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Original Article

An Analysis of Supply and Demand for Psychiatrists and Their Maldistribution among Secondary Medical Areas in Japan: Time-based Analysis Based on Japanese Official Statistics from 2000 to 2018

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Abstract

Purpose: Over the years, the problems of shortage and geographical maldistribution of physicians have remained major social issues in Japan, but few studies have quantitatively analyzed them in regard to psychiatrists. The purpose of the current study was to conduct a time-based analysis of these issues in psychiatry.

Method: The analysis covered the period from 2000 to 2018. (1) Using the newspaper article database (Nikkei telecom 21), we analyzed the number of articles highlighting psychiatrist shortage. (2) We searched through the "Survey of Physicians, Dentists, and Pharmacists" to inquire about the supply of psychiatrists and analyze changes in their actual number, sex, age composition, and place of work. (3) With respect to the demand for psychiatrists, data from the "Patient Survey" were used to examine changes in both the number of outpatients and the total number of inpatient hospital stays per year due to mental illness. (4) In order to investigate geographical distribution, we drew on the reaggregated dataset of "Survey of Physicians, Dentists, and Pharmacists" and compared the number of psychiatrists per 100,000 population in 344 secondary medical areas (SMAs) where each prefectural government was required to provide general medical care and supplies.

Results: (1) The number of articles related to the shortage and growth rate of psychiatrists was lower than that for other specialist physicians. (2) The number of psychiatrists had increased by 1.44 times from 11,063 in 2000 to 15,925 in 2018. The percentages of females, those aged 60 and over, and the overall psychiatrists working at clinics appeared to have changed from 16.9%, 19.7%, and 14.9% to 22.9%, 28.6%, 25.4%, respectively. (3) The number of outpatients per psychiatrist per year had increased 1.31-fold from 4,028 to 5,396, while the total inpatient hospital stays had decreased by 32% from 12,171 to 8,245 days. (4) The number of SMAs with 1 or more and less than 5 psychiatrists had declined from 77 to 39 areas, whereas the number of SMAs with 10 or more and less than 15 had risen from 79 to 124 areas.

Discussion: The results of this study indicate that the shortage and uneven distribution of psychiatrists tend to improve, which seems to be different from what the medical staff working in clinical settings actually feel. It may be due to the shortage of psychiatrists in specialized fields such as emergency, children, judiciary, or general hospitals, as well as the shortage of psychiatrists in settings other than medical facilities, such as child consultation centers and nursing homes. However, this study took account of only Japanese official statistics, so new surveys are required to support the findings obtained herein. Furthermore, it is urgent to create a new system that solves the problems of organizational and structural distribution of psychiatrists with the aim of enhancing the satisfaction of stakeholders.

Keywords: psychiatrist, maldistribution, supply and demand, secondary medical area

Introduction

The problem of physician supply in Japan began to be reported in the mass media in the 2000s and reached its peak around 2008. Among the reports on the shortage of physicians, the departments most frequently mentioned are surgery, obstetrics/gynecology, pediatrics, and anesthesiology, while the shortage of psychiatrists has rarely been reported on.

There is a long history of research on physician shortages in Japan. According to Haga et al. 2), until the 1970s, there was a period when the establishment of new medical schools was promoted to resolve the shortage of physicians in rural areas, but from around the mid-1980s, the main issue of supply and demand for physicians became how to control the expected future excess of physicians caused by

the increased medical school capacity. The target set by the Ministry of Health and Welfare (reorganized as the Ministry of Health, Labour and Welfare in 2001) in 1975 to increase the supply of physicians to 150 per 100,000 population was achieved in 1983, and thereafter, the issue was rather to control the number of physicians. However, according to Ishikawa 5), after the introduction of the clinical training system in April 2004, the problem of a shortage of physicians in rural areas became apparent. To address this issue, the Ministry of Health, Labour and Welfare established the "Study Group on the Supply and Demand of Physicians" in 2005, and has been working to increase the number of physicians nationwide by increasing the number of medical school places, as well as taking various regional maldistribution measures. However, in June 2016, the Ministry of Health, Labour and Welfare's "Study Group on the Supply and Demand of Medical Personnel," in its interim report, stated that the shortage of physicians in the regions had not been resolved. Since then, the Subcommittee has published several interim reports, but when the Fourth Interim Report was published on March 22, 2019, the Group of Seven Psychiatry Societies (the Japanese Society of Psychiatry and Neurology, Japanese Association of University

Psychiatry Department Directors, Japan Psychiatric Hospitals Association, Council of Directors of National Psychiatric Facilities, Japan Municipal Hospital Association, Japanese Association of Neuro-Psychiatric Clinic, and Japanese Society of General Hospital Psychiatry) jointly expressed the view that "The number of psychiatrists required and number of trainings required in the future shown in the 'Forecast of the number of physicians required in the future for each department by prefecture (provisional)' are far from the shortage of psychiatrists that is strongly felt in daily practice and work" 19), and raised again the issue of the shortage of psychiatrists that each organization strongly felt in their daily practice and work.

