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Supply, Demand and Distribution of Physicians in Japan

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The number of physicians in Japan has been and will continue to be lower than that in other the Organization for Economic Co-operative and Development (OECD) countries. The admission capacity of medical schools, which has the greatest impact on the number of physicians, has been determined through discussions among the Ministry of Health, Labour and Welfare, medical associations, medical organizations, universities, and academics, depending on the medical supply-demand status on that era. In recent years, the maldistribution of medical specialties and regions has become an issue. For the involving this issue, Japanese government takes from multiple perspectives to address this problem, including “regional quotas” in admission quotas for university medical school and, setting a ceiling on the number of residency positions available in each prefecture as well as on recruitment capacity in the specialist physician system. The implementation of “work style reform” for physicians, focuses on shortening physicians’ working hours and has raised concerns regarding a shortage and regional maldistribution of physicians. The government’s policy is based on a key concern: rising healthcare costs could seriously threaten the country’s financial health. Therefore, the government has limited the increase in the number of physicians. Conversely, this year, the government has begun to argue that a regulatory approach is necessary to address the uneven distribution of physicians. Our proposition is to achieve a number of physicians comparable to that of other OECD countries and to create an environment that enables physicians to voluntarily address their regional and departmental maldistribution.

Keywords: Demand for and supply of physicians, Physicians maldistribution, Physician’s work-style reforms, Medical cost pariah theory

Introduction

Many factors determine the demand for and supply of physicians, and it is not possible to accurately evaluate the oversupply or shortage situation in the medical field simply by considering the ratio of the number of physicians to the number of patients. Considering the uneven distribution of regions and medical specialties, it is difficult to determine the appropriate number of physicians and the basis for such a number.

This paper examines the current situation and history of physician supply and demand in Japan, addresses their maldistribution, analyzes government policies, and provides further discussions.

The number of physicians in Japan

Recent number of physicians in Japan

As of December 31, 2022, the total number of physicians in Japan was 343,726, or 2.74 per 1,000 individuals in the population [1]—29th out of 37 OECD member countries, the lowest among the G7 (Fig. 1) [2].

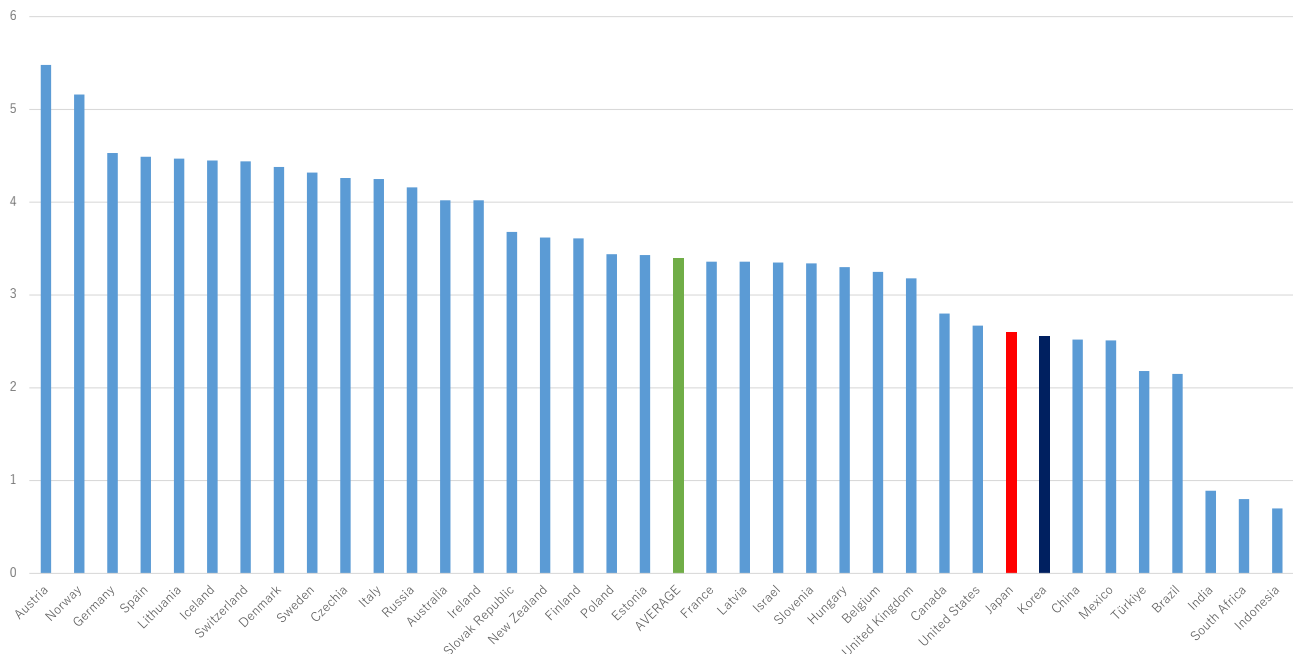


Fig. 1. Physicians total, per 1,000 inhabitants, 2022 or latest available. X-axis shows the number of physicians per 1,000 individuals in the population. Y-axis shows OECD countries. Cited from OECD iLibrary. Doctors (https://www.oecd-ilibrary.org/social-issues-migration-health/doctors/indicator/english_4355e1ec-en) [2].

The number of physicians in Japan has been slowly increasing, but it is still ranked low among OECD countries (Fig. 2) [2].

