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## Editorial

# “Navigating Post-COVID Healthcare Challenges: Towards Equitable, Sustainable, and Ethical policy making”

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### ABSTRACT

The COVID-19 pandemic has presented significant challenges to healthcare systems worldwide, necessitating a proactive and strategic approach to navigate the post-COVID healthcare landscape. This editorial delves into the multifaceted challenges that healthcare systems face in the aftermath of the pandemic and emphasizes the importance of equitable, sustainable, and ethical policy making. The editorial highlights the persisting mental health burdens, the long-term effects of COVID-19, the threat of antimicrobial resistance, strained healthcare infrastructure, health disparities, climate change impacts, inflation's influence on healthcare, the integration of artificial intelligence, and the specific challenges related to aging populations. To address these challenges effectively, policymakers must focus on developing policies that ensure equitable access to healthcare services, facilitate sustainable healthcare practices, and uphold ethical standards. Collaborative efforts among policymakers, healthcare providers, researchers, and communities are essential for successfully navigating these post-COVID healthcare challenges. By adopting a comprehensive and proactive approach, healthcare systems can work towards achieving a resilient, inclusive, and ethically-driven healthcare landscape.

**Keywords:** Ethical policy making, healthcare challenges, Artificial intelligence, health disparities, inflation in healthcare, Resilient healthcare, Inclusive healthcare.

### POST COVID-19 HEALTHCARE CHALLENGES

The COVID-19 pandemic has strained healthcare systems, impacted economies, and resulted in a significant loss of life. The COVID-19 pandemic has already posed several challenges to healthcare systems worldwide. Some of these challenges have persisted or emerged in the post-COVID-19 period.

The pandemic has significantly impacted mental health [1], with increased rates of anxiety, depression, and post-traumatic stress disorder (PTSD). Post-COVID-19, healthcare systems faced challenges in addressing the mental health needs of individuals affected by the pandemic. The pandemic continued to constitute a burden to healthcare systems. Access to mental health services for these vulnerable customers becomes more complex and requires more waiting times. Access to mental health services, de-stigmatization, and integrating mental health into primary care remain vital challenges.

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Some individuals experience prolonged symptoms even after recovering from the acute phase of COVID-19. These symptoms, often referred to as “long COVID” or post-acute sequelae of SARS-CoV-2 infection (PASC), can include fatigue, shortness of breath, brain fog, and other persistent health issues. Healthcare systems must develop strategies to diagnose, manage, and provide long-term care for these individuals.

Antimicrobial resistance (AMR) is a growing threat to global health. Overuse and misuse of antibiotics and vaccines have contributed to the developing of drug-resistant infections, making it harder to treat common diseases. Addressing AMR requires promoting responsible antibiotic use, developing new antibiotics, and improving infection prevention and control practices. Performing more research on the side effects of the covid-19 vaccines becomes an urgent necessity that could help us prevent increased antimicrobial resistance.

The surge in COVID-19 cases put a strain on healthcare infrastructure, including hospital capacities, equipment availability, and healthcare workforce. Access to health services in due time became more complex. We actually observe long waiting times before getting an appointment, especially for specialty medicine. Several countries reorganized their priorities in terms of medical and healthcare services offered. However, several other countries still need help with shortages in the healthcare workforce and insufficient available infrastructure capacity. Post-COVID-19, healthcare systems need to assess and strengthen their infrastructure, capabilities, and human capital to be better prepared for future healthcare emergencies and actual burdens.

The pandemic has highlighted existing health disparities and inequalities in access to healthcare services [2]. Covid-19 health inequities persist globally, with marginalized and disadvantaged populations facing disproportionate health burdens. Post-COVID-19, healthcare systems will need to address these disparities, particularly among marginalized communities, to ensure equitable access to healthcare and reduce health inequalities. Addressing social determinants of health, reducing health disparities, and promoting health equity requires comprehensive policies and targeted interventions. Addressing social determinants of health, such as education, housing, and employment, requires comprehensive policies beyond traditional healthcare approaches. Implementing comprehensive strategies and policies requires strong leadership, political will, and sustained commitment from multiple stakeholders. It also necessitates understanding the unique challenges and needs of specific communities. Flexibility, adaptability, and continuous evaluation are essential to refine and improve policies over time. The comprehensive approaches and policies that can be implemented could include cross-sector collaboration (Health/ economic/ social sectors as examples). We also need to adopt the health in All Policies (HiAP) approach [3], which involves considering health implications in developing and implementing policies across different sectors. Comprehensive approaches can also include initiatives of education and skill-building programs, affordable and safe housing programs, economic development and employment opportunities, accessible transportation, nutritious food access, income support, poverty reduction, community empowerment, and engagement. Finally, we need to mention that data-driven approaches and evaluation condition the success of these programs and policies. For example, in early 2023, the Canadian government conditions provinces' financing for covering medical expenses through data-driven approaches, primarily through the Canada Health Transfer (CHT) program. The CHT is a federal transfer payment that provides funding to provinces and territories to support the delivery of healthcare services. Through the agreement between the Canadian government and its provinces, data-driven approaches are used in conditioning the financing of provinces. Thus, through Canada Health Infoway, the Canadian government invests in digital health initiatives and developing electronic health records (EHRs) and health information systems. These initiatives aim to improve nationwide healthcare data collection, sharing, and analysis. Data-driven approaches these systems support enable better monitoring, evaluation, and decision-making regarding healthcare services. Also, through this agreement, provinces are required to report data on various healthcare indicators to the Canadian Institute for Health Information (CIHI). This national organization collects and analyzes healthcare data. This data includes information on wait times for specific procedures, access to primary care, hospital readmission rates, health outcomes, and more. Data reporting allows for comparisons and benchmarking across provinces, enabling evidence-based decision-making and accountability. Finally, the Canadian federal government and CIHI collaborate to develop performance indicators and reporting frameworks to assess the effectiveness and efficiency of healthcare systems. These indicators are often based on data collected by provinces and territories and help identify areas of improvement and inform policy decisions.

