

United Frontline Of Healthcare: A Comprehensive Review Of The Roles, Contributions, And Collaborative Impact Of All Medical Workers In Advancing Patient Care, Quality, And System Sustainability

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Abstract

Medical workers represent the backbone of healthcare systems, encompassing physicians, nurses, pharmacists, laboratory staff, radiologists, paramedics, allied health professionals, and administrative teams. This review provides a comprehensive exploration of their collective roles and contributions in advancing patient care, improving healthcare quality, and promoting system sustainability. By examining evidence from multidisciplinary perspectives, the article highlights how interprofessional collaboration enhances patient outcomes, reduces medical errors, and fosters resilience in health systems. Key themes include the unique and overlapping responsibilities of diverse healthcare professionals, the integration of evidence-based practice, and the adoption of innovative models of teamwork. The review concludes with implications for policy, education, and leadership in ensuring a unified healthcare workforce prepared to meet 21st-century challenges.

Keywords: medical workers, healthcare collaboration, patient care, system sustainability, interprofessional teamwork, healthcare quality.

Introduction

Healthcare systems worldwide rely on a diverse and interdependent workforce collectively referred to as medical workers, including physicians, nurses, pharmacists, laboratory specialists, radiologists, paramedics, allied health professionals, and administrative staff. Each of these professionals plays a unique role in ensuring patient care, yet their collaborative integration determines the overall quality, efficiency, and sustainability of healthcare delivery (Frenk et al., 2010). The notion of a united frontline of healthcare emphasizes the critical importance of teamwork and interprofessional collaboration in facing contemporary challenges in medicine and public health.

The 21st century has introduced unprecedented pressures on healthcare systems. Populations are aging, the burden of chronic diseases continues to rise, and global crises such as the COVID-19 pandemic have exposed vulnerabilities in healthcare infrastructure (World Health Organization [WHO], 2020). Addressing these issues requires coordinated contributions from all categories of

medical workers, extending beyond physicians and nurses to include laboratory and diagnostic staff, pharmacists ensuring medication safety, and administrative personnel who manage logistics and resources (Bodenheimer & Sinsky, 2014).

Interprofessional collaboration is increasingly recognized as a cornerstone of high-quality healthcare. Evidence suggests that multidisciplinary teamwork reduces medical errors, enhances patient outcomes, and increases workforce satisfaction (Reeves et al., 2017; Zwarenstein et al., 2009). Moreover, healthcare institutions that adopt collaborative models are better equipped to implement evidence-based practices, integrate technological innovations, and maintain continuity of care (Institute of Medicine [IOM], 2015). These benefits demonstrate that medical workers, when functioning collectively, are not only providers of individual services but also architects of system resilience and sustainability.

Despite its importance, interprofessional collaboration faces persistent barriers, including professional silos, communication challenges, and unequal recognition of roles (Willis et al., 2018). These barriers can undermine system performance and compromise patient safety. As healthcare becomes more complex, the need to acknowledge, strengthen, and integrate the contributions of all medical workers has become a pressing global priority.

The purpose of this review is to provide a comprehensive analysis of the roles, contributions, and collaborative impact of all medical workers in advancing patient care, improving healthcare quality, and ensuring system sustainability. By synthesizing current evidence and examining multidisciplinary perspectives, this article highlights how a united healthcare workforce forms the backbone of effective, patient-centered, and resilient healthcare systems.

Methodology

This review employed an integrative review approach to provide a comprehensive synthesis of existing evidence on the roles, contributions, and collaborative impact of medical workers in advancing healthcare outcomes and system sustainability. The integrative design was chosen because it allows for the inclusion of both empirical and theoretical studies, offering a holistic understanding of multidisciplinary collaboration in healthcare (Whittemore & Knafl, 2005).

The literature search was conducted across four major databases—PubMed, Scopus, Web of Science, and CINAHL—to ensure broad coverage of medical, nursing, and allied health research. The search strategy included combinations of keywords such as medical workers, healthcare workforce, interprofessional collaboration, patient outcomes, healthcare quality, and system sustainability. Publications were limited to the period between 2010 and 2025 to capture contemporary developments, with a focus on studies in English.

Inclusion criteria comprised peer-reviewed articles, systematic reviews, policy reports, and conceptual papers that examined the role of one or more categories of medical workers in relation to patient care, healthcare quality, or system sustainability. Exclusion criteria included studies that narrowly focused on one profession without addressing its broader system-level implications, conference abstracts without full text, and non-peer-reviewed commentaries.

A thematic analysis was employed to organize findings into three domains: (1) roles and contributions of medical workers, (2) collaborative impact on patient care and quality, and (3) collaborative impact on healthcare system sustainability. This process ensured that the review not only highlighted individual contributions but also emphasized the synergistic effects of interprofessional collaboration, offering insights relevant to policymakers, educators, and healthcare leaders.

Roles and Contributions of Medical Workers

Medical workers encompass a broad and diverse group of professionals whose collective contributions form the foundation of healthcare delivery. Physicians are often regarded as central

figures in clinical decision-making, diagnosis, and treatment planning. Their role extends beyond individual patient care to leadership within multidisciplinary teams, ensuring that clinical standards are maintained and that evidence-based practices are effectively implemented (Epstein & Street, 2011). Nurses, who represent the largest proportion of the global healthcare workforce, provide continuous, patient-centered care that integrates clinical expertise with holistic support, emphasizing health promotion, patient education, and advocacy (Aiken et al., 2014). Their presence at the bedside positions them as vital contributors to safety, quality, and the emotional dimensions of care.

Pharmacists play an equally crucial role by safeguarding medication use, preventing adverse drug events, and promoting rational pharmacotherapy. Through active participation in clinical rounds and direct patient counseling, pharmacists strengthen the therapeutic alliance and contribute to improved treatment adherence (Alomi, 2017). Laboratory and radiology professionals provide the diagnostic backbone of healthcare systems, generating essential data that guide medical decisions. Their expertise ensures accuracy and reliability in detecting disease, monitoring progress, and informing evidence-based interventions (Hallworth, 2011).

Paramedics and emergency medical staff extend healthcare beyond hospital walls, providing rapid pre-hospital interventions that reduce mortality and improve survival in emergencies. Their ability to stabilize patients in critical conditions highlights their indispensable role in the continuum of care (Sasser et al., 2012). Allied health professionals, including physiotherapists, occupational therapists, and dietitians, contribute to recovery, rehabilitation, and long-term wellness by addressing functional limitations and promoting lifestyle modifications (World Health Organization, 2010). Administrative and support staff, though often overlooked, enable the seamless operation of healthcare institutions through effective resource allocation, patient coordination, and logistical management.

Together, these professionals form a unified network where the integration of diverse expertise enhances healthcare delivery. Their interdependent contributions demonstrate that healthcare is not the result of isolated practices but rather the outcome of collaboration across multiple disciplines. This synergy underscores the importance of recognizing and empowering all categories of medical workers in order to achieve sustainable, resilient, and high-quality healthcare systems (Reeves et al., 2017).

Collaborative Impact on Patient Care

The quality of patient care is increasingly recognized as a collective achievement rather than the result of individual effort. Collaborative practice among medical workers ensures that patients benefit from a holistic and coordinated approach to treatment, one that integrates diverse professional perspectives and expertise. When physicians, nurses, pharmacists, laboratory staff, radiologists, paramedics, and allied health professionals work together, the patient experience is enriched by comprehensive assessments, accurate diagnoses, safe interventions, and continuous monitoring across the continuum of care (Frenk et al., 2010).

Evidence consistently shows that interprofessional collaboration reduces medical errors and improves patient outcomes. For example, integrated teams have been linked with reductions in hospital mortality, shorter lengths of stay, and lower rates of hospital-acquired infections (Bodenheimer & Sinsky, 2014). Nurses, working closely with physicians and pharmacists, play a central role in ensuring medication safety by detecting prescribing errors and monitoring adverse effects. Similarly, laboratory and diagnostic experts provide timely and reliable data that allow clinical teams to respond rapidly to changes in patient conditions (Hallworth, 2011). The collaboration between paramedics and hospital-based teams has also been critical in acute care, particularly in reducing pre-hospital delays for stroke and cardiac patients, which directly improves survival rates and long-term recovery (Sasser et al., 2012).

Beyond clinical effectiveness, collaboration fosters a patient-centered model of care that emphasizes communication, shared decision-making, and continuity. Patients treated by multidisciplinary teams report higher satisfaction levels because they perceive their care as more coordinated, respectful, and responsive to their needs (Reeves et al., 2017). Chronic conditions such as diabetes, cardiovascular disease, and cancer particularly benefit from collaborative care models, where ongoing management requires not only medical intervention but also dietary counseling, physiotherapy, psychological support, and social services. This integrated approach not only improves health outcomes but also enhances patients' ability to manage their conditions effectively.

The collaborative impact on patient care also extends to the emotional and psychological dimensions of healing. By engaging multiple professionals who address different aspects of patient well-being, the healthcare system delivers a more humanized and compassionate form of care. This integration of efforts demonstrates that patient outcomes are maximized when medical workers operate not in isolation but as a united frontline, where each role is respected and leveraged to its fullest capacity (Zwarenstein et al., 2009).

Collaborative Impact on Healthcare Quality

Healthcare quality is increasingly defined by its ability to deliver safe, effective, patient-centered, timely, efficient, and equitable care, and these dimensions cannot be achieved without the collective efforts of medical workers across disciplines. Collaboration enhances quality by integrating diverse forms of expertise, reducing fragmentation of care, and strengthening systems of accountability. A unified approach enables healthcare teams to anticipate risks, standardize protocols, and embed evidence-based practices into daily operations, which directly contributes to improvements in clinical outcomes and patient safety (Institute of Medicine [IOM], 2001).

One of the most significant ways collaboration impacts quality is through the reduction of medical errors. Studies show that when physicians, nurses, and pharmacists work together in medication management, the incidence of adverse drug events decreases significantly, leading to improved safety and more consistent therapeutic outcomes (Bates et al., 1999). Similarly, the integration of laboratory and radiology professionals into decision-making processes ensures diagnostic accuracy, reducing delays and misdiagnoses that can compromise care quality (Hallworth, 2011). Paramedics and emergency medical teams contribute by ensuring rapid triage and accurate information transfer to hospital staff, which enhances continuity of care and reduces preventable complications (Sasser et al., 2012).

Collaboration also plays a central role in achieving accreditation and maintaining quality standards. Many international accreditation frameworks, such as those promoted by the Joint Commission, emphasize the importance of multidisciplinary teamwork in meeting benchmarks of safety, infection control, and patient-centered communication (The Joint Commission, 2021). Team-based approaches foster a culture of shared responsibility where administrative staff and clinical workers collaborate to align resources, workflows, and policies, ensuring that quality is not an isolated clinical goal but an organizational priority.

In addition to improving outcomes and safety, collaboration strengthens the efficiency and equity of healthcare services. Efficient allocation of resources—whether staffing, equipment, or finances—requires coordination across departments, while equitable care is achieved by integrating social workers, community health practitioners, and allied professionals who address the social determinants of health. Through these mechanisms, interprofessional collaboration advances healthcare quality beyond the clinical setting, reinforcing healthcare systems as adaptive, resilient, and responsive to patient and community needs (Reeves et al., 2017).

Collaborative Impact on System Sustainability

Sustainability in healthcare systems refers to their capacity to maintain high-quality services over time while adapting to evolving demands, resource constraints, and unforeseen crises. Medical workers across all disciplines collectively ensure sustainability by pooling their expertise, optimizing resource use, and creating resilient structures that can withstand demographic, epidemiological, and economic pressures. Collaboration, therefore, is not only a means to enhance immediate patient outcomes but also a critical mechanism for safeguarding the long-term viability of health systems (World Health Organization [WHO], 2016).

One key aspect of sustainability is the resilience of the healthcare workforce. Interprofessional collaboration distributes workload across diverse professionals, reducing burnout and fostering job satisfaction. Studies have shown that collaborative environments improve retention rates of healthcare staff, addressing one of the most pressing threats to system sustainability: workforce shortages (Bodenheimer & Sinsky, 2014). By engaging all categories of workers—from physicians and nurses to pharmacists, laboratory staff, and administrators—health systems are better able to adapt flexibly to surges in demand, such as during pandemics or natural disasters (Shanafelt et al., 2020).

Another dimension of sustainability is efficient resource utilization. Collaborative decision-making helps avoid duplication of services, reduces unnecessary testing, and ensures appropriate allocation of equipment and medications. For instance, when physicians, laboratory staff, and pharmacists coordinate effectively, diagnostic and treatment processes are streamlined, minimizing waste while maintaining accuracy and safety (Berwick & Hackbarth, 2012). This efficiency not only saves costs but also enables reinvestment in preventive and innovative healthcare strategies.

Digital transformation has further demonstrated how collaboration sustains healthcare systems by integrating electronic health records, telemedicine, and artificial intelligence tools into interprofessional workflows. These technologies enhance communication, enable real-time data sharing, and promote continuity of care, especially for patients with chronic or complex conditions (Topol, 2019). Such innovations highlight that system sustainability depends on the willingness of all medical workers to adapt and collaborate within technologically enabled environments.

