

Estimated Number of Acupuncture Practitioners in Mainland China in 2018: Multiperspectives

Arthur Yin Fan, MD(CHN), PhD, LAc,^{1,2} Deguang He, MD(CHN), LAc,^{1,3}
Sherman Gu, MD(CHN), PhD, AdvDipMyother, MAppSc,^{4,5} Haihe Tian, MD(CHN), PhD, AP,^{1,6}
Hui Ouyang, MD(CHN), DC, LAc,^{1,7} Hui Wei, MD(CHN), AP,^{1,8} Changzhen Gong, PhD,^{1,9}
Sarah Faggert Alemi, DAc, LAc,^{1,10} and Xiaoyin Zhao, MD¹¹

ABSTRACT

Background and Objective: Acupuncture and Oriental medicine are widespread, practiced in >183 countries and regions. As such, it has played an important role in the world health care system. However, there are no official statistics available on the number of acupuncture practitioners in China. The aim of this study is to calculate the number ranges of acupuncture practitioners in China in 2018.

Materials and Methods: In total, 33.708 million was used as the total number of patient visits for acupuncture in 2018 in China. This number was calculated using the data released by the National Administration of Traditional Chinese Medicine (China), in which the average daily workload of all acupuncture practitioners in China was 134,832 patient visits. Acupuncture practitioners in China are part of Chinese Medicine doctors (CMDs) at the physician level, called “acupuncture doctors.” This number 134,832 was divided by the workload of a single doctor of acupuncture, which was 19.4 or 7.0 patient visits per day. These numbers were from a survey by the authors. There are also the numbers 16.0 or 9.4 patient visits per day; these numbers were calculated from the salary level of acupuncture practitioners at 10,000 Yuan per month (providing the doctor’s net income was 30% or 50% in his/her gross income). From these 2 sources, the authors then obtained 2 sets of ranges of acupuncture practitioners in China in 2018. There were 9,927 CMDs in 49 big hospitals, of which 619 were acupuncture practitioners; the ratio of acupuncture practitioners to the whole of all CMDs was 6.23%. Using this ratio multiplied by the whole number of CMDs in 2018, then the number of acupuncture practitioners in China in 2018 could be obtained as well.

Results: Calculating based on the workload, the range of acupuncture practitioners in China in 2018 was from 6,950 to 19,262. Calculating based on the salary level, the range was 10,618 to 17,697. Calculating based on the ratio of the number of acupuncture practitioners to the whole population of CMDs, the number was 28,360.

¹American TCM Association (ATCMA), Vienna, VA, USA.

²McLean Center for Complementary and Alternative Medicine, PLC, Vienna, VA, USA.

³New England School of Acupuncture, MCPHS University, Worcester, MA, USA.

⁴Federation of Chinese Medicine and Acupuncture Societies of Australia Ltd (FCMA), Melbourne, Australia.

⁵Knox Chinese Healing and Myotherapy, Wantirna South, Australia.

⁶Chinese Acupuncture and Herbs Center, Largo, FL, USA.

⁷YIN and YANG Healthcare, Friendswood, TX, USA.

⁸Wei’s Chinese Medical Center, Lake Worth, FL, USA.

⁹American Academy of Acupuncture and Oriental Medicine, Roseville, MN, USA.

¹⁰Eastern Roots Wellness, PLC, McLean, VA, USA.

¹¹Nanjing University of Chinese Medicine The Third Hospital, Nanjing, China.

Conclusions: The reasonable range of acupuncture practitioners in China in 2018 was 10,618 to 17,697, with a median of 14,157. Considering that some acupuncture practitioners are also engaged in teaching, research, and management, the mentioned number is enlarged by 30% to produce 18,404, which would be reasonable. It was also concluded that the density of acupuncture practitioners was 1.31 per 100,000 residents.

Keywords: acupuncture practitioner, number, density, range, China

INTRODUCTION

STATISTICS OR ESTIMATES on the number and density of practitioners in the acupuncture field are an important aspect, in describing the acupuncture profession. We found that in the United States, the major acupuncture practitioners are labeled as “licensed acupuncturists” (LACs); in early 2015 and early 2018, there were 34,481¹ and 37,886² LACs, respectively; the density of LACs in the United States reached 11.63 per 100,000 population in early 2018.² China is considered the birthplace of acupuncture. As one of the important components of Chinese Medicine, acupuncture has spread to 183 countries and regions in the world and is widely used. Acupuncture plays an important role in the health care system in China, as well as in many other countries and regions.³ In 1972, before and after President Nixon’s visit to China, a well-known column writer for The New York Times, James Reston, published his personal experience with acupuncture treatment for his postoperative abdominal pain in the New York Times. And many other United States and Western countries’ major newspapers, radios, and televisions extensively reported the use of acupuncture anesthesia in China and treatment testimonies in Western countries. Such news led to people’s enthusiasm with acupuncture and has created long-lasting global “acupuncture fever.” It led to acupuncture being re-introduced into the United States after it disappeared for half a century.⁴⁻⁶ Based on the data in O*NET, which is endowed by the U.S. Department of Labor, the health and wellness field is booming and acupuncture is one of the fastest growing professions in medicine. In fact, projected job growth from 2018 to 2028 for the field of acupuncture is faster than average, at a rate of 11% or more.⁷ In contrast, people may be curious and want to know the current status of acupuncture in China, especially the number of acupuncture practitioners. However, there have been no official statistics available in this scope until now.⁸⁻¹¹

