

## **INTEGRATING PRIVATIZATION, DIGITAL HEALTH, AND SUSTAINABILITY: A HYBRID FRAMEWORK FOR HEALTHCARE TRANSFORMATION UNDER SAUDI ARABIA'S VISION 2030**

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### **Abstract**

Saudi Arabia's Vision 2030 is reshaping healthcare through a dual emphasis on privatization and digital transformation, with sustainability positioned as a critical enabler of long-term resilience. This paper proposes and evaluates a hybrid framework where public-private partnerships (PPPs) finance and operationalize digital health adoption while embedding equity and environmental standards. The analysis benchmarks Saudi reforms against global leaders such as Singapore, Switzerland, and Estonia, as well as regional peers in the Gulf, positioning the Kingdom as a unique hybrid model. Empirical illustrations—including dialysis service privatization, the Seha Virtual Hospital, and insurance reforms—demonstrate how financing structures, digital integration, and sustainability initiatives are converging in practice. Policy recommendations highlight structuring PPP contracts with digital and environmental clauses, insurer-driven incentives for preventive care, and robust monitoring frameworks. Collectively, the study underscores Saudi Arabia's potential to emerge as a global exemplar of healthcare transformation that is efficient, equitable, and future-proof.

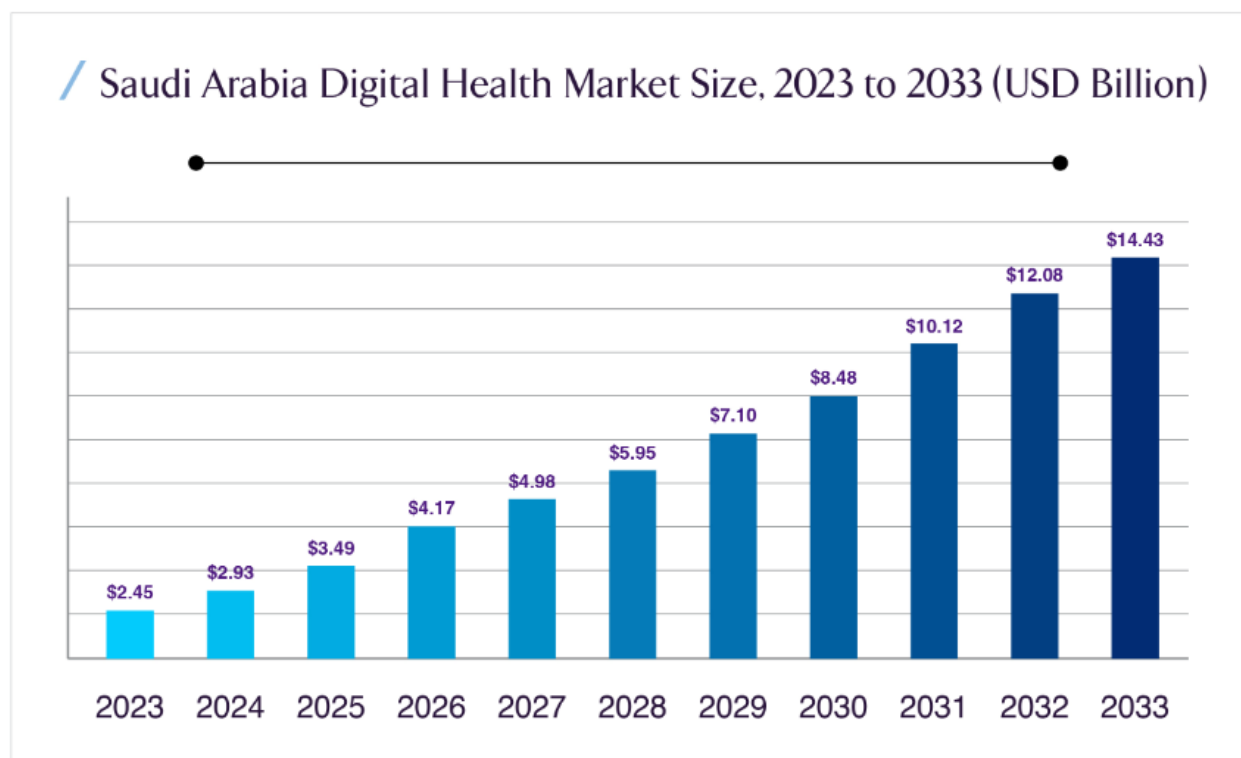
**Keywords:** Public-Private Partnerships (PPPs), Digital Health Transformation, Healthcare Sustainability, Vision 2030 (Saudi Arabia), Health System Reform

### **Introduction**

Saudi Arabia's Vision 2030 is a transformative national initiative that will move the kingdom away from a dependence on oil revenues and reimagine public services, and central to the plan is healthcare reform (Burger & Arampatzi, 2025). The program is built on two mutually supporting pillars, privatization under public-private partnerships (PPPs) on the one hand and fast uptake of digitalization of health on the other hand. Taken together, these represent a clear attempt to deliver care in a way that ensures efficiency, equity, and sustainability. The privatization component of Vision 2030 aims to attract private sector investment, diversify primary sources of healthcare financing, and alleviate the state's efforts to manage a steadily increasing fiscal burden. The private sector's contribution to GDP is earmarked for a sharp increase under the National Transformation Program, and healthcare has been identified as a priority sector within this program. The application of the Private Sector Participation (PSP) Law in 2021 marked a significant policy milestone, as it legalized this structure to attract both domestic and foreign investors systematically, while ensuring patients' entitlements and maintaining their access continuity (Alasiri & Mohammed, 2022). The Kingdom has implemented reforms to privatize hospitals, introduce more rehabilitation, and increase the extent of financing through insurance as components of a strategy for a mixed public-private scheme of healthcare provision.

In parallel, Vision 2030 places unprecedented emphasis on digital transformation as a means to modernize service delivery. Digital health initiatives encompass telemedicine platforms, nationwide electronic health records (EHRs), artificial intelligence-enabled diagnostics, and mobile health applications that empower patients to manage their conditions more effectively. The

launch of Seha Virtual Hospital, the largest of its kind in the region, exemplifies how the Kingdom is integrating advanced digital tools to overcome geographic barriers and ensure equitable access to high-quality care (Mani & Goniewicz, 2024). Beyond service delivery, digitalization also underpins new models of patient safety, resource allocation, and system-wide efficiency. The alignment of privatization with digital innovation represents more than parallel reform; it is a synergistic approach. By leveraging PPPs to fund digital health infrastructure, Saudi Arabia seeks to create a resilient system that can deliver sustainable, patient-centered, and technologically advanced healthcare. This dual emphasis positions the Kingdom not only to address domestic demographic and fiscal challenges but also to emerge as a regional exemplar of integrated healthcare reform. This also aligns with projections of exponential growth in the digital health market (Figure 1), where revenues are expected to more than six fold between 2023 and 2030.