Lastly, collaboration underpins the equity and inclusivity of healthcare systems, ensuring that vulnerable populations are not left behind. By involving community health workers, social care professionals, and allied health staff, healthcare delivery extends beyond hospitals into communities, addressing social determinants of health. This approach enhances population health outcomes and reduces long-term demand for high-cost hospital-based care, reinforcing sustainability at both system and societal levels (Marmot et al., 2020).

In summary, collaborative practice strengthens system sustainability by fostering workforce resilience, improving efficiency, embracing innovation, and expanding equity. A united frontline of medical workers thus ensures that healthcare systems remain capable, adaptable, and sustainable in the face of current and future challenges.

Conceptual Framework

To synthesize the findings of this review, a conceptual framework has been developed to illustrate the interconnections between the roles of medical workers, the mechanisms of collaboration, and the resulting outcomes in patient care, healthcare quality, and system sustainability. The framework positions medical workers as the core input of healthcare systems, highlighting their diversity, complementary skills, and shared responsibility. It emphasizes that no single category of professional can ensure optimal outcomes in isolation, but rather that system performance depends on synergistic collaboration across all disciplines.

The framework operates through three main mechanisms: communication, evidence-based practice, and interprofessional teamwork. Communication ensures accurate information sharing between physicians, nurses, pharmacists, laboratory staff, paramedics, allied health workers, and

administrative teams. Evidence-based practice provides a common foundation for decision-making, integrating clinical expertise with research findings. Interprofessional teamwork links these mechanisms by fostering trust, mutual respect, and shared accountability, which collectively strengthen healthcare delivery.

The outputs of this framework are categorized into three domains. First, patient care benefits through improved safety, reduced errors, faster recovery, and greater satisfaction. Second, healthcare quality is enhanced via consistent standards, efficiency, and accreditation readiness. Finally, system sustainability is achieved through resilience of the workforce, optimized use of resources, adaptability to crises, and long-term equity in healthcare delivery.

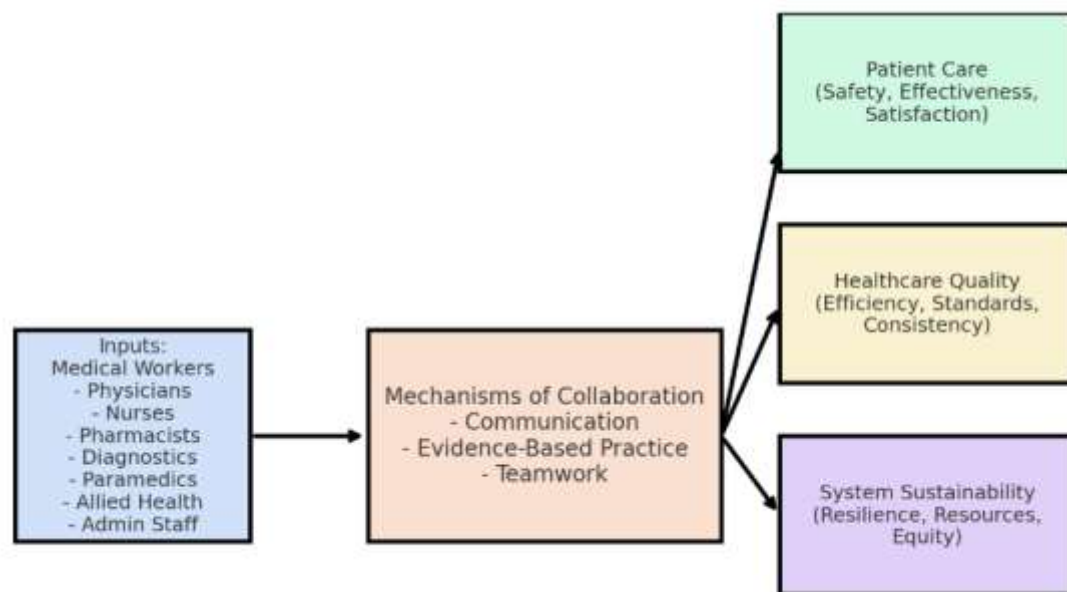


Figure 1. Conceptual Framework of the United Frontline of Healthcare

Discussion

The findings of this review underscore the critical role of collaboration among all categories of medical workers in advancing patient care, healthcare quality, and system sustainability. A recurring theme is that no single professional group, regardless of expertise, can independently achieve the complex objectives of modern healthcare. Instead, it is through interprofessional collaboration that the system's potential is fully realized. By integrating diverse roles and expertise, medical workers form a united frontline capable of addressing both immediate clinical needs and broader system-level challenges (Frenk et al., 2010).