In China, the legal acupuncture practitioners are usually the Chinese Medicine doctors (CMDs) who work in acupuncture departments in various Chinese Medicine hospitals, comprehensive hospitals, and clinics. CMDs are 1 of 2 kinds (Western physician and TCM physician) of medical doctors in China.^{12,13} As for the unofficial estimates of the number of acupuncture practitioners, that is, “acupuncture doctors,” in China (current authors note: refers to “mainland,” thereafter; it does not include the numbers from Taiwan or Special Ad-

ministrative Regions, such as Hong Kong), different authors have reported different numbers based on their different estimating perspectives. The current lead author (A.Y.F.) estimated there were 18,000 to 20,000 acupuncture doctors in China. It was based on a discussion with a scholar who reported on *the current application of acupuncture in China* to the U.S. National Cancer Institute (NCI)’s acupuncture and acupuncture experts consensus conference in June 2016.^{14,15} According to the information reported in this NCI meeting, the total number of patient visits in out-patient departments and clinics to CMDs in China in 2013 was 425,573,000, whereas the number of visits for acupuncture was 21,070,000 (or 5%); there were 656,000 inpatient visits for acupuncture, or 3.6%.^{14,16} In 2013, there were 398,000 CMDs in China. This estimation was based on a rough ratio of acupuncture practitioners to the whole population of CMDs. It directly used the patients’ visits percentage, providing that the acupuncture practitioners were seeing the same number of patients per day as other CMDs.^{2,14,15,17} A scholar estimated, based on his “feeling,” that there were <80,000 acupuncture doctors.¹⁸ He said, “There were 408,600 CMDs (the current authors note: it is unknown where this data came from), I conservatively estimate; among them, there were <20% of CMDs using acupuncture in their daily practice.” Jiang¹¹ estimated that there were ~54,000 acupuncture doctors in China, based on China’s White Paper on Chinese Medicine^{12,13} and “List of Shanghai Qualified Personnel Who Passed the Comprehensive Assessment of *Standardized Training in Resident Program* in 2017” (the “List,” in short).¹⁹ China’s White Paper on Chinese Medicine indicated that at the end of 2016, there were 3,191,000 licensed physician and physician assistants in China; among them, 482,000 were physicians and physician assistants in Chinese Medicine.^{12,13} Based on the “List,” he indicated that there were 36 resident acupuncture doctors, or 1.7%, in the whole of the 2,124 resident physicians who passed the assessment. He used 3,191,000 (the number of physicians and physician assistants at the end of 2016) and timed it by 1.7% to get 54,000. This is the number of acupuncture doctors he estimated. He said, “this represented 11.2% of physicians and physician assistants in Chinese medicine (the number was 482,000). The density of acupuncture doctors was 3.9 per 100,000 population.”¹¹

This study aims to calculate the ranges of acupuncture practitioners in China in 2018 from multiple perspectives, and tried to find a reasonable number of acupuncture practitioners in China in 2018.