*Figure 1: Digital health market projection (Omari, 2023)*

While existing literature extensively explores healthcare privatization through public–private partnerships (PPPs) and the adoption of digital health solutions as separate domains, a critical gap persists in understanding how these two dimensions can be integrated within a sustainability framework. Research on PPPs in healthcare has primarily concentrated on financing efficiency, risk-sharing mechanisms, and improving infrastructure delivery (Hodge & Greve, 2017; Roehrich, Lewis, & George, 2014). However, these studies seldom consider how digital technologies—such as telemedicine, artificial intelligence, or electronic health records—can be embedded within PPP-financed projects to simultaneously advance equity, access, and environmental sustainability. Likewise, research into digital health transformation has primarily focused on patient outcomes, system efficiency, and the diffusion of innovation (Alami et al., 2020; Wosik et al., 2020a).

However, such a flow of labor frequently ignores the funding arrangements and management framework required to make digital solutions lucrative, reasonable, and sustainable over time. In addition, despite the ever-growing popularity of sustainability in healthcare, which aims to lower carbon footprints and develop robust infrastructures (Morton, Pencheon, & Squires, 2017), few studies connect these aims to the financial and technological changes being implemented within the framework of larger national policies. A thinking gap has been established with this haphazard method. Healthcare reforms will become largely fragmented and disjointed in the absence of a comprehensive framework bridging the gap between PPP-driven financing and the imperatives of digital health and digital health sustainability. In countries such as Saudi Arabia, where Vision 2030 aims to seek a balance between privatization, technological modernization, and sustainable development in a single paradigm, it is crucial to address this gap.

This study advances the literature on healthcare reform by bridging three previously used domains: financing through public–private partnerships (PPPs), digital health adoption, and sustainability. First, it contributes a novel integrated framework that positions PPPs not only as mechanisms for mobilizing private capital and enhancing efficiency, but also as enablers of digital health infrastructure. By reframing PPPs beyond infrastructure delivery, the study introduces their potential role in financing innovations such as telemedicine platforms, electronic health records, and AI-driven diagnostic systems. Second, the research adds to digital health scholarship by embedding technological innovation within financing and governance models. While most studies emphasize outcomes and adoption barriers, this study underscores the structural conditions—particularly PPP-driven financing—that determine the scalability, equity, and resilience of digital health systems. Third, the study extends the debate on sustainable healthcare transformation by integrating environmental and equity considerations into discussions of privatization and digitalization. It highlights how green hospitals, energy-efficient infrastructure, and equitable access can be advanced through financing contracts that explicitly incorporate sustainability clauses. Finally, by situating Saudi Arabia’s Vision 2030 within this nexus, the study offers policy-relevant insights for other emerging economies, contributing both theoretically and practically to global discourses on integrated healthcare transformation.

The primary objective of this study is to propose and evaluate a hybrid framework that integrates public–private partnership (PPP)-driven privatization with digital health adoption and sustainability imperatives. The framework seeks to reposition PPPs from being solely financing and infrastructure mechanisms to becoming catalysts for technological innovation and equitable service delivery. Specifically, the study aims to examine how PPP contracts can embed provisions for telemedicine, electronic health records, and AI-enabled diagnostics, ensuring that digital solutions are accessible across diverse geographic and socio-economic contexts. Simultaneously, it emphasizes incorporating sustainability dimensions—such as green hospital infrastructure, energy efficiency, and value-based care—into financing models to secure long-term resilience. By focusing on Saudi Arabia’s Vision 2030 as a case context, the research not only contributes to theoretical advancement but also generates practical policy insights for designing future-ready healthcare systems that balance efficiency, equity, and sustainability in emerging economies.

## **Literature Review**

### **Privatization and PPPs in Healthcare: Balancing Efficiency and Equity**

Efficiency versus equity has long dominated the debate over privatization and the relationship between privatization and public-private partnerships (PPP) in healthcare. In their opinion, PPPs can introduce managerial capability, capital production, and incentives tied to performance that

will catalyze efficiencies. The advantageous developments related to the PPPs are as follows: along with the accelerating rate of informatization of infrastructure, the de-escalatory course of government fiscal resources, and the rise of cost-saving through the system of risk sharing (Roehrich et al., 2014). Privatization has increased the productivity and responsiveness of hospitals to patient demand in various contexts because it subjects providers to market forces and other incentive types that are competitive and market-driven (Hodge & Greve, 2017). On the other hand, critics note that privatization can also lead to a loss of equity because it places higher emphasis on profitability than accessibility to the poor. Latin American and certain African experiences indicate that in the context where healthcare is extensively privatized, vulnerable populations have lower access because costs and out-of-pocket payments increase, and selective addition to the service is more common (Barlow, Roehrich, & Wright, 2013). It has been established that there is the danger of cream-skimming, whereby even if it is found that the private providers do not simply assault the good forms of treatment but also desert the hard or otherwise non-economic ones, incomplete as it is, it is being put into use to augment the evils (Hermann & Flecker, 2009). Another downside of PPP is that, being a very contractual form, it requires less transparency and accountability; thus, instead of decreasing the imbalance, it strengthens it. The efficiency equity controversy is especially relevant in situations of systemic change, as governments aim at fiscal sustainability as well as the fair provision of services. The issue here is how to develop PPP structures without making them costly in a situation that will not affect universal health coverage. The trade-off between efficiency benefits and the safeguarding of vulnerable groups has thus come to the fore as one of the key challenges in the changing literature on healthcare privatization.

### **Digital Health Adoption: Global Trends and the Saudi Experience**

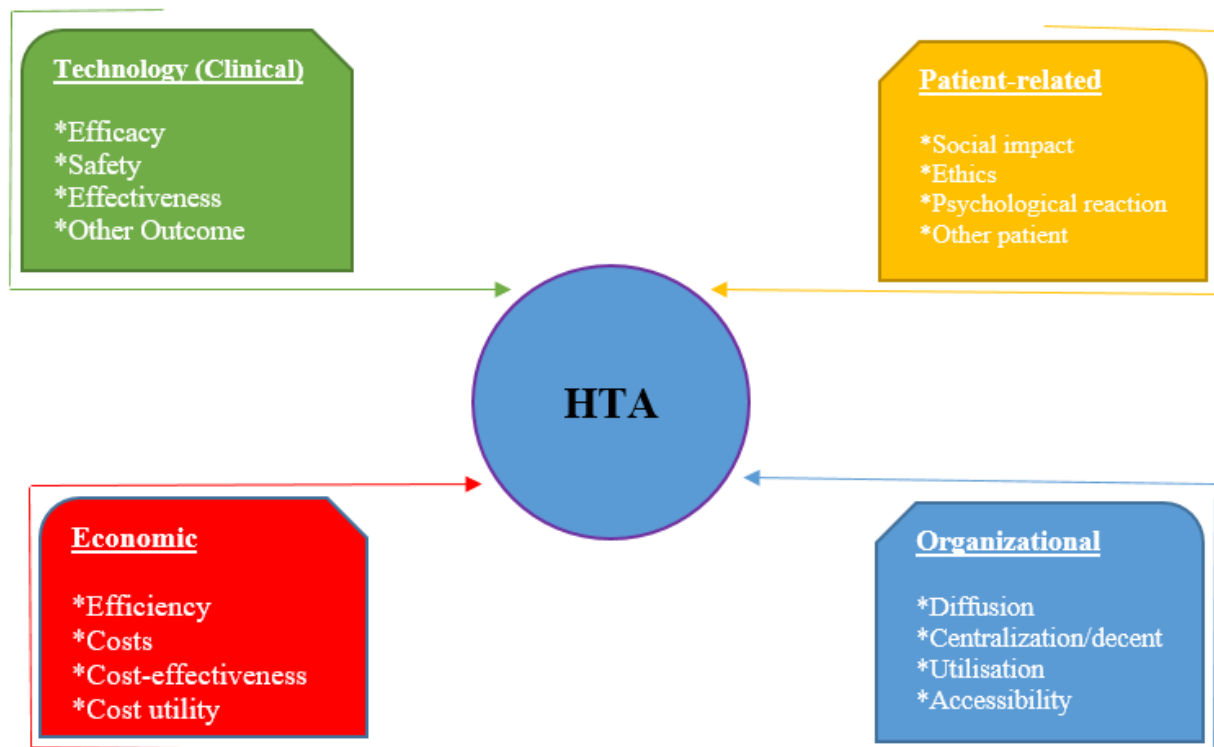
Digital health adoption has expanded rapidly worldwide, driven by advances in telemedicine, electronic health records (EHRs), and artificial intelligence. Studies emphasize that digital platforms have improved continuity of care, especially during the COVID-19 pandemic, where telehealth reduced service disruption and maintained chronic disease management (Wosik et al., 2020b). The World Health Organization's *Global Strategy on Digital Health 2020–2025* outlines priorities for interoperability, governance, and equitable access, stressing that without supportive policies, digital tools risk widening health disparities (WHO, 2021). Similarly, the OECD highlights that integrated health data systems enable both clinical decision-making and secondary uses such as research and public health surveillance, positioning digital health as central to sustainable health system reform (OECD, 2019).

Within Saudi Arabia, Vision 2030 places digital health at the heart of systemic transformation. National initiatives focus on scaling telemedicine, expanding EHR coverage, and implementing AI-based diagnostic support. A notable example is the Seha Virtual Hospital, which connects over 200 hospitals and provides specialized services remotely, addressing geographic inequalities in access to care (Sheerah et al., 2024a). Empirical evaluations highlight significant progress in e-health literacy and mobile health app usage, supported by strong regulatory frameworks around data protection and cybersecurity (Alharbi, Alghanmi, & Fahlevi, 2022). Recent reviews show that Saudi Arabia's digital health adoption is not limited to technology acquisition but embedded in broader financing and policy reforms aimed at efficiency and patient-centered care (Mani & Goniewicz, 2024). This positions the Kingdom as a regional leader in leveraging digital health to achieve both equity and sustainability in healthcare delivery.

### Sustainability and Financing Mechanisms in Healthcare

Value-based care has become an urgent financing reform with a shift in incentives to results. Value-based models support efficiency, prevention, and long-term sustainability by incentivizing patient health gains in relation to service delivery versus offering assistance. Evidence indicates that these structures decrease wasteful use even as the behavior of providers is consistent with system-wide quality goals (Porter, 2010; Tseng, Kaplan, Richman, Shah, & Schulman, 2018). Bundled payments and performance-based contracts have been promising in high-income systems to reduce costs whilst improving patient satisfaction, although concerns still exist over their application in resource-constrained environments.

Another foundation of sustainable financing is health technology assessment (HTA). HTA informs the priority of resource allocation through an organized assessment of cost-effectiveness, safety, and ethical consequences (Figure 2). The European experience emphasizes HTA as an evidence-based decision-maker, constraining unnecessary expenditure on marginal technologies (O'Rourke, Oortwijn, & Schuller, 2020). WHO also recognizes HTA as critical to the realization of universal health coverage, in which investments in innovation should yield proportional population benefits (WHO Press, 2015).



*Figure 2. Key Dimensions of Health Technology Assessment (HTA).*

Sustainability debates also extend to the environmental footprint of healthcare infrastructure. The concept of “green hospitals” integrates energy efficiency, waste reduction, and environmentally responsible procurement into health facility design. Studies show that green hospital initiatives reduce operational costs while improving patient well-being and workforce satisfaction (Eckelman & Sherman, 2016; Kaplan, Sadler, Little, Franz, & Orris, 2012). Incorporating renewable energy, smart resource management, and sustainable construction has become a policy priority in countries aligning healthcare transformation with climate change mitigation goals. Together, these



mechanisms—value-based care, HTA, and green hospitals—illustrate how financial sustainability can be broadened to include economic, social, and environmental dimensions.

