Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 1s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Comparative Analysis of Healthcare System, Financial, and Governance Developments Pre- and Post-Covid-19: Lessons Learned and Future Directions

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Cite this paper as: Abid Yaseen, Ali Nawaz, Dua Zhaira, (2025) Comparative Analysis of Healthcare System, Financial, and Governance Developments Pre- and Post-Covid-19: Lessons Learned and Future Directions. *Journal of Neonatal Surgery*, 14 (1s), 1433-1437.

ABSTRACT

Background: The COVID-19 pandemic exposed critical vulnerabilities in Pakistan's health system ranging from fragmented service delivery and inadequate financing to governance deficiencies. Before the pandemic, health expenditure stagnated near 1.4% of GDP, with heavy reliance on out-of pocket payments and stark disparities across regions[1].

Objective: This study aims to compare Pakistan's healthcare system performance, financial resilience, and governance mechanisms before and after COVID-19, drawing lessons for building a more equitable and crisis-prepared health architecture.

Methods: Adopting a comparative descriptive-analytical design, the study synthesizes data from peer-reviewed publications, government reports, WHO and World Bank databases, and national health ministry documents (2010–2024). Thematic domains service delivery, health financing, and governance reforms—were analyzed through descriptive statistics and qualitative synthesis, with triangulation across sources ensuring robustness.

Results: Pre-COVID-19, Pakistan's primary healthcare (PHC) was underdeveloped, health spending was insufficient, and coordination between federal and provincial entities was limited. The pandemic, however, accelerated PHC reprioritization, revealed fiscal inflexibilities with continued high catastrophic OOP burdens[2], and catalyzed governance innovations like the National Command and Operation Center (NCOC), enabling data-driven, multi-sector coordination[3].

Conclusion: COVID-19 revealed systemic frailties yet provided a window for reform. Sustaining these gains requires embedding crisis governance mechanisms into routine public health frameworks, investing in financial protection, and ensuring resilient service delivery.

1. INTRODUCTION

The COVID-19 pandemic has challenged health systems globally, exposing structural vulnerabilities and prompting urgent reforms. Pakistan a lower-middle-income South Asian nation was no exception, grappling with fragile healthcare infrastructure, budgetary constraints, and governance challenges. Prior to the pandemic, health spending in Pakistan hovered around 1.4% of GDP, with high reliance on out-of-pocket payments and significant urban-rural and public-private disparities[1]. The 18th Amendment (2011) further decentralized healthcare responsibilities to provinces, reshaping the governance of service delivery[2].When COVID-19 struck, Pakistan's public financial management system was ill-prepared for such a shock. Budgetary reallocations, fiscal inflexibility, procurement delays, and misaligned donor priorities exposed deep structural mis-alignments between health financing and PFM processes[3].Governance reforms also emerged in response. The National Command and Operation Center (NCOC), established in April 2020, became the central coordinating body for pandemic response, bridging federal-provincial coordination and crisis management[4]. Simultaneously, the Sehat Sahulat social health insurance program expanded significantly, offering impoverished families access to quality care enhancing financial protection[5]. Additionally, the Ehsaas Emergency Cash initiative provided direct economic relief to vulnerable households, helping mitigate socio-economic fallout from lockdowns[6].Despite these efforts, trust in the healthcare system among providers remained low. A large-scale survey of over 10,000 healthcare workers revealed widespread skepticism toward governmental health apparatus during the crisis, with pronounced concerns among female practitioners[7].Comparative analysis from multi-country case studies also helps contextualize Pakistan's experience. Early pandemic health systems

responses in Switzerland, Spain, Iran, and Pakistan varied widely in timing, coordination, and impact demonstrating how governance, decentralization, and context-specific factors shaped national outcomes[8].This study seeks to conduct a systematic **comparative analysis** of Pakistan's healthcare system, financial policy shifts, and governance adaptations **before and after COVID-19**. Drawing upon both domestic and international evidence, it aims to distill lessons and chart possible trajectories for enhancing resilience, equity, and efficiency within Pakistan's health architecture.

