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A Comparative Case Study: Does the Organization of Primary Health Care in Brazil and Turkey Contribute to Reducing Disparities in Access to Care?

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ABSTRACT

Brazil and Turkey are among the few high-middle-income countries that explicitly chose to strengthen their primary health care (PHC) systems as the centerpiece of much broader health system reforms aiming to narrow inequities in access to care. This comparative case study reviews the organization of Brazil and Turkey's PHC systems to derive lessons that can apply to other countries that may consider reforming the organization of PHC systems as a way to address health inequities. The analysis uses the Flagship Framework to investigate how the organization of PHC delivery in Brazil and Turkey can lead to measurable improvements in access to care. It compares (1) the degree of decentralization in PHC service delivery responsibilities, (2) the use of multi-professional PHC teams, and (3) patient impanelment strategies. The comparative analysis offers three important lessons. First, changes in the organization of PHC systems can contribute to observable improvements in the level and distribution of health outcomes, but organizational strategies do not guarantee eliminating disparities in access. Second, PHC systems can operate in health systems with varying degrees of decentralization, but the level of decentralization may influence implementation. Third, relying on multi-professional PHC teams that serve geographically empaneled populations can improve equitable access to care, but course corrections may be needed to address evolving health demands.

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Primary health care; Brazil; Turkey; organization of primary health care; health disparities; universal health coverage

Introduction

Building on decades of experience, all members of the World Health Organization (WHO) pledged in the 2018 Astana Declaration to scale up investments in primary health care (PHC) as an essential step toward achieving universal health coverage (UHC) and health-related Sustainable Development (SDG) goals.[1] The COVID-19 pandemic presents a roadblock to advances made toward SDG goals in recent years[2] by exacerbating long-standing health inequities.[3–5] Emerging evidence demonstrates that strong PHC systems can play an instrumental role not only in responding to health emergencies but also in ensuring equitable access to essential health care services even at times when health systems are under unprecedented strain.[6–8]

The vast majority of existing literature demonstrates that strengthening PHC systems is associated with improvements not only in the health of the whole population but also in a more equitable distribution of health outcomes.[9–13] However, most evidence on the contributions of PHC systems on alleviating health inequities comes from high-income countries, with very little evidence generated by analyzing large-scale PHC systems implemented in low- and high-middle-income countries.[10,12] In a recent scoping review, Bitton and colleagues (2019) further concluded that evidence is lacking in terms of the ways PHC systems are organized across countries (e.g., patient impanelment and multidisciplinary teams).[13] Moreover, only a handful of studies compared how cross-country differences in the organization of PHC systems can influence health system performance in the level and distribution of health outcomes.[14,15]

Brazil and Turkey are two high-middle-income countries that experienced improvements in the level and distribution of health outcomes of their populations in the last three decades.[16,17] As shown in Table 1, in Brazil, maternal and child mortality declined, with infant mortality rate standing at 12.4 per 1,000 live births in 2019, compared to 52.4 in 1990.[18] Macinko and colleagues (2006) found that between 1990 and 2002, a 10% increase in the share of population covered by PHC

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Table 1. Socioeconomic, demographic and health system indicators in Brazil and Turkey, 1990–2019.

	Brazil		Turkey	
Indicator	1990	2019	1990	2019
Total population (*n*)	149,003,223	211,049,527	53,921,760	83,429,615
Annual population growth (%)	1.81	0.8	1.7	1.3
Proportion of population aged 65 years and older (%)	4.3	9.3	4.6	8.7
Non-communicable diseases as % of total deaths	69.1	74.7	80.1	90.2
GDP per capita (constant 2010 USD)	7,983.7	11,121.7	6,774	15,125
GDP growth (annual %)	−3.1	1.1	9.3	0.9
Life expectancy at birth (years)	66.3	75.9	64.3	77.7
Maternal mortality ratio (per 100,000 live births)	69.0	60.0	42	17
Infant mortality rate (per 1,000 live births)	52.4	12.4	55.4	8.6
Total fertility rate (births per woman)	2.9	1.7	3.1	2.1
Number of physicians (per 1,000 inhabitants)	1.1	2.2	0.9	1.8
Number of nurses and midwives (per 1,000 inhabitants)	0.9	10.1	1.4	2.7
Current health expenditure as % GDP	8.3	9.5	4.6	4.1
Current health expenditure per capita (PPP current international $)	756	1531	443	1171
Domestic general government health expenditure (% current health expenditure)	41.6	41.7	62	77
Voluntary health insurance (% current health expenditure)	20.5	29.3	0	2.6
Out-of-pocket health expenditure (% current health expenditure)	36.6	27.5	28.6	17.5

Source: Data are extracted from the World Development Indicators Database and WHO Global Health Expenditure Database.[18,19]

Notes: Data are for the years 1990 and 2019 unless specified otherwise. For Turkey, data for physician, nurse and midwife density are from the year 2017. For Brazil, physician, nurse and midwife density are for the year 2018. For both countries, data on maternal mortality ratio, health current health expenditure as % of GDP, current health expenditure per capita (PPP current international $), domestic general government health expenditure (% current health expenditure), voluntary health insurance (% current health expenditure) and out-of-pocket health expenditure (% current health expenditure) are from the years 2000 and 2018; and data on non-communicable diseases as % of all causes of death are from the years 2000 and 2019.

services was associated with a 4.5% reduction in the infant mortality rate.[20] Aquino and colleagues (2009) found similar declines in infant mortality attributable to the PHC expansion between 1996 and 2004, and suggested that communities with lower levels of socioeconomic development at baseline may have benefited more from this expansion.[21] Rocha and Soares (2010) corroborated previous results and showed more pronounced effects in the poorest regions, including in the North and Northeast.[22] Similarly, Wagstaff (2000) used data collected from households in the Southeast and Northeast, and demonstrated that there were stark socioeconomic disparities in infant mortality and under-5 mortality rates.[23]

