specialized training to the staff responsible for that particular area [17]. This program is fully integrated into the hospital's overarching quality improvement and patient safety initiatives.



Figure-2 -Training & development

Documentation:

Training records should be maintained. This type of training development form is aim of reducing the incidence of infections to the most possible levels. Regular communication of infection monitoring results is a key practice within the organization, extending to leaders, staff, and the quality department on a monthly basis [18]. Additionally, the organization upholds transparency by promptly sharing infection-related information with pertinent external public health agencies. The primary objective of the infection prevention and control program is to actively identify and monitor all infection risks, rates, and trends associated with hospital-acquired infections [19]. Notably, the programs for preventing and controlling infections are seamlessly woven into the broader fabric of quality assurance within the organization. Improvement programs which later oversee the activities and provide mechanisms for measuring the rates, identified risks and trends of hospital-acquired infection and prevention control interventions. The data for rates, trends and risk factors are collected and

tracked for the whole organization, which are measured and analyzed to communicate in the meetings [20,21].

Training – for emergency case management on-site, in-transit, and in hospitals

Health Education – among general public

Empanelled health facilities/hospitals – ensuring quality of care

Information System and Knowledge Management – using multi-media and multi-channel data management

Legal framework- to define roles and liabilities of various stakeholders for transparency and regulation

Figure-3 Challenges and future perspectives

Appropriate policy decisions are taken in the meeting to bring down the rates or prevent it altogether. The decisions are based on measures, presented in the monthly meeting minutes and decisions are circulated and communicated to all paramedics, doctors, nurses and management staff for their perusal and implementation [22,23] (Fig-3).

5. Comparing Paramedics in India

Conversations with paramedics and hospital department heads have brought to light a significant gap in the regulatory framework governing the recruitment and operations of paramedics in the country. Currently, there is a no Act or Council overseeing the hiring and functioning of paramedics, making it challenging to verify the work history or conduct of individual paramedics [24]. This issue gains added importance considering the pressing need for adequately trained paramedic staff, especially with the upcoming Commonwealth events, where their role is crucial not only in assisting doctors but also in ensuring the safety of all medical practitioners. To address this shortage, untrained personnel are often engaged on a temporary or daily basis to handle sophisticated equipment, with the intention of gradually providing them with the necessary training to fulfil their duties effectively [24].

In the era of globalized education, the Indian government is actively recommending the privatization of education, aligning with Western models. This involves encouraging non-governmental organizations to play a necessary role in meeting the educational needs of hospitals by offering job-oriented courses and training programs [25]. In response to the escalating demand for paramedical technicians in hospitals,

diagnostic labs, nursing homes, and similar healthcare settings, the Para Medical Council of India has undertaken the responsibility of bridging this gap. Health activists and medical professionals attribute the current situation to the absence of comprehensive central legislation overseeing paramedics. They argue that the lack of a central law has resulted in the absence of standard minimum qualifications for the appointment of paramedics, including nurses, laboratory assistants, compounders, X-ray assistants, and others. Addressing this regulatory void becomes imperative for ensuring the quality and competence of paramedic professionals in the healthcare sector [26,27].

Challenges and Future Perspectives

Lack of infrastructure, shortage of efficient and trained manpower. Identification of training needs is a crucial aspect of our approach, ensuring that all personnel whose responsibilities may have a substantial impact on the environment undergo pertinent training. Emphasis is placed on the significance of adhering to paramedic policies and procedures, along with the fulfilment of paramedic requirements [28]. This commitment to training underscores our dedication to environmental responsibility and compliance within the paramedic framework. To achieve goals, a lot more needs to be done to develop a behavioral change in society regarding preparedness in Healthcare Service and response, missing links, and gap areas. Also, an ambience needs to be created to evoke community curiosity. There is a need in the Indian scenario to have a trained community health team, and also, a healthcare facility is needed to be more educated and trained for the specific purpose. Being prepared in healthcare is vital for addressing upcoming challenges, requiring solid infrastructure, adaptable systems, and skilled staff. Prioritizing prevention, timely resource allocation, and technology integration enhances response abilities. Collaborative involvement among governments, institutions, and communities' nurtures collective readiness. By learning from past crises, embracing innovation, and maintaining open communication, healthcare systems can effectively handle uncertainties and protect public health [29].

6. Conclusion

The research will give feedback to the policymakers on how to respond in future while keeping the precious frontline paramedics in a better, safe and secure environment. The healthcare system has recently initiated a more systematic approach to ensuring patient safety, highlighting a discernible need for enhancing the overall quality of care. There is a recognized imperative to improve the planning processes and deliver superior medical care. This underscores the commitment to advancing healthcare standards, emphasizing both patient safety and the

quality of medical services. Paramedical field research plays a vital role in advancing pre-hospital care, improving patient outcomes, and guiding evidence-based practices. It has the potential to bridge gaps in healthcare and promote equitable access to quality emergency medical services. Further investment in paramedical research is essential for continuous improvement and innovation in this critical field.

Therefore, there is an urgent need to provide a major boost to the scholarly publications and research in this area in India. The analysis appears to reveal that lack of professional prospects, lack of opportunities for career progression, inappropriate compensation, arduous working conditions, risk involved in the profession have been the crucial factors influencing little or no research on Paramedics.