Several previous studies focused on the regional maldistribution of physicians in Japan, i.e., the disparity in the number of physicians between physician-dense and physician-deficient areas, using secondary medical areas as the unit of analysis and number of physicians per 100,000 population as an indicator. A secondary medical area is an area that provides general healthcare and consists of several municipalities, and prefectures are required to plan the medical care system (number of hospital beds, number of physicians and nurses,

number of clinic facilities, etc.) for each secondary medical area. For example, previous studies involved pediatrics 12), obstetrics and gynecology 13), anesthesiology 14), pediatrics, obstetrics, and anesthesiology 15), and clinicians 10)11) by Matsumoto et al. According to Ishikawa 5), several studies also considered physicians as a whole 6)22)23), showing that the regional maldistribution of physicians has hardly changed or has worsened. However, while most of these previous studies looked at changes in the distribution of physicians over a 10-year period, few studies analyzed data from 2008, when measures to address physician maldistribution began, and even fewer studies covered a long period of time, from 2000 to 2018, as this study did. If we limit ourselves to studies examining the transitions of psychiatrist shortage and regional maldistribution, only two reports 4)16) by Inagaki and Mizuno et al. have been published, which surveyed 11,169 examinees for the Japanese Society of Psychiatry and Neurology's specialist medical examinations between 2004 and 2008.

Fukuda et al. 1) pointed out that the background to the lack of studies that should have been conducted in the past was that the names of medical departments used in government statistics were changed and added, and

that frequent consolidation and closure of municipalities occurred, resulting in significant changes in the form of secondary medical areas that should be compared over time. However, the situation has changed since 2012, when Fukuda et al. and the Japan Medical Association Research Institute (JMARI) recompiled individual data of the "Survey of Physicians, Dentists, and Pharmacists", a key statistic in Japan, and released the data in a form that allows time-series comparison in each secondary medical area 21). In this study, the data were fixed in the secondary medical area (344 medical areas) in 2014, they were reconstructed to enable analysis of changes over time, and the analysis was conducted by independently adding the newly released data from the "Survey of Physicians, Dentists, and Pharmacists" to the above data 21).

The purpose of this study was to comprehensively understand the problem of supply and demand of psychiatrists by attempting to make a time-series comparison of how the shortage of psychiatrists is perceived in the mass media, the number of psychiatrists including regional differences (supply of physicians), number of inpatient days spent in the hospital, and number of outpatient visits (demand for physicians).

I. Methods

In this study, content analysis of newspaper articles was used to clarify the sense of a shortage of psychiatrists. This method is commonly employed in the social science field, and has been used in previous studies (10-15). It is also a method that attempts to explore social consciousness or the pseudo-environment through content analysis of mass media, assuming that there is a strong relationship or similarity between the content of mass media reports and social consciousness as "consciousness shared by members of a certain social group" (3). We counted the number of articles including the keywords "shortage of physicians" and "psychiatry" in five major national newspapers (Nihon Keizai Shimbun, Yomiuri Shimbun, Asahi Shimbun, Mainichi Shimbun, and Sankei Shimbun) from 2000 to 2018, using the newspaper article search system Nikkei Telecom (21, 17). In order to make comparisons with other departments, we also counted the number of articles on surgery, pediatrics, obstetrics/gynecology, and anesthesiology.

Next, changes in the supply of physicians were analyzed using the Ministry of Health, Labour and Welfare's "Survey of Physicians, Dentists, and Pharmacists". This survey is a complete enumeration of all

physicians who have an address in Japan and who have registered under the Medical Practitioners Law. It aims to clarify the distribution of physicians by sex, age, working arrangements, place of employment, and department in which they work, and is valid and reliable for ascertaining the number of psychiatrists working in Japan and their places of employment. In this study, the number of psychiatrists was defined as the number of respondents who answered "clinic" or "hospital" as the facility and working arrangements, and "psychiatry" as their main department.

Factors that are considered in terms of physician supply are: (1) changes in the number of psychiatrists, (2) changes in the proportion of psychiatrists aged 60 or older, and (3) changes in the proportion of female psychiatrists. In the "Survey of Physicians, Dentists, and Pharmacists", the classification of medical specialties was changed several times up until 2018, but continuity has been maintained for "psychiatry". As a method of analysis, the year 2000 was used as the base year, the number of psychiatrists in the base year was set as 1, and how it changed was observed. We also compared the number of psychiatrists with that of other medical specialties, where a shortage of physicians had become a problem, to clarify the relative position of the

number of psychiatrists. With regard to changes in the age structure, the percentage of psychiatrists aged 60 or older in all age groups was followed chronologically from 2000. The number of female psychiatrists as a percentage of the total number of psychiatrists was also examined.

Next, we analyzed changes in the demand for physicians using the patient survey conducted by the Ministry of Health, Labour and Welfare. This patient survey provides the only government statistics that can be used to measure the number of out- and inpatients in hospitals and clinics by disease, including mental illness, by stratified random sampling by secondary medical area for hospital inpatients, and by prefecture for hospital outpatients and clinics, targeting patients who use medical facilities nationwide. From the data of this patient survey, we calculated changes in: (1) the total number of outpatient visits per year and (2) the total length of hospital stay for discharged patients per year (the product of the average number of hospital stays per year and estimated number of discharges) for patients with mental and behavioral disorders (ICD-10: F00 to F99).