Similarly, in Turkey, infant mortality rate fell from 55.4 to 8.6 per 1,000 live births between 1990 and 2019.[18] Cesur and colleagues (2017) showed that the expansion of PHC services in Turkey from 2005 to 2013 led to a 7.7% reduction in mortality for the elderly, 25.6% for infants, and 22.9% children between 1 and 4 years of age,[24] with more pronounced improvements in areas that faced long-standing problems in addressing higher burden of maternal and child mortality. Despite mounting evidence pointing to gains in both the level and distribution of health outcomes attributable to the expansion of PHC services in both settings, limited comparative evidence exists to understand the potential factors that may explain how the organization of PHC in Brazil and Turkey could have influenced the performance of their health systems.[16]

The goal of this case study is to compare Brazil and Turkey's PHC systems to ascertain how key organizational features can plausibly lead to measurable changes in equitable access to care. We apply the Flagship Framework to investigate similarities and differences in the two PHC systems in terms of (1) degree of decentralization of PHC delivery responsibilities in the public sector, (2) the use of multi-professional PHC teams, and (3) patient impanelment strategies. We review the existing literature on Brazil and Turkey's PHC reforms and supplement our findings with descriptive analyses of publicly available data sources that track the number of PHC consultations per capita. Our analysis is intended for policymakers and researchers that are interested in rethinking the organization of their PHC systems to tackle inequities in access to care.

We selected Brazil and Turkey as the main focus of our comparative analysis for several reasons. Both are among the few high-middle-income countries that explicitly chose to strengthen their PHC systems as a crucial part of much broader health system reforms aiming to achieve progress toward UHC goals and improve health inequities.[25] Today, Brazil's Family Health Strategy (FHS) Program is the world's largest community-based PHC system, providing care for more than 123 million people.[26] In Turkey, the Family Medicine Program (FMP) provides care nationwide, reaching more than 80 million people. Before health reforms, both countries were faced with long-standing inequities in access to care and low financial risk protection.[25,27] In Brazil, the FHS was launched in 1994, shortly after the Unified Health System (UHS) was created in 1990. Efforts to reorganize the PHC system included (1) decentralization of PHC delivery

responsibilities, (2) introducing PHC team comprised professionals with different educational backgrounds, and (3) deploying patient impanelment strategies to ensure PHC teams deliver care for predefined populations that reside in clearly defined catchment areas.[28] In Turkey, the FMP was introduced in 2005 as a crucial component of a broader health system reform effort known as the Health Transformation Program (HTP) (2002–2013). In contrast to Brazil, the reorganization of PHC in Turkey entailed limited changes to the highly centralized structure of service delivery, but similar to Brazil, the FMP reforms led to the introduction of multiprofessional PHC teams that provide care for individuals who are assigned to them based on place of residence.

This case study is organized as follows. First, we describe the conceptual framework and methods used in the analysis. Next, we present the comparative analysis. For each country, we start by describing the context within which the PHC reforms took place. Next, we apply the conceptual framework to the extant PHC literature in each country to explain differences in performance. For this analysis, we compare the similarities and differences in the design and implementation of PHC organizational reforms in each country that changed the existing arrangements for PHC provision. Next, we draw lessons from the Brazilian and Turkish experiences that may apply to other countries. Lastly, we discuss the limitations of our comparative analysis and conclude.

Methods

Conceptual Framework

We adopt the Flagship Framework to guide this comparative analysis. Since its introduction in the 1990s, policymakers and researchers frequently relied on the Flagship Framework in their efforts to systematically diagnose problems facing health systems and to identify policy interventions that can help tackle these problems.[29] The Flagship Framework has also been used by policymakers in many low- and high-middle-income countries, including Turkey, to navigate the health system reform process.[30] A more detailed description of the application of the Flagship Framework is provided elsewhere.[29]

The Flagship Framework underscores the importance of identifying explicit health system goals. It presents that all health systems strive to achieve three final performance goals: improving health status of the population, financial risk protection, and citizen satisfaction.[29] It groups policy levers that can be used to influence final performance goals into five categories: financing, payment, organization, regulation, and persuasion. These five policy levers enable both the process to diagnose problems hindering health system performance and the process to design policies to address these problems. Intermediate health system goals (i.e., efficiency, access, and quality) link the final performance goals with these five policy levers. Organization refers to mechanisms used by policymakers to directly affect the kind of providers deployed in the health care markets and how they work internally.[29] Organizational changes can impact incentives for how frontline workers provide care and influence their beliefs, attitudes, and motivation toward work.[29]

In this study, we examine how changing the organizational features of Brazil and Turkey's PHC systems may have contributed to improvements in equitable access to care. Countries can deploy various organizational strategies to improve access. Decentralization refers to the process by which the central government transfers resources, and fiscal, political and administrative responsibilities to subnational units,[31] which can enhance accountability to local communities, foster more effective supervision of PHC delivery, and incentivize providers to tailor health care services in accordance with local needs.[29] Several degrees of decentralization exist in low- and middle-income countries.[32] Broadly, deconcentration refers to the decentralization of certain administrative responsibilities to sub-national governments without any dispersion of authority from the central government.[33] Delegation occurs when the central government transfers discretionary and administrative functions to sub-national governments.[33] In comparison, devolution takes place when the central government disperses the discretionary, financial and management responsibilities to the subnational governments. In this way, devolution is considered to be the most extensive form of decentralization.[33] Even though at least 80% of countries globally deployed some form of decentralization policy until the 1990s, particularly in Latin America,[34] evidence on the impact of decentralization on health system performance remains mixed.[31,35]

Organizational strategies can also change the mix of providers.[29] In particular, deploying multidisciplinary PHC teams comprised health professionals from diverse educational backgrounds is becoming a popular strategy. While the size and composition of PHC teams can vary,[13] team-based delivery can contribute to narrowing of geographic and socioeconomic disparities in population health,[36,37] while improving clinical performance, adherence to clinical protocols, and patient satisfaction.[13,38]

Policymakers can also consider using different patient impanelment strategies (the process by which individuals are identified and assigned to health care providers).[39,40] By enabling providers to actively monitor and manage the health care needs of patients in their care,[41] patient impanelment offers an important means for improving continuity of care and the use of PHC services, while promoting accountability, especially in

communities where certain population groups lack access to a regular source of care.[39] Patient impanelment has been linked to improvements in the effectiveness of service delivery[13] by reducing the need for hospitalizations for ambulatory care-sensitive conditions and emergency department visits.[42]

