

## Addressing the Shortage of Healthcare Professionals in Saudi Arabia Strategies and Solutions

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### Abstract:

The shortage of healthcare professionals in Saudi Arabia poses a significant challenge to the country's healthcare system, particularly in light of its expanding population and increasing demand for medical services. To address this issue, the Saudi government has implemented several strategies aimed at enhancing the supply of healthcare workers. Key initiatives include increasing investment in medical education and training programs, enhancing incentives for healthcare professionals to work in underserved areas, and streamlining the process for foreign healthcare workers to practice in the kingdom. By expanding existing medical schools and launching new training programs, Saudi Arabia aims to improve the quality and quantity of healthcare professionals entering the workforce. In addition to educational enhancements, strategic partnerships with international healthcare organizations can provide valuable insights and resources to bolster the local workforce. Implementing retention strategies, such as competitive salaries, professional development opportunities, and improved working conditions, can help ensure that healthcare professionals remain within the country. Furthermore, leveraging technology through telemedicine can alleviate some pressures on healthcare facilities by enabling remote consultations and follow-ups. By adopting a multifaceted approach that combines education, incentives, and technological advancements, Saudi Arabia can effectively address the shortage of healthcare professionals and improve health outcomes for its population.

**Keywords:** Healthcare shortage, Saudi Arabia, training programs, incentives, underserved areas, foreign healthcare workers, retention strategies, competitive salaries, telemedicine.

### Introduction:

The healthcare sector in Saudi Arabia has undergone significant transformations in recent decades, driven by economic growth, rapid population expansion, and evolving healthcare needs. However, the

country is currently facing a critical shortage of healthcare professionals, a challenge that poses a serious threat to the sustainability of its healthcare system and the overall well-being of its citizens. As the government aims to provide high-quality

healthcare services to improve health outcomes, the critical shortage of healthcare personnel necessitates urgent attention, strategic planning, and the implementation of effective solutions [1].

One of the foremost contributors to the shortage of healthcare professionals in Saudi Arabia is the significant gap between the growing population's healthcare needs and the available workforce. The country has experienced rapid population growth, currently reaching over 34 million people, with a sizable proportion comprising youth and aging demographics that require varied healthcare services. This burgeoning population demands comprehensive and specialized healthcare services, intensifying the need for a skilled workforce. Moreover, the Kingdom's Vision 2030 initiative, which aims to reform healthcare delivery and improve the quality of services, has further exacerbated the pressure on healthcare personnel as new strategies require a broad array of skills and specialized training [2].

Additionally, several systemic challenges have contributed to the persistent shortage. These challenges include the relatively low attractiveness of the medical profession due to factors such as long working hours, increasing workloads, and limited opportunities for professional development. Many healthcare professionals, particularly those in primary care, opt to seek opportunities abroad, enticed by better working conditions and favorable economic factors. This exodus adds another layer of complexity to the existing labor market dynamics in the Kingdom, necessitating both immediate and long-term solutions to retain talent and attract new professionals into the sector [3].

Furthermore, educational shortcomings in the training of healthcare professionals play a critical role in this workforce crisis. While the Kingdom has made substantial investments in medical education and training programs, there remains a gap in the number of graduates produced each year relative to the demand. Academic institutions often face challenges such as outdated curricula, insufficient clinical training opportunities, and a mismatch between educational outcomes and the evolving needs of the healthcare system. Addressing these educational barriers is paramount to enhancing the supply of skilled healthcare professionals qualified to meet the demands of the population [4].

The implications of this shortage are multifaceted and far-reaching, impacting not solely the efficiency and effectiveness of healthcare delivery but also encompassing patient outcomes, satisfaction, and the overall healthcare experience. Delays in receiving care, increased patient-to-provider ratios, and overstretched healthcare facilities can lead to subpar healthcare experiences, contributing to negative health outcomes across the population. Moreover, a shortage of healthcare professionals can hinder the Kingdom's ability to execute important public health initiatives, manage chronic diseases, and respond adequately to emergencies and pandemics [5].

In light of these challenges, addressing the shortage of healthcare professionals in Saudi Arabia requires a comprehensive approach that employs a range of strategies and solutions. Potential avenues include optimizing workforce distribution, enhancing educational frameworks, investing in retention strategies, and utilizing technology to augment the workforce. By examining successful models from other countries and adapting them to the unique context of Saudi Arabia, the Kingdom can devise targeted strategies to develop a healthcare workforce that is well-equipped to meet the growing demands of its population [6].

### **Current State of Healthcare Professionals in Saudi Arabia:**

The healthcare system in Saudi Arabia has undergone significant transformations over the past few decades, largely driven by the government's commitment to improving public health outcomes and expanding healthcare access [7].