The covid-19 pandemic allowed the world to reduce atmospheric pollution, NO<sub>2</sub>, and carbon emissions [4]. However, the respite was short-lived. Increasing production potential and the resumption of industrial activities again led to severe atmospheric downturns. Several negative effects of climate change were recently observed in different parts of the planet, negatively impacting citizens' health [5]. Climate change [6] poses risks to human health through extreme weather events, air pollution [7], changing disease patterns, and disruptions to food and water supplies [8]. Mitigating climate change and building resilience in healthcare systems are crucial for protecting public health and ensuring sustainable development.

On the economic side, the post covid-19 era was marked by unprecedented waves of Inflation that had various impacts on the healthcare and medical sectors, affecting providers and patients. The Inflation increased the cost of goods and services, including medical supplies, pharmaceuticals, and healthcare equipment. Healthcare providers faced higher expenses for acquiring essential medical resources, which impacted their operational budgets and profit margins.

Inflation made healthcare services less affordable for individuals, particularly those with limited financial resources or inadequate insurance coverage. As healthcare costs rise, patients face challenges in accessing necessary medical treatments, procedures, and medications.

Inflation also contributed to higher health insurance premiums. Insurance companies adjusted their rates to account for increased healthcare costs, making coverage less affordable for individuals and businesses. This impacted the ability of individuals and employers to provide comprehensive healthcare coverage to their employees.

Inflation has put pressure on governments' healthcare budgets. As healthcare services and public health programs rise, most governments fail to allocate additional funds to maintain the same level of healthcare provision. This failure resulted in strained healthcare systems and reduced access to quality care.

Addressing the impact of inflation on the healthcare and medical sectors requires a comprehensive approach. This can include implementing cost-containment measures, promoting efficiency in healthcare delivery, enhancing healthcare financing models, and ensuring equitable access to care. Governments, healthcare organizations, and policymakers must work together to strike a balance between maintaining quality healthcare services and managing the financial implications of inflation.

The covid-19 pandemic facilitated the transition to digital health and accelerated research and dependence on Artificial intelligence in the healthcare and medical sector. The development of artificial intelligence (AI) significantly impacted the healthcare and medical fields [9].

Researchers developed AI-powered algorithms to analyze large amounts of medical data, including patient records, lab results, and imaging scans, to aid in more accurate and timely diagnoses. This helped healthcare professionals detect diseases at earlier stages and improve patient outcomes.

AI algorithms also offer the golden opportunity of analyzing individual patient data, including genetic information, medical history, and treatment outcomes, to develop personalized treatment plans. This led to more targeted and effective therapies, reducing trial-and-error approaches and optimizing patient care.

Also, AI-enabled remote monitoring devices collect real-time patient data and transmit it to healthcare professionals for analysis. The development of chatbots also facilitated telemedicine consultations by providing virtual healthcare services and guidance to patients. These technologies improved access to care, especially in remote areas, and enabled continuous monitoring of patients with chronic conditions.

The development of artificial intelligence (AI) in the healthcare and medical fields also covered the areas of drug discovery and development, patient engagement and education, medical image analysis, and clinical decision support. Finally, it offered the possibility of predictive analytics and early interventions.

Despite all these technological developments, the increasing use of digital health technologies, telemedicine, and health data analytics has raised ethical concerns about data privacy and security [9]. Ensuring ethical data use, protecting patient privacy, and maintaining regulatory frameworks for emerging technologies are ongoing challenges.

For several occidental countries, the aging population poses long-term care and support services challenges. The actual burden of the medical installation makes it difficult to absorb the needs of older adults. Future medical services need to be adapted to the needs of this specific population. Key priorities are providing quality healthcare for older adults, addressing age-related diseases, offering home-based medical services and care, and promoting healthy aging. Special attention and the

necessary support need to be provided for caregivers. This support could be related to offering special training and incentives for the medical staff that deal with the critical medical care of elderlies. Policies also need to support volunteer caregivers to enhance their well-being and the quality of care they provide. Consequently, support programs must offer training and education, respite care, support groups and counseling, access to resources and information, and recognition and appreciation. Elderly volunteer caregivers also need unique work arrangements like paid or without-pay vacations, flexible scheduling, and support for work-life balance.