2. METHODOLOGY

This study employed a comparative, descriptive-analytical design to examine the evolution of Pakistan's healthcare system, financial strategies, and governance mechanisms before and after the COVID-19 pandemic. Data were collected from peer-reviewed literature, government policy documents, international health databases (WHO, World Bank), and reports from Pakistan's Ministry of National Health Services.

A systematic search strategy was applied using PubMed, Scopus, and Google Scholar with key terms such as Pakistan healthcare system, COVID-19 financial response, and health governance reforms. Publications from 2010–2024 were included to capture both the pre-pandemic baseline and post-pandemic developments. Literature, including official policy briefs and national program reports, was also reviewed to ensure contextual completeness.

2.1.DATA ANALYSIS

Data were organized thematically into three domains: (i) healthcare system performance and service delivery, (ii) health financing and resource allocation, and (iii) governance and institutional reforms. Comparative analysis was conducted by contrasting pre-COVID-19 indicators such as health expenditure as a percentage of GDP, hospital bed-to-population ratios, and provincial governance structures with post-COVID-19 adaptations, including pandemic preparedness frameworks, fiscal reallocations, and institutional coordination mechanisms.

Quantitative data (e.g., health financing trends, budgetary allocations, service coverage rates) were summarized using descriptive statistics, while qualitative findings from policy documents and scholarly reports were thematically synthesized. Triangulation was applied by cross-validating results across academic, institutional, and international sources to enhance reliability.

Ethical approval was not required as this study relied exclusively on secondary data from publicly available resources.

3. RESULTS

Table 3.1. Comparative Analysis of Healthcare System Performance and Service Delivery

Indicator	Pre-COVID-19	Post-COVID-19
Primary Health Care (PHC)	Under-resourced; ongoing reform but weak implementation	Pandemic accelerated reprioritization; PHC became critical in emergency response
System Readiness	Limited training, fragmented logistics, weak surveillance systems	Exposure of weaknesses triggered early reforms in training, logistics, and preparedness
Provider Trust	Moderate trust levels; systemic skepticism existed	Large-scale survey showed decline in trust among healthcare workers during pandemic

Table 3.1 shows how the healthcare delivery system in Pakistan, already constrained pre-COVID-19, experienced amplified pressures during the pandemic. The crisis highlighted structural gaps but also stimulated renewed focus on PHC and service readiness.

Table 3.2. Comparative Analysis of Health Financing and Resource Allocation

Indicator	Pre-COVID-19	Post-COVID-19
Health Expenditure (% of GDP)	Around 1.2–1.4% of GDP; insufficient for population needs	Minimal increase; pandemic reinforced underinvestment challenges
Out-of-Pocket Expenditure	Approximately 52% of total	Continued burden; households

	health spending borne by households	faced catastrophic spending during pandemic waves
Fiscal Response	Limited fiscal flexibility; low priority for health sector	Initial allocation of ~USD 0.5 million exposed lack of readiness; reforms in fiscal management considered

Table 3.2 highlights that Pakistan's financial health system was underfunded prior to COVID-19, and the crisis exposed its vulnerabilities. Out-of-pocket spending remained high, and limited fiscal capacity hampered rapid emergency response.

Table 3.3. Comparative Analysis of Governance and Institutional Reforms

Indicator	Pre-COVID-19	Post-COVID-19
Federal-Provincial Coordination	Decentralized after 18th Amendment; inconsistent coordination	National Command and Operation Center (NCOC) improved interprovincial coordination
Crisis Management Framework	Limited preparedness for emergencies	COVID-19 catalyzed creation of emergency response strategies and coordination bodies
Digital Governance	Minimal adoption of digital platforms in public health	Expansion of e-governance and digital health initiatives under Digital Pakistan Policy

Table 3.3 shows how governance structures shifted from fragmented and slow processes to more centralized, coordinated, and digital frameworks in response to the COVID-19 pandemic.