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9. References

- Smith, Erin, Morgan, Australian journal, Risk Assessment natural disasters Paramedics Perceptions of risk and willingness to work during disasters. journal article 2009:24;3.
- SC Jones, L Waters, O Holland, J Bevins Developing pandemic communication strategies of business research, 2010 – Elsevier.
- Mulholland P, Barnett T, Spencer J. Interprofessional learning and rural paramedic care. Rural Remote Health. 2014;14(3):2821. Epub 2014 Jul 18. PMID: 25036770.
- Van Baal K, Schrader S, Wiese B, Geyer S, Stiel S, Schneider N, *et.al.* GPs' perspective on End-of-Life Care - an evaluation based on the German version of the General Practice End of Life Care Index. Ger Med Sci. 2020;16;18. 1-13.
- Bedson AM, Latter SM., Providing medicines in emergency and urgent care: a survey of specialist paramedics' experiences of medication supply and views on paramedic independent prescribing. Br Paramed J. 2018 December.
- Acker JJ, Johnston TM, Lazarsfeld-Jensen A, Industrial paramedics, out on site but not out of mind. Rural Remote Health. 2014;14(4):2856.
- Rhee JJ, Grant M, Senior H, Monterosso L, McVey P, Johnson C, *et.al.*, Facilitators and barriers to general practitioner and general practice nurse participation in end-of-life care: systematic review. BMJ Support Palliat Care. 2020 June.
- Whalen S, Goldstein J, Urquhart R, Carter AJE., The novel role of paramedics in collaborative emergency centres aligns with their professional identity: A qualitative analysis. CJEM. 2018 Jul;20(4):518-522.
- Martin AC, O'Meara P., Perspectives from the frontline of two North American community paramedicine programs: an observational, ethnographic study. Rural Remote Health. 2019 Feb;19(1):4888.
- Carter AJE, Harrison M, Goldstein J, Arab M, Jensen J, Houde K. *et.al.*, Providing palliative care at home aligns with the professional identity of paramedics: a qualitative study of paramedics and palliative health care providers., CJEM. 2022 Nov;24(7):751-759.
- Brydges M., Margaret D., Agarwal, G., The CHAP-EMS health promotion program: A qualitative study on participants' views of the role of paramedics. BMC Health Services Research. 2016;16:435; 2-9.
- Kelly-Ann B., Bill L., Brett W. Introducing, Designing and Conducting Research for paramedic Alexander Olaussen, Paperback Paramed1st Edition – August 2, 2022.
- Lau HS, Hollander MM, Cushman JT, DuGoff EH, Jones CMC, Kind AJH *et.al.*, Qualitative Evaluation of the Coach Training within a Community Paramedicine Care Transitions Intervention., Prehosp Emerg Care. 2018;22(4):527-534.
- Aveyard H.D., A literature review in health and social care a practical guide. 3rd edn. Maidenhead: McGraw-Hill/Open University Press; 2014
- O'Meara P, Duthie S., Paramedicine in Australia and New Zealand: A comparative overview. Aust J Rural Health. 2018;26(5):363-368.
- O'Meara P, Maguire B, Jennings P, Simpson P., Building an Australasian paramedicine research agenda: A narrative review. Health Res Policy Syst. 2015;15;13:79.
- Smith, Burele, Archer, A quantitative analysis of disaster, Specific of Paramedic Disaster medicine and public health preparedness. USA, Fear, familiarity and perception of risk: March 2011. Australia.
- Tavares W, LeBlanc VR, Mausz J, Sun V, Eva KW., Simulation-based assessment of paramedics and performance in real clinical contexts. Prehosp Emerg Care. 2014;18(1):116-22.
- Right Time, Right Place Health Communication Brigham Young University, Computational Health Science Research Group, Department of Health Science, Provo, UT, United States 15.11.12 in Vol 14, No 6 (2012).

20. Health Communication Activities in Europe for Communicable Disease Prevention: Results of the Translating Health Communications Project Reputation, Relationships, Risk Communication, and the Role of Trust in the Prevention and Control of Communicable Disease: A Review Georgina Cairns, Marisa de Andrade & Laura MacDonald. 3 Dec. 2013:
21. Jacob, Lalit, Vinod and Manish K., Continuing challenge of infectious diseases in India. *the Lancet*, science direct journals, Jan. 2011.
22. Lisa Young, Paramedics confidences and infectious diseases pandemics, article, university of Canada, Oct 2017.
23. El-Hage W, Hingray C, Lemogne C, Yrondi A, Brunault P, Bienvenu T. et.al., Health professionals facing the coronavirus disease 2019 (COVID-19) pandemic, *Aouizerate B.Encephale*. 2020 Jun;46(3S):S73-S80.
24. Thomas B, O'Meara P, Spelten E., Everyday Dangers - The Impact Infectious Disease has on the Health of Paramedics: A Scoping Review. *Prehosp Disaster Med*. 2017;32(2):217-223.
25. Toner E., Healthcare Preparedness: Saving Lives. *Health Secur*. 2017 Jan/Feb;15(1):8-doi: 10.1089/hs.2016.0090. Epub 2017 Jan 16.PMI.
26. World Health Organization. WHO Issues a Global Alert About Cases of Atypical Pneumonia: Cases of Severe Respiratory Illness May Spread to Hospital Staff. Geneva: World Health Organization; 2003. Available at www.who.org.Google Scholar
27. Public Health Emergency Preparedness Cooperative Agreements. Centres for Disease Control and Prevention, Office of Public Health Preparedness and Response webpage. <http://www.cdc.gov/phpr/archive.htm> Accessed November 28, 2016
28. Ilczak T., Rak M., Ćwiertnia M., Mikulska M., Waksmańska W., Krakowiak A. et.al., Predictors of stress among emergency medical personnel during the COVID-19 pandemic., *Int J Occup Med Environ Health*. 2021 May 27;34(2):139-149.
29. Dubey S., Biswas P., Ghosh R., Chatterjee S., Dubey MJ., Chatterjee S. et.al., Critical care in India, *Diabetes Metab Syndr*. 2020 Sep-Oct;14(5):779-788.