The Ministry of Health, Labour and Welfare and many previous studies have conventionally used the number of

physicians per 100,000 population in a secondary medical area as an indicator of physician maldistribution. However, as of March 22, 2019, the Ministry of Health, Labour and Welfare and the Study Group Supply and Demand of Medical Personnel established a new indicator of physician maldistribution, because an appropriate indicator of the degree of physician maldistribution is necessary to implement effective measures for physician maldistribution that meet regional medical needs. Specifically, the index is defined as a mathematical formula incorporating the following variables: (1) medical needs and future changes in population and population structure, (2) out- and inflow of patients, (3) geographical conditions such as remote areas, (4) sex and age distribution of physicians, and (5) units of physician maldistribution (area, department, in-/outpatient) as "five factors related to maldistribution". However, as criticized by Sato (18), the visits that are not (or cannot be) made for various reasons, despite the real need for medical care, are not taken into account. Furthermore, despite the fact that it is necessary to eliminate regional differences in physicians' working hours, the current average working hours of physicians were taken as a variable, which assumes a harsh working environment for physicians, where the average numbers of working hours of

physicians are considerably longer than the standard working hours (8 hours/day) due to physician shortages. In addition, in the Japanese government statistics portal site, the "Survey of Physicians, Dentists, and Pharmacists" and the "Patient Survey" do not disclose sex- and age-specific rates of receiving medical treatment at the secondary medical area level, making it difficult for a third party other than the Ministry of Health, Labour and Welfare or local government officials to verify the reliability and validity of the physician maldistribution index. In the first place, as far as we know, only two previous studies (4,16) have been conducted on the shortage/abundance of psychiatrists, and comparative studies with the shortage/abundance of other specialties have not been performed. Therefore, in this study, we placed emphasis on comparisons with previous studies and defined the index of physician maldistribution as the change in the number of psychiatrists per 100,000 population in a secondary medical area.

II. Results

1. Changes in perceptions of the supply and demand of psychiatrists

Figure 1 shows the results of content analysis by departments of psychiatry, surgery, pediatrics, obstetrics/gynecology, and

anesthesiology. The number of articles on the shortage of psychiatrists began to increase in 2003, but the number was small and hardly increased compared with the increase in articles on physicians in other departments. Thereafter, the number of articles peaked in 2008 and has been decreasing, as in the case of other departments.

2. Changes in the number of psychiatrists

Figure 2 shows the changes in the number of all physicians and number of physicians whose main specialty is psychiatry, surgery, pediatrics, obstetrics/gynecology, and anesthesiology, respectively, according to the "Survey of Physicians, Dentists, and Pharmacists". The number of surgeons and obstetricians/gynecologists decreased in absolute numbers until 2006, while the number of pediatricians increased, but at a lower rate than that of the total number of physicians, and the number of psychiatrists and anesthesiologists increased at a higher rate than the growth rate of the total number of physicians. The actual number of psychiatrists increased from 11,063 in 2000 to 12,474 in 2006, 14,733 in 2012, and 15,925 in 2018.

Figure 3 shows the changes in the number of psychiatrists, sex, and age composition based on whether they

worked in hospitals or clinics. The proportion of psychiatrists working in clinics increased from 14.9% in 2000 to 25.4% in 2018. During the same period, the proportion of women among physicians in all departments increased from 14.4 to 21.9%, while the proportion of women among all psychiatrists increased from 16.9 to 22.9%. The percentage of psychiatrists over 60 years old increased from 19.7 to 28.6%.

3. Changes in the total number of outpatient visits, total length of hospital stay for discharged patients, and age structure

Figure 4 shows the total number of outpatient visits per psychiatrist during the year, and Figure 5 shows the change in the total number of hospital days for discharged patients per psychiatrist. The total number of outpatient visits per psychiatrist per year increased 1.31-fold from 4,128 to 5,396, while the total number of hospital days for discharged patients decreased 0.68-fold from 12,171 to 8,245. Both in- and outpatients aged 65 years or over showed an increasing trend.

4. Uneven distribution among secondary medical areas

Figure 6 shows the distribution and trends of the number of psychiatrists per 100,000 population in secondary medical areas. A total of 77 medical care

areas had between 1 and 5 psychiatrists in 2000, but this number decreased to 39 in 2018. On the other hand, the number of medical areas with 10 to 15 psychiatrists increased from 79 to 124. The number of medical areas with zero psychiatrists remained unchanged, ranging from 5 to 7. Two of the medical areas had no psychiatrists throughout the observation period.