### **Overview of the Healthcare System**

Saudi Arabia's healthcare system is primarily public, funded by the government, which allocates a substantial portion of its budget to health services. The Ministry of Health (MoH) oversees the public healthcare sector, while a growing number of private healthcare facilities complement these services. The country has made remarkable strides in healthcare delivery, evidenced by improved health indicators such as life expectancy, maternal and child health, and the control of communicable diseases [8].

### **Education and Training of Healthcare Professionals**

The education and training of healthcare professionals in Saudi Arabia are crucial for maintaining a robust healthcare system. The Kingdom has established numerous medical and nursing schools, both public and private, to produce qualified healthcare workers. The King Saud University, King Abdulaziz University, and the University of Dammam are among the leading institutions that offer comprehensive medical programs [9].

In recent years, there has been a significant emphasis on enhancing the quality of education for healthcare professionals. The introduction of the Saudi Commission for Health Specialties (SCFHS) has standardized the accreditation process for medical and healthcare training programs. This has led to the establishment of residency programs and continuing medical education (CME) initiatives that ensure healthcare professionals remain updated with the latest medical advancements and practices [9].

Despite these advancements, there are still gaps in the education and training processes. Many healthcare professionals express concerns about the quality of practical training and the need for more hands-on experience during their studies. Additionally, the rapid growth of the healthcare sector has created a demand for specialized training programs, particularly in fields like geriatrics, palliative care, and mental health, which are still developing within the Kingdom [10].

### **Workforce Dynamics**

The healthcare workforce in Saudi Arabia comprises a diverse mix of professionals, including physicians, nurses, pharmacists, and allied health workers. As of the latest statistics, the country has made notable progress in increasing the number of healthcare professionals. However, the ratio of healthcare workers to the population still lags behind international standards. The World Health Organization (WHO) recommends a minimum of 2.5 healthcare workers per 1,000 population, whereas Saudi Arabia currently stands at approximately 1.5 per 1,000 [11].

One of the significant challenges in the healthcare workforce is the heavy reliance on expatriate professionals. A large percentage of physicians and nurses in Saudi Arabia are foreign nationals, primarily from countries such as Egypt, India, and the Philippines. This reliance on expatriates can

create challenges in terms of cultural competence, language barriers, and the continuity of care, especially as the government aims to localize the workforce through initiatives like Saudization [11].

Saudization, part of the broader Vision 2030 initiative, aims to increase the number of Saudi nationals in the workforce, including healthcare. The government has implemented various programs to encourage local talent to enter the healthcare field, including scholarships, training programs, and job placement services. However, the transition to a more localized workforce is gradual and requires sustained efforts to ensure that Saudi graduates are adequately prepared to meet the demands of the healthcare system [12].

### **Challenges Facing Healthcare Professionals**

Despite the advancements in the healthcare sector, several challenges hinder the optimal functioning of healthcare professionals in Saudi Arabia. One of the primary issues is the high workload and burnout experienced by many healthcare workers. The rapid expansion of healthcare facilities and the increasing patient population have placed significant pressure on healthcare professionals, leading to long working hours and high-stress environments [12].

Moreover, there is a growing concern regarding the retention of healthcare professionals. Many expatriate workers face uncertainties related to job security, visa regulations, and the lack of career advancement opportunities, prompting some to seek employment in other countries. For Saudi nationals, the challenge lies in the competitive job market and the need for ongoing professional development to keep pace with advancements in medical science and technology [13].

Another critical challenge is the mental health of healthcare professionals, exacerbated by the COVID-19 pandemic. The pandemic has highlighted the importance of mental health support for healthcare workers, who often face traumatic experiences while managing patients during crises. Recognizing this, the Saudi government has started to implement mental health programs aimed at supporting healthcare professionals, but further efforts are necessary to ensure comprehensive mental health services are available [14].

### **Recent Reforms and Future Directions**

In response to the challenges faced by healthcare professionals, the Saudi government has initiated several reforms aimed at enhancing the healthcare system. The Vision 2030 framework emphasizes the importance of improving healthcare quality, increasing the efficiency of services, and fostering a healthier population. Key initiatives include the introduction of telemedicine, which has gained traction during the COVID-19 pandemic, and the development of health insurance coverage to ensure broader access to healthcare services [15].

Additionally, the government is investing in research and development to promote innovation in healthcare. This includes partnerships with international institutions and private sector involvement to enhance the capabilities of the healthcare workforce. The establishment of specialized centers of excellence in various medical fields is also part of the strategy to attract and retain top talent [15].

### **Role of Foreign Healthcare Workers in Bridging the Gap:**

The global healthcare landscape is characterized by complex challenges, including workforce shortages, increasing demand for services, and disparities in access and quality of care. In response to these multifaceted issues, foreign healthcare workers have emerged as critical players in bridging the gap between the availability of healthcare services and the needs of diverse populations [16].