Changing the organization of PHC systems does not always yield observable improvements in health system performance. While decentralization can enhance accountability to local communities, certain areas may not have sufficient scale or technical capacity to carry out health care financing and delivery responsibilities. Challenges in coordination and communication across different levels of government may hinder efforts to optimize the delivery of care. The benefits of team-based PHC delivery may be diluted if the teams do not have the appropriate size or mix of health professionals reflecting the needs of the populations. The lack of practice guidelines with clear delineation of tasks in line with the skillset and capabilities of team members may also undermine the effectiveness of team-based PHC delivery.[40] The extent to which patients can be successfully empaneled largely correlates with the availability of information systems that can enable identifying and assigning populations to providers (e.g., vital statistics, civil registries).[40] Even when these systems are available, the beneficial impact of impanelment may be limited if there are no mechanisms that incentivize providers to prioritize certain services or segments of the population.

Analytical Methods

We started our analysis by conducting two literature reviews on Brazil and Turkey. These reviews focused on identifying analytical studies, government documents and publications from international organizations that describe the main organizational features of the PHC system in each setting and provide rigorous empirical evidence on the impact of the PHC reforms on access to care.

We applied the Flagship Framework to the studies that our review yielded. We focused on three organizational design features: (1) degree of decentralization in health care delivery responsibilities in the public sector, (2) deploying multi-professional teams, and (3) using patient impanelment strategies. We selected these features, because each of them can plausibly lead to changes in the level and distribution of access to PHC services, and our search produced a number of publications that facilitated a comparative analysis.

Our main study outcome that measures access to PHC care is the number of PHC consultations per capita. To assess changes in this variable over time, we supplemented our literature review with descriptive analyses of publicly available datasets on the number of PHC consultations per capita. For Brazil, we extracted municipal aggregated data on the number of PHC consultations attended by FHS team from 1998 to 2015 (the latest year for which data are available) and population estimates from the MOH website.[43,44] To explore community-level differences in the use of PHC services, we used the extreme poverty classification published on the MOH website.[45] For Turkey, we obtained the number of PHC consultations per capita by Nomenclature of Territorial Units for Statistics Regions aggregated at the first level (NUTS-1) for the years 2002 and 2018 from the 2018 Turkey Health Statistics Yearbook.[46] We supplemented our analysis with available evidence that looks at the changes in access to maternal and child health services in the analysis period whenever possible, because both PHC systems prioritize these population groups.

Comparative Analysis

As summarized in Table 2, our review yielded evidence that changing the organizational features of PHC systems may have contributed to increased access to care in both countries, but there were marked differences in the design and implementation of these organizational reforms.

Brazil

Context

The 1988 Brazilian Constitution established health as a fundamental right of all citizens, tasked the state to ensure UHC, and opened the health sector to private participation. The Brazilian Constitution laid out three overarching principles that underpin the objectives of the PHC system, including (1) universal right to comprehensive health care ensured by the State, (2) decentralization with responsibilities given to the three levels of government (i.e., federal, state, and municipal), and (3) social participation in formulating and monitoring the implementation of health policies through federal, state, and municipal health councils.[47,48] These overarching principles are operationalized through the implementation of UHS reforms.[28] The public system is financed by tax revenues and contributions from all three levels of the government expenditure as share of current health expenditure remained relatively stable around 42% in the last two decades.[19] There is no explicitly defined entitlement package, but all PHC services are provided free-of-charge.[48]

Table 2. The current organization of PHC programs in Brazil and Turkey.

	Brazil	Turkey
Level of decentralization in PHC delivery responsibilities in the public sector	A total of 5,570 municipalities are responsible for management of UHS in local communities, including financing and delivery of PHC, as well as coordination with state and federal health authorities	MOH is the main steward in the health sector, but PHC teams have limited administrative responsibility to cover their operational expenses through monthly transfers from the MOH
Team-based PHC delivery	Multi-professional PHC teams comprised of physicians, nurses, community health workers, supported by other health professionals	Multi-professional PHC teams comprised of physicians, nurses, midwives, and technicians
Impanelment strategy	Geographic impanelment by which each PHC team serves up to 3,500 people residing in non-overlapping catchment areas	Mix of geographic impanelment and voluntary enrollment

Alongside the UHS implementation, the private health sector grew as a complement to the public system to circumvent bottlenecks in access to care. In 2015, the proportion of population with private insurance plans reached about 25% of Brazilians, but dropped to 23% in 2019 due to the economic crisis and increase unemployment.[48] About 70% of beneficiaries receive private health insurance as an employment benefit.[48] The population covered by private health insurance lives mainly in large- and medium-sized cities, while small and poor cities have almost no coverage. The assistance model is based on offering specialized outpatient and hospital procedures, instead of PHC.[48]

Before the UHS reforms, the National Institute for Social Medical Assistance was the main stakeholder in the public system, along with the MOH that focused on the implementation of nationwide public health initiatives and vertical programs. PHC services were delivered by basic care units (i.e., *unidades básicas de saúde*). The PHC system was marked by stark shortages in trained health professionals, particularly in poorer communities, and low utilization and satisfaction with quality of care.[47] No mechanism existed to track and match patients with specific providers.

Organizational Features of the FHS in Brazil

Level of Decentralization in PHC Delivery Responsibilities in the Public Sector. The most notable difference in Brazil and Turkey's PHC organizational reforms relates the level of decentralization in PHC delivery responsibilities in the public sector. In Brazil, the devolution of PHC delivery responsibilities was at the heart of the design and implementation of UHS reforms. With the UHS reforms, the MOH became responsible for the health system's national coordination, including health policies design, financing, auditing, and control. Regional governance, coordination of strategic programs, and delivery of specialized services that have not been decentralized to municipalities are under the responsibility of state governments. The 5,570 municipalities largely handle the management of UHS at the local level, including co-financing, coordination of health programs, and delivery of health care services.[48]

Available evidence suggests that the devolution of service delivery in Brazil was more pronounced at the PHC level than in secondary and tertiary care, particularly in communities with lower levels of socioeconomic development. Since 1998, the number of FHS teams increased rapidly, reaching 43,223 in December 2019.[49] This increase was more pronounced in poorer areas, such as the Northeast region.[26] The growth in health infrastructure capacity was driven mostly by the expansion of outpatient facilities managed by the municipalities.[47] While hospital bed capacity declined since the launch of FHS, the share of hospital beds at the municipal level increased from 11% in 1985 to nearly 50% in 2009. However, a large portion of public hospitals is still managed by the states and the Federal Government.[47] For instance, a network of 50 federal university hospitals linked to the Ministry of Education serves patients with health conditions classified by the SUS as medium and high complexity.[50]

Team-based PHC Delivery. A key similarity between the organizational PHC reforms in Brazil and Turkey involves the introduction of multi-professional PHC teams, though the composition of these teams varies between the two countries. In Brazil, each FHS team includes physicians, nurses, and nurse assistants. Community health workers play an important role in PHC delivery.[51] They are often recruited from members of the communities and provide non-medical support to the rest of the FHS team during public health emergencies (e.g., incidence reporting during the recent Zika crisis).[52,53] The FHS teams regularly visit households in their assigned lists. In this way, the FHS model is meant to overcome limitations of facility-based PHC delivery.

Considering the health needs of the population, the composition of FHS teams in Brazil evolved over time. In 2004, oral health professionals were integrated into the FHS. Since 2008, pharmacists, physiotherapists, nutritionists, psychologists, occupational therapists,

and specialist doctors can join the FHS specialist team (NASF—*Núcleo de Apoio ao Saúde da Família*) to support clinical and public health actions in PHC. Starting in 2002, community and family medicine were introduced as a new medical specialty, though physicians working in FHS are not obligated to have prior training in primary care.[54]

Reflecting the changes in the composition of FHS teams, the range of PHC services offered expanded over time. In Brazil, the FHS teams provide not only maternal and child health care services (e.g., prenatal care, childhood vaccination), but also focus on preventive care as well as the control and management of noncommunicable diseases. In addition, the FHS teams are responsible for carrying out health promotion and education activities (e.g., promotion of healthy lifestyles). With the addition of oral health professionals in the FHS teams, dental care is also now offered at the PHC level.

Patient Impanelment. Another important similarity between Brazil and Turkey's PHC organizational reforms relates to the introduction of patient impanelment strategies to provide care for predefined populations, but the method of impanelment differs between the two countries. In Brazil, the FHS employs a geographic patient impanelment strategy that requires each team to serve households located in nonoverlapping areas. In doing so, the FHS patient impanelment approach allows health professionals to consider broader social, economic and environmental conditions surrounding their patients and their communities. Each FHS team is tasked with registering households in their catchment area.[52] During monthly household visits, community health workers within the FHS teams ensure that the patient registries are up to date.[55] Each FHS team is expected to serve approximately 3,500 people in their catchment area.

Since the launch of the FHS, Brazil experienced an increase in the use of PHC services. The number of PHC consultations attended by the FHS teams increased from about 0.02 in 1998 to 0.54 visits per capita in 2015. In this period, the number of antenatal consultations with FHS teams increased more than six-fold. In 2015, the number of PHC consultations per capita in municipalities classified as communities with extreme poverty averaged 0.72 visits, surpassing the average of 0.49 PHC visits per capita in the remaining municipalities. In line with these findings, Dourado and colleagues (2016) also showed that in areas with greater FHS coverage, a greater proportion of the population reported having a usual source of care, particularly in the poorest regions in the North and Northeast.[56]

The observed increases in the number of FHS consultations may be partly due to the increases in the use of maternal and child health.[28,57] By 2006–2007, nearly all pregnant women in Brazil saw a trained health professional at least once during their pregnancy, representing a notable improvement from about 74% in 1986.[57] Similarly, in 2006–2007, the share of women who consulted a trained health professional more than six times in the course of their pregnancy was around 81%, compared to about 40.5% in 1981.[57] There have been marked improvements in vaccination coverage, with Brazil reaching nearly universal coverage rates in childhood vaccines. For instance, vaccination coverage for BCG vaccines among 1-year-old children increased from about 79% in 1990 to 99% in 2015.[28] In the same period, the coverage of diphtheria, pertussis, and tetanus vaccines among children between 12 and 23 months also saw a rise from 66% to 96%.[28]

Turkey

Context

Similar to Brazil, the Turkish Constitution explicitly highlights the centrality of universal access to health care services and mandates the Central Government to ensure health for all. Following the introduction of the 2008 Social Security and Universal Health Insurance Law, UHC is operationalized through the Social Security Institution, with all citizens being entitled to the same set of explicitly defined benefits.[58] General government spending is the main source of health expenditure, reaching 78% of current health expenditure in 2017.[19] The private insurance market remains relatively limited, as evident by low levels of voluntary health insurance (VHI) in 2017, which accounted for only about 2.5% current health expenditure.[19] The low level of VHI is partly due to the generous UHC package that encompasses nearly all health care services, which limits VHI to non-essential aspects of care (i.e., higher quality private facilities).

The Turkish PHC system was established by the 1961 Constitution, as outlined in the 1961 Law on Socialization of Medicine (Law No 224, 1961). Yet prior to the FMP reforms in 2005, the PHC system lacked a standard set of rules that delineated tasks and responsibilities across health professionals,[59] the type of health provider available in each community varied substantially,[60] and no mechanism existed to identify and assign patients to specific providers. Patients relied on outpatient departments and specialist physicians in hospitals as their usual source of care, exacerbating overcrowding and prolonged waiting times in these facilities.[16,59,60]

The HTP reforms entailed comprehensive changes to the organization and financing of PHC system in Turkey. In addition to the organizational reforms discussed here, the HTP led to the introduction of performance-based contracts for FMP professionals that included explicitly defined performance targets which incentivized services targeting certain population groups (e.g., pregnant women and young children) and encouraged deployment in communities with low levels of socioeconomic development.[61,62] In 2010, a new regulation banned part-time private practice in order to improve physician availability in the public sector. A more detailed description of the HTP reforms in provided elsewhere.[16,60,62,63]