Number of enrollment capacity in medical schools and its history

This section addresses the number of medical school enrollment quotas, which have the greatest impact on the number of physicians (Fig. 3) [3], and the history of the demand for and supply of physicians.

In 1961, Japan achieved a universal health insurance system; however, the government recognized a shortage of physicians and increased the number of medical school enrollments by about 250 each year. Thus, in 1973, a “one-prefecture, one-medical-school concept” was proposed. In 1982, the government withdrew its recognition of a shortage of physicians and, by Cabinet decision, halted the increasing number of physicians, stating that care would be taken to avoid an excess. The government announced a 10% reduction in the new entrants number to the medical school in 1983, because the target of 150 physicians per 100,000 population (1.5 per 1000) was achieved.

In 2006, the number of medical school enrollments was slightly increased to address the perceived maldistribution of

physicians. In 2010, the overall capacity increased owing to the implementation of the “regional quota system” to eliminate the uneven distribution of physicians. However, by 2016, it was determined that an oversupply would occur in the future.

The total number of physicians in Japan reached its highest level—approximately 340,000 in 2020, but this is still 130,000 less than the simple average of OECD member countries.

In fact, according to the “FY2019 Questionnaire Survey Report on the Shortage of Medical Practitioners and Physician Work Styles” published by the Japan Hospital Association found that only 24% of the 413 hospitals have full-time physicians in all practicing departments. Furthermore, 88% of hospitals reported a “shortage or slight shortage” of physicians. Conversely, only 10% of hospitals were “fully staffed”—down from 23% and 15% in the previous surveys, indicating an increasing shortage of hospitalists [4].

Demand and Supply of Physicians

Latest demand estimates

The Subcommittee on Physician Supply and Demand of the “Study Group on the Supply and Demand of Medical Professionals” of the Ministry of Health, Labour and Welfare (MHLW), developed new supply and demand estimates in

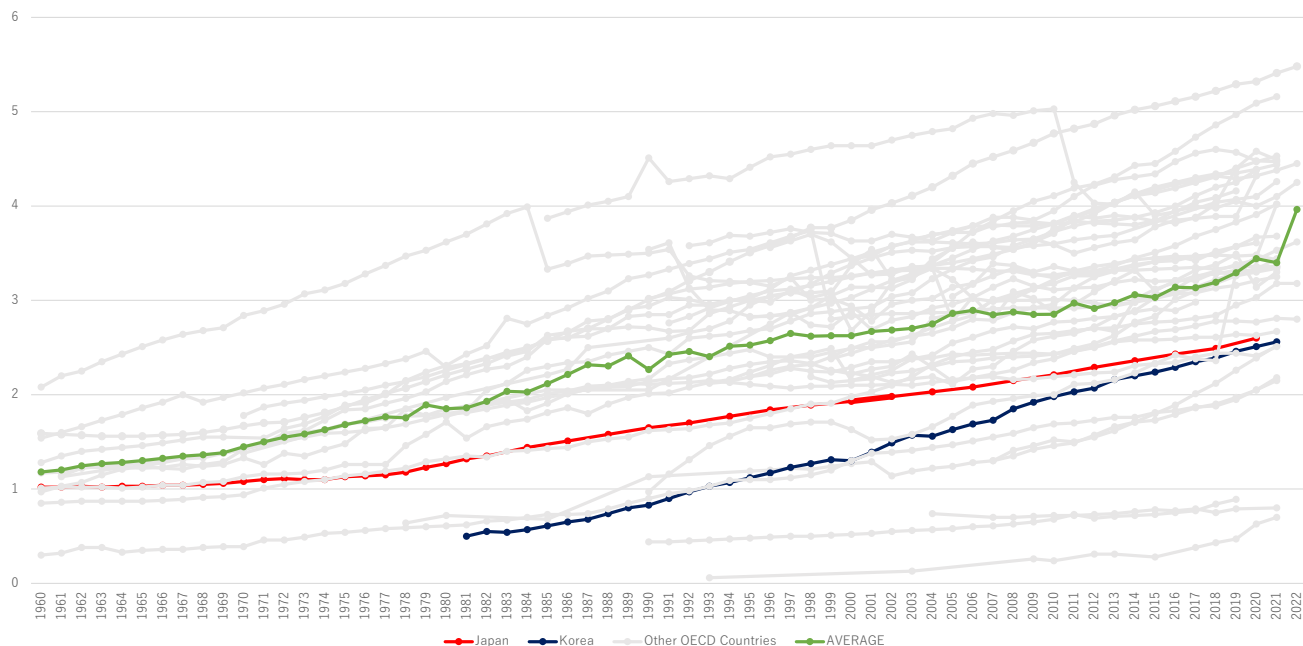


Fig. 2. Physicians total, per 1,000 inhabitants, 1960–2022. Cited from OECD iLibrary. Doctors (https://www.oecd-ilibrary.org/social-issues-migration-health/doctors/indicator/english_4355e1ec-en) [2].

