

Sequencing Primary Healthcare Reform for Universal Health Coverage: Lessons from China's Health System Transformation for Pakistan

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ABSTRACT

Background: Universal health coverage (UHC) aims to ensure that populations have access to the health services they need without financial hardship. In Pakistan, UHC implementation has focused largely on the hospital-based Sehat Sahulat Programme (SSP), while important primary healthcare (PHC) challenges remain. In contrast, China developed its PHC delivery system over several decades before achieving near-universal health insurance coverage. This review examines the sequencing of PHC reforms in China and identifies lessons from China's health system transformation that may be relevant and potentially adaptable to Pakistan.

The review focuses on China's reform journey, including the development of the rural health workforce and PHC delivery system through the "barefoot doctor" initiative and rural cooperative financing system from the mid-twentieth century, followed by the expansion of insurance coverage since 2003, and subsequently the development of digital health and family-doctor contracting after basic health coverage was largely achieved. The analysis considers the potential applicability of these sequential reforms within Pakistan's institutional and socioeconomic context.

Pakistan began implementing a hospital-oriented health insurance system at the national level in 2015; however, challenges remain in the distribution of PHC personnel, functionality of health facilities, referral systems, and public health financing. Public health expenditure was approximately 0.8% of GDP in FY2025, substantially below the widely cited 5%-of-GDP government health spending target in the UHC financing literature. These challenges are further complicated by governance fragmentation following the 18th Constitutional Amendment. China's experience suggests that strengthening PHC foundations, including the workforce, service delivery infrastructure, financing mechanisms, and referral systems, before or alongside broader insurance expansion may provide a more sustainable pathway toward UHC.

Conclusion: Sustainable and equitable UHC in Pakistan may depend on strengthening the foundations of PHC and aligning these reforms with health financing and insurance expansion. Lessons from China's sequential approach may be informative for Pakistan, but their adaptation should take into account the country's institutional, socioeconomic, and governance context.

Keywords: Universal Health Coverage; Primary Healthcare; Health System Reform; China; Pakistan; Health Insurance; Health Financing; Digital Health.

INTRODUCTION

The paths towards achieving UHC are quite different in two large Asian countries. Two big, populous Asian countries present stark contrast in the paths that lead to achieving UHC. China has also seen significant progress in both achieving near-universal health insurance coverage, which increased from about 22% of the

population in 2003 to over 95% in 2013, and in improving maternal and child health outcomes, as well as decreasing out-of-pocket expenditures from 60% of current health expenditure in 2000 to 36% in 2016.¹ The Sehat Sahulat Programme (SSP), launched in 2015 and then extended to several jurisdictions, showed that at some points a total of more than 37 million



families were covered and that, at this time, most families were covered for defined secondary and tertiary inpatient services, while coverage and arrangements were different in each province and territory.²

But the two paths are not the same and comparing headcount numbers of coverage would be misnomer. China's insurance expansion followed more than fifty years of investment in rural and community-based primary care delivery, beginning with the "barefoot doctor" system of the 1950s--1970s and continuing through a 2009 reform that included PHC strengthening as one of four pillars, with PHC-related infrastructure, insurance expansion, public health services and essential medicines addressed during the first phase (2009--2011), while major public-hospital payment and governance reforms were taken forward in a subsequent phase beginning in 2012.² Pakistan's SSP, by contrast, was introduced while approximately 80% of PHC facilities are reported to be in the private sector, up to 60% of health expenditure is paid out of pocket, and a substantial share of public Basic Health Units are non-functional or under-resourced. The SSP provides coverage for inpatient secondary and tertiary care, but traditionally does not provide outpatient care for PHC, which remains outside the insurance coverage it was meant to extend.¹⁻³

This review is not about suggesting that Pakistan should emulate the Chinese Health system. Nor does it suggest that China can serve as a blueprint for direct transposition: the two countries are too different for that to be an appropriate policy objective. At the same time, the order in which reforms are implemented from workforce to infrastructure, governance, and referral capacity, and from large-scale financing to other reforms matters for the realisation of UHC in terms of financial protection and access.⁴ The central argument developed here is that the sequence in which reforms are introduced and that is, which reforms are implemented before, concurrently with, or after large-scale financing reform has material impacts on the likelihood of achieving equitable and sustainable improvements in financial protection and access to health. The review critically analyzes the transferability of some elements of the reform pathway in China, others that need significant adaptation and those that are unlikely to be viable in Pakistan due to structural differences between the two countries.

Sequencing in Historical Institutionalism

The influence of the sequence of reform can be found in a larger literature on historical-institutionalist research on path dependence and critical junctures. With respect to social policies in particular, the influence of path-dependence is shown in the way that welfare-states develop: Haggard and Kaufman showed that the expansion of welfare-states is more likely to succeed when it follows administrative and institutional development, as opposed to the development of capacity after the benefits are introduced, in a pattern that has a clear structural resemblance to the foundation-financing relationship examined in this review in the context of health systems.⁵

A second mechanism based on this literature accounts, not only for the fact that a foundation-first or funding-first sequence of action yields better results, but also for the reasons why governments select one over another and why once-initiated paths are hard to reverse. The barefoot doctor experience in China seems to generate a constituency that is vested in protecting and expanding community primary care, a constituency that could have supported the implementation of a different policy that would have redirected resources to primary care that they had not yet experienced, whereas the beneficiaries of insurance-first reforms are likely to be insured and dependent on hospitals.⁶ Thus more inclined to defend the benefits they

already receive than to invest in new primary care services as it argues that once a country has initiated a financing-first sequence, the next round of investments in the foundation layer will present a political-economy headwind, given that their interests were formed by the first sequencing choice.⁷ This policy-feedback mechanism is not a causal claim that is being tested here, but rather a plausible interpretive lens for applying to the comparison between China and Pakistan; directly testing it would require the type of longitudinal political-economy data collection that a narrative review is not suited to.

China's Health System Transformation

Foundations: The Barefoot Doctor Era (1949--1978)

The PHC system in China traces its origins to the collectivist rural health system which developed since 1949 but can be broken down into two sub-periods of development rather than one undifferentiated period. Over the years 1949 to 1957, the number of China's county hospitals increased by approximately 50%, from 1437 to 2193, despite the period's acute resource constraints and the presence of a difficult post-1949 political climate. Two features proved to be consequential over these years: the proliferation of a low-cost, community-based primary care workforce, and the development of an administrative culture of 'policy experimentation' within the multi-level provincial--prefecture--county--township--village hierarchy.⁸ A crucial qualification in this origin story is that the barefoot doctor system was not planned or introduced as an investment in the future of a universal health system. It was produced by the political mobilisations of the Great Leap Forward (1958-1962) and, in its most radical form, the Cultural Revolution (1966-1976); and its design was shaped by the ideologies of the times, specifically a strong emphasis on political commitment ("redness") over formal medical training, and a campaign against "bourgeois" physicians from the city who were required to move to the countryside.⁶ Most barefoot doctors received only three to six months of training, there was significant regional variation in the quality of the training, and historians of the programme report important controversy even within the ranks of Chinese health-policy scholars regarding its evaluation: Although the programme was successful in providing real gains in infectious-disease control and maternal and child health, particularly compared to the near absence of rural care that preceded it, it also resulted in minimally trained practitioners, uneven clinical quality, and a programme logic oriented toward mass political campaign rather than health-system design.⁹ It is important to understand, therefore, that the system was not "dismantled" after 1978 because financing structures were withdrawn, but because it was linked to a specific economic and political model of the communes that, for a variety of other reasons, largely non-health related, collapsed. And rural health provision was a by-product of this collapse rather than a separate process of transition.¹⁰ The two aspects highlighted above, a dense community workforce and the development of an experimentalist administrative culture, are best understood as enduring outcomes of this tumultuous period rather than as intended outcomes of a consistent PHC-first approach: they were left behind and expanded by later Chinese policymakers.

Market Transition and Fragmentation (1978-2009)

The economic reforms started in 1978, which led to the elimination of the commune system, which had financed the CMS, leading to a sharp drop in rural risk pooling. This 40-year period of opportunities and new chances to implement the outline of rural PHC, however, is instructive precisely because it has witnessed the rapid deterioration of the delivery system in the early 2000s, a time when China had experienced catastrophic out-of-pocket expenditure and a falling share of

insurance coverage, which directly paved the way for the next phase of reform.¹¹

Comprehensive Reform and Insurance Consolidation (2009)