MATERIALS AND METHODS

Calculation Based on the Workload of Acupuncture Practitioners

Acupuncture practitioners' workload may reach up to 100 patients per day according to some news reports in China.^{20,21} This means the doctor used 4 minutes to examine, diagnose, and perform acupuncture for each patient, providing he or she worked 8 hours per day; however, this would be an uncommon or extreme situation. Considering that the whole procedure of examination, performing diagnosis, and doing acupuncture and so on for each patient needs at least 15–20 minutes, the reasonable high-end number of acupuncture practitioners' daily workload would be closer to 20–30 patient visits per day. According to our survey, the single Chinese Medicine hospital with the largest number of patient visits in outpatient clinics in China was Jiangsu Provincial Hospital of Chinese Medicine.^{22,23} Its acupuncture clinic had >160,000 patient visits in 2018, and there were 33 doctors at the time. If considering that there were 250 working days in 2018, each acupuncture practitioner would have averaged 19.40 patient visits per day.²³ This should be taken as the high-end number for the average single-day workload of acupuncture practitioners nationwide. As we know, China national (mainland, thereafter) average annual workload of physicians was 7.0 patient visits per day,²⁴ based on the feedback from the acupuncture practitioners in China that we surveyed. We believe that this number can be used as the average low-end number for the acupuncture practitioners' single-day workload nationally. According to the data released by the National Administration of Traditional Chinese Medicine, there were >30 million outpatient visits for acupuncture in 2016, and it has been growing at a rate of 6% each year (authors note: In China, the central government has a long tradition to release official information through "Xinhua News Agency" or "People Daily").²⁵ Therefore, the number of outpatient visits for acupuncture in 2018 should reach 33.708 million. Based on 250 work-days per year, the average number of daily outpatient visits for acupuncture in 2018 should be 134,832. Dividing by the high-end average workload of 19.40 patient visits per day, we can get the low-end number of acupuncture practitioners in China in 2018; dividing by the low-end average workload of 7.0 patient visits per day, we can get the high-end number of acupuncture practitioners in China in 2018.

We also tried to consider another possibility, in which we assume that the workload of acupuncture practitioners in China and American LACs were the same, that is, far below the average low-end workload of 7.0 patient visits per day already mentioned. However, this possibility would be unlikely. The median annual workload of American acupuncturists was 1,140 patient visits annually,¹⁰ divided by 250 work days per year, we can get an average daily workload of 4.56 patient visits per day. Based on information for 2018,

the average number of patient visits for acupuncture in China in a single day was 134,832, dividing 4.56, we can get the extreme high-end number of acupuncture practitioners in China in 2018, although this number has been considered "not possible" by most acupuncture practitioners we consulted in China.

Calculation Based on the Salary Level of Acupuncture Practitioners

The income level of acupuncture practitioners across China in 2018 is difficult to accurately calculate or estimate. However, the average income of acupuncture practitioners in the more developed eastern regions of China can be roughly estimated. The average income of CMDs was 105,600 Yuan (Renminbi), whereas the income of attending and senior doctors would be higher than this average, based on the "Chinese Medical Doctors' Salary Report 2018" released by the "Medical World" online survey.²⁶ Acupuncture practitioners are 1 subset of CMDs, and their average income can be roughly based on the mentioned CMDs, that is, ~10,000 Yuan per month. According to the authors' observation, the actual income of acupuncture practitioners in Beijing and Nanjing in 2018 mostly ranged from 10,000 to 15,000 Yuan per month. In that year, the acupuncture fee charged by acupuncture practitioners in 2 big Chinese Medicine Hospitals affiliated to Nanjing University of Chinese Medicine—Jiangsu Provincial Hospital of Chinese Medicine and Nanjing Municipal Hospital of Chinese Medicine—was 80–120 Yuan per session. The authors believe its median of 100 Yuan per session can be used for the calculation. Considering that the gross income from doctors' daily work must cover many other aspects included in the expenses, such as the overhead, the salaries of other clinical and administrative staff, the pension of former retirees, the usage of hospital space or property, supplies and utilities, as well as the investment for hospital development, the actual income of acupuncture practitioners is roughly 25%–30% of the clinical gross income. This is based on our observation; each hospital may have slight differences. If based on 30%, the gross income for each acupuncture practitioner should be 33,000 Yuan per month—that equals to 330 patient visits for acupuncture per month, or 16 patient visits per day for each acupuncture practitioner. The actual acupuncture fee schedule for patients and actual income for acupuncture practitioners may be different in each region, either higher or lower than those in Nanjing. However, for having a normal income for living in different regions, the daily workload for acupuncture practitioners in different regions should be similar. If we base our calculations on the total number of patient visits for acupuncture treatment in all of China in 2018 to be 33.708 million, the average daily workload of acupuncture practitioners in China should be 134,832. This number divided by 16 patient visits per day for each acupuncture practitioner, as an average daily workload, the total number of

acupuncture practitioners in 2018 will be obtained. Providing some hospitals may have better support from other doctors' gross income and allowing acupuncture practitioners have less economical contribution to the hospitals, if acupuncture practitioners' incomes occupied 50% of their gross incomes, then the workload of each acupuncture practitioner could come down to 200 patient visits per month, or 9.60 patient visits per day. Then, based on 134,832 as the average daily patient visits for all acupuncture practitioners in China that year, divided by acupuncture practitioner's workload of 9.6 patients per day, the total number of acupuncture practitioners in 2018 will be obtained. Furthermore, it needs to be considered that the local governments have certain financial support for hospitals of Chinese Medicine. Shanghai city governments probably are the best ones in this area, as the city has a stronger economy and the governments have supported Chinese Medicine more than other regions. The financial support from the Shanghai government to local Chinese Medicine hospitals accounted for 16%–36%, compared with the whole gross income of local Chinese Medicine hospitals;²⁷ taking a median of 26% as the weight for adjusting the number of acupuncture practitioners, calculated as the number already calculated—based on the salary level of acupuncture practitioners—multiplied by (100% +26%).