## THE FUTURE OF MEDICAL AND HEALTHCARE POLICIES

Medical and healthcare policies face various challenges that impact their effectiveness and implementation. Ensuring affordable and equitable access to healthcare services for all individuals is a persistent challenge. High healthcare costs, inadequate insurance coverage, and limited availability of healthcare facilities can create barriers to access, particularly for marginalized populations.

A second notable issue is organizational and managerial in nature. Many countries have fragmented healthcare systems with multiple stakeholders, such as government agencies, private insurers, healthcare providers, and pharmaceutical companies. Coordinating and aligning the policies and actions of these diverse entities can be complex and challenging.

Also, rapid advancements in medical technology bring both opportunities and challenges to healthcare policies. Policies must adapt to new treatment options, diagnostics, and digital health innovations while ensuring their safety, efficacy, and accessibility to all individuals. Special attention is needed from policy makers regarding the ethical challenges associated with the fast development of medical technology. Laws, rules, regulations, and policies must be regularly adjusted.

Again, with the increasing use of electronic health records and digital health platforms, ensuring the privacy and security of personal health information becomes critical [10]. Policies must address data protection, consent, and cybersecurity to maintain public trust and protect sensitive health information. While AI and chatbots offer significant potential, it is essential to integrate these technologies thoughtfully, considering the ethical implications and ensuring that they complement and enhance human expertise rather than replacing it entirely. Regulatory frameworks and guidelines are essential to ensure the responsible and safe implementation of AI and chatbot technologies in healthcare.

Finally, we need to mention that implementing and sustaining effective healthcare policies requires adequate funding and long-term financial planning. Balancing the cost of healthcare services with available resources is a complex challenge that policymakers face, particularly when addressing the needs of vulnerable populations. Approving funding programs and adopting healthcare policies are always influenced by political ideologies, lobbying efforts, and conflicting stakeholder interests. Achieving consensus and focusing on public health outcomes can be challenging in the face of competing agendas. Several politicians consider public health and healthcare services a burden and non-efficient spending.

Hence, addressing these challenges requires a multifaceted approach involving collaboration between policymakers, healthcare providers, researchers, and communities. It also necessitates a comprehensive understanding of local healthcare contexts and continuous evaluation and adaptation of policies to meet evolving needs.

Avicenna's first number of 2023 tries to address some of the challenges observed in this editorial. The paper of Batoool et al. [11] discussed the impact of the COVID-19 pandemic on the health of severely acutely malnourished (SAM) children and the compliance of the Community-based Management of Acute Malnutrition (CMAM) program in Pakistan. The study highlights that the pandemic has led to food insecurity and economic disruptions, increasing malnutrition risk among children in low- and middle-income countries (LMICs). The study results show that parents expressed concerns about the effect of COVID-19 on their child's health, and the lockdown measures resulted in reduced compliance with the CMAM program. The paper emphasizes the need for collaboration among public health experts, nutritionists, and academicians to improve healthcare service delivery. It suggests implementing initiatives like mobile healthcare services to enhance access and utilization of healthcare services, especially for socially disadvantaged and vulnerable communities.

The second paper [10] comes from Saudi Arabia. It proposes a cloud-based and Internet of Things (IoT)-based electronic health records (EHRs) system that utilizes wearable body biosensors to collect real-time biometric data and provide personalized therapy recommendations. The study focuses on

ensuring the confidentiality and integrity of patient data through security authorizations, device authentication, and encrypted communication channels. The study emphasizes the importance of a robust IoT communication architecture for secure data transfer in healthcare settings. It highlights the potential of IoT technology to transform healthcare but also emphasizes the need for robust security measures to protect patient data and ensure system effectiveness.

The paper of Abdulqadir Nashwan [12] from Qatar discusses the importance and implications of open access (OA) initiatives in the Eastern Mediterranean Region (EMR) countries, focusing on the fields of research, education, and policymaking. The paper emphasizes the transformative impact of OA in healthcare and medicine within the EMR. It highlights how OA facilitates the dissemination of research findings, enables evidence-based decision-making for healthcare professionals and policymakers, promotes cross-border collaborations, and stimulates innovation in the medical field.

The last paper [13] comes from Pakistan. It discusses the importance of bacterial culturing and antibiotic susceptibility testing in the context of gallbladder diseases. It highlights the prevalence of bacterial infections in the gallbladder and emphasizes the need to administer antibiotics to prevent complications and improve patient outcomes properly. The paper acknowledges the importance of acquiring bacterial cultures from the gallbladder and conducting antibiotic susceptibility testing to guide appropriate antibiotic treatment and improve patient outcomes in cases of gallbladder diseases.

## DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

While preparing this work, the author used ChatGPT to improve readability and language. After using this tool, the author reviewed and edited the content as needed and took full responsibility for the publication's content.

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