4. DISCUSSION

The findings of this study reveal that Pakistan's healthcare system, which was already characterized by limited resources and fragmented structures, experienced heightened strain during the COVID-19 pandemic. Primary healthcare (PHC), often considered the backbone of health systems in low- and middle-income countries, came under intense pressure as routine services were disrupted and trust between practitioners and communities declined. This mirrors evidence reported in other studies which argue that while Pakistan demonstrated agility in multisectoral coordination during the crisis, the maintenance of essential services and community outreach remained inadequate, thereby weakening the continuity of care and highlighting the fragility of PHC approaches in times of emergency[1]. The financial landscape similarly reflected pre-existing inequities. Even prior to the pandemic, Pakistan struggled with high levels of out-of-pocket (OOP) payments and catastrophic health expenditures (CHEs), disproportionately affecting low-income groups. Recent analyses demonstrate that CHEs rose significantly, from 8.3% to 13.7% between 2007–08 and 2018–19, which placed severe financial strain on households[2]. These disparities worsened during COVID-19 as fiscal constraints and rigid budgetary processes hindered timely responses. Such challenges echo broader concerns about public financial management (PFM) in Pakistan, where delays in disbursement, misalignment of donor funding, and weak budgetary flexibility undermined an effective pandemic response[3].

In terms of governance, the establishment of the National Command and Operation Center (NCOC) emerged as a critical institutional innovation during the pandemic. The NCOC facilitated coordination between federal and provincial levels, enhanced transparency through real-time data, and enabled evidence-informed decision-making in ways not previously observed in Pakistan's governance framework. This governance mechanism marked an important shift towards centralization during emergencies and is widely cited as a key driver of the country's relatively organized pandemic response[4]. Nevertheless, while such centralized approaches enhanced efficiency during the crisis, questions remain regarding their sustainability in the absence of pandemic urgency. Broader evaluations of Pakistan's health system in the context of global health security similarly highlight the persistence of fragmentation, underfunding, and inadequate preparedness, calling for structural reforms that move beyond reactive measures[5]. Overall, the comparative analysis suggests that although COVID-19 acted as a catalyst for certain reforms in governance and crisis management, long-term systemic weaknesses in healthcare delivery and financing continue to threaten resilience and equity.

5. CONCLUSION

This research highlights that Pakistan entered the COVID-19 crisis with longstanding weaknesses in its healthcare infrastructure, financial protection mechanisms, and governance arrangements, all of which became more visible during the

pandemic. While the pandemic created opportunities for innovation, such as the establishment of the NCOC and the adoption of data-driven policy responses, these measures were primarily reactive and crisis-specific rather than structural. Health financing remained inadequate, with OOP expenditures continuing to expose poor households to financial risk. The PHC system, though central to pandemic response, was unable to sustain essential health services, reflecting the fragility of service delivery mechanisms. Taken together, the study concludes that the pandemic did not fundamentally alter the weaknesses of the health system but rather revealed them more starkly. Nonetheless, the lessons learned underscore the importance of institutionalizing reforms, strengthening preparedness, and addressing inequities as Pakistan moves forward.

6. LIMITATIONS

This study has certain limitations which must be acknowledged. As the analysis relied exclusively on secondary data from published literature, government reports, and international databases, the findings were inevitably shaped by the availability and quality of existing evidence. The absence of primary data collection meant that perspectives from frontline health workers, policy makers, and patients could not be directly incorporated, which may have limited the contextual richness of the study. Furthermore, the data available for the immediate post-COVID-19 period remain limited and uneven, particularly for health financing and service delivery indicators, restricting the ability to conduct robust trend analyses. In addition, the reliance on heterogeneous sources, including peer-reviewed studies, policy briefs, and institutional reports, introduces variability in methodological rigor. Despite these constraints, triangulation of findings across multiple credible sources was undertaken to enhance the reliability and validity of results.

7. FUTURE RECOMMENDATIONS

Pakistan should strengthen its primary healthcare system by investing in infrastructure, workforce capacity, and community outreach. Sustainable health financing reforms are needed to reduce reliance on out-of-pocket payments and expand financial protection programs like Sehat Sahulat. Governance innovations such as the National Command and Operation Center (NCOC) should be institutionalized within permanent health security frameworks to ensure effective coordination and data-driven policy-making. Reducing socioeconomic and regional disparities in healthcare access must be prioritized, alongside routine monitoring of health expenditures and service outcomes. By embedding these reforms, Pakistan can build a more resilient, equitable, and sustainable health system for future crises.

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