### **Gaps in Connecting Financing, Technology, and Sustainability**

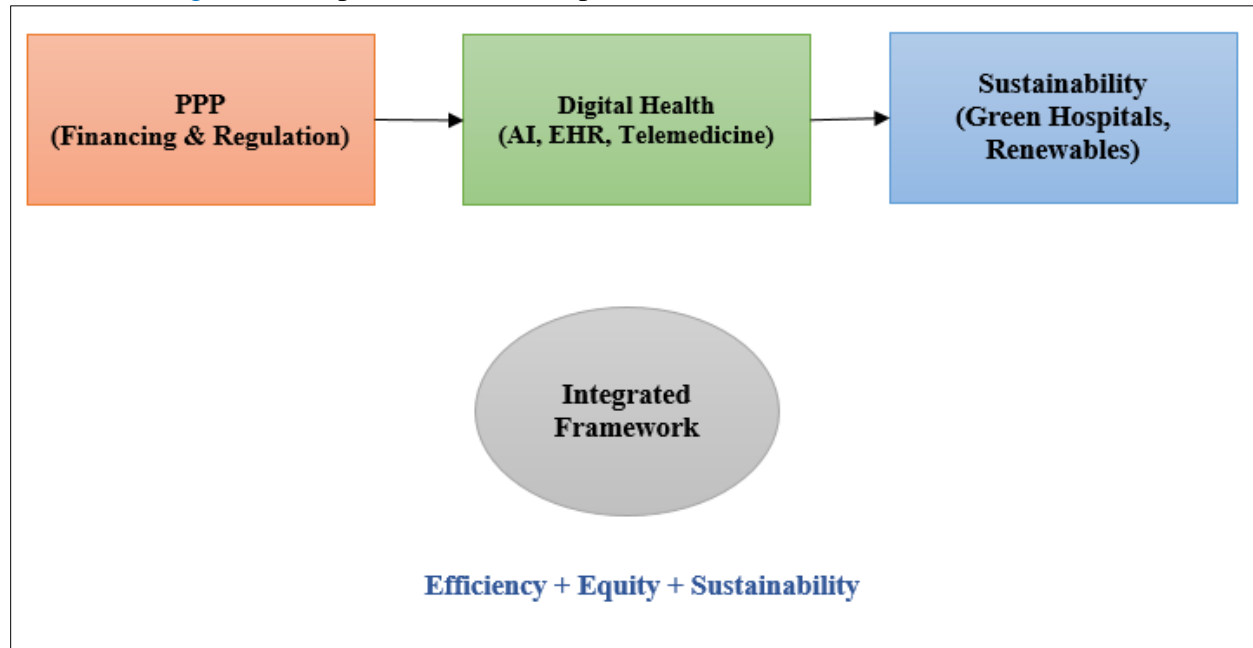
Existing research on healthcare privatization and PPPs largely concentrates on financial efficiency, governance structures, and infrastructure delivery, often neglecting the implications for technological adoption and sustainability. Analyses of PPP performance emphasize cost control, risk allocation, and accountability frameworks (Roehrich et al., 2014), but rarely integrate how such financing mechanisms can actively support the deployment of digital innovations. Similarly, studies on digital health adoption—whether focusing on telemedicine, AI, or electronic health records—tend to foreground patient outcomes and system efficiency (Wosik et al., 2020b), while paying little attention to the financing structures that enable equitable scaling of these technologies. Sustainability debates, although increasingly present in global health policy, are also treated in isolation. Research on green hospitals highlights environmental benefits and cost savings (ElSafty, 2025), yet does not connect these to the contractual and financial frameworks driving health sector transformation. The absence of integrative analyses creates a fragmented evidence base, where privatization reforms, technological innovations, and sustainability initiatives are studied separately rather than as interconnected drivers of systemic change. This approach leaves a gap in understanding how hybrid models can leverage PPP financing to advance both digital health adoption and environmental sustainability in tandem with equity-focused reforms.

### **Conceptual Framework: The PPP–Digital Health–Sustainability Nexus Model**

The proposed framework positions public–private partnerships (PPPs) as the financial and structural foundation that enables integration of digital health and sustainability within healthcare reform. Private capital, when aligned with robust government regulation, creates opportunities to finance not only infrastructure but also the technological and environmental upgrades needed for resilient systems (Cull, Gill, Pedraza, Ruiz-Ortega, & Zeni, 2024). Efficiency emerges from embedding digital technologies—such as artificial intelligence, electronic health records, and telemedicine—into PPP-financed facilities (Mabelo, 2025). These tools streamline clinical workflows, reduce duplication of diagnostic testing, and improve care coordination across networks, translating financial investments into measurable productivity gains (Agarwal, Gao, DesRoches, & Jha, 2010). In systems where PPPs underwrite digital integration, efficiency becomes an outcome of both economic design and technological innovation.

Development of equity, PPP-supported insurance plans, and contractual requirements that actively promote the use of digital access by underserved groups in connection with other requirements achieves equity. One of the platforms that reach rural and low-income communities and provide meaningful inclusivity towards the provision of technologically-supported care is telemedicine sites and mobile health applications (Keesara, Jonas, & Schulman, 2020). The role of government regulation is central to the nature of equity requirements in PPP contracts and ensuring the existence of privatized involvement in universal health coverage in the marketplace, which exists in an environment of nonmarket segmentation. This is done through the achievement of sustainability via PPP financing directed to the environmentally sensitive infrastructure. Green hospitals are projected to be establishments that incorporate energy-efficient buildings and water-saving architecture, along with plans that minimize waste and reduce ecological footprints, ultimately leading to lower operational expenses in the long run (Chung & Meltzer, 2009). Incorporating renewable energy solutions into PPP projects further aligns healthcare expansion with global climate commitments, transforming privatization into a lever for sustainable

development. The nexus model thus demonstrates how financial innovation, digital transformation, and environmental stewardship can converge within a single integrated framework. [Figure 3](#) also presents this conceptual framework.



*Figure 3: Conceptual Framework*

### Comparative Analysis

Singapore operationalizes a tightly governed national e-health backbone: the National Electronic Health Record (NEHR) aggregates key clinical summaries across providers, while HealthHub gives residents patient-facing access to medications, allergies and lab results within the same ecosystem (and allows individuals to track access to their records) (Ministry of Health Singapore, 2025). This central architecture enables longitudinal care coordination at scale.

Switzerland contrasts as an insurance-driven system with universal mandatory coverage under the Federal Law on Compulsory Health Insurance (LAMal); residents must enroll within three months of residence, with regulated benefits, deductibles and premium subsidies overseen by the Federal Office of Public Health (FOPH) (Herzlinger & Parsa-Parsi, 2004). The model exemplifies managed competition and strong financial protection, rather than a state run provider network.

Estonia represents a digital frontrunner: its nationwide E-Health Record, built on the X-Road interoperability layer, integrates data from all providers and gives citizens online access; WHO/European Observatory reviews document the system's maturity and ongoing equity challenges despite high digitalization (Tiik & Ross, 2010).