Calculation Based on the Ratio of the Number of Acupuncture Practitioners to Whole Population of Chinese Medicine Doctors

Current authors conducted separate field surveys in 2017, in an attempt to find the number of CMDs in large or well-known Chinese Medicine hospitals in the regions of eastern and central China, where acupuncture is more popular (the detailed data of each hospital are given in Table 1). In total, there were 49 large Chinese Medicine hospitals in the 6 provinces and metropolitans that the current authors surveyed, with a total of 9,927 CMDs, of which 619 were acupuncture practitioners, accounting for 6.23% (ranging from 4.41 to 8.04% in each region). The total number of doctors and assistants with licenses in the Chinese Medicine category in 2018 was 575,000.²⁴ As the number of CMDs has been ~79.17% in the whole population of CMDs plus CMD assistants with licenses,²⁸ the number 575,000 should be multiplied 79.17%, then we can get the real number of CMDs. Furthermore, multiplying the number of CMDs by 6.23%, one can obtain the number of acupuncture practitioners.

Estimating from the Latest Published Number of Members of the China Association for Acupuncture and Moxibustion

The authors conducted an online search of “China Association for Acupuncture and Moxibustion,”²⁹ to find the latest number of its members.

RESULTS

Calculation Based on the Workload of Acupuncture Practitioners

Based on the average daily workload of 19.40 patient visits per acupuncture practitioner in China, the low-end number of acupuncture practitioners should be 6,950; based on the average daily workload of 7.0, the high-end number should be 19,262; therefore, the number of acupuncture practitioners in China in 2018 was between 6,950 and 19,262. However, if calculation is based on the average daily workload of American acupuncture colleagues of 4.56, the potential number of acupuncture practitioners in China in 2018 could be 29,568.

Calculation Based on the Salary Level of Acupuncture Practitioners

According to the generally accepted salary or income level, acupuncture practitioners' income should at least match the average level of local employees (the average income has already been discussed). If the workload of acupuncture practitioners is 16 patient visits per day, then with the average income already discussed, the number of acupuncture practitioners will be 8,427. Weighing in the factor of local government's financial support to hospitals, then the number of acupuncture practitioners would be 10,618. If the hospital accepted lower contribution from acupuncture practitioners, such as their income occupied 50% of their gross income, the workload of an acupuncture practitioner would be reduced to 9.60 patient visits per day; in this case, then the number of acupuncture practitioners nationwide would be 14,045. Taking into account the government's input, one would get 17,697.

Calculation Based on the Ratio of the Number of Acupuncture Practitioners to the Whole Population of Chinese Medicine Doctors

The total number of practicing (and assistant) physicians in the Chinese Medicine category in 2018 was 575,000.²⁴ Removing assistants from this total, the total number of the CMDs was 455,227,²⁴ with acupuncture practitioners accounting for 6.23%; the number of acupuncture practitioners would then be 28,360.

Estimation from the Latest Published Number of Members from China Association for Acupuncture and Moxibustion

Based on “Brief Introduction of China Association for Acupuncture and Moxibustion” on the website of China Association for Acupuncture and Moxibustion,²⁹ its latest update was on March 6, 2019, the number of individual members was 28,935.

TABLE 1. RATIO OF ACUPUNCTURE PRACTITIONERS TO CHINESE MEDICINE DOCTORS IN 49 CHINESE MEDICINE HOSPITALS OF MAINLAND CHINA (IN JUNE, 2017)

<i>Region</i>	<i>Hospitals included [No. of acupuncture practitioners]</i>	<i>No. of CMDs</i>	<i>No. of acupuncture practitioners</i>	<i>The ratio of acupuncture practitioners to CMDs</i>
Beijing metropolitan region (10 hospitals)	1. Acupuncture hospital of the CACMS [8], 2. CACMS Guang'anmen Hospital [25], 3. CACMS Xiyuan Hospital [10], 4. CACMS Ophthalmology Hospital [3], 5. CACMS Wangjing Hospital [3], 6. BUCM Dongzhimen Hospital [25], 7. BUCM Dongfang Hospital [7], 8. BUCM the Third Hospital [5], 9. Capital Medical University Beijing Municipal Hospital of Chinese Medicine [37], 10. Xuanwu Hospital of Chinese Medicine [3]	2,378	126	5.30%
Shanghai metropolitan region (6 hospitals)	1. SUCM Longhua Hospital [21], 2. SUCM Shuguang Hospital (East Campus) [12], 3. SUