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Policy Brief

Optimizing Medical Workforce Distribution for a Sustainable Healthcare System in Iran

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Abstract

Public health is one of the most valuable assets of any country, and the level of development of societies largely is contingent upon the quality and equity of their healthcare systems. This policy brief analyzes recent trends in medical education in Iran, examines the current physician-to-population ratio in a regional context, and highlights structural challenges in physician distribution as well as referral systems. Official reports from the Ministry of Health and the Iranian Medical Council demonstrate that while Iran's physician-to-population ratio (1.7–1.9 per 1,000) remains below the WHO recommended level (2–3 per 1,000), the main issue lies in unequal geographic distribution, lack of incentives for medical specialization, and insufficient educational infrastructure. According to evidence, merely elevating the number of medical graduates, without addressing structural and economic factors, may fail to improve health outcomes. It could even contribute to unintended consequences such as physician unemployment and increased migration of skilled professionals. Thus, effective policy-making in this domain requires a clear understanding of verified data sources, robust distribution policies, as well as realistic strategies to align medical workforce expansion with national healthcare needs and development plans.

Keywords: Medical Education; Physician-To-Population Ratio; Physician Distribution; Physician Migration; Health Policy

Background

Public health is widely recognized as one of the key indicators of sustainable development and social resilience. Throughout history, inadequate healthcare infrastructure and poor disease control have subjected societies to severe public health crises, as observed during recent global pandemics. In Iran, the formal training of local physicians dates back to the establishment of *Dar ul-Funun* and the country's first modern hospitals in the 19th century, which significantly diminished dependence on foreign medical practitioners.

Nowadays, despite significant growth in medical education, Iran's healthcare system is facing emerging challenges such as regional physician shortages, unequal distribution of medical personnel, limited economic incentives for specialization, and growing trends of physician migration. Official data from the Ministry of Health and the Iranian Medical Council reveal disparities in the availability of healthcare services across provinces, with some underserved areas reporting fewer than 10 physicians per 10,000 people, compared to over 55 per 10,000 in major urban centers such as Tehran.

Moreover, factors such as limited investment in rural healthcare infrastructure, inadequate residency support, and external pull factors such as international recruitment contribute to the ongoing brain drain. These challenges necessitate careful, evidence-based policy-making to ensure that any expansion of medical school admissions is matched by sustainable workforce planning, equitable distribution, and robust support systems (1, 2).

Current Status of Medical Workforce

According to the *Annual Statistical Report* of the Ministry of Health (2023) along with the data published

by the Iranian Medical Council (*IMC Report on Medical Licenses*, 2022):

- Approximately 200,000 students are currently enrolled in different medical sciences programs in Iran, of whom about 55,000 are studying general medicine (*MOHME, 2023*).
- As of 2023, an estimated 176,000 physicians hold valid practice licenses nationwide. Each year, between 5,000 and 6,000 new general practitioners graduate and enter the workforce (*IMC, 2022*).
- Of the total medical graduates, 46,000 have completed specialist or subspecialist training, and approximately 16,000 are enrolled in residency programs (*MOHME Graduate Tracking Report, 2022*).
- It is estimated that more than 20,000 general practitioners have left the medical field in recent years owing to factors such as international migration (~12,000), transition to non-medical careers (~5,000), or non-renewal of licenses because of early retirement or career changes (~3,000) (*IMC Migration and Workforce Report, 2022*).

According to these figures, Iran's physician-to-population ratio ranges between 1.7 and 1.9 per 1,000 people. This variance reflects differences in data reporting and regional fluctuations (*MOHME Workforce Dashboard, 2023*). Although this ratio remains slightly below the World Health Organization (WHO) recommended standard of 2–3 per 1,000, Iran's ranking is comparable to the lower-middle range among countries in the Middle East and North Africa (MENA) region (*WHO Global Health Observatory, 2022*).

Nevertheless, a closer look indicates that the main issue is not the absolute number of physicians; rather it is inequitable geographic distribution. For example, in Tehran and major urban centers, the ratio exceeds 5.5 physicians per 1,000 (55 per 10,000), while in at least six provinces—including Sistan and Baluchestan, Kohgiluyeh and Boyer-Ahmad, Ilam, South Khorasan, Hormozgan, and Lorestan.

These gaps, coupled with insufficient rural healthcare infrastructure and limited incentives for specialization, have significant implications for national health equity and access (3-7).

Challenges in Physician Distribution and Medical Student Admission

1. Inequitable Distribution of Physicians

Although Iran's overall physician-to-population ratio is close to regional averages, there persists significant internal disparities. For instance, while Tehran enjoys over 5.5 physicians per 1,000 people, provinces such as Sistan and Baluchestan, Hormozgan, and Lorestan report ratios under 1 per 1,000 (*MOHME Regional Report, 2023*). According to studies, more than 35% of new graduates prefer to practice in major urban centers thanks to better facilities, higher pay, and lifestyle advantages (*IMC Physician Location Survey, 2022*). This urban concentration exacerbates service gaps in rural and underserved areas.