III. Discussion

The results of content analysis show that the sense of a shortage of psychiatrists in the mass media was not as marked as in other departments during the entire observation period, including around 2008, when the number of articles reached its peak. Between 2000 and 2018, the total number of psychiatrists increased 1.44-fold, of which psychiatrists working in hospitals increased 1.26-fold and those working in clinics increased 2.46-fold. The proportion of female and elderly psychiatrists increased. The supply-demand situation for psychiatrists was as follows: between 1999 and 2017, the total number of outpatient visits per psychiatrist increased 1.31-fold, while the total number of hospital days for discharged patients decreased 0.68-fold. Furthermore, between 2000 and 2018, the average number of psychiatrists per 100,000 population in each secondary medical area tended to increase from 8.1

to 11.5, with a decrease in secondary medical areas with fewer than 10 psychiatrists and an increase in secondary medical areas with more than 10. These results suggest that the number of psychiatrists is increasing and that the regional distribution of psychiatrists is being corrected.

However, from the aforementioned opinion of the 2019 Group of Seven Psychiatry Societies 19) and the view in the preface of the 2019 *Psychiatria et Neurologia Japonica* that "there is no sense of a surplus of psychiatrists at all," 20) it seems that the shortage of psychiatrists continues to be strongly recognized, at least in the field of psychiatric care. Why, then, is there such a discrepancy between the results of macro data analysis such as those in this study and the reality of clinical practice? Five factors are discussed below.

First, the overall workforce may not have increased as much as the number of psychiatrists. In this regard, in the process of estimating the "number of necessary physicians," the Ministry of Health, Labour and Welfare's "Study Group on the Supply and Demand of Medical Personnel" assumed that physicians work 60 hours per week, and when the workforce of male physicians in their 30s to 50s was 1.0, the workforce of female physicians was 0.8, that of physicians aged 60 or older was

0.5, and 0.3 for first-year residents and 0.5 for second-year residents, the "projected number of physicians needed" is shown for each prefecture 7)8). Even if the number of new entrants who aim to become psychiatrists increases, if the overall number of psychiatrists ages, the actual workforce may decline. Although the increase in the number of female physicians has positive aspects such as revitalization of organizations, there is a concern that this may lead to a decline in the workforce, as female physicians may leave clinical practice and quit after maternity leave or for other reasons. Using each of these coefficients and recalculating to the extent possible, a comparison of 2000 and 2018 shows that the actual number of psychiatrists increased from 11,063 to 15,925, a 1.44-fold increase, while the number increased from 10,288 to 14,401, a 1.40-fold increase when the workforce was taken into account. Thus, despite the aging of psychiatrists and increase in the proportion of female psychiatrists, the number of psychiatrists increased at about the same rate both in the actual number and in the workforce, suggesting that the overall improvement trend is continuing.

Second, as shown in Figure 6, while the overall number of psychiatrists per 100,000 population in secondary medical areas tended to increase, there

were some secondary medical areas that did not increase; comparing 2000 and 2018, 36 out of 344 medical areas showed a decrease. If metropolitan areas are defined as those with a population of 1 million or more or a population density of 2,000 persons/km² or more, regional urban areas as those with a population of 200,000 or more or a population density of 200 persons/km², and other areas as underpopulated areas, the 36 medical areas that experienced a decrease consisted of 2 metropolitan areas, 13 regional urban areas, and 21 underpopulated areas. In the two metropolitan areas and three regional urban areas, there may have been a delay in replenishing the number of psychiatrists compared with the increase in population. On the other hand, 10 regional urban areas and 21 underpopulated areas showed a marked decline in population, suggesting that the concentration of psychiatrists in neighboring secondary medical areas may have progressed with the population decline in these areas.

In contrast, the top 20 secondary medical areas with an increase in the number of psychiatrists per 100,000 population were 4 metropolitan areas, 4 regional urban areas, and 12 depopulated areas. Of these, the four increases in metropolitan areas are thought to be the result of psychiatrists being recruited more than population

growth. On the other hand, the number of psychiatrists remained unchanged or increased in 3 regional urban areas and 11 depopulated areas, despite a decrease in population. This may be due to, for example, the location of a core psychiatric hospital in the region, which maintained the number of psychiatrists, or the policy of consolidating psychiatrists to complement those in neighboring secondary medical areas.

There were two medical areas with zero psychiatrists and seven medical areas with almost one or less psychiatrists throughout the entire observation period. In these medical areas, two designate that psychiatrists under the Mental Health and Welfare Law cannot provide examinations for involuntary admission, so it is necessary to take individual measures to guarantee access to psychiatric treatment, such as treatment in adjacent secondary medical areas. When discussing the uneven distribution of physicians not only in the secondary medical area in question but also in all 344 secondary medical areas, it is necessary to examine how the regional medical care plans formulated by the prefectures handle the issue, including mutual complementation.

Third, as shown in Figure 3, the number of psychiatrists working in hospitals did not increase relative to those working in clinics, as Maeda 9)

wrote in the preface to a 2007 issue of *Psychiatria et Neurologia Japonica* that "the increase in psychiatric clinics is of course not a bad thing," but "there is a shortage of psychiatrists in various fields, but only the number of psychiatric clinics is increasing". Inagaki and Mizuno et al. 4)16) analyzed data on board-certified psychiatrists from 2006 to 2009, and noted that "a trend of transferring from general hospital psychiatrists to psychiatric clinics was observed". The results of this study also showed an increasing trend in the number of psychiatrists in clinics compared with psychiatrists working in hospitals, but the rate of increase was gradually decreasing. During the observation period, the number of psychiatrists working in hospitals did not decrease, and we believe that the increase in outpatients was met mainly by the increase in psychiatrists working in clinics.