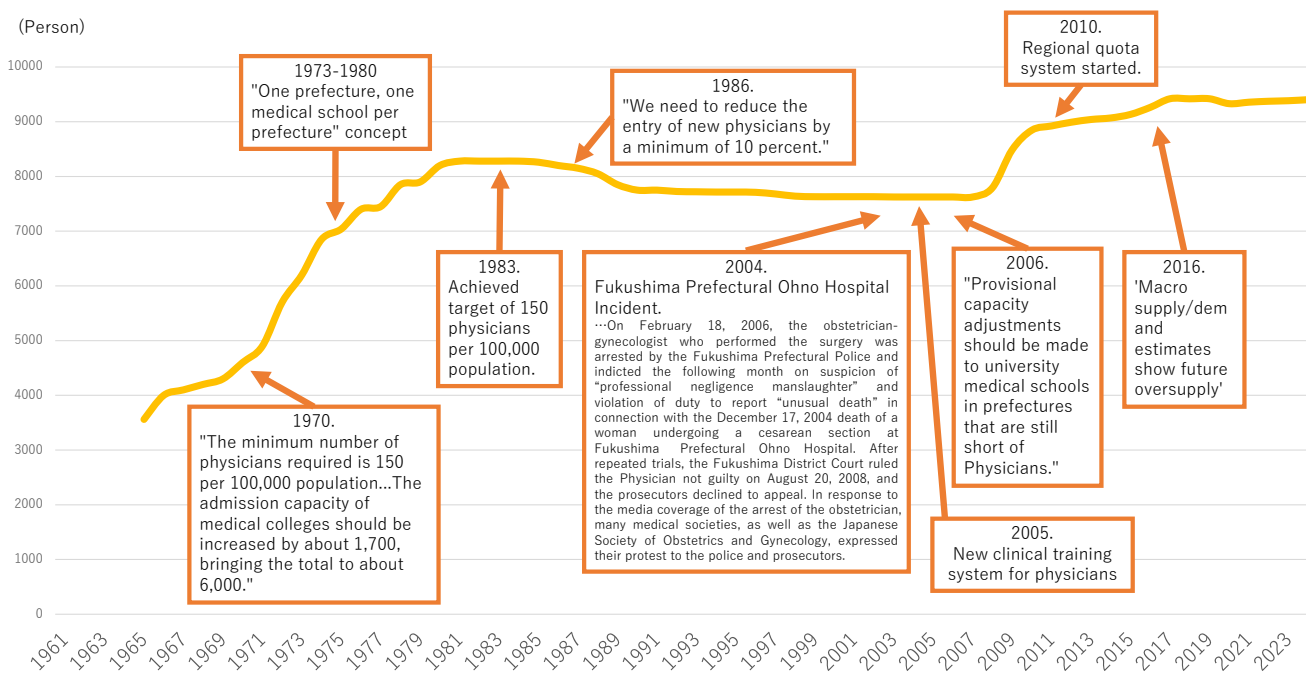


Fig. 3. Changes in admission capacity of medical schools. Cited from Ministry of Health, Labour and Welfare of Japan. 2022 White Paper on Health, Labour and Welfare: securing human resources to support social security. Chart 1-2-2: annual changes in admission quotas and regional quotas for medical school (<https://www.mhlw.go.jp/stf/wp/hakusyo/kousei/21/backdata/01-01-02-02.html>) [3].

2020 [5] (see [Additional information 1](#)) considering the working hours of physicians, their work efficiency, and the rate at which patients receive care. As a result, the subcommittee estimated that in the intermediate demand case 2, supply and demand will reach equilibrium around 2029 with approximately 360,000 physicians, and in case 1, which has the highest demand, supply and demand will reach equilibrium around 2032 (Fig. 4) [6,7].

Clinical training system for physicians and its impact

Physicians' clinical training system has had a major impact on their supply and maldistribution. In 1968, an "effort policy" was implemented, mandating that required physicians to undergo clinical training for at least two years after obtaining their license. Under this system, physicians who passed the national examination were assigned to hospital departments of their home universities. This old type doctor training system, known as the "intern doctor system," lacked detailed establishment regarding basic incomes and working conditions. Additionally, its training program was not well-defined and focused only on the specific field to which the intern was affiliated.

In 2004, the new clinical training system for physicians was instituted, making clinical training of two or more years mandatory based on the basic concept of cultivating a physician's

character, acquiring basic medical skills in primary care, and creating an environment in which trainees can devote themselves to training without part-time work.

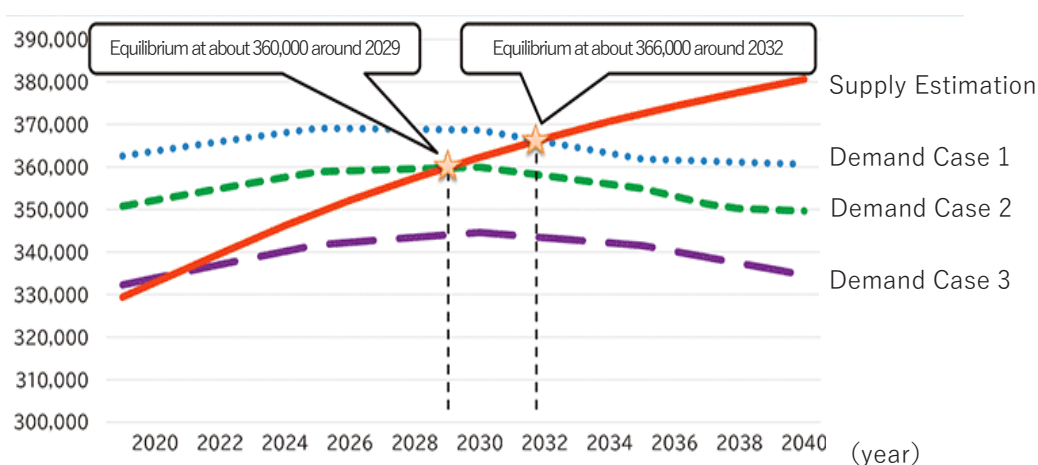
The new system allowed trainees to freely choose their training locations, which led to a concentration of trainees in large hospitals in urban areas with well-developed training systems. Additionally, a certain amount of salary was provided, which discouraged "part-time" treatment and per diem shifts at affiliated hospitals, and a shortage of physicians in rural areas became evident.