### **Addressing Workforce Shortages**

The World Health Organization (WHO) has identified a significant global shortage of healthcare workers, particularly in low- and middle-income countries (LMICs). According to WHO estimates, there is a need for an additional 18 million health workers by 2030 to meet the global target of universal health coverage. This gap is often exacerbated by socioeconomic factors, including inadequate training facilities, poor working conditions, and low salaries, which deter local individuals from pursuing careers in healthcare [17].

Foreign healthcare workers play a pivotal role in alleviating these shortages, particularly in underserved areas. Countries such as the United States, Canada, and the United Kingdom actively recruit healthcare professionals from abroad to fill positions in nursing, medicine, and allied health

services. These workers bring valuable skills, experience, and diversity to healthcare environments, ensuring that patients receive comprehensive care even in regions grappling with workforce deficits. For instance, during the COVID-19 pandemic, many countries relied heavily on foreign healthcare workers to sustain their healthcare systems under unprecedented stress, highlighting their importance in crisis situations [18].

### **Enhancing Cultural Competence**

Cultural competence—the ability to effectively deliver healthcare services that meet the social, cultural, and linguistic needs of patients—is essential for providing high-quality care. As healthcare systems continue to diversify, foreign healthcare workers help bridge cultural divides between providers and patients. They bring unique perspectives and knowledge of their communities, which is crucial in developing and implementing culturally sensitive care approaches [19].

For example, foreign healthcare workers are often more familiar with the cultural beliefs and practices of specific patient populations, enabling them to communicate more effectively and provide care that aligns with patients' values. This not only improves patient satisfaction but also enhances treatment adherence and health outcomes. Studies have shown that patients are more likely to engage with providers who understand their cultural context, thereby reducing disparities in health access and outcomes among marginalized communities [20].

Moreover, the integration of foreign healthcare professionals fosters a culturally competent workforce. Their presence encourages local workers to enhance their cultural awareness and sensitivity, leading to a more inclusive healthcare environment. Training programs that incorporate insights from foreign workers can help all providers learn best practices in cultural competence, ultimately benefiting the overall quality of care [21].

### **Promoting Diverse Healthcare Practices**

Healthcare is not monolithic; it encompasses a wide range of practices influenced by varying cultural beliefs and medical traditions. Foreign healthcare workers contribute to the richness of the healthcare landscape by introducing diverse medical practices and perspectives. Their experiences in different

health systems may lead to innovative approaches to treatment and care delivery [22].

For instance, the integration of traditional medicine alongside conventional treatment protocols can offer comprehensive care options for patients. In countries where certain cultural practices are prevalent, foreign healthcare workers may advocate for the inclusion of traditional healing methods, provided they align with evidence-based practices. This pluralistic approach not only respects the cultural identity of patients but also broadens the scope of treatment options available [23].

Additionally, the cross-pollination of ideas among healthcare professionals from varied backgrounds can lead to improved problem-solving in clinical settings. Collaboration among diverse teams has been shown to enhance creativity and innovation, ultimately fostering a dynamic healthcare environment that is better equipped to address the complexities of patient care [23].

#### **Ethical Considerations and Challenges**

While the contributions of foreign healthcare workers are indispensable, their integration into health systems raises ethical considerations and challenges. One significant concern is the “brain drain” phenomenon, where resource-poor countries lose their skilled professionals to wealthier nations, exacerbating the very workforce shortages they are trying to overcome. This loss can severely affect healthcare quality in their home countries and perpetuate cycles of poverty and health inequity [23].

To address this issue, some countries have implemented measures to promote ethical recruitment practices. Initiatives such as the WHO’s Global Code of Practice on the International Recruitment of Health Personnel encourage transparent hiring processes and emphasize the importance of investing in local healthcare workforce development. Countries that recruit foreign healthcare workers should also engage in capacity-building efforts to ensure that these professionals are supported in their new environments and that their skills can be effectively utilized [24].

Moreover, foreign healthcare workers may face challenges related to credential recognition and working conditions in host countries. Navigating

licensing requirements and securing appropriate positions can be daunting, often leading to underemployment or work in roles that do not fully utilize their training. Addressing these barriers requires collaborative efforts among regulatory bodies, professional associations, and healthcare institutions to streamline licensing processes and create support systems that facilitate the integration of foreign workers [25].

#### **Future Outlook**

As the demand for healthcare services continues to grow, the role of foreign healthcare workers is likely to expand further. As we move toward an increasingly interconnected world, it will be essential for health systems to embrace diversity and inclusivity, recognizing the invaluable contributions these workers offer. Initiatives aimed at fostering international collaboration in medical education and training can also help ensure a more equitable distribution of healthcare personnel across borders [26].

#### **Public-Private Partnerships in Healthcare Workforce Development:**

In today’s rapidly evolving healthcare landscape, the importance of a well-trained and adequately staffed healthcare workforce cannot be overstated. As populations grow, healthcare demands increase, and technology advances at an unprecedented pace, the need for a collaborative approach to workforce development has never been more critical. Public-private partnerships (PPPs) offer innovative frameworks for addressing these challenges, enabling the convergence of resources, expertise, and strategic objectives from both the public sector and private industry [27].