Among Gulf peers, the UAE has pursued federated—but interoperable—health information exchanges: Abu Dhabi's Malaffi connects public and private providers under Department of Health policies mandating standardized coding and data exchange (Deeb, Lakinska, Goyal, Al Braiki, & Al Hashemi, 2023); Dubai's NABIDH performs a similar role under the Dubai Health Authority, linking hospitals and clinics across the emirate (Hamidi, 2014). Qatar is sequencing financing reform through a new mandatory health insurance framework (Al-Kaabi, 2021), with the Ministry of Public Health defining competencies and benefit design; implementation has prioritized non-citizens and visitors while citizens continue to access publicly financed care.

Saudi Arabia’s trajectory aligns elements from both groups into a hybrid model. On the financing side, Vision 2030 institutionalizes privatization/PPP capacity via the National Center for Privatization & PPP and a dedicated Privatization Program; on the delivery side, the Health Sector Transformation Program anchors large-scale digitalization, exemplified by Seha Virtual Hospital, which connects more than 150–170 hospitals and delivers dozens of specialized services via telemedicine—functioning as a national virtual tertiary network. Figure 4 shows that medicinal consultations through Sehha app are significantly increased after Covid-19. In combination, Saudi policy choices blend Switzerland-style regulated financing with Singapore/Estonia-style digital integration, while maintaining Gulf-region interoperability ambitions—positioning the Kingdom as a PPP-enabled, digitally coordinated system rather than a purely insurance- or provider-led model. Table 1 summarizes the comparison.

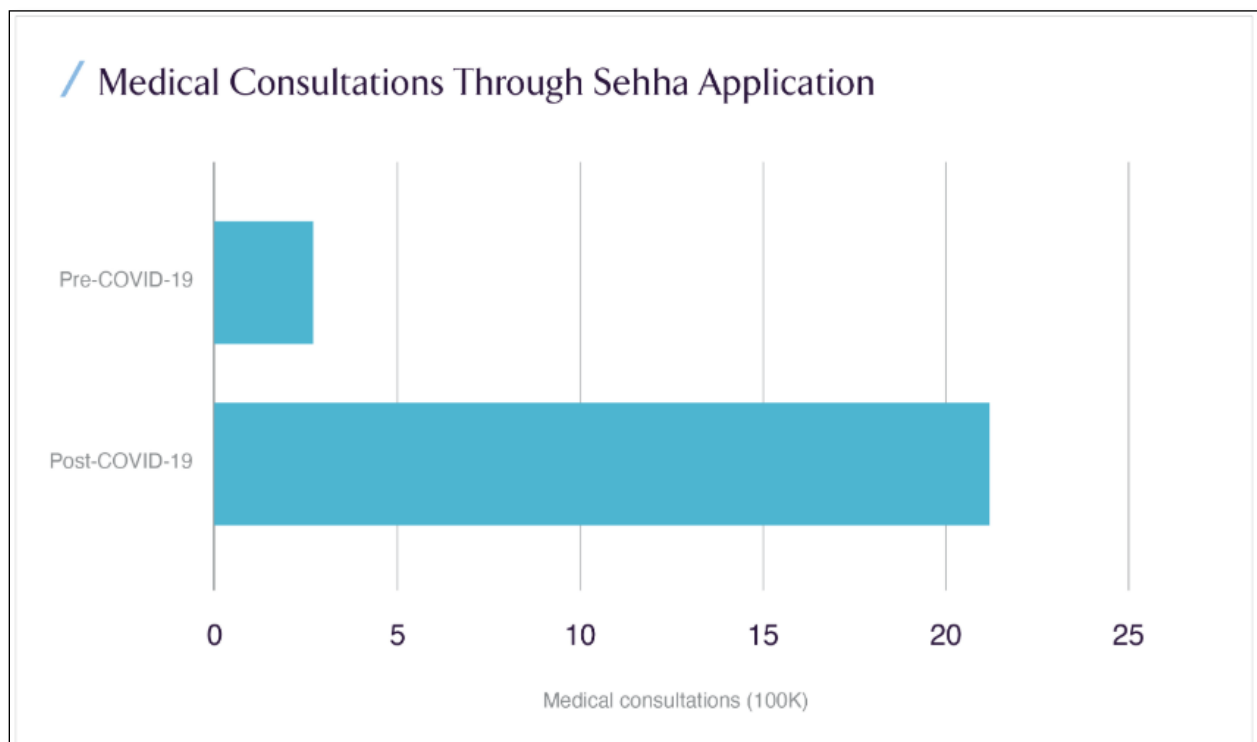


Figure 4: Pre and Post Covid-19 Consultations Through Sehha Application (Omari, 2023)

Table 1: Comparative Features of Healthcare Financing and Digital Health Models

Country / Region	Financing Model	Digital Health Infrastructure	Key Innovations / Features	Relevance for Saudi Arabia
Singapore	Public financing with Medisave, MediShield Life, MediFund	National Electronic Health Record (NEHR), HealthHub patient portal	Longitudinal records, patient-controlled data	Illustrates integrated national EHR backbone
Switzerland	Universal mandatory insurance (LAMal),	Regional eHealth exchanges,	Strong financial protection,	Highlights role of regulation and



	regulated premiums and subsidies	electronic patient records	managed competition	mandatory insurance
<b>Estonia</b>	Social health insurance via Estonian Health Insurance Fund	Nationwide E-Health Record via X-Road interoperability	Citizens' online access, blockchain-based data integrity	Demonstrates advanced digital interoperability
<b>UAE (Abu Dhabi, Dubai)</b>	Mixed financing with mandatory insurance for residents	Abu Dhabi "Malaffi", Dubai "NABIDH"	Federated HIE models linking public/private hospitals	Regional precedent for large-scale HIE
<b>Qatar</b>	Mandatory Health Insurance (Law No. 22/2021) for non-citizens; public financing for citizens	Expanding e-health platforms, focus on insurance integration	Gradual roll-out prioritizing expatriates	Shows staged insurance-based reform in the Gulf
<b>Saudi Arabia</b>	Privatization/PPP with insurance expansion under Vision 2030	Seha Virtual Hospital; EHR roll-out; telemedicine networks	PPP-backed digital health, equity clauses, green hospital initiatives	Hybrid model blending financing reform + digital health