"Physician's Work Style Reforms"

Working hours of hospitalists and "Physician's Work Style Reforms"

Fig. 5 illustrates the working hours of the hospital-based physicians as of 2019 [8]. Some working physicians exceeded the so-called "overwork line, which creates a critical situation due to both mental and physical stresses" of 960 hours per year (80 hours per month), which is the standard for workers' compensation certification in Japan. Starting in 2019, "Work Style Reform" were initiated, aiming to enable workers to choose diverse work arrangements according to their individual circumstances and improve their prospects.

Regarding physicians, the report states that "Japanese phy-



(Note) Supply Estimation Future medical school capacity is estimated to be 9330 in 2020.

In order to take into account the different working hours by gender and age group, the ratio of the overall average working hours to the working hours by gender and age group was used as the work rate, which was converted to workload.

Demand Estimation Estimates were made with a certain range of working hours, work efficiency, and receipt rate.

Case 1 (working hours are limited to 55 hours per week, etc. ≈ equivalent to 720 hours of overtime and holiday work per year)

Case 2 (working hours limited to 60 hours per week ≈ equivalent to 960 hours of overtime and holidays per year)

Case 3 (Limiting working hours to 78.75 hours per week, etc. ≈ equivalent to 1860 hours of overtime and holidays per year)

Fig. 4. Estimated physician receipts in FY2020. Cited from Ministry of Health, Labour and Welfare of Japan. 2022 White Paper on Health, Labour and Welfare: securing human resources to support social security. Chart 2-1-9 Estimated demand and supply of physicians in FY2020 (<https://www.mhlw.go.jp/stf/wp/hakusyo/kousei/21/backdata/01-02-01-09.html>) [7].

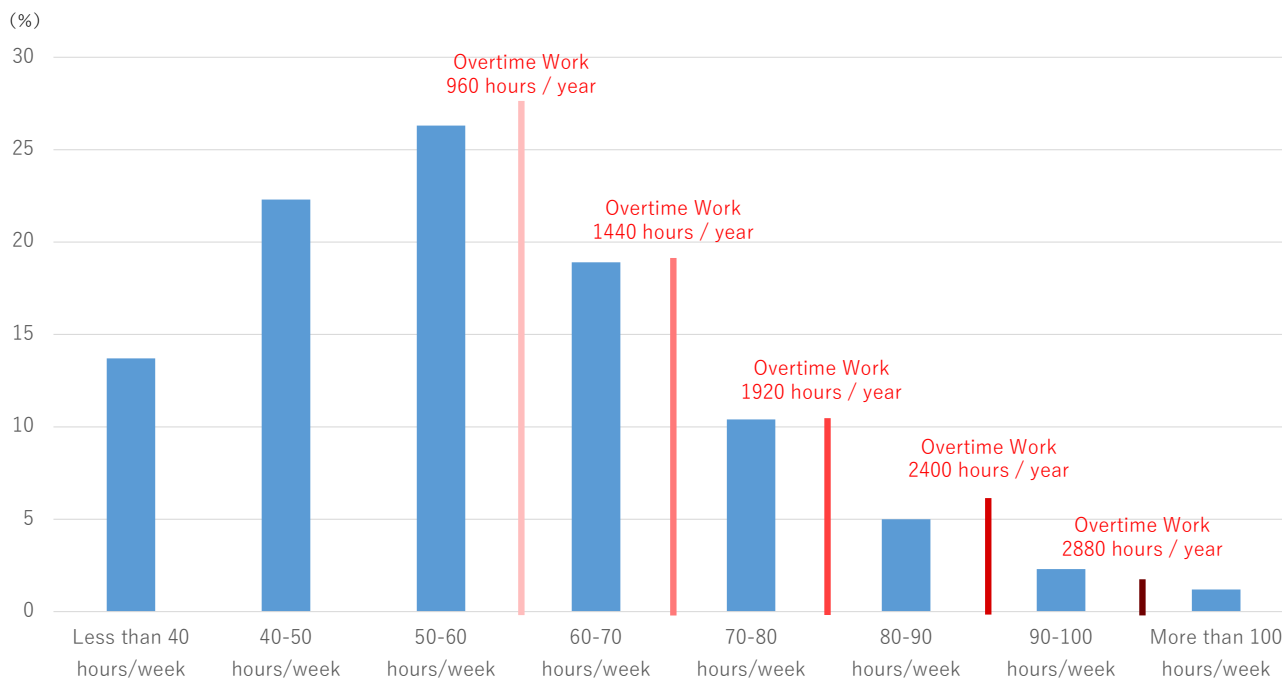


Fig. 5. Percentage of full-time hospital physicians by category of weekly working hours. Cited from Tanigawa T. 2019 Survey on the working conditions of physicians (https://www.mhlw.go.jp/stf/newpage_12705.html) [8].

sicians’ have supported healthcare long working hours. The burden on individual physicians is expected to intensify due to evolving medical needs, sophistication of medical care, and a decrease in medical personnel due to the declining birth-rates.”