Public-Private Partnerships are collaborative agreements between government entities and private sector organizations designed to deliver public services or infrastructure. In the context of healthcare workforce development, these partnerships are forged to create a skilled workforce that can meet the needs of the healthcare system. They leverage the strengths of both sectors: public institutions typically have access to policy-making and funding mechanisms, while private entities bring industry insight, operational efficiency, and innovative practices [27].

#### **The Need for Workforce Development**

The demand for healthcare services continues to surge due to a multitude of factors, including an aging population, the rise of chronic diseases, and the increasing complexity of healthcare delivery. According to the U.S. Bureau of Labor Statistics, employment in healthcare occupations is projected to grow by 16 percent from 2020 to 2030, adding approximately 2.6 million new jobs. This explosive growth underscores the urgent need for targeted workforce development initiatives to ensure that there are enough trained professionals across various healthcare sectors, including nursing, physician assistants, allied health, and administrative roles [28].

### **Benefits of Public-Private Partnerships in Workforce Development**

1. **Resource Pooling:** One of the primary advantages of PPPs is the ability to pool resources from both public and private sectors. This collaboration allows for increased funding for training programs, educational initiatives, and workforce planning. By leveraging the financial stability of private companies and the funding capabilities of governments, these partnerships can create more comprehensive training frameworks [29].
2. **Curriculum Development:** PPPs can facilitate the development of curricula that reflect the current and future needs of the healthcare industry. By involving industry leaders, educational institutions can align their training programs with the competencies sought by employers, ensuring graduates are job-ready and equipped with relevant skills.
3. **Innovation and Flexibility:** The private sector is often driven by competitiveness and innovation. By integrating these principles into workforce development, PPPs can foster creative approaches to training and education, embracing new technologies such as telemedicine, artificial intelligence, and simulation-based training that enhance the learning experience [30].
4. **Addressing Shortages in Underserved Areas:** Many regions face critical healthcare workforce shortages, particularly in rural and underserved urban areas. PPPs can design targeted initiatives aimed at attracting healthcare professionals to these regions through scholarships,

loan repayment programs, and residency placements, thus enhancing access to care [30].

5. **Enhanced Data Sharing and Research:** Collaborative partnerships often promote data sharing between sectors, leading to better research and insights related to workforce needs. This data can then be used to inform policy decisions and strategic planning, ensuring evidence-based approaches to workforce development [31].

### **Challenges Facing Public-Private Partnerships**

Despite the numerous benefits, PPPs in healthcare workforce development are not without challenges. These include:

1. **Misalignment of Goals:** Public and private entities may have differing missions, priorities, and timeframes, leading to potential conflicts. Establishing clear, shared objectives from the outset is critical to overcoming this hurdle [32].
2. **Regulatory Barriers:** Healthcare is one of the most heavily regulated sectors, and compliance with these regulations can complicate the establishment and operation of PPPs. Streamlining regulatory processes to accommodate innovative partnerships is essential for their success [32].
3. **Sustaining Engagement:** Maintaining stakeholder engagement throughout the lifespan of a PPP can be challenging. As personnel or leadership changes, the initial vision can be diluted, resulting in decreased commitment and direction. Ongoing communication and strategic adjustments are necessary to mitigate this risk [32].
4. **Equitable Access:** It is crucial that benefits from PPPs are distributed equitably, ensuring that marginalized communities do not miss out on opportunities. Careful planning and consideration must be applied to prevent exacerbating existing disparities in health workforce availability [33].

### **Successful Case Studies**

Several successful examples illustrate the effectiveness of PPPs in developing the healthcare workforce:

1. **The Florida Health Care Workforce Coalition:** This initiative brings together various stakeholders, including educational institutions, healthcare providers, and state agencies, to address

workforce shortages in Florida. Through collaborative strategies, including data sharing and joint developmental initiatives, the coalition has successfully increased the number of trained healthcare professionals in the state's rural areas [34].

2. **The United Kingdom's NHS and Private Sector Collaboration:** In the UK, collaborations between the National Health Service (NHS) and private sector entities have been pivotal in addressing nursing shortages. Initiatives such as recruitment drives, educational sponsorships, and collaborative workforce planning have yielded positive outcomes by significantly increasing the number of qualified nursing professionals [34].

3. **The "Health Careers" Program:** In Canada, Health Careers is a successful initiative that engages youth in health career exploration. Through partnerships with schools and healthcare organizations, the program provides students with internships, mentorships, and hands-on training, ultimately promoting a workforce pipeline [35].

#### **Key Drivers of the Shortage: Fiscal, Educational, and Social Influences:**

In recent years, healthcare systems globally have faced significant challenges, most notably staffing shortages that have disrupted patient care and strained existing resources. This phenomenon has emerged as a critical issue, necessitating an analysis of its main drivers—financial, educational, and social impacts. By understanding these factors, stakeholders can devise effective strategies to mitigate shortages and enhance healthcare delivery [36].