One of the most significant insights is that collaboration not only improves clinical outcomes but also mitigates risks. Studies demonstrate that team-based approaches reduce diagnostic and medication errors, improve continuity of care, and enhance patient satisfaction (Zwarenstein et al., 2009; Reeves et al., 2017). For example, the integration of pharmacists into care teams has been shown to reduce adverse drug events, while the collaboration between laboratory specialists and clinicians improves diagnostic accuracy and timeliness. Similarly, the inclusion of allied health professionals and administrative staff broadens the scope of care to address both functional and social determinants of health, leading to more comprehensive and equitable services (Marmot et al., 2020).

Despite these benefits, barriers to collaboration persist. Professional hierarchies, role ambiguity, and inadequate communication channels often reinforce siloed practices that undermine teamwork. Nurses and allied health workers, for instance, frequently report undervaluation of their

contributions, which can hinder motivation and limit their integration into decision-making processes (Willis et al., 2018). Additionally, resource limitations, workforce shortages, and uneven training in interprofessional education create challenges in sustaining collaborative models across diverse healthcare contexts. Overcoming these barriers requires cultural change within healthcare organizations, as well as policy frameworks that promote equal recognition of all medical workers and encourage shared accountability (Institute of Medicine, 2015).

Another critical dimension highlighted in this review is the role of collaboration in workforce well-being and system resilience. The COVID-19 pandemic revealed both the fragility and adaptability of healthcare systems, with interprofessional collaboration serving as a vital mechanism for responding to crisis demands. Teams that functioned collaboratively were better able to distribute workload, prevent burnout, and adapt to resource shortages (Shanafelt et al., 2020). This reinforces the importance of cultivating collaborative cultures not only for patient outcomes but also for sustaining the workforce that underpins healthcare delivery.

Looking forward, collaboration must evolve alongside technological and demographic shifts. Digital health innovations, such as electronic health records, telemedicine, and artificial intelligence, have the potential to transform collaborative practices by facilitating real-time communication and integrated care pathways (Topol, 2019). However, technology cannot replace the human dimensions of trust, respect, and shared values that are foundational to collaboration. Educational reforms that embed interprofessional training at undergraduate and postgraduate levels will be essential for preparing future healthcare workers to operate effectively in multidisciplinary teams (Reeves et al., 2017).

In conclusion, the discussion highlights that interprofessional collaboration is not a luxury but a necessity for modern healthcare. While barriers remain, the evidence demonstrates that collaboration improves patient safety, enhances quality, and ensures long-term sustainability. Future strategies must prioritize cultural transformation, policy support, and education to embed collaboration as a core pillar of healthcare systems worldwide.

Conclusion

This review has highlighted the essential role of medical workers as the united frontline of healthcare, emphasizing that system success depends not on isolated contributions but on synergistic collaboration across all professional categories. Physicians, nurses, pharmacists, laboratory specialists, radiologists, paramedics, allied health professionals, and administrative staff collectively contribute to the advancement of patient care, the enhancement of healthcare quality, and the sustainability of health systems. Their combined expertise ensures that patients receive safe, effective, and compassionate care while health systems maintain resilience in the face of demographic, economic, and public health challenges.

The evidence confirms that collaboration reduces medical errors, strengthens diagnostic and therapeutic accuracy, and elevates patient satisfaction. Furthermore, interprofessional teamwork contributes to improved efficiency, streamlined resource utilization, and alignment with global quality standards. Perhaps most importantly, collaboration enhances system sustainability by fostering workforce resilience, reducing burnout, and promoting adaptability during crises such as the COVID-19 pandemic. These findings reaffirm that the collective contributions of all medical workers are indispensable to creating healthcare systems that are both equitable and enduring.

Nonetheless, barriers such as professional hierarchies, siloed practices, and insufficient interprofessional training remain obstacles to fully realizing collaborative potential. Addressing these challenges requires deliberate cultural change within healthcare organizations, policy frameworks that elevate the recognition of all professional roles, and investment in interprofessional education.

In conclusion, a united healthcare workforce is central to the pursuit of safer, higher-quality, and more sustainable healthcare systems. By valuing the contributions of every medical worker and fostering collaboration across disciplines, healthcare institutions can achieve not only better patient outcomes but also the long-term resilience required to meet the evolving demands of global health.

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