Fourth, there may be a shortage of physicians and facilities specializing in various specialties. For many years, the shortage of physicians and facilities in such specialties as emergency psychiatry, child psychiatry, industrial psychiatry, judicial psychiatry, and general hospital psychiatry has been discussed, but the number of physicians and facilities in each specialty and their geographical distribution could not be

discerned objectively from government statistics and were not based on objective data. It is necessary to grasp the actual situation through new surveys.

Fifth, there may be a shortage of psychiatrists working outside of clinics and hospitals, such as in child guidance centers and nursing homes, etc. In 2019, the Group of Seven Psychiatry Societies 19) pointed out the shortage of psychiatrists in the following: medical intervention for dementia patients in nursing homes; the role as industrial physicians in industrial mental health; mental health consultation and psychiatric care at child guidance centers, psychiatric medical review boards, mental health and welfare centers, developmental disability support centers, public health centers etc.; psychiatric research at research institutions such as universities. Since it is difficult to discern the demand for psychiatrists in these facilities through the current government statistics, this study only captures changes in the demand for psychiatrists in terms of the number of outpatient visits and length of hospital stay in hospitals and clinics, and does not analyze the supply and demand for psychiatrists in these facilities. New surveys are needed to provide objective data to support the perception of shortages in the field.

This study had the following

limitations. The content analysis used in this study is a common method in the social science field, but there is some debate as to the extent to which data including newspaper articles reflect social consciousness. In particular, with the rapid spread of the Internet and social networking systems, further research continues to be conducted on the strength of the relationship or similarity between the two 3).

Second, regarding the supply of psychiatrists, we use the number of psychiatrists in the "Survey of Physicians, Dentists, and Pharmacists" as an indicator, but do not take into account changes in the way psychiatrists work according to sex and age group.

Third, regarding the demand for psychiatrists, the number of patients who visited or were discharged from psychiatric hospitals and clinics from the patient survey was used as an indicator, but as mentioned in the discussion, the demand for consultation and support services at administrative agencies, judicial institutions, schools, companies, etc., was not taken into account.

Fourth, this study did not take into account the possibility that factors such as the education of psychiatrists themselves and their families and the number of employment opportunities may mediate the uneven distribution of

psychiatrists and supply and demand for psychiatrists.

Fifth, the patient survey used in this study was generated from data for one day during three days in mid-October determined by each medical facility for in- and outpatients, and from data for one month from September 1 to 30 for discharged patients, which may differ from demand during the year.

Sixth, although the "Survey of Physicians, Dentists, and Pharmacists" has also surveyed concurrent workplaces ("secondary workplaces") since the 2016 survey, this study only analyzed data from "primary workplaces" and did not measure the workforce of psychiatrists who concurrently work at other medical facilities.

Seventh, when analyzing the demand for psychiatry in this study, the targets were out- and inpatients with mental and behavioral disorders (ICD-10: F00-99) as the primary injury or disease, and the demand for psychiatry when these were secondary injury or disease was not considered.

Conclusion

The methods used in this study to analyze previous studies do not indicate that psychiatrists are in short supply compared with other departments. On the other hand, the shortage of psychiatrists in individual secondary

medical areas, the shortage of psychiatrists working outside clinics and hospitals, and shortage of psychiatrists in specialized fields such as emergency psychiatry, child psychiatry, industrial psychiatry, judicial psychiatry, and general hospital psychiatry have been pointed out, but the actual situation has yet to be clarified. New surveys and other objective data are needed to confirm the sense of shortage in the field. In addition, as pointed out by the Ministry of Health, Labour and Welfare's "Study Group on the Supply and Demand of Medical Personnel," if the number of psychiatrists continues to increase in the future and demand for psychiatrists peaks due to the aging of society, there may be an oversupply of psychiatrists overall. The key issue is how to grasp the balance between supply and demand for physicians based on objective data, and how to adopt policy measures. It is necessary to solve the problem of organizational and structural allocation of psychiatrists and create a system to increase the satisfaction level of each stakeholder.