The Chinese government introduced a new package of health system reforms in 2009, which has sometimes been summarised as "explicitly oriented towards a PHC-based system", as well as "a new round of reforms that was to move away from a hospital-dominated system towards a PHC-based one. The summary is an overly rosy one of what was, in reality, a multipolar political compromise. The 2009 plan was based on four pillars: Improving social health insurance, enhancing public health services, developing an essential medicines system, and improving public hospitals.¹² In the first phase (2009--2011), insurance expansion and infrastructure for primary care were emphasized, while in the second phase (from 2012 onward), the public health hospital reform (以药代医) was specifically postponed, and was not implemented in all counties nationwide until 2015.¹³ This sequencing was not accidental: public hospitals in China employ millions of staff, generate substantial

revenue for local governments, and represent one of the most politically resistant components of the health system to reform, since local governments and hospital administrators had strong incentives to preserve revenue-generating arrangements such as the drug mark-up.¹² The two least politically contentious and least fiscally prioritised elements of the reform were the PHC-strengthening component¹²⁻¹⁴ which was real and resulted in tangible gains for infrastructure, and the hospital-sector component. China operated two parallel schemes of social insurance 'the New Rural Cooperative Medical Scheme (NRCMS/NCMS)', which was established in 2003 for rural population, covering 97% of the rural population by 2011, and the Urban Employee Basic Medical Insurance (UEBMI), launched in 2007 for urban residents outside formal employment. By 2013, aggregate insurance coverage exceeded 95% of the population.^{15,16}

Table 1 Comparison between China and Pakistan across the six WHO health system building blocks

Building Block	China	Pakistan
Service delivery	Hierarchical tiered network (village-township-county-city); ~36,000 township health centres and comparable community health centres nationally; PHC-oriented reform prioritised from 2009; no mandatory gatekeeping, so hospital-centric use persists. ¹⁷⁻¹⁹	Three-tier structure: 5,518 BHUs, 683 RHCs, 1,201 hospitals; approximately 80% of PHC facilities are reported to be in the private sector; substantial BHU non-functionality has been documented. ^{16, 20}
Health workforce	~4.29 million physicians nationally (2021); barefoot doctor legacy evolved into family doctor contract system (national from 2016; 75% coverage target by 2035, though "signing without service" gaps persist. ^{18, 21, 22}	~319,000 registered doctors nationally; severe rural shortages (rural doctor:population as low as 1:12,000); persistent urban migration/"brain drain". ²³
Health information systems	National Health Commission registration systems; provincial data feeding Healthy China 2030 monitoring. ²⁴	Fragmented post-devolution provincial systems; limited interprovincial data harmonization. ^{25, 26}
Medical products & technologies	National volume-based drug procurement introduced 2019 to control costs. ²⁷	Supply gaps in rural facilities; limited equipment at ~62% of rural health centres. ²⁰
Financing	Historical three-scheme architecture (NRCMS/URBMI/UEBMI) reaching >95% nominal coverage by 2013; URBMI and NRCMS were subsequently integrated into the Urban and Rural Resident Basic Medical Insurance system; OOP fell from 60% to 36% (2000-2016); government health spending estimates vary by measure and year; the cited China estimates should be interpreted according to the underlying expenditure definition. ^{19, 28}	SSP has at various points been reported to cover >37 million families for defined secondary/tertiary inpatient care; OOP has been reported as high as ~60%; public health expenditure was approximately 0.8% of GDP in FY2025, far below the widely cited 5%-of-GDP UHC financing target. ^{1, 29}
Leadership & governance	Centralised multi-level administrative hierarchy enabling policy experimentation and rapid national scaling. ¹⁷	Post-2010 devolution transferred health to provinces without a strong federal coordination structure; capacity and funding gaps at provincial level. ²⁵

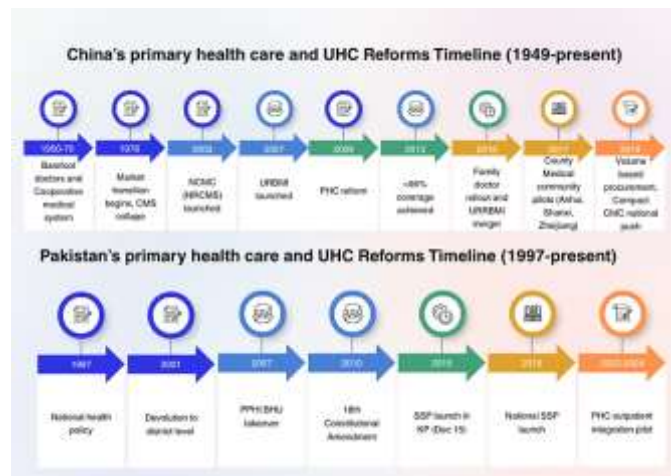
The ranges are very similar in midpoints, and on their own could indicate a less robust steering effect than this review has suggested, but the combined effect is certainly not stronger. But in reality, the best advantage is to be had from the bottom, not the top: at the primary level, the reimbursement is around 65% guaranteed; at the city hospitals, it is as low as 45% and the out-of-pocket exposure that a patient is facing is likely to be significantly higher at the top tier than at the bottom. But as patients don't know in advance which end of the reimbursement band their particular treatment will land at, it is this asymmetric downside risk, and not the average or ceiling rate, that plausibly influences care-seeking behaviour

under uncertainty, together with the lower absolute costs of primary-tier care, whatever the reimbursement percentage. This financing structure provided an incentive for patients to go to the most primary level of services available. The empirical findings of the NCMS expansion were consistent with a substantial supply-side response, with the expansion of financing largely driving the increase in delivery-system capacity (especially the number of inpatient beds at township health centres), adding to the rationale supporting the sequencing argument that financing the expansion of the delivery system outweighed the funding of unmet demand.¹⁶ The comparison highlights important differences between

China and Pakistan in the development and functioning of their health systems across the six WHO health system building blocks, as summarized below.

Figure 1 explains the timelines illustrating the evolution of primary health care and universal health coverage reforms in China and Pakistan. China demonstrates a longer progression from community-based care to integrated PHC, insurance, digital health, and strategic reforms. Pakistan's timeline highlights decentralization, constitutional changes, social health protection, and recent PHC integration initiatives.

Figure 1 China and Pakistan Health Reform Timelines



Sources: China-NMCS 2003, URBMI 2007(state Council), CMC pilots 2017 Anhui/Shanxi/Zhejiang; Pakistan- 18th Amend.2010, SSP KP

Workforce Strengthening and the Family Doctor Contract System

The Chinese government invested in professionalising its primary health care workforce, in addition to insurance. The services are offered in three tiers: a free basic public-health service package, a basic service package with personalisation, and an integrated medical-and-nursing-care service package, and are designed as a "soft gatekeeping" mechanism, despite the fact that China does not have a mandatory referral gatekeeping system in place: patients are free to receive care without going through primary care and then directly seek treatment at tertiary hospitals, and this is identified as a structural weakness in China's health policy literature.^{18,19}

The right for the 75% target and the increased nominal "signing rates" (签约率) should not, however, be interpreted as the existence of a national gatekeeping system, and this framing of the review might have led readers to think that the 75% target was more of a functioning system than the literature on implementation would suggest. In fact, the family doctor system in China is often more akin to a 'signing without service' (签而不约) mechanism than to an active gatekeeping model of primary care, as documented in health-services research conducted from the patient perspective; and the quality of service provided and financing mechanisms for contracted family doctors are often inconsistent.³⁰ This has a direct impact on transferability because, despite China's administrative capacity and the CCP's capacity to set and monitor quantitative targets down to the township level, it seems that the family doctor system has not yet fully won over the signing-versus-service gap, even if the challenge is not quite as difficult as Pakistan's, given the significantly weaker regulatory and monitoring capacity there, and the fact that the PHC sector in Pakistan is largely private and harder to supervise.

Digital Health Integration

Digital health was introduced as a component of the system, late in the reform process. At this point, China had almost complete insurance coverage and an established primary care service system, and the digital health model was used more to facilitate "family doctor contracts" and chronic disease follow-up, with the goal of enhancing efficiency and access, but not as a replacement for basic investment in primary care.³¹

This "layering" description is applicable to those Internet-hospital and consumer-oriented telemedicine services in particular and should not be interpreted as meaning that China's health information infrastructure in general has been built up in a clean order following the setting up of financial resources and human forces. The distinction the above failed to make is between the traditional infrastructure of the public family doctor and the insurance- and public-financing-based infrastructure that has been underway since 2009, and the infrastructure of consumer-oriented private telemedicine services like Ping An Good Doctor or Ali Health, which are developed more independently and are commercially significant.³² The latter are not straightforwardly integrated with, and in some respects compete with, the former, and can be said to reinforce this behavior of avoiding hospitals that this review identified as one of the structural weaknesses. Digital health in China is better described as a multi-track evolution, rather than a single "layer on top" accelerant that is just sitting atop a finished foundation layer and financing layer.