#### **Financial Drivers**

One of the most significant financial drivers contributing to healthcare shortages is the disparity between healthcare professionals' compensation and the rising costs associated with training and education. In many regions, especially underserved and rural areas, salaries offered to healthcare workers, such as nurses and primary care physicians, may not align with the cost of living or the educational debt incurred during professional training. According to a report from the Association of American Medical Colleges, student loan debt for medical students can average over \$200,000, prompting many graduates to seek higher-paying

opportunities in specialty fields or urban locations where compensation is more robust [37].

Moreover, hospital and clinic budgets often face constraints due to fluctuating reimbursement rates from insurance plans and government programs. This financial pressure can lead to hiring freezes or reductions in the workforce, exacerbating shortages. Facilities may also struggle to provide competitive salaries or benefits, leading to turnover and a decrease in available staff. Ultimately, the pursuit of cost-effectiveness can compromise the quality of care, as overworked employees may experience burnout and job dissatisfaction, further driving individuals away from healthcare careers [37].

#### **Educational Drivers**

The educational framework for training healthcare professionals also plays a crucial role in creating and perpetuating shortages. The capacity of medical and nursing schools to admit and train new students is frequently limited by faculty shortages, inadequate funding, and a lack of resources. Additionally, the growing demand for healthcare professionals amid an aging population, rising chronic diseases, and global pandemics has outpaced the educational infrastructure's ability to respond effectively [38].

Many healthcare programs require a designated number of clinical training hours, which necessitates partnerships with hospitals that may be strained by existing workforce shortages. As a result, aspiring healthcare professionals may face difficulties in securing the clinical experiences necessary for graduation. This bottleneck can delay entry into the healthcare workforce and lead to an insufficient supply of new professionals.

Furthermore, there is a lack of awareness around healthcare careers, particularly in elementary and secondary education. Career counseling often emphasizes traditional professions while overlooking the broad spectrum of opportunities within healthcare. This lack of exposure can lead to a shortage of applicants who would otherwise consider pursuing careers in health, perpetuating the cycle of workforce shortages [39].

#### **Social Impacts**

The social factors underpinning healthcare shortages are profound and multifaceted. A significant issue is the inequity in access to healthcare education and employment opportunities, particularly among

marginalized communities. Historically, certain demographics, including people of color, have faced systemic barriers that hinder their entry into health professions. This underrepresentation not only affects the diversity of the workforce but also reduces the likelihood that healthcare services will be culturally competent and sensitive to the populations they serve [40].

In addition, societal perceptions of healthcare roles can profoundly influence the supply of professionals. Stereotypes and stigmas surrounding certain positions, particularly in nursing and allied health careers, can discourage individuals from pursuing these paths. For instance, the perception of nursing as a low-status profession can deter talented individuals from entering the field, despite its critical importance to health outcomes [40].

Moreover, the societal impact of healthcare shortages can be devastating. Chronic understaffing and increased workloads contribute to decreased morale among healthcare workers, leading to a cycle of burnout, which often results in early retirements or career changes away from the health sector. This exodus creates gaps in the workforce that are challenging to fill, further exacerbating the existing shortages and impacting patient care quality [41].

Another key social factor is the growing demand for mental health services, especially in the wake of the COVID-19 pandemic. As societal awareness around mental health issues has surged, there has been an increased desire for trained professionals in this area. However, the educational pathways to becoming a mental health professional are often limited by both funding and availability, compounding the existing shortages in this vital sector [41].

### **Impact of Shortages: Consequences for Patient Care and Healthcare Systems:**

In recent years, the healthcare landscape has increasingly become susceptible to various shortages that not only disrupt patient care but also pose significant challenges to broader healthcare systems. These shortages can manifest in multiple forms—ranging from medication and medical supplies to healthcare professionals—and their ramifications are felt at every level, from individual patient experiences to the operational stability of healthcare institutions. Understanding the complexities and consequences of these shortages is

crucial for developing effective strategies to mitigate their impact and enhance the resilience of healthcare systems [42].

### **Types of Shortages in Healthcare**

#### **1. Medication Shortages:**

One of the most pressing issues in healthcare is the shortage of essential medications. Medications can become scarce for numerous reasons, including manufacturing disruptions, quality control issues, regulatory challenges, and market dynamics [43]. Particularly critical are shortages of life-saving drugs such as antibiotics, chemotherapeutics, and anesthetics, which can have immediate and devastating effects on patient outcomes. The availability of generic drugs can also fluctuate, as the market may not sustain multiple producers for less profitable formulations [44].

#### **2. Medical Supplies:**

The COVID-19 pandemic starkly illuminated the vulnerability of medical supply chains, with shortages of personal protective equipment (PPE), ventilators, and testing kits prompting nationwide—indeed, global—concern. Shortages in medical supplies can lead to suboptimal patient care, as healthcare providers are forced to ration essential equipment and materials. The implications of such shortages stretch beyond the immediate demand; they can lead to increased healthcare costs as providers scramble to procure alternative supplies that may be more expensive or less effective [45].