Organizational Features of the Family Medicine Program in Turkey

Level of Decentralization in PHC Delivery Responsibilities in the Public Sector. In Turkey, the universality principle is operationalized within a highly centralized structured of service delivery responsibilities. In contrast to Brazil, the Turkish MOH is the main stakeholder role in the PHC system, with the responsibility of designing and implementing health policies, as well as regulating and overseeing service delivery.[60] The PHC system is financed by the Central Government's budget.[60]

Unlike in Brazil, where the PHC reforms resulted in the devolution of the PHC provision responsibilities to each Brazilian municipality, the FMP reforms in Turkey did not attempt to alter the highly centralized arrangements for PHC delivery. Instead, the Turkish FMP reforms involved a limited form of deconcentration, whereby the organizational roles and responsibilities were clarified through the introduction of standardized guidelines for family medicine practice.[64] Moreover, the FMP reforms transferred some administrative discretion to the FMP teams and to their local oversight administrative units (e.g., how to use the portion of payments for upgrading the facilities).

In contrast to Brazil, where municipality officials have full discretion over the management of health care professionals that work in the community, the General Directorate of Primary Health Care within the MOH holds responsibility for operational management duties. These include hiring and firing of family medicine staff; opening, closing, or relocating family medicine units in 81 provinces; and planning medical training activities for family medicine units. In comparison, health directorates in each Turkish province are mainly responsible for managing and monitoring the performance of FMP professionals.

Team-based PHC Delivery. Much like in Brazil, a key feature of the FMP reform in Turkey was the introduction of multi-professional PHC teams referred to as family medicine units. Before the FMP reforms, the PHC system was marked by a highly fragmented network of PHC providers.[59] In towns and villages with populations of 2000–2500 people, nurses and midwives provided a limited range of PHC services (e.g., maternal and child health care) in facilities referred to as health houses. While general practitioners worked in PHC centers in larger communities, they lacked specialized training in family medicine.[59]

The Turkish model of multi-professional team-based PHC delivery differs from the Brazilian model in terms of the changes in the team composition over time. From the outset, the FMP reforms meant to harmonize the types of PHC provider available in each community, regardless of the population size or level of socioeconomic development. To this end, these reforms entailed the introduction of multi-professional FMP units that were comprised of physicians, nurses and midwives, and health technicians.[62] However, unlike in Brazil, the composition of the FMP teams in Turkey remained the same since the introduction of the Program. Within each FMP unit, physicians are considered to be the lead, supported by other team members.[61] The FMP physicians can participate in family medicine training either by attending training programs designed for those who are already practicing medicine or specializing in family medicine practice during medical school.[62] Unlike their Brazilian counterparts who pay visits to households in their catchment area, the Turkish FMP professionals see their patients primarily in FMP centers in which they work.[62] More than one physician can be deployed in the same family medicine center depending on population needs. Importantly, the PHC services provided by FMP target individuals, because community-level public health services (e.g., cancer screening) are delivered by a separate network of PHC providers through community health centers. In remote areas, FMP teams provide mobile health services.[62,65]

Similar to their Brazilian counterparts, the FMP professionals in Turkey cover a comprehensive range of PHC services, though the scope of these services are more limited. From the outset, the FMP prioritized the provision of maternal and child health care services, with the FMP provider contracts including explicitly defined financial rewards for increased use of antenatal care services and higher coverage of childhood immunizations.[66] In addition, the FMP teams provide services to prevent and manage non-communicable diseases at the PHC level (e.g., cancer screening,

hypertension control), health promotion and education activities (e.g., promoting healthy lifestyles).

Patient Impanelment. Similar to Brazil, the introduction of patient impanelment was another important aspect of the FMP reforms in Turkey, but the FMP impanels patients based on a mix of geographic location and voluntary enrollment methods. Currently, each FMP unit is expected to serve, on average, 3,000 inhabitants. Initially, health directorates in provinces assign patients to an FMP unit depending on their place of residence.[67] Patients can subsequently switch to a different FMP unit in the area, though they are required to wait for a period of at least 6 months before they can be assigned to a new provider.[67] Patients who temporarily move to a new province are not expected to register with a new FMP unit in their new place of residence.[67] The FMP units' patient rosters also provide the basis for financial compensation, with those units working in communities with less than 3,000 inhabitants receiving additional financial compensation for low population density.[61]

Over 13 years, the number of FMP units reached 26,252 units by 2018, providing care across 7,979 FMP centers.[46] In 2018, each FMP unit covered, on average, 3,124 people, though this number varied across communities. For instance, in Northeastern Anatolia, Turkey's second poorest geographic region, each FMP unit cared for an average of 2,984 people, compared to 3,201 people in Western Anatolia, which is the second richest region following Istanbul.[46]

Since the launch of the FMP, the use of PHC services increased, particularly in regions with lower levels of socioeconomic development. The number of PHC consultations per capita more than tripled from 3.1 in 2002 to 9.5 in 2018.[46] A 2013 study conducted by the World Bank found that the implementation of FMP led to a 14% increase in the number of PHC consultations from 2003 to 2010.[61] In 2017, Hone and colleagues showed that the observed increases in the PHC consultations were more pronounced in provinces with lower levels of socioeconomic development.[68]

Similar to Brazil, available evidence from Turkey suggests that the rise in the number of PHC consultations may be partly driven by greater access to maternal and child health care services. For instance, the fraction of pregnant women who did not seek health care services declined substantially from about 18.6% to only 3.6% from 2003 to 2018.[69,70] By 2018, the share of pregnant women who visited a trained health professional at least four times reached almost 90%, compared to about 54% in 2003.[69,70] Importantly, disparities in antenatal care coverage were largely addressed by 2018, with the gap in antenatal care coverage standing at around five percentage points between pregnant women from the poorest and richest households.