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References

- 1) 福田昭一, 渡部鉄兵, 高橋 泰: 診療科別医師数の地域間格差及びその動向に関する研究. 日医療病管理会誌, 55 (1); 9-18, 2018
- 2) 芳賀香代子, 松本邦愛, 北澤健文ほか: 外科医師の需給と地域偏在に関する研究. 医療マネジメント会誌, 12 (3); 134-139, 2011
- 3) 樋口耕一: 現代における全国紙の内容分析の有効性—社会意識の探索はどこまで可能か—. 行動計量学, 38 (1); 1-12, 2011
- 4) 稲垣 中, 水野雅文, 藤原修一郎ほか: わが国における精神科医・精神科医療の実態把握に関する調査結果(その 2)—精神科医師の職域および地域の異動に関する検討—. 精神経誌, 114 (12); 1374-1384, 2012
- 5) 石川雅俊: 2004 年の新医師臨床研修制度施行以降における, ジニ係数を用いた医師の診療科ごとの地域偏在についての検討. 公衆衛生, 82 (4); 334-338, 2018
- 6) Kobayashi, Y., Takaki, H.: Geographic distribution of physicians in Japan. *Lancet*, 340 (8832); 1391-1393, 1992
- 7) 厚生労働省: 医師の需給推計について [医療従事者の需給に関する検討会 第 4 回 医師需給分科会(一部訂正)資料 1, 平成 28 年 3 月 31 日] (<https://www.mhlw.go.jp/file/05-Shingikai-10801000-Iseikyoku-Soumuka/0000120209.pdf>) (参照 2020-06-20)
- 8) 厚生労働省: 都道府県別診療科ごとの将来必要な医師数の見通しについて(医療

- 従事者の需給に関する検討会 第 30 回
医師需給分科会 別添資料 3, 平成 31 年
3 月 22 日)
(<https://www.mhlw.go.jp/content/10801000/000491598.pdf>) (参照 2021-05-07)
- 9) 前田 潔: 精神科医不足と精神科診療所. 精神経誌, 109 (11); 991, 2007
- 10) Matsumoto, K., Kitazawa, T., Ito, S., et al.: Study on supply, demand and distribution of physicians in Japan. 医療マネジメント会誌, 10 (4); 575-582, 2010
- 11) Matsumoto, K., Seto, K., Fujita, S., et al.: Population aging and physician maldistribution: a longitudinal study in Japan. J Hosp Adm, 5 (1); 29-33, 2016
- 12) 松本邦愛, 松裏裕行, 平尾智広ほか: 小児科医師の需給と地域偏在に関する研究. 病院管理, 43 (2); 117-128, 2006
- 13) 松本邦愛, 田中政信, 前村俊満ほか: 産科・産婦人科医師の需給と地域偏在に関する研究. 病院管理, 44 (2); 93-103, 2007
- 14) 松本邦愛, 難波江功二, 長谷川敏彦ほか: 麻酔科医師の需給と地域偏在に関する研究-医療の質・安全のニーズと麻酔科医師への需要の増大-. 日医療病管理会誌, 46 (2); 79-89, 2009
- 15) 松本邦愛, 北澤健文, 伊藤慎也ほか: 日本の医師不足問題に関する研究. 医療マネジメント会誌, 10 (4); 575-582, 2010
- 16) 水野雅文, 稲垣 中, 藤原修一郎ほか: わが国における精神科医・精神科医療の実態把握に関する調査結果(その 1)—実数ならびに分布についての基礎資料—. 精神経誌, 114 (12); 1359-1373, 2012
- 17) 日 経 テ レ コ ン
(<https://t21.nikkei.co.jp/g3/CMN0F11.d>)
- o) (参照 2020-06-20)
- 18) 佐藤英仁: 要医師数の推計方法および医師偏在指標の問題点に関する考察. 医療福祉政策研究, 3 (1); 39-48, 2020
- 19) 精神科七者懇談会: 「医療従事者の需給に関する検討会 医師需給分科会第 4 次中間取りまとめ」についての見解. 2019
(https://www.jspn.or.jp/uploads/uploads/files/activity/20190518_02.pdf) (参照 2020-06-20)
- 20) 紫藤昌彦: 将来, 精神科医は余って行くのか?. 精神経誌, 121 (12); 905, 2019
- 21) 高橋 泰, 石川雅俊, 江口成美: 二次医療圏別医師数データ集—医師の地域別・診療科別偏在と将来推計に関する地域別報告—(日医総研ワーキングペーパーNo. 419).
(https://www.jmari.med.or.jp/research/working/wr_658.html) (参照 2020-06-21)
- 22) Tanihara, S., Kobayashi, Y., Une, H., et al.: Urbanization and physician maldistribution: a longitudinal study in Japan. BMC Health Serv Res, 11; 260, 2011
- 23) Toyabe, S.: Trend in geographic distribution of physicians in Japan. Int J Equity Health, 8; 5, 2009