#### **3. Healthcare Workforce Shortages:**

Healthcare professionals, including doctors, nurses, and allied health workers, are critical to ensuring quality patient care. However, workforce shortages have become increasingly pronounced, exacerbated by factors such as burnout, inadequate compensation, and a lack of educational opportunities for new practitioners. The challenges of recruiting and retaining skilled professionals can strain healthcare systems, leading to longer wait times, reduced patient interactions, and ultimately compromised care [45].

### **Consequences for Patient Care**

The consequences of shortages are profound and multifaceted, affecting both the quality of patient care and the overall health outcomes of populations [46].

### 1. **Decreased Quality of Care:**

Patients experiencing medication shortages may not receive optimal prescriptions, resulting in unmanaged symptoms or exacerbated health conditions. In situations where alternative medications are utilized, there may be a lack of sufficient evidence supporting their efficacy or safety in particular cases, raising the risk of adverse outcomes. The impact on quality of care is no less severe when it comes to medical supplies; for instance, the limited availability of PPE affects both patient safety and healthcare providers' ability to deliver care without risking their own health [47].

### 2. **Increased Healthcare Costs:**

Shortages invariably drive up costs within the healthcare system. When supply chains are disrupted, healthcare facilities may resort to purchasing alternatives at premium prices or expediting shipments, incurring additional expenses. Increased costs may ultimately be passed on to patients, either directly through higher out-of-pocket expenses or indirectly through higher insurance premiums. This financial strain can deter access to necessary care, particularly among vulnerable populations [48].

### 3. **Delay in Treatment:**

Scarcity of medical resources often leads to delays in treatment. Healthcare providers are frequently forced to prioritize care based on availability, which can lead to patients being deferred for essential procedures or receiving inadequate assessments. Consequently, conditions that could have been managed effectively in a timely manner may become critical, leading to greater health complications and higher mortality rates [49].

### 4. **Impact on Patient Satisfaction:**

Shortages inevitably contribute to deteriorating patient satisfaction scores. Patients expect timely and effective care, and any disruption in the continuity or quality of services can adversely affect their perception of the healthcare providers. Reduced staff-patient interactions, delays in treatment, and experiences of being turned away for necessary services further exacerbate feelings of dissatisfaction and distrust in the healthcare system [50].

## **Consequences for Healthcare Systems**

On a broader scale, shortages affect the operational integrity and sustainability of healthcare systems.

### 1. **Strain on Healthcare Infrastructure:**

A persistent shortage of healthcare professionals signifies an overwhelming burden on existing staff, leading to excessive workloads and increased stress levels. This, in turn, can contribute to high rates of burnout, which has become a critical concern, especially amid the COVID-19 pandemic. A fatigued workforce not only operates less efficiently but also contributes to dangerous lapses in patient care, ultimately compromising the entire healthcare delivery model [51].

### 2. **Reallocation of Resources:**

When shortages occur, healthcare institutions are often forced to reallocate financial and human resources to address immediate concerns. This can strain an organization's ability to invest in preventive measures, upgrades, and expansion of services in the long term, inhibiting innovation and adaptation to changing healthcare needs [51].

### 3. **Public Health Implications:**

Shortages can lead to broader public health issues, as communities and populations grapple with diminished access to essential healthcare. For chronic diseases, for example, the lack of medications and follow-up care can lead to increased hospitalization rates and the spread of infectious diseases. Consequently, a healthcare system burdened by shortages may ultimately hamper progress on essential health indicators such as morbidity and mortality rates [52].

## **Addressing Shortages: Steps Forward**

To combat the adverse effects of shortages in the healthcare system, a multi-faceted approach is essential. Measures could include:

### 1. **Strengthening Supply Chain Management:**

Healthcare systems can invest in robust supply chain management practices to ensure that essential medications and supplies are adequately stocked. This may involve diversifying suppliers and increasing inventory for critical items, particularly during unforeseen disruptions [53].

## 2. **Enhancing Workforce Development:**

Addressing workforce shortages necessitates a holistic approach, including improved working conditions, greater job security, and competitive compensation for healthcare professionals. Additionally, enhancing educational programs to train new entrants into the workforce is vital for long-term sustainability [53].

## 3. **Policy Interventions:**

Governments play a critical role in overseeing the availability of medications and supplies through regulation and incentives for manufacturers. Policymakers can create frameworks aimed at streamlining the approval process for new drugs and addressing barriers to production that lead to shortages [53].

## 4. **Encouraging Collaboration:**

Collaboration between healthcare providers, manufacturers, and policymakers can yield valuable insights into predicting potential shortages and developing solutions before they escalate into crises [54].