The report identifies “long working hours,” “inadequate labor management,” and “concentration of work on physicians” as future challenges [9].

However, since the early elimination of long working hours by physicians will have a substantial impact on the regional medical care delivery system, “Physician’s work style reforms” will be implemented in April 2024 following a five-year grace period.

In June 2022, the Japan Medical Association conducted a “Questionnaire on the Current State of Health of Working Physicians and How Support Should Be Provided” and reported that 4.0% of working physicians “specifically contemplate suicide or death every week/every day” [10]. Fig. 6 provides an overview of the “Physician’s Work Style Reform” implemented in April of 2024 to improve the working environment for such Japanese working physicians. However, many working physicians are still permitted to work hours exceeding the overwork line.

Physician’s work style reforms and their impact on the regional healthcare delivery system

The primary objective of physician work-style reforms is to reduce physicians’ working hours. Consequently, the system of providing outpatient care—especially emergency care—is being scaled back, and the deployment of physicians from core hospitals to regional hospitals is being reconsidered.

The “Survey on the Status of Physician’s Work Style Reforms” released in March 2024 by the Council of Four Hospital Association (see [Additional information 2](#)) reported that 23.1% of medical institutions have physicians who work overtime exceeding 960 hours, which is a special exception level, and 3.3% have physicians who work overtime exceeding 1,860 hours. Applications for these special exception levels are most common at university hospitals, clinical training hospitals, emergency centers, and perinatal maternity and childcare centers.

Regarding the negative impact on the practice system, 7.0% reported that this “Work Style Reform” policy would have a negative impact on their hospital; 35.0% stated that it might have a negative impact, and 6.7% reported that it might have a negative impact on the community. Additionally, 9.3% of medical institutions have reduced the number of physicians sent from other hospitals. Of the medical institutions that dis-

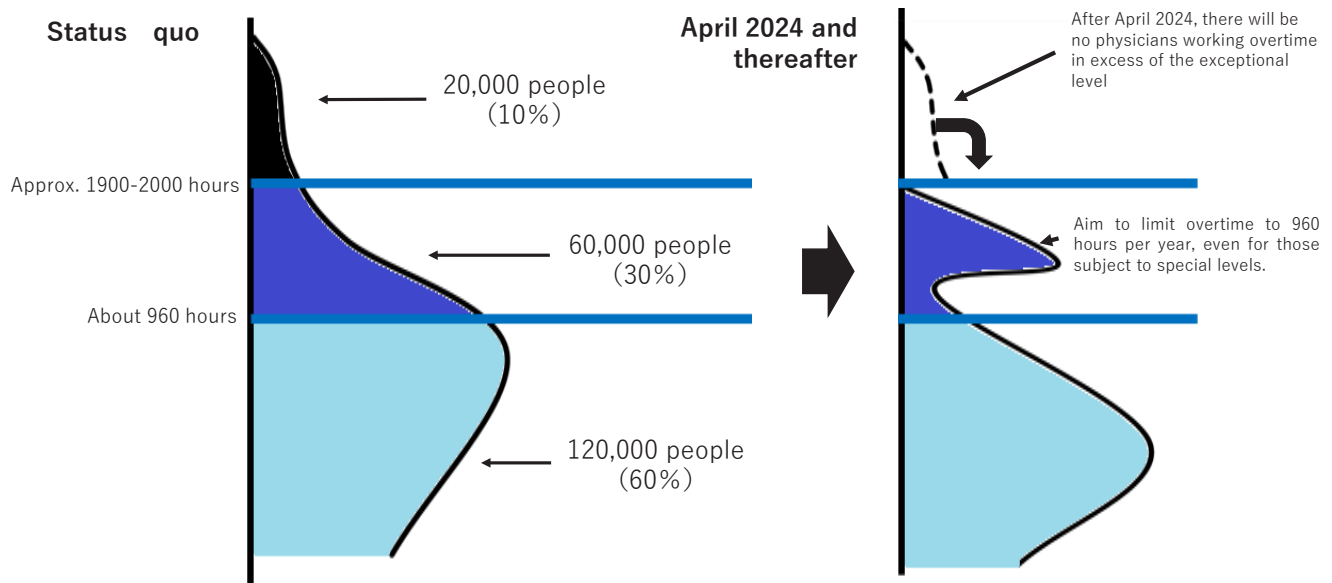


Fig. 6. Physician's work style reforms. Cited from Ministry of Health, Labour and Welfare of Japan. Physician's work style reforms (<https://www.mhlw.go.jp/content/10800000/001129457.pdf>) [9].

patched physicians to other hospitals, 26.0% responded that they would consider discontinuing or reducing the dispatch of physicians depending on the situation [11].

As described above, the physician's work-style reforms will have substantial impact on the local medical care delivery system, and after April, the reduction of the medical care delivery system will be evident in emergency and perinatal care.

However, if physicians' working hours are reduced, their income will likely decrease. To avoid this, it is essential to "increase the number of physicians" and "increase medical fees," the source of physicians' income; these two points constitute our basic demands.

Future number of physicians to be trained

The simplest and clearest solution to shortening physicians' working hours is to increase the number of physicians. However, the current trend of increasing the number of physicians is being restrained by concerns about a future oversupply.

The Fifth Interim Report of the Subcommittee on Physician Supply and Demand released on February 7, 2022 stated the following [12]:

"The supply-demand balance for physicians will reach equilibrium around 2029, after which the number of physicians will increase, but in the future, the demand for physicians will decline as the population decreases. However, since the demand for physicians will enter a phase of decline in the

future owing to population decrease, the pace of increase in the number of physicians needs to be reviewed. Nevertheless, regional and departmental maldistribution of physicians still exists, and it is important to address these issues."

In response, in March 2024, the MHLW held a "Study Group on Measures to Counteract the Uneven Distribution of Physicians through Medical Training Programs" and decided that the total new student number of medical schools in FY2026 "shall be capped at the FY2024 level (9,403 places)" [13].

Uneven distribution of physicians

Facts about the uneven distribution of physicians

Around 1990, the maldistribution of physicians became a topic of discussion.

As for the maldistribution of physicians by specialty, physicians tend to avoid specialties that offer harsh working conditions. Then the number of physicians who choose those hard-working specialties was only small increase (Fig. 7) [14].

Although the distribution of physicians by region is uneven, the existing ratio of the number of physicians to population is not a sufficient indicator to clarify the current situation. Therefore, the MHLW introduced a new "Physician Maldistribution Index" in 2020 that considers factors such as population composition and age distribution of physicians, thereby

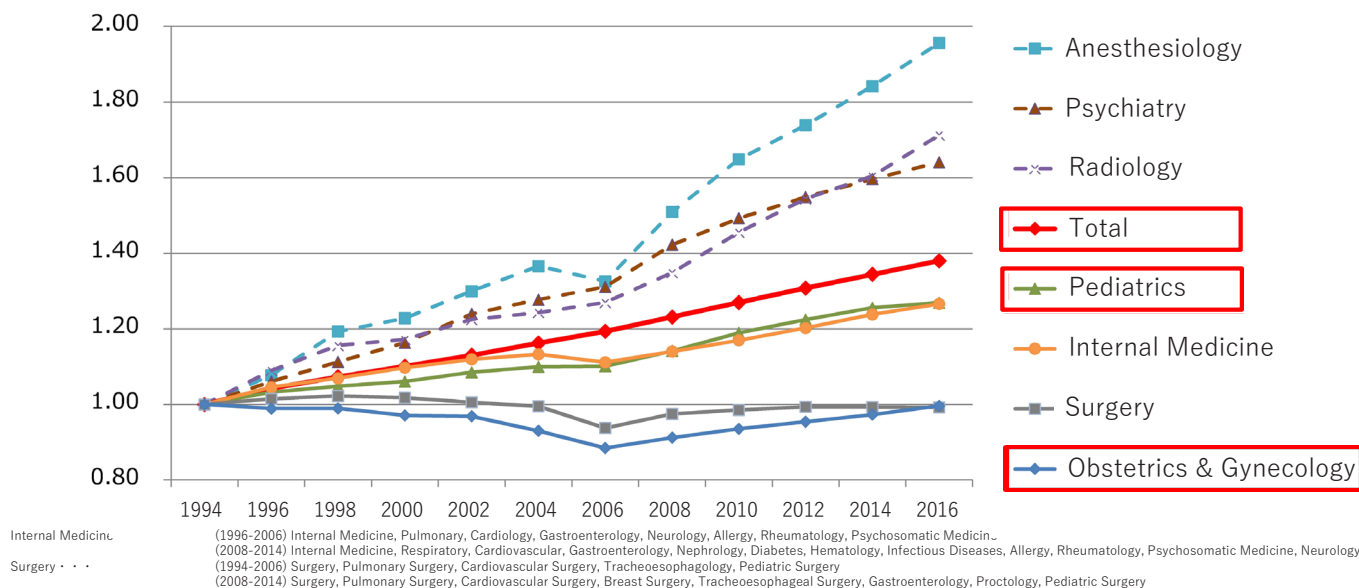


Fig. 7. Uneven distribution of physicians by department. Cited from Ministry of Health, Labour and Welfare of Japan, Subcommittee on Physician Supply and Demand, Study Committee on the Supply and Demand of Health Care Workers. (1) Physician maldistribution by medical specialty, (2) Types of physician maldistribution (<https://www.mhlw.go.jp/content/10801000/000454557.pdf>) [14].

clarifying the maldistribution of physicians between regions (prefectures) (Fig. 8).

However, the new index is still only a relative index, with the top third of the population being considered “many” and the bottom third being considered “few.” Furthermore, not all prefectures have reached the OECD average level of physicians-to-population ratio. This comparison by administrative region does not clearly show the actual situation of over- and under-representation only in the local government unit, further complicating the assessment and resolution of maldistribution.

The Fifth Interim Report of the Subcommittee on Physician Supply and Demand presented measures to address regional maldistribution, as shown in Table 1 [12].

Changes in regional and specialty maldistribution

Fig. 8 compares the number of physicians per 1,000 individuals in the population by prefecture in 1996 and 2022. The overall increase in the number of physicians is due to the increase in capacity at almost all medical schools. The number of physicians has increased in all regions, but the regions with relatively few physicians have remained small and have not exceeded those with many. The reasons for this are complex. For example, in Saitama Prefecture, there were originally no national or public medical schools, only one private university, and even if the capacity of this medical school was in-

creased, a drastic improvement would be difficult. On the other hand, in Tokyo and Kyoto prefectures, there is no change in the trend of having a large number of medical school capacity and a relatively high number of physicians per capita compared to the population. If this trend continues, even if the number of physicians is increased, the regional maldistribution will not improve.