Discussion

To our knowledge, this is the first study that compared how the organization of PHC systems in Brazil and Turkey may contribute to improvements in population health, with a particular focus on health disparities. Our analysis makes use of the Flagship Framework, enabling a systematic analysis to ascertain how changes in the organization of PHC services may lead to changes in both the level and distribution of ultimate health system goals. We applied the Flagship Framework on the existing evidence from the literature and supplemented our analysis with data from publicly available sources.

A comparative analysis of the organizational features of PHC systems in Brazil and Turkey offers important lessons for policy makers in other countries. Our analytical framework suggested that changing the organization of PHC systems can contribute to observable improvements in the level and distribution of health outcomes, but these strategies do not guarantee that the gaps in access to care across populations with different levels of socioeconomic development are eradicated. This is in line with our findings. In Brazil, healthy life expectancy at birth stands 6.2 years higher in the South and Southeast regions than in the North and Northeast regions for both men and women aged 20 years and above.[71] Between 2009 and 2011, the maternal mortality ratio ranged from 80.8 in the Northeast and 77.8 in the North, compared to 54.5 in the South and 60.4 deaths per 100,000 live births in the Southeast.[72] Infant mortality also remains the highest in the North and Northeast and the lowest in the South.[73] The observed disparities in maternal and child mortality in Brazil may be partly explained by the deficiencies at the tertiary care level, as emerging evidence suggests that a substantial fraction of pregnant women experiences some form of delay in receiving the obstetric care that they need in tertiary care facilities.[74]

While the observed declines in maternal and child mortality over the last three decades have been associated with the expansion of the FHS, addressing the social determinants of health may require further rethinking of some of the organizational aspects of the FHS. For instance, the current patient impanelment

method in Brazil takes into account the risk profile and social vulnerability of the populations that the FHS teams serve (e.g., in outskirts of large cities), but available evidence points to high turnover among FHS professionals in high-risk areas, which undermines the availability and continuity of PHC care.[75]Exacerbating these challenges, many remote and low-resource communities experience difficulty in attracting and recruiting health care professionals. Recently, the More Doctors Program (MDP), a large-scale PHC program that aimed at increasing investments for the FHS, attempted to address this challenge by recruiting domestic and foreign primary care physicians in low-resource communities.[76] Hone and colleagues (2020) found that the MDP led to improvements in physician availability, though this Program has been partially discontinued.[77]

Turkey continues to confront similar disparities in the distribution of population health. In 2019, infant mortality rate stood at 12.9 deaths per 1,000 live births (the highest) in the poorest Southeast Anatolia region, almost double that of the mortality rate of 6.3 deaths per 1,000 live births in Eastern Black Sea region.[78] These disparities may be explained by several factors. Öcek and colleagues (2014) documented that the FMP professionals perceived the division of responsibilities between the FMP teams and community health centers in terms of delivering population-level PHC services as a barrier that hindered their ability to take into account the social determinants of health.[65] This study also suggested that the FMP's current impanelment strategy may not adequately track certain segments of the population, including those residing in areas with high levels of inward/outward migration (e.g., students, seasonal workers) and those who are not registered in the census records.[65] Alternatively, the majority of Turkish patients continue to prefer specialists over family medicine teams,[57] which may exacerbate the overuse of emergency departments —especially for minor causes.[60]

Second, large-scale primary health care programs can operate in health systems with varying degrees of decentralization of service delivery responsibilities, though the degree of decentralization may influence program implementation. Aligned with our analytical framework, we found that, in Brazil, the devolution of service delivery responsibilities to municipalities was the centerpiece of UHS reforms. In contrast, the Turkish PHC reforms entailed a limited degree of deconcentration in the form of transfer of certain administrative responsibilities to the FMP units. This was coupled with the introduction of standard rules and responsibilities for PHC delivery. Evidence from Brazil suggests that decentralization may have contributed to improvements in population health, but it also posed challenges for the implementation of the FHS. Guanais and Macinko (2009) used the proportion of ambulatory care facilities directly managed at the municipality level as a measure of decentralization and found an inverse association with post-neonatal mortality between 1998 and 2006.[79] Subsequently, Rocha and colleagues (2016) concluded that the beneficial impact of health spending autonomy on infant mortality rates between 2000 and 2007 was only observed in municipalities classified as efficient in their spending.[80] Andrade and colleagues (2018) showed that municipality-level characteristics played a crucial role in the implementation of FHS services, with factors including the level of socioeconomic development, supply of physicians, population density and size, as well as political party alignments between State and Federal governments influencing the uptake and expansion of the FHS.[26] Andrade and colleagues (2018) also found that municipalities with lower physician and population density adopting FHS services later than those with greater density of physicians and population.[81] In congruence with these findings, similar community-level discrepancies were observed in the roll out of the MDP.[76]

In Turkey, the MOH remains the main steward in the PHC system. Kringos and colleagues (2015) suggested that the clear delineation of rules and responsibilities in PHC delivery may have contributed to improvements in coordination of care and communication between the MOH and health authorities in provinces, and reductions in cross-provincial variation in the implementation of primary care policies.[64] More recently, Barış (2019) also argued that more clear definition of roles and responsibilities of the MOH as the main steward of the health system may have contributed to greater accountability, though the author also pointed out that further decentralization of service delivery responsibilities could help tailor to the evolving needs of the population.[60] Moreover, even highly decentralized systems can face important challenges in coordination and communication across different stakeholders. For instance, Espinosa-González and Normand (2019) pointed to a perception among the FMP professionals that they were not sufficiently consulted in the design and implementation of FMP policies, which undermined job motivation.[82]

Third, deploying multi-professional teams that serve geographically empaneled populations can improve equitable access to care, but course corrections may be needed to address the changing needs of the population. In line with our analytical framework, in both countries, studies suggest that high demand for FHS teams in certain areas may spur health professionals to prioritize certain services over prevention measures, even though prevention is crucial to address the changing disease

burden of the populations. In Brazil, Ignacio and colleagues (2017) demonstrated that the FHS teams that are deployed in urban slums in northern Rio de Janeiro prioritized treatment of intestinal parasitic infections in lieu of prevention activities (e.g., health education and promotion), which may contribute to preventing infections in communities that lack adequate sanitation infrastructure.[83] Yet, innovative approaches can be integrated into the existing arrangements to promote prevention. One recent study aimed to improve the prevention care capacity of the FHS teams by integrating a supervised physical activity program found reductions in cardiovascular risk among adults that live in low-income communities in Rio de Janeiro City.[84] Another study from the Federal District found that the promotion of healthy eating habits and physical exercise by the FHS teams was associated with reductions in risk factors in overweight among adults.[85]