### **Role of Technology: Telemedicine and Digital Solutions in Workforce Management:**

In recent years, the landscape of healthcare has undergone a significant transformation, primarily driven by technological advancements. The integration of digital solutions and telemedicine into healthcare services has redefined patient care and optimized workforce management, creating opportunities for improved efficiency, accessibility, and effectiveness [55].

### **The Emergence of Telemedicine**

Telemedicine, defined as the delivery of healthcare services through telecommunications technology, has gained substantial traction, especially in light of the global Covid-19 pandemic. This innovation not only facilitated the continued provision of healthcare services during periods of social distancing and lockdowns but also established a foundation for a more flexible approach to patient care. Telemedicine encompasses a variety of technological tools, including video conferencing, remote monitoring, and mobile health applications,

which enable healthcare providers to diagnose, treat, and monitor patients from a distance [55].

The benefits of telemedicine extend beyond patient care, significantly impacting healthcare workforce management. By reducing the necessity for in-person visits, telemedicine allows healthcare organizations to optimize staff allocation. Physicians, nurses, and allied health professionals can now focus their efforts on patients who require in-person attention while efficiently managing other cases through virtual consultations. This not only improves resource utilization but also minimizes burnout by distributing workloads more evenly across the workforce [56].

### **Enhancing Accessibility and Flexibility**

One of the primary advantages of incorporating technology and telemedicine into healthcare workforce management is enhanced accessibility. Digital solutions provide healthcare professionals the flexibility to work remotely, enabling them to reach underserved populations, including those in rural areas or those with mobility challenges. By leveraging telemedicine, healthcare organizations can recruit and retain talent in geographically diverse locations, thereby enriching the workplace with varied expertise and enhancing overall service delivery [57].

Furthermore, digital platforms can facilitate seamless communication among healthcare teams spread across multiple locations. Collaborative tools such as secure messaging apps and patient management systems enable real-time information sharing, fostering coordinated care efforts and ensuring that all team members are informed of patient needs and treatment plans. This connectivity enhances the capability of healthcare providers, promoting a culture of teamwork and accountability in patient care [58].

### **Streamlining Administrative Processes**

Technology plays a crucial role in simplifying and automating many of the administrative functions associated with healthcare workforce management. The traditional model of scheduling patient appointments, managing electronic health records (EHR), and maintaining compliance with regulatory standards can be cumbersome and time-consuming. However, digital solutions—including practice management software and EHR systems—can

automate these processes, allowing healthcare professionals to focus more on patient care rather than administrative burdens [59].

Digital tools can streamline workforce scheduling by utilizing algorithms that take into account staff availability, patient demand, and individual qualifications to ensure optimal staffing levels. This reduces the likelihood of staffing shortages or overstaffing, which can both compromise patient care and waste valuable resources. Additionally, automated time-tracking and reporting systems help organizations monitor productivity, identify trends in workload, and pinpoint areas needing improvement [59].

### **Facilitating Professional Development and Training**

Another significant aspect of technology's role in healthcare workforce management is the facilitation of continuous professional development and training. Telemedicine and digital resources offer healthcare professionals the opportunity to pursue remote learning programs, certifications, and workshops that enhance their skills without the constraints of traditional in-person training. Online platforms not only make continuing education more accessible but also allow healthcare organizations to standardize training processes, ensuring that all personnel are equipped with the latest knowledge and best practices [60].

Virtual simulations and interactive training modules can provide hands-on experience in a risk-free environment, preparing healthcare workers for real-world challenges. Furthermore, technology enables healthcare organizations to track employee performance and competencies effectively, allowing for targeted professional development plans that align with individual career goals and organizational needs [61].

### **Addressing Challenges and Considerations**

While the benefits of telemedicine and digital solutions in healthcare workforce management are manifold, it is essential to address the challenges and considerations that accompany this technological transition. Initially, there is a need for investment in infrastructure, including hardware, software, and cybersecurity measures, to protect patient data and maintain compliance with regulations such as HIPAA in the United States. Additionally,

healthcare organizations must ensure that all staff members are adequately trained to utilize these technologies efficiently [62].

Moreover, the reliance on telemedicine raises questions about the quality of care delivered remotely. Although telemedicine is especially effective for follow-up care and non-emergency consultations, it may not be suitable for all patients or conditions. Healthcare providers must continue to assess patient needs holistically, integrating telemedicine judiciously into the continuum of care [62].

Lastly, equity in access to technology must be considered. The digital divide can exacerbate existing health disparities, with low-income or technologically disadvantaged populations potentially facing barriers to accessing telehealth services. Therefore, healthcare organizations must work to identify and mitigate these inequities, ensuring that all individuals have the opportunity to benefit from technological advancements in healthcare [62].

### **Conclusion and Future Outlook: Sustainable Solutions for Workforce Challenges:**

The healthcare workforce is at a crucial juncture in its evolution, facing multifaceted challenges exacerbated by the COVID-19 pandemic, demographic shifts, and rapid advancements in medical technology. As the demand for healthcare services continues to grow, exacerbated by an aging population and increasing prevalence of chronic diseases, the necessity for a robust, well-distributed workforce becomes paramount [63].

### **Current Challenges Facing the Healthcare Workforce**

The existing healthcare workforce is grappling with several interrelated challenges. Firstly, there is a marked shortage of skilled professionals in various medical specialties, which poses a significant barrier to delivering quality care. Reports indicate that the global shortage of healthcare workers could reach 18 million by 2030, particularly in low and middle-income countries. In addition to shortages, the workforce faces overwhelming stress and burnout exacerbated by long hours, high patient loads, and emotional strains involved in patient care, particularly highlighted during the pandemic [63].

Furthermore, geographical maldistribution is a growing concern. Many healthcare professionals are concentrated in urban areas while rural regions struggle to attract and retain talent. This maldistribution leads to health disparities, leaving vulnerable populations without adequate access to healthcare services. The inadequately navigated complexities of diversity and inclusion within the healthcare workforce further complicate the situation. Minority groups often experience barriers to entering healthcare professions, resulting in a workforce that does not reflect the population it serves [64].

### **Sustainable Solutions to Workforce Challenges**

#### **1. Investment in Education and Training:**

Sustainable solutions for the healthcare workforce crisis begin with education and training. Expanding nursing and medical school capacities, enhancing scholarship programs, and promoting vocational training can increase the number of qualified graduates entering the field. Additionally, creating partnership programs between educational institutions and healthcare providers can ensure that training aligns closely with community needs [64].

#### **2. Promoting Work-Life Balance and Mental Health Support:**

Addressing workforce burnout requires a systemic culture change within healthcare organizations. Implementing policies that promote work-life balance, such as flexible scheduling, mental health resources, and regular wellness check-ins, can enhance job satisfaction, boost morale, and ultimately lead to improved patient care. By prioritizing employee well-being, healthcare organizations can cultivate a more resilient workforce [65].

#### **3. Telehealth and Technology Integration:**

The integration of telehealth services has emerged as a sustainable strategy for alleviating workforce pressures and improving access to care, particularly in understaffed or rural areas. Telehealth not only increases the reach of healthcare professionals but also allows providers to manage their time effectively by conducting follow-up consultations and routine check-ups remotely. Embracing technology can facilitate greater collaboration among healthcare team members, streamline

workflows, and enhance training through simulation-based learning [65].

#### **4. Diversity and Inclusion Initiatives:**

Building a workforce that reflects the diversity of the communities served is vital for improving health outcomes. Initiatives to recruit, train, and promote individuals from underrepresented backgrounds can contribute to a more equitable healthcare system. Organizations should prioritize mentorship programs, inclusive hiring practices, and community engagement to create pathways into healthcare professions for diverse populations [66].

#### **5. Policy and Funding Support:**

Coordinated efforts at national and local levels to enact policies that support workforce development are essential. This includes funding for public health initiatives and loan forgiveness programs for healthcare professionals who work in underserved areas. Policymakers must prioritize healthcare as a vital public service that requires investment to stabilize and sustain its workforce [66].

### **Future Outlook**

The future of the healthcare workforce hinges upon the successful implementation of these sustainable solutions. As technology continues to evolve, healthcare organizations will increasingly need to adapt to manage the synergy between human and artificial intelligence, ensuring that technology complements rather than replaces the human touch essential in patient care [67].

Moreover, fostering a culture of continuous learning will allow the workforce to adapt to ever-changing demands. Lifelong learning programs and professional development opportunities need to be integrated as core elements of healthcare employment to foster adaptability and responsiveness to future challenges [67].

The recognition of healthcare as a global issue necessitates international cooperation and knowledge exchange, enabling countries to learn from each other's workforce strategies. As health systems advance toward more integrated and community-focused models, the realization of sustainable healthcare workforce solutions will prove to be a cornerstone for delivering high-quality and equitable care [68].

### **Conclusion:**

In conclusion, addressing the shortage of healthcare professionals in Saudi Arabia is essential for the sustainability and effectiveness of the nation's healthcare system. The integration of comprehensive strategies, including enhanced educational programs, improved retention policies, and the facilitation of foreign healthcare worker integration, provides a robust framework to uplift the current workforce. Furthermore, leveraging technology and innovative training methods can greatly enhance efficiency and access to healthcare services, particularly in underserved areas.

By fostering a collaborative environment among government, educational institutions, and private sector stakeholders, Saudi Arabia can cultivate a resilient healthcare workforce that meets the growing demands of its population. Continual assessment and adaptation of these strategies will be crucial in ensuring that the healthcare system is equipped to provide high-quality care now and in the future. Ultimately, a committed approach to addressing these challenges will not only bolster the healthcare sector but also contribute to the overall well-being and health outcomes of the Saudi population.

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