2. Limited Economic Incentives for Specialization

In spite of the rise in medical residency capacity from 3,600 to 4,300 positions in 2021, many specialties remain unpopular given unattractive salaries—often below $150 per month—long working hours, and insufficient legal protections (*MOHME Residency Enrollment Report, 2021*). For instance, fields such as family medicine, emergency medicine, and rural general practice confront chronic recruitment shortfalls.

3. Limited Impact of Increased Physician Supply on Health Outcomes

Evidence suggests that boosting graduate numbers alone does not automatically translate to better health indicators. For example, from 2010 to 2020, although Iran doubled the number of dental graduates, national oral health surveys revealed only marginal improvements in oral hygiene and caries indices (*National Oral Health Report, 2021*). A similar pattern could emerge in general medicine if structural issues such as referral system weaknesses and lack of preventive care models remain unresolved.

4. Insufficient Educational Infrastructure

While admission quotas have grown in response to physician shortages, some universities lack sufficient teaching hospitals, clinical laboratories, and qualified faculty. As of 2022, 27% of Iran's medical schools report faculty-to-student ratios lower than WHO's recommended standard of 1:7 for clinical training (*MOHME Medical Education Capacity Report, 2022*). Without substantial investment, further expansion may jeopardize the quality of medical education and clinical competency (8-12).

Policy Recommendations

1. Implement Targeted Incentive Packages for Underserved Areas

International experience indicates that competitive salaries and non-financial incentives are essential for attracting physicians to underserved regions. For instance, Turkey's rural physician program enhanced coverage by offering 30–50% higher salaries, subsidized housing, and fast-track promotion schemes (*OECD Health Workforce Report, 2021*). Iran could adopt a similar approach by allocating special budget lines to offer financial incentives, housing benefits, and career

advancement opportunities for doctors who commit to working at least 5 years in low-coverage provinces.

2. Reform the Referral and Family Medicine System

A robust referral system lowers unnecessary specialist visits and helps distribute healthcare demand more evenly. Strengthening Iran's family medicine program—by augmenting family medicine residency slots, raising salaries to match specialist levels, and integrating family doctors into urban clinics—can diminish overcrowding in tertiary hospitals. A 2020 pilot in Fars Province revealed that a 20% reduction in unnecessary specialist referrals is achievable with an active family physician network (*MOHME Pilot Evaluation, 2020*).

3. Align Admissions with Verified Infrastructure Capacity

Medical school admissions should be explicitly linked to capacity of teaching hospitals, availability of clinical placement slots, and faculty numbers. A transparent national capacity map—updated annually—can prevent over-enrollment. For example, South Korea's Ministry of Health ties university admission quotas to annual hospital accreditation reviews (*Korean Health Workforce Policy Review, 2019*). Iran can adopt a similar dynamic quota system.

4. Mandatory Service with Clear Enforcement Mechanisms

Evidence from Thailand and Malaysia suggests that requiring graduates to serve in designated regions is only effective if backed by clear penalties and benefits. For Iran, a 3–5-year compulsory service period for students admitted under expanded quotas can be enforced by tying license renewal and board certification to completion of this service. Graduates who fail to comply would face license suspension or fines equal to the cost of their subsidized education (*Thailand Rural Doctor Program Evaluation, 2018*).

5. Enhance Residency Program Support

To address specialist shortages, residency stipends have to be elevated to at least cover basic living expenses. Further, offering loan forgiveness, subsidized housing, and guaranteed job placement after graduation can attract more applicants. Studies from Eastern European countries demonstrate that residency retention improved by 40% when financial and legal protections were introduced (*European Medical Training Trends, 2020*).

6. Promote Alternative Career Pathways and Public Awareness

Ultimately, to alleviate excessive pressure on medical school admissions, it is essential for policymakers to advocate for the social and economic significance of allied health professions, nursing, and non-medical careers. Media campaigns, high-school counseling, and financial incentives for high-demand non-medical fields can gradually balance student interest across disciplines.

Conclusion

In conclusion, while raising the number of physicians in Iran is a necessary step toward ameliorating healthcare access, it is not sufficient by itself. The key challenges lie in the uneven geographic distribution of medical personnel, insufficient educational infrastructure, weak referral systems, and inadequate incentives for specialists, all collectively limiting the influence of increased physician numbers on public health outcomes.

Without coordinated reforms that address these structural and systemic challenges—including targeted financial incentives, compulsory service programs with clear enforcement, and alignment of medical school admissions with actual capacity—the risks of physician unemployment, quality decline in medical education, and increased brain drain will persist.

Accordingly, evidence-based policy-making that integrates comprehensive workforce planning, educational capacity building, and social incentives is essential to enhance the quality, equity, and sustainability of Iran's healthcare system. Only through such multifaceted approaches can the country ensure that medical education expansions translate into tangible improvements in population health.

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