Prioritizing disease prevention is also paramount in Turkey in order to address the rapid rise chronic diseases and modifiable risk factors such as rapidly rising obesity, particularly among women, and persistently high prevalence of smoking.[60] The observed increases in the use of PHC services following the launch of the FMP come primarily from maternal and child health care services, while others services targeting the control and management of non-communicable diseases have been lagging.[61,62] In recent years, innovative approaches (e.g., text and email reminders for family medine physicians to promote healthy lifestyles) are increasingly being experimented.[86] These efforts can be further supported by introducing new practice guidelines for PHC professionals to encourage healthy living practices.[62] Similar to Brazil, alternative team compositions with new roles and responsibilities may be considered to better address the evolving health needs.

This comparative analysis has some limitations. First, our comparative study is based on a review of existing academic publications, documents produced by governments and international organizations, and descriptive analyses of publicly available administrative datasets. Therefore, our conclusions are subject to the analytical methods deployed in these publications, and possible reporting errors in administrative data.

We used the number of PHC consultations as our main measure of access to health care services, and supplemented this analysis with available data on maternal and child health care services to the extent possible. However, the number of PHC consultations alone is an imperfect measure of access that does not take into account other aspects of care (e.g., content and process of care). We opted for this approach due to dearth of publicly available data from both countries that systematically track information that can shed light on other dimensions of access. Yet, emerging evidence suggests that there may be important access barriers in both settings. One 2015–2016 study with older Brazilian adults found that about 40% of FHS beneficiaries experienced some form of difficulty while making appointments with health professionals; nearly half (49%) indicated that they could not see a doctor within 24 hours; and almost 64% indicated that they experienced difficulty getting information over the phone.[87] This study also suggested that about 37% of FHS beneficiaries reported that they rarely or never saw the same doctor and about 18% of their physicians did not know their medications.[87] In Turkey, available evidence also points to deficiencies in access to preventive care services, even though these services are meant to be covered at the PHC level. Rates of cancer screening remain low, with only about 16% of women between ages 20 and 69 being screened for cervical cancer in 2011 and only about 27.3% of women between ages 50 and 69 screened for breast cancer.[88] Similarly, colorectal cancer screening stood at only about 3.2% among adults in ages 50–74.[88] Future studies can explore the existing bottlenecks in access in both countries using outcome measures that track dimensions of access other than the number of interactions with the PHC system.

Second, PHC reforms in Brazil and Turkey entailed concurrent changes in several policy levers, and our comparative analysis was unable to disentangle potential interaction effects between different these reforms. In Brazil, the expansion of the FHS coincided with notable shifts in the financing of health care services across three levels of government, even though the domestic general government health expenditure as share of current health expenditure remained relatively stable from 1990 to 2019. Between 2003 and 2016, the share of health expenditure from municipal resources soared, with municipal health expenditure per capita more than doubling by 2016.[89] The Federal government's share in total public health expenditure reduced from 50% to 40.8% in the same period.[89] Increased reliance on municipality resources may present a barrier against the further expansion of the FHS services, particularly among municipalities with relatively limited resources. In 2019, Brazil introduced a new PHC financing initiative called "PrevineBrasil," replacing existing criterion based on total population by a new one that focuses on the number of people registered in Family Health and Primary Care teams.[90] This change may reduce the amount of financial resources transferred from the Federal government to subsidize PHC in municipalities.[90]

In Turkey, PHC reforms took place at a time of expansion in general government health spending per

capita.[18] In addition, the reorganization of PHC delivery was complemented with the rollout of performance-based contracts.[61] An important aspect of these contracts was the transfer of certain administrative responsibilities to PHC teams, through which the MOH started to transfer a lump sum payment to family medicine teams every month, which were then used by family medicine physicians to cover operational expenses (e.g., expenses related to electricity, fuel, transportation).[61,66] Importantly, these funds accounted for the level of socioeconomic development within which the PHC teams are deployed,[61] which may have helped narrow disparities in access to care. Alternatively, performance-based contracts have been suggested to contribute to the rise in the utilization of incentivized services (e.g., maternal and child health services),[61,62] leading to heavier workload and dissatisfaction among PHC professionals on the pay-scale that do not reflect increased demand for their services.[65]

We were unable to shed light on all organizational aspects of PHC delivery. The Flagship Framework describes other organizational strategies including privatization, competition, and interventions targeting managers.[29] In our study, we compared three organizational strategies, because the Flagship Framework suggested that each of these strategies may lead to observable improvements in access to PHC services and our literature reviews on Brazil and Turkey yielded a number of publications that enabled us to perform a comparative analysis. Nevertheless, other organizational strategies may have led to performance improvements. For instance, in Brazil, recent studies showed an inverse relationship between the proportion of population with FHS coverage and the proportion of population with private health insurance.[26] Whereas, this relationship may not be as pronounced in Turkey, because private providers are mostly limited to inpatient care. However, we were unable to make comparisons due to lack of sufficient empirical evidence from Turkey.

We did not attempt to investigate whether the changes in the organization of PHC systems in each country may have led to measurable changes in the level and distribution of the other ultimate health systems goals discussed in the Flagship Framework. Concerning consumer satisfaction, a relatively small body of literature suggests that both countries achieved gains in satisfactions with the PHC services. In Brazil, a recent study from almost 71% of municipalities found that about three out of four FHS beneficiaries were satisfied with FHS services, though consumer satisfaction varied by geographic region.[91] This study found that the highest level of consumer satisfaction was achieved in the South and Southeast regions, with more than 80% of FHS beneficiaries indicating that they were satisfied with the FHS services, compared to 63.2% in the North and 71.5% in the Northeast region.[91] One small area study in the State of Rio Grande do Norte recently suggested that difficulties around scheduling PHC appointments, long waiting times and time spent in the PHC consultation were the leading reasons for dissatisfaction with the FHS services.[92]

In Turkey, earlier small area studies found that the expansion of the FMP was associated with significant improvements in consumer satisfaction.[93,94] More recently, one study that used nationwide data also concluded that the expansion of the FMP was associated with significant improvements in consumer satisfaction with clinical behaviors of FMP professionals, a composite measure that tracked 18 different aspects of care (e.g., listening to patients), as well as the process of care (e.g., obtaining an appointment at a time that suits the patient).[95] However, these studies fell short of isolating the potential role that the organizational PHC reforms may have played in the observed improvements in client satisfaction. Future studies can shed light on the ways in which the organizational reforms in Brazil and Turkey may have improved consumer satisfaction.