## Empirical Illustration

### Dialysis Centers Privatization

Renal dialysis is among the earliest domains where Saudi Arabia has piloted public-private partnerships (PPPs) as part of Vision 2030's healthcare transformation. According to (Alghamdi & Alonazi, 2024) the Kingdom operated 275 dialysis centers, equipped with more than 8,000 hemodialysis machines, treating approximately 20,534 hemodialysis (HD) patients and 1,861 peritoneal dialysis (PD) patients. The distribution of these services illustrates the strong but gradually shifting role of the public sector: Ministry of Health facilities accounted for 70.18% of centers and 67.13% of machines, while the private sector managed 18.55% of centers and 13.26% of machines. The remaining capacity was under other governmental agencies such as the National Guard and military hospitals. Despite public dominance, outsourcing contracts have increasingly been signed with global providers such as DaVita and Diaverum, who now manage several thousand patients annually under multi-year concessions. These arrangements not only ensure international standards in dialysis delivery but also introduce bundled payments and performance monitoring, marking a shift toward efficiency-driven service models. The structure also frees MoH resources to focus on preventive nephrology and transplantation, aligning with Vision 2030's emphasis on reallocating state resources toward stewardship and system oversight rather than direct provision

### Seha Virtual Hospital Initiative

The Seha Virtual Hospital (SVH) is a flagship project in the digital transformation area. Launched in 2022, SVH is now the largest virtual hospital in the world. By the beginning of 2024, it was connected to over 170 hospitals and offered access to 29 basic specialties and over 73 sub-specialties staffed by over 150 physicians (Ministry of Health, 2024). Patient throughput has

increased at an exponential rate, with the facility being able to handle up to 480,000 per annum from different regions of the Kingdom. More recent reports indicate that SVH now integrates 224 hospitals and delivers 44 specialized services, including neurology, cardiology, intensive care, and oncology consultations. The model addresses two persistent challenges in the Saudi healthcare system: geographical disparities in specialist access and the rising cost of tertiary care. By leveraging telemedicine platforms, AI-supported diagnostics, and remote monitoring, SVH minimizes unnecessary patient transfers to tertiary centers in Riyadh or Jeddah, while ensuring that rural and peripheral regions have timely access to advanced care (Sheerah et al., 2024b). Furthermore, the initiative demonstrates a fusion of digital health and PPP financing: many of the platforms and infrastructure contracts have been developed with private-sector technology partners, blending public funding with private expertise.

### **Insurance Reforms Supporting e-Health Rollout**

Parallel to privatization and digitalization, insurance reforms have been critical in shaping Saudi Arabia's evolving healthcare financing model. The Council of Cooperative Health Insurance (CCHI) has steadily expanded mandatory coverage, initially for expatriates and private-sector employees, and now gradually for the broader population. Looking ahead, the establishment of the National Health Insurance Center (NHIC)—expected to become fully operational by 2026—will provide lifetime coverage for all Saudi citizens, moving away from the current model of annual renewals (AlJohani & Bugis, 2024). This reform is expected to increase efficiency in claims management and strengthen financial sustainability.

The scale of private investment in the insurance-linked healthcare market is substantial. Current estimates suggest that healthcare insurance is projected to attract SR 330 billion (approximately USD 88 billion) in private investment by 2030, with the overall health insurance market expected to grow from USD 7.8 billion in 2024 to USD 12.5 billion by 2033 (Saudi Market Research Consulting, 2025). Digital integration is central to these reforms. The National Platform for Health and Insurance Exchange Services (NPHIES) is already transforming claims processing, enabling real-time digital authorizations and billing, reducing administrative costs, and ensuring interoperability between insurers, providers, and regulators (Almazrou, 2024). Insurers are also increasingly mandated to reimburse for telemedicine consultations and digital prescriptions, directly linking financing reforms with the uptake of e-health services.

### **Policy and Managerial Implications**

Saudi policymakers can enhance the transformative potential of PPPs by embedding explicit clauses that mandate digital health adoption and sustainability standards within contractual frameworks. Contracts should not only define financial and operational responsibilities but also require investment in telemedicine platforms, AI-assisted diagnostics, and interoperable electronic health records. Parallel provisions on sustainability—such as renewable energy integration, water conservation, and waste management—would align healthcare infrastructure with the Kingdom's broader climate and environmental goals under Vision 2030.

Private insurers play a crucial role in shaping incentives for preventive and digital health use. By paying for teleconsultations, remote monitoring solutions, and mobile applications for health and condition information, providers can make digital service delivery normal while keeping expensive hospital stays to a minimum. Performance-based Risk Sharing Models, including Contract Remuneration: Alternative payment models may also seek to incentivize providers for demonstrating preventive results, such as reductions in avoidable readmissions or improved management of chronic diseases. Such alignment would cause the financing system to move from

reactive, treatment-centered spending to proactive, outcome-based care. Strong monitoring frameworks are still necessary to protect equity. Without someone looking at the process, profit incentives work to encourage the bundling of high-margin services to the populations better served by cities, leaving vulnerable populations with unmet needs. Resolving the risks by independent quality auditing, equity, and environmental performance audit authorities. The publication of public dashboards on indicators for improving service delivery and sustainability would enhance accountability processes. Together, these steps ensure PPP-led reforms align efficiency and innovation with equity and environmental stewardship to create a better chance for achieving strong and lasting transformation of healthcare outcomes.

## Conclusion

Vision 2030 will show that healthcare reform is not necessarily restricted to incremental changes in financing or how services are delivered but can be recast as an integral model in which privatization, digital innovation, and sustainability go hand in hand. Through the careful structuring of PPPs, the Kingdom is mobilizing private capital, widening financing options, and freeing up fiscal policy space for the state while at the same time preparing the ground for a technological transformation. The incorporation of digital health into this model, through programs like the Seha Virtual Hospital and the adoption of interoperable electronic health records, demonstrates how new technology can increase access, enhance coordination, and facilitate more patient-centric healthcare, even among geographically isolated populations.

Equally important is the acknowledgement that long-term change needs to be sustainable from both an environmental and a social perspective. Making modernization efforts to replicate unsustainable practices of previous generations, by including sustainability provisions in PPP contracts, and by prioritizing green hospitals, renewable energy sources, and the efficient utilization of resources. When coupled with regulatory oversight and insurance reforms that encourage prevention and digital care, this hybrid model promises to provide a system that would be both more efficient and not incompatible with public accountability concerns, and more innovative without sacrificing stewardship. When adopted prospectively and transparently, Saudi Arabia's strategy places the Kingdom not only to address national health issues with success but also to present an example for countries to follow if they wish to harmonize privatization with fair inclusivity and resilience to climatic and environmental disruptions. The result will be a forward-looking, globally-connected future healthcare system that is firmly grounded in the principles of sustainable development.