The changes in the number of physicians specialty have been remarkable. Fig. 7 shows the overall number of physicians. In addition to anesthesiology and psychiatry, dermatology and orthopedics have also shown remarkable growth, especially in clinics. Conversely, surgery and obstetrics and gynecology are on the decline. The reasons for this include changes in medical demand and differences in the ease of working in different departments.

Regarding changes in medical demand, there is an increase in atopic dermatitis and cosmetic cosmetic surgery in dermatology, an increase in demand due to the aging of the population in orthopedics, an increase in demand due to an increase in mental illness and dementia in psychiatry, an increase in demand due to an increase in operation in anesthesiology, and a decrease in demand due to the declining birth rate in obstetrics.

In terms of ease of work by specialty, ophthalmology, orthopedics, and dermatology are said to require less hospital duty, while obstetrics and gynecology and surgery are said to

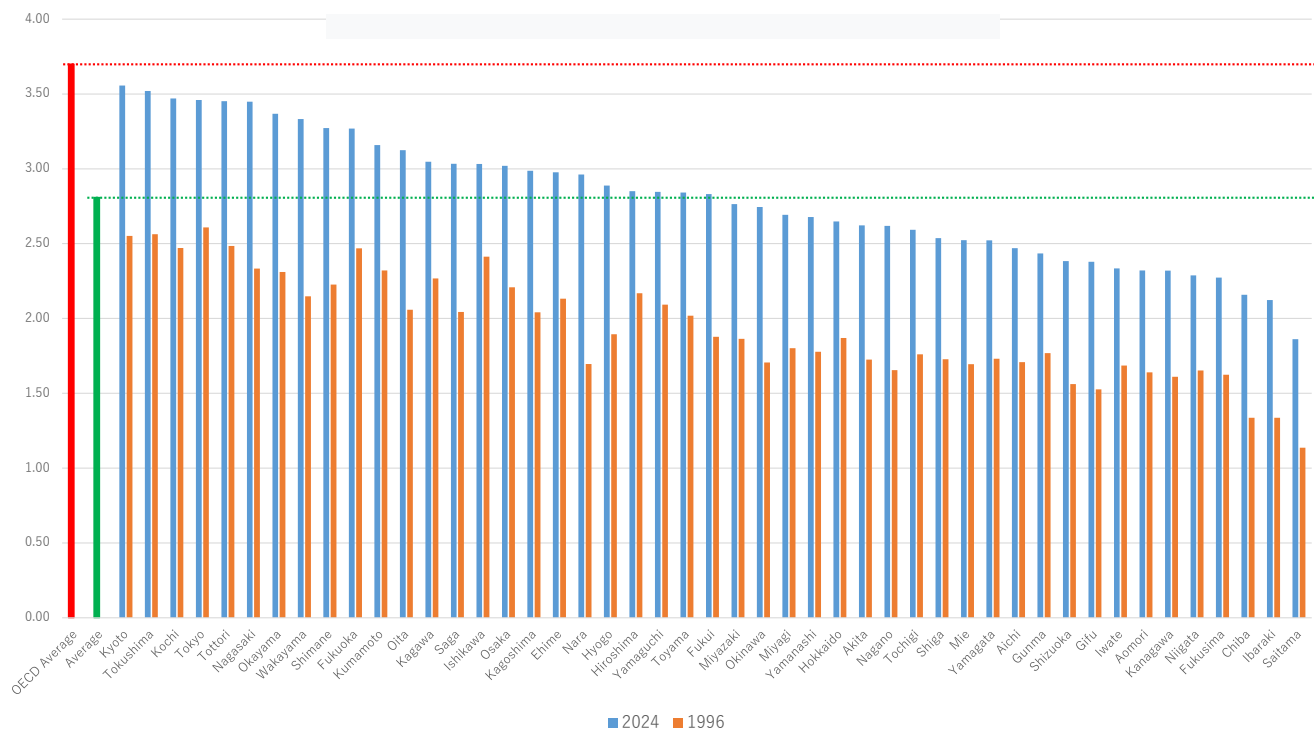


Fig. 8. Number of physicians per 1,000 individuals in the population.

Table 1. Measures to prevent regional maldistribution of physicians

(1) Establishment of "regional quotas" in medical school admission

- Establish a selection quota based on the requirement to practice in a specific region or department.

(2) Clinical training system to address regional maldistribution

- Set a ceiling on recruitment capacity by prefecture, and narrow down the recruitment capacity nationwide, which has secured more applicants than applicants for training.
- Reduce the ratio of applicants to the maximum number of students to be accepted to 1.22 times by FY2015 and to about 1.05 times by FY2025.

(3) Measures against regional and departmental maldistribution in the medical specialist system

- In the new specialist medical system that started in 2018, the Japan Medical Specialty Organization will set the upper limit for the number of recruited majors by prefecture and by department.