Our study did not examine the ways in which the organizational changes in PHC systems may have influenced the other intermediate health system goals discussed in the Flagship Framework. A growing strand of literature suggests that both countries achieved improvements in quality of PHC care, which may be plausibly linked to the organizational reforms at the PHC level. One commonly used measure of PHC quality tracks the changes in hospitalizations due to a range of health conditions that are considered to be preventable with timely and adequate access to PHC.[88] A growing body of literature from Brazil demonstrates that the expansion of the FHS was associated with reductions in preventable hospitalizations,[96] including hypertension,[97] diabetes and respiratory conditions,[98] heart failure and cerebrovascular diseases.[99]As discussed by Macinko and colleagues (2010) the observed declines in preventable hospitalizations were pronounced in municipalities that had no or low coverage of FHS services at the beginning of the Program.[97] More recently, the MDP has been associated with notable reductions in mortality amenable to health care,[77] and hospitalizations due to a range of primary–sensitive conditions,[100] including cerebrovascular diseases[101]and infectious gastroenteritis.[102] Importantly, this literature highlights that the observed gains in health system performance grew over time.

While limited, a body of evidence from Turkey also suggests that the introduction of FMP has been associated

with improvements in quality of care,[16,24,60] though available evidence also suggests that there is room for further improvement. For instance, one analysis recently conducted by the Organization for Economic Cooperation and Development (OECD) showed that hospitalization rates for chronic obstructive pulmonary diseases were around 877.2 per 100,000 population, which was more than four times higher than the average hospitalizations for this health condition among OECD members.[88] Hospitalizations due to diabetes were estimated to be similarly high compared to other OECD countries.[60,88]

Our paper did not examine how protection against financial risks may have responded to the changes in the organization of PHC systems in Brazil and Turkey. In both countries, the PHC services are offered free-of-charge, which in turn, may yield improvements in protection against financial risks. Yet, available evidence from both countries suggests that increased access to the PHC systems did not guarantee greater financial risk protection for all citizens. As shown earlier in Table 1, out-of-pocket (OOP) expenditures incurred by Brazilian patients declined over the last three decades,[18] though they still constitute an important source of health financing.[103,104] Moreover, catastrophic health expenditures, another important measure of financial risk protection, have been on the rise. In 2008–2009, the risk of incurring catastrophic health expenditure among the poorest Brazilian households was estimated to be 5.2 times higher that of the risk faced by the richest households.[105] In a comparative analysis, Wagstaff and colleagues (2016) concluded that Brazil performed worse on providing financial risk protection for its citizens compared to many other countries in Latin American, despite providing greater levels of health care service coverage.[25,106] This study also found that Turkey also achieved improvements in financial risk protection, both in terms of reliance on OOP and catastrophic health spending.[25] Wagstaff and colleagues (2017) subsequently found reductions in the incidence of impoverishing health spending in Turkey between 2002 and 2012.[27] From 2003 to 2009, the risk of incurring catastrophic health expenditures also declined.[107] However, the observed reductions in catastrophic health expenditures coincided with the worsening of the progressivity of the OOP spending, suggesting that financial risk protection for households with the lowest level of income declined over time. These complexities necessitate additional studies to achieve a deeper understanding of the main drivers of OOP and catastrophic health spending in both countries, and the ways in which PHC systems can help improve financial risk protection.

Our analysis revealed that both Brazil and Turkey systematically collect information from communities in terms of the number of interactions with the health system (e.g., number of PHC visits, hospitalizations), with relatively little emphasis on the collection and dissemination of publicly available indicators that can help track changes in the other aspects of PHC delivery (e.g., continuity and comprehensiveness of care, coordination with other levels of care). The collection and dissemination of a wider set of PHC indicators can help support future analytical studies and inform the development of health policies that aim to enhance health system performance.

Conclusion

Changes in the organization of PHC systems can offer an important means to narrow health disparities in access to care. Our comparative analysis revealed that the PHC reforms in Brazil and Turkey led to measurable improvements in reducing disparities in access to care. Our results suggest that large-scale PHC programs can be operationalized in settings where PHC governance responsibilities in the public sector are decentralized in varying degrees. But the degree of decentralization may impact the implementation of these programs. Reliance on team-based PHC delivery and patient impanelment may contribute to addressing persistent gaps in access to care, but course corrections may be needed to better respond to the evolving health needs of the local populations. Combined, our results suggest that additional measures are needed in Brazil and Turkey to improve the performance of the PHC systems.

Highlights

- Brazil and Turkey are among the few high-middle-income countries that invested in primary health care as an important element of much broader health systems reforms to tackle disparities in acces to care.
- This is the first comparative case study that reviews how changes in the organization of PHC systems may have contributed to measurable improvements in access to care by applying the Flagship Framework on the extant literature from both settings. In particular, we focus on (1) level of decentralization in service delivery responsibilities, (2) team-based PHC delivery, and (3) patient empanelment.
- Our findings suggest that policies that alter the organization of PHC can help narrow inequitable access to care, but they do not guarantee eradicating these disparities. PHC systems can operate in health systems with varying degrees of decentralization, but the level of decentralization has important implications for the implementation of these programs. Relying on multi-professional PHC teams that serve geographically empaneled populations can improve equitable access to care. However, course corrections may be needed to address evolving health demands.

Disclosure of Potential Conflicts of Interest

No potential conflict of interest was reported by the authors.

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