China's average life expectancy increased from 72.0 years in 2000 to 76.4 years in 2017, maternal mortality dropped from 59 to 29 per 100,000 live births, and the under five mortality rate dropped from 36.8 to 9.3 per 1,000 live births, in addition to the reduction in out-of-pocket expenses mentioned above.²⁸ The Healthy China 2030 strategy that was launched in 2016 further prioritized the prevention of non-communicable disease (NCD) and quality improvement of the health care system, which had undergone full coverage but had suffered from changing disease burden. However, there are existing challenges that warrant attention, including a segmented, hospital-driven system of delivery, an increase in health-care costs, limited coverage for catastrophic events, continued rural-urban and provincial disparities in performing UHC, and a minority of people who remain under-insured and continue to dis-enroll because of increasing premiums. China's own Lancet Public Health assessment of its UHC progress is candid: good political leadership and targeted investment led to good outcomes in reproductive, maternal and child health and infectious disease control, and focusing on hospital-centric delivery and shallow financial protection had not yet resulted in significantly better outcomes for NCDs and equity.²⁹ This is an important caveat for this review, that China is a partial and an ongoing success, and not a complete model.

It is important to be clear what type of problem the constant hospital-centrism poses, since this is significant for the sequencing review that follows. The problem of utilisation in the hospital sector in China is not one for which better implementation would be enough; it is rooted in the design of the 2009 reform. If interpreted this way, it does not appear that the sequencing alone was sufficient to ensure success in China; it appears that even a country with significant administrative capacity and a partial orientation towards PHC failed to create the right sequencing through financing incentives if the incentives for providers to deliver volume-based, hospital-based care were not reformed at the same time. This review calls for financing design that will benefit primary care, but for this to be sufficient, primary care

provider incentives and quality of delivery systems need to be reformed as well.

County Medical Communities: A Structural Governance Response

As pointed out above, a second, more structurally ambitious reform, the close-knit county medical community (县域医共体, CMC), is aimed at tackling the problem of hospital-centrism, a topic that was only briefly mentioned in previous drafts of this review and which is still a major issue in the current Chinese PHC governance model. A new reform for CMC was piloted and formally launched as a compact model in Shanxi, Zhejiang and Anhui in 2017.^{33, 34}

The early findings on the impact of the reform are mixed, not uniformly positive, and this is indicative of how this review will articulate the transferability of the reform to China. A difference-in-differences study of counties monitored under the reform from 2018 to 2022 found no significant effect of bundled payment on average cost per discharge, alongside a

modest rise in outpatient expenses and inpatient reimbursement rates.³⁵ A quasi-experimental study of 92 county-level public hospitals in Shanxi Province found the reform improved county-hospital service efficiency by roughly 15.6% on average, with substantial regional heterogeneity larger, statistically significant gains in less-resourced counties than in already-efficient ones.³³ A cross-sectional survey of healthcare professionals across eleven pilot counties in Zhejiang found broad support for integrating public health functions into the consortium, but identified inadequate financial-guarantee mechanisms as the most severe implementation problem.³⁴ Read together, this evidence base does not show CMC as a solved model to be exported; it shows a country still actively restructuring the governance layer of its own PHC system nearly two decades after the reforms discussed earlier reinforcing, rather than undermining, this review's central caution above that China's PHC architecture is a partial and still-evolving system, not a completed template.