(4) Measures for uneven distribution in regions in prefectures

- Establish target number of physicians and policies for securing physicians, etc., establish regional quotas in cooperation with universities, provide loans for training funds to regional quota students, etc., operate regional medical support centers, and create and enhance career development programs.
- In order to improve the working environment for physicians in physician minority areas, a system will be established in which the Minister of Health, Labor and Welfare will certify and evaluate the experience of physicians who have worked in physician minority areas for a certain period of time. Incentives for certified physicians will include requirements to become managers of regional medical support hospitals and support for medical care provision in physician minority areas.
- Visualization of information on outpatient medical functions, consultation on outpatient medical functions, and requiring new practitioners to take on the responsibility of performing medical functions needed in the community.

Data from Ministry of Health, Labour and Welfare of Japan, Subcommittee on Physician Supply and Demand, Study Committee on the Supply and Demand of Health Care Workers. Fifth interim summary (<https://www.mhlw.go.jp/content/10801000/000894411.pdf>) [12].

require more duty. Anesthesiology is another specialty with many on-duty positions, but its surgical operation schedule is said to be more predictable, making it easier to secure private

time. Obstetrics and surgery are also said to carry a high risk of litigation, and many physicians avoid these departments.

Recent statement by the Ministry of Health, Labour and Welfare on the uneven distribution of physicians and response of the Japan Medical Association

Ministry of Health, Labour and Welfare Keizo Takemi stated, in an NHK program in April 2024, “We are now at the stage where we must address the uneven distribution of physicians through regulations.” Yutaka Oguma, president of the National Council of Local Authorities Hospitals, also acknowledged that, “it may be possible to impose professional obligations for keeping the public health care system to physicians.” In accordance with the Ministry of Finance’s insistence on curbing the increase in the government’s share of medical expenses, there are concerns that regulatory methods will be introduced to address the uneven distribution of physicians. However, Kichirou Matsumoto, President of the Japan Medical Association, stated that, “We should be cautious about suddenly exerting coercive force” [15].

Discussion

“The Subcommittee on Physician Supply and Demand has concluded that the increase in the number of physicians has not been effective in addressing their uneven distribution, stating that “despite the provisional increase in medical school places for about 10 years in response to a shortage of physicians in certain regions, this may not have effectively addressed the uneven distribution of physicians across regions and medical specialties.”

According to a member survey conducted by the Hyogo Health Physicians Association in 2022, 28.6% of respondents answered “too few”; 32.8% answered “just right,” and 8.1% answered “too many.”

The government’s fundamental approach when discussing the oversupply and shortage of physicians began with the so-called medical cost pariah theory (increasing medical costs will jeopardize the nation) proposed in 1983 [16]. The government posited that the supply of physicians would create a greater demand for medical care than necessary, resulting in higher medical costs, that would negatively impact on the nation’s finances. The Ministry of Finance—considered Japan’s most powerful government agency—has also been advocating to the Japanese public that the nation’s finances will deteriorate unless the balance of national revenue and expenditure is brought into surplus for fiscal reconstruction (fiscal soundness). Therefore, social security spending, that accounts for most of the medical spending, is more flexible than pensions, have been the targeted for restraints.

What affects the maldistribution of physicians is the freedom of physicians in Japan to choose their work area, practice area, their specialty, and the department in which they specialize. In this regard, the Ministry of Finance has identified “a system that allows physicians to freely establish medical institutions,” which is a characteristic of Japan’s medical insurance system, along with “universal coverage,” “free access,” and “piece-rate payment,” as perspectives for reforming the healthcare system.

We have proposed securing an average number of physicians comparable with OECD countries. We also propose developing a strategy to voluntarily address the regional and specialty maldistribution of physicians. Rather than the state imposing stringent regulations, it is necessary to consider effective policies that encourage physicians to voluntarily work in areas with a shortage of physicians such policies could include a significant expansion of regional quotas that consider physicians’ preferences; establishment of public medical institutions in unprofitable areas; infrastructure that encourages physicians to establish private practice in areas with a shortage of physicians, such as lifelong training and enhanced educational, social, and welfare services; and income compensation for medical institutions in areas where the patient population is declining.

Factors affecting the demand for and supply of physicians include demographics, gender and age structure, prevalence and consultation rates, number of physicians, age structure, hours of practice, scope and efficiency of physician practice, range of treatments and drugs covered by insurance, ratio of public to private health care spending, government attitudes toward healthcare, determinants of health, national character, and satisfaction with healthcare—the list is endless. Evaluating maldistribution by region or department is even more challenging.

The basis for determining a shortage or maldistribution of physicians is whether a “public” medical insurance system that provides “necessary medical care” to “all citizens” “when necessary” and “in kind” has been implemented. The supply-demand balance and physicians’ maldistribution represent a complex interplay of various factors based on each country’s unique historical background, evolving over time, thus making it difficult to implement drastic reforms or adopt the systems of other countries as they are. We hope that this report will be helpful in helping countries revise their healthcare policies.

Additional informations

Additional information 1. Physician supply is calculated by multiplying the future number of physicians by gender and age group, estimated from medical school capacity, by the number of hours worked by each gender and age group. Demand is estimated by multiplying the future population by gender and age group by the current consultation rate, based on the assumption that the current medical system is generally able to provide necessary medical services [5].

Additional information 2. All Japan Hospital Association, Japan Hospital Association, Japanese Association of Medical-care Corporations, Japan Psychiatric Hospitals Association.

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Ethics approval

Not applicable.

Conflict of interest

The authors have nothing to disclose.

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