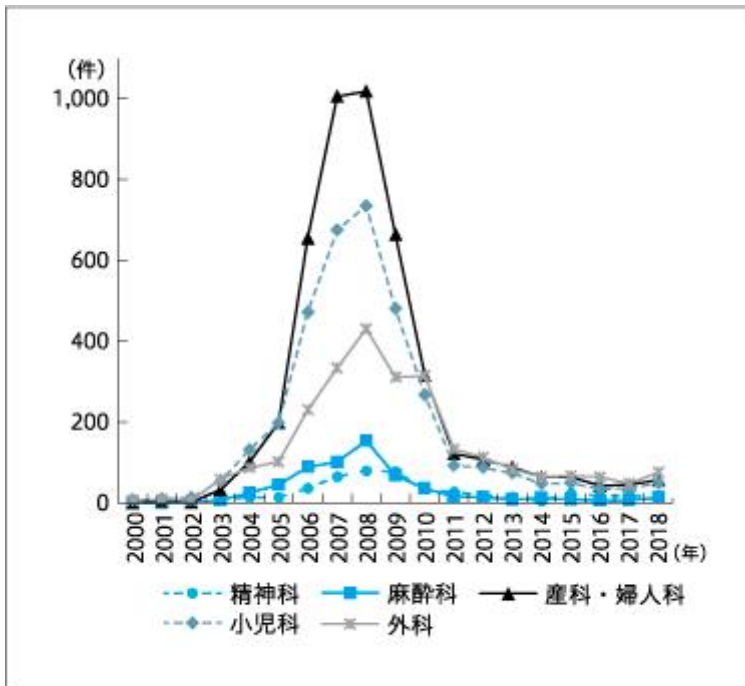


図1 医師不足に関する新聞掲載記事数の診療科別の変化

Figure 1: Changes in the number of newspaper articles on the physician shortage by department

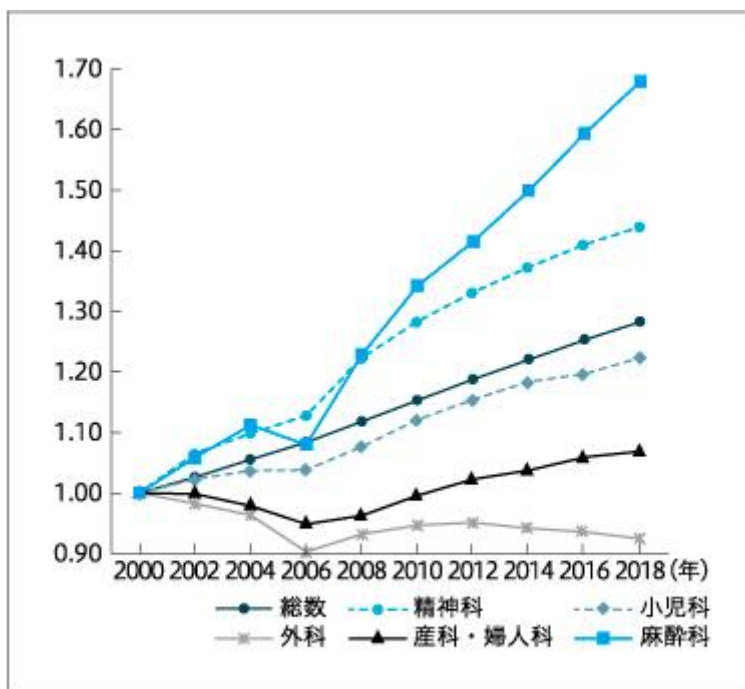


図2 2000年を1としたときの医師数の推移

Figure 2: Changes in the number of physicians with the year 2000 as 1

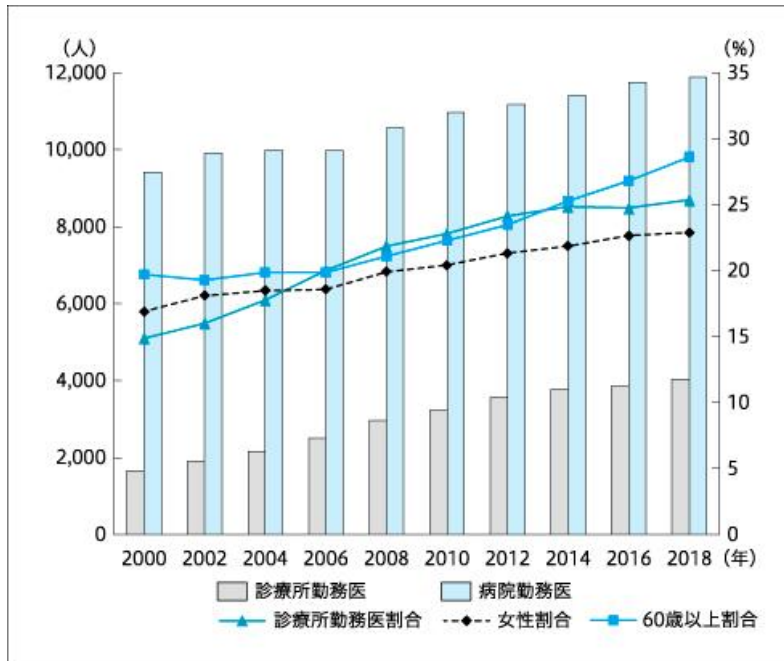


図3 勤務形態別の精神科医数および性・年齢構成の変化

Figure 3: Changes in the number of psychiatrists and their sex and age composition by working arrangements