## References

- Agarwal, R., Gao, G. G., DesRoches, C., & Jha, A. K. (2010). The digital transformation of healthcare: Current status and the road ahead. *Information Systems Research*, 21(4), 796–809. <https://doi.org/10.1287/ISRE.1100.0327>
- Al-Kaabi, M. H. (2021). Qatar's National Health Insurance Company (NHIC): What Happened, and What Shall Be Done to Develop the Current Social Health Insurance Law. *Journal of Legal, Ethical and Regulatory Issues*, 24. Retrieved from <https://heinonline.org/HOL/Page?handle=hein.journals/jnlolletl24&id=1455&div=&collection=>
- Alami, H., Alami, H., Rivard, L., Rivard, L., Lehoux, P., Lehoux, P., ... Fortin, J. P. (2020). Artificial intelligence in health care: Laying the Foundation for Responsible, sustainable, and

- inclusive innovation in low- And middle-income countries. *Globalization and Health*, 16(1), 1–6. <https://doi.org/10.1186/S12992-020-00584-1/METRICS>
- Alasiri, A. A., & Mohammed, V. (2022). Healthcare Transformation in Saudi Arabia: An Overview Since the Launch of Vision 2030. *Health Services Insights*, 15. [https://doi.org/10.1177/11786329221121214/SUPPL\\_FILE/SJ-DOCX-1-HIS-10.1177\\_11786329221121214.DOCX](https://doi.org/10.1177/11786329221121214/SUPPL_FILE/SJ-DOCX-1-HIS-10.1177_11786329221121214.DOCX)
- Alghamdi, L. S., & Alonazi, W. (2024). The utilization of renal dialysis: a comprehensive study in Saudi Arabia. *BMC Public Health*, 24(1), 1914. <https://doi.org/10.1186/S12889-024-19450-5>
- Alharbi, N. S., Alghanmi, A. S., & Fahlevi, M. (2022). Adoption of Health Mobile Apps during the COVID-19 Lockdown: A Health Belief Model Approach. *International Journal of Environmental Research and Public Health*, 19(7), 4179. <https://doi.org/10.3390/IJERPH19074179>
- AlJohani, B. A., & Bugis, B. A. (2024). Advantages and Challenges of Implementation and Strategies for Health Insurance in Saudi Arabia: A Systemic Review. *Inquiry (United States)*, 61, 21–37. <https://doi.org/10.1177/00469580241233447>
- Almazrou, S. H. (2024). Unveiling the National Platform for Health and Insurance Exchange Services: Data Exchange Era within in the Healthcare System in Saudi Arabia. *Saudi Journal of Health Systems Research*, 5(1), 1–2. <https://doi.org/10.1159/000542561>
- Barlow, J., Roehrich, J., & Wright, S. (2013). Europe sees mixed results from public-private partnerships for building and managing health care facilities and services. *Health Affairs*, 32(1), 146–154. <https://doi.org/10.1377/HLTHAFF.2011.1223;WEBSITE:WEBSITE:HOPE-SITE;REQUESTEDJOURNAL:JOURNAL:HLTHAFF;PAGE:STRING:ARTICLE/CHAPTER>
- Burger, M. J., & Arampatzis, E. (2025). Vision 2030 and Subjective Well-Being in Saudi Arabia. *Sustainability 2025, Vol. 17, Page 6856*, 17(15), 6856. <https://doi.org/10.3390/SU17156856>
- Chung, J. W., & Meltzer, D. O. (2009). Estimate of the Carbon Footprint of the US Health Care Sector. *JAMA*, 302(18), 1970–1972. <https://doi.org/10.1001/JAMA.2009.1610>
- Cull, R., Gill, I., Pedraza, A., Ruiz-Ortega, C., & Zeni, F. (2024). *Mobilizing Private Capital for the Sustainable Development Goals*. <https://doi.org/10.1596/1813-9450-10838>
- Deeb, A., Lakinska, B., Goyal, R., Al Braiki, A., & Al Hashemi, H. (2023). Bringing health information exchange to the Middle East and North Africa: the case of Malaffi in Abu Dhabi. *Health Information Exchange: Navigating and Managing a Network of Health Information Systems*, 665–680. <https://doi.org/10.1016/B978-0-323-90802-3.00020-4>
- Eckelman, M. J., & Sherman, J. (2016). Environmental Impacts of the U.S. Health Care System and Effects on Public Health. *PLOS ONE*, 11(6), e0157014. <https://doi.org/10.1371/JOURNAL.PONE.0157014>
- ElSafty, A. (2025). the Concept of Green Hospitals and Sustainable Practices (Review Article). *Egyptian Journal of Occupational Medicine*, 49(1), 117–123. <https://doi.org/10.21608/ejom.2024.254652.1355>
- Hamidi, S. (2014). Evidence from the national health account: The case of Dubai. *Risk Management and Healthcare Policy*, 7, 163–175. <https://doi.org/10.2147/RMHP.S69868;WEBSITE:WEBSITE:TFOPB;PAGEGROUP:STRI>

# NG:PUBLICATION

- Hermann, C., & Flecker, J. (2009). *Privatisation of Public Services and the Impact on Quality, Employment and Productivity (PIQUE) - Final Report* (Vol. 028478).
- Herzlinger, R. E., & Parsa-Parsi, R. (2004). Consumer-driven health care: Lessons from Switzerland. *JAMA*, 292(10), 1213–1220. <https://doi.org/10.1001/JAMA.292.10.1213>
- Hodge, G. A., & Greve, C. (2017). On Public–Private Partnership Performance: A Contemporary Review. *Public Works Management and Policy*, 22(1), 55–78. <https://doi.org/10.1177/1087724X16657830>;WEBSITE:WEBSITE:SAGE;WGROU:STRING:PUBLICATION
- Kaplan, S., Sadler, B., Little, K., Franz, C., & Orris, P. (2012). *Can sustainable hospitals help bend the health care cost curve?* New York: Commonwealth Fund. Retrieved from [https://www.greenribboncommission.org/wp-content/uploads/2016/01/bending\\_the\\_curve.pdf](https://www.greenribboncommission.org/wp-content/uploads/2016/01/bending_the_curve.pdf)
- Keesara, S., Jonas, A., & Schulman, K. (2020). Covid-19 and Health Care’s Digital Revolution. *New England Journal of Medicine*, 382(23). [https://doi.org/10.1056/NEJMP2005835/SUPPL\\_FILE/NEJMP2005835\\_DISCLOSURES.PDF](https://doi.org/10.1056/NEJMP2005835/SUPPL_FILE/NEJMP2005835_DISCLOSURES.PDF)
- Mabelo, P. (2025). BIM Implementation as Lifecycle Enabler. Retrieved from [https://www.researchgate.net/profile/Pascal-Mabelo-2/publication/392522625\\_BIM\\_Implementation\\_as\\_Lifecycle\\_Enabler\\_1/links/68470dcad1054b0207fac7f1/BIM-Implementation-as-Lifecycle-Enabler-1.pdf](https://www.researchgate.net/profile/Pascal-Mabelo-2/publication/392522625_BIM_Implementation_as_Lifecycle_Enabler_1/links/68470dcad1054b0207fac7f1/BIM-Implementation-as-Lifecycle-Enabler-1.pdf)
- Mani, Z. A., & Goniewicz, K. (2024). Transforming Healthcare in Saudi Arabia: A Comprehensive Evaluation of Vision 2030’s Impact. *Sustainability 2024, Vol. 16, Page 3277, 16(8), 3277*. <https://doi.org/10.3390/SU16083277>
- Ministry of Health. (2024). MOH Initiatives & Projects - Seha Virtual Hospital. Retrieved September 1, 2025, from <https://www.moh.gov.sa/en/Ministry/Projects/Pages/Seha-Virtual-Hospital.aspx>
- Ministry of Health Singapore. (2025). Health Information and the NEHR. Retrieved August 31, 2025, from [https://www.healthinfo.gov.sg/overview/health-info-and-nehr/?utm\\_source=chatgpt.com](https://www.healthinfo.gov.sg/overview/health-info-and-nehr/?utm_source=chatgpt.com)
- Morton, S., Pencheon, D., & Squires, N. (2017). Sustainable Development Goals (SDGs), and their implementation: A national global framework for health, development and equity needs a systems approach at every level. *British Medical Bulletin*, 124(1), 81–90. <https://doi.org/10.1093/BMB/LDX031>
- O’Rourke, B., Oortwijn, W., & Schuller, T. (2020). The new definition of health technology assessment: A milestone in international collaboration. *International Journal of Technology Assessment in Health Care*, 36(3), 187–190. <https://doi.org/10.1017/S0266462320000215>
- OECD. (2019). *Health in the 21st Century*.
- Omari, E. (2023). Seha Virtual Hospital: Transforming Healthcare Delivery in Saudi Arabia. Retrieved September 1, 2025, from <https://www.tanmeya.com.sa/article/seha-virtual-hospital-transforming-healthcare-delivery-in-saudi-arabia>
- Porter, M. E. (2010). What Is Value in Health Care? *New England Journal of Medicine*, 363(26), 2477–2481. [https://doi.org/10.1056/NEJMP1011024/SUPPL\\_FILE/NEJMP1011024\\_DISCLOSURES.PDF](https://doi.org/10.1056/NEJMP1011024/SUPPL_FILE/NEJMP1011024_DISCLOSURES.PDF)



- Roehrich, J. K., Lewis, M. A., & George, G. (2014). Are public–private partnerships a healthy option? A systematic literature review. *Social Science & Medicine*, 113, 110–119. <https://doi.org/10.1016/J.SOCSCIMED.2014.03.037>
- Saudi Market Research Consulting. (2025). Digital Health Spurs Insurance Growth in KSA. Retrieved September 1, 2025, from [https://saudimarketresearchconsulting.com/insights/articles/digital-health-spurs-insurance-growth-in-ksa?utm\\_source=chatgpt.com](https://saudimarketresearchconsulting.com/insights/articles/digital-health-spurs-insurance-growth-in-ksa?utm_source=chatgpt.com)
- Sheerah, H. A., AlSalamah, S., Alsalamah, S. A., Lu, C. T., Arafa, A., Zaatari, E., ... Labrique, A. (2024a). The Rise of Virtual Health Care: Transforming the Health Care Landscape in the Kingdom of Saudi Arabia: A Review Article. *Telemedicine and E-Health*, 30(10), 2545–2554. <https://doi.org/10.1089/TMJ.2024.0114;ISSUE:ISSUE:10.1089/TMJ.2024.30.ISSUE-10;WGROU:STRING:PUBLICATION>
- Sheerah, H. A., AlSalamah, S., Alsalamah, S. A., Lu, C. T., Arafa, A., Zaatari, E., ... Labrique, A. (2024b). The Rise of Virtual Health Care: Transforming the Health Care Landscape in the Kingdom of Saudi Arabia: A Review Article. *Telemedicine and E-Health*, 30(10), 2545–2554. <https://doi.org/10.1089/TMJ.2024.0114;ISSUE:ISSUE:10.1089/TMJ.2024.30.ISSUE-10;WGROU:STRING:PUBLICATION>
- Tiik, M., & Ross, P. (2010). Patient Opportunities in the Estonian Electronic Health Record System. *Studies in Health Technology and Informatics*, 156, 171–177. <https://doi.org/10.3233/978-1-60750-565-5-171>
- Tseng, P., Kaplan, R. S., Richman, B. D., Shah, M. A., & Schulman, K. A. (2018). Administrative Costs Associated With Physician Billing and Insurance-Related Activities at an Academic Health Care System. *JAMA*, 319(7), 691–697. <https://doi.org/10.1001/JAMA.2017.19148>
- WHO. (2021). *Global strategy on digital health 2020-2025*. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO. Who. Retrieved from <http://apps.who.int/iris>
- Wosik, J., Fudim, M., Cameron, B., Gellad, Z. F., Cho, A., Phinney, D., ... Tcheng, J. (2020a). Telehealth transformation: COVID-19 and the rise of virtual care. *Journal of the American Medical Informatics Association*, 27(6), 957–962. <https://doi.org/10.1093/JAMIA/OCAA067>
- Wosik, J., Fudim, M., Cameron, B., Gellad, Z. F., Cho, A., Phinney, D., ... Tcheng, J. (2020b). Telehealth transformation: COVID-19 and the rise of virtual care. *Journal of the American Medical Informatics Association*, 27(6), 957–962. <https://doi.org/10.1093/JAMIA/OCAA067>