Table 2. Phased PHC & UHC Policy Recommendations

Timeframe	Recommendation	Sequencing Logic	Rationale / Evidence Base
Short-term (1–3 years)	Scale the existing PHC-outpatient/SSP integration pilots (general-practitioner network engagement) beyond current union councils to additional urban and peri-urban districts.	Foundation must be rehabilitated BEFORE or ALONGSIDE financing expansion in a given district, to avoid demand absorption by higher tiers.	Pilots already exist and have identified the outpatient coverage gap as the key structural weakness. ¹
Short-term (1–3 years)	Establish or strengthen a standing federal-provincial health coordination body with authority over minimum service standards and data harmonisation.	Governance capacity must be built ALONGSIDE delivery and financing expansion to prevent the fragmentation that undermines both.	Devolution left no federal structure for interprovincial coordination. ²⁵
Short-term (1–3 years)	Direct a defined share of new health budget allocations to BHU rehabilitation (staffing, equipment, maintenance) in the lowest-functioning districts identified by existing surveys.	Supply-side investment must PRECEDE demand-side activation in target districts to ensure absorptive capacity exists before it is tested.	Substantial BHU non-functionality has been documented; ~38% of rural facilities meet equipment standards. ²⁰
Medium-term (3–7 years)	Increase public health expenditure incrementally toward 3% of GDP, with a transparent multi-year financing roadmap.	Financing expansion should be progressively aligned with demonstrated foundation-layer improvement and verified against budget execution, rather than treated as a substitute for it.	Current public health expenditure is approximately 0.8% of GDP in FY2025; the 3% target is therefore framed as a pragmatic medium-term staging target rather than a claim about a fixed regional average. ²⁹
Medium-term (3–7 years)	Introduce rural service incentives (salary premiums, career-progression pathways, housing) to address the rural workforce shortage.	Workforce investment must ACCOMPANY utilisation expansion; expanding insured demand without workforce capacity risks quality collapse at the primary tier.	Rural doctor: population ratios as low as 1:12,000; documented brain drain. ²⁰

Medium-term (3–7 years)	Pilot tiered reimbursement rates within the expanded SSP/PHC benefit package that financially favour primary-tier utilisation.	Financing design must actively steer demand toward the tier being strengthened, NOT BEFORE that tier has the capacity to absorb the steered demand.	China's NCMS tiered reimbursement design is associated with a measurable supply-side response at the primary tier. ¹⁶
Long-term (8–15 years)	Move toward a unified, PHC-inclusive risk-pooling design with a nationally consistent (though provincially administered) benefit package.	Unification should occur ONLY AFTER foundation-financing alignment is demonstrated across the majority of districts, not as a first step.	Fragmented risk pools and narrow benefit depth limit equity gains even where nominal coverage is high. ^{1,26}
Long-term (8–15 years)	Pilot and scale a structured, contracted-primary-care model (drawing selectively on the design logic, not the scale, of China's family doctor contract system) in willing provinces.	Contracting models should be tested FOLLOWING confirmation that foundation capacity is already strongest in the pilot province, not imposed where regulatory capacity is weakest.	Contracted primary care improved continuity and coordination in China's own PHC reform, though implementation gaps persist even there. ¹⁸
Long-term (8–15 years)	Progressively move toward the widely cited 5%-of-GDP government-health-spending target used in UHC financing literature, while protecting and increasing the PHC share of public spending.	The long-term financing target should be ratcheted up only after the medium-term 3% intermediate target is verified against actual budget execution, NOT BEFORE.	Health-financing benchmark for UHC progress; current Pakistan spend remains far below it. ²⁹

Pakistan.

LIMITATIONS

There are some limitations to this review. First, it is a narrative review and hence is not searching for a systematic search, formal risk of bias assessment, or quantitative synthesis of the available evidence. Therefore, the results are to a degree reflective of both the choice and analysis of the existing studies and policy documents. Secondly, the comparison between China and Pakistan is limited in the extent to which it can be directly transferred, as there are significant differences between the two countries in terms of governance systems, fiscal capacity, health-system organization and political economy. Third, while sequencing of primary health care reforms, financing, governance and the human resources for health are key areas, they are not explored equally. Socio-economic inequalities, the role of culture, and private sector dynamics or population-level health seeking behaviour may not be explored in the same depth. Fourth, some of the reforms mentioned above are still in their early stages of development, while others have various implementation problems and even different results, which is not conducive to making concrete conclusions on their long-term effects. Lastly, the review suggests a heuristic framework that connects the construction of foundations with financing growth, which is open to interpretation and has not been studied empirically, with longitudinal and/or comparative causal data. Further implementation and comparative research is therefore required to understand if there is an improvement in access, equity, financial protection and sustainability using the proposed sequencing approach in

CONCLUSION

This review indicates that further solidifying the foundation of PHC is essential to achieve UHC, not after, but hand-in-hand with funding for expansion in Pakistan. China's experience has demonstrated the need to have a workforce, infrastructure, governance system, referral systems and financing aligned. But China is no blueprint. Ideal approaches should be taken selectively and Pakistan's decentralized governance, resource constraints, and health-system structure should be taken into account.

Ethical Approval

None.

Data Availability

No primary data were collected for this narrative review. All data were obtained from published literature cited in this article.

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All authors agree to be accountable for all aspects of the work, ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Informed Consent

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