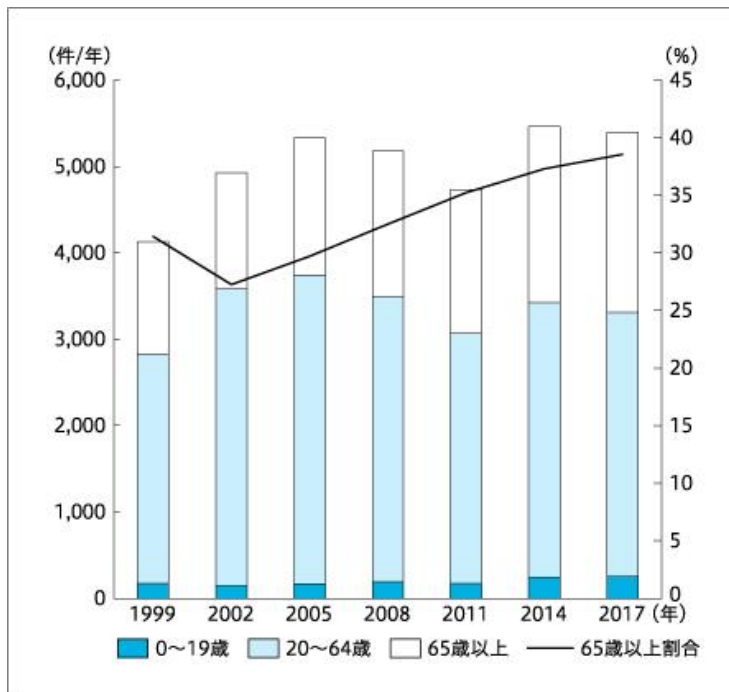


図4 精神科医1人あたりの精神科需要（外来患者ののべ受診件数）の推移

Figure 4: Changes in demand for psychiatry per psychiatrist (total number of outpatient visits)

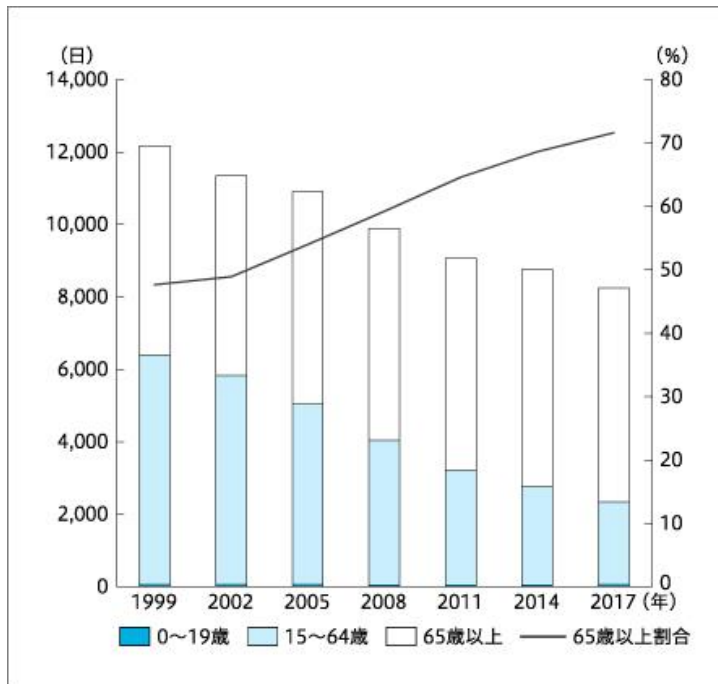


図5 精神科医1人あたりの精神科需要（退院患者ののべ在院日数）の推移

Figure 5: Changes in demand for psychiatry per psychiatrist (total hospital days of discharged patients)

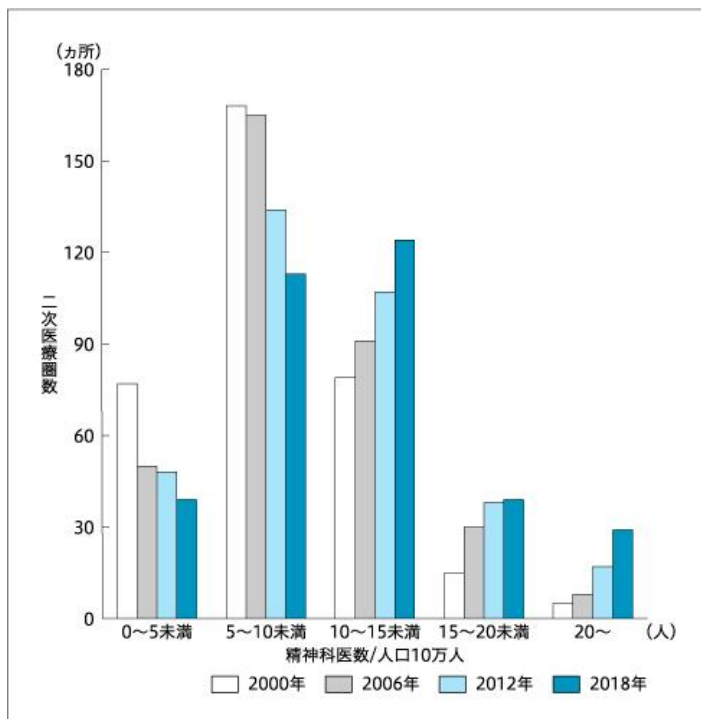


図6 二次医療圏別人口10万対精神科医数の分布と推移

Figure 6: Distribution and changes in the number of psychiatrists per 100,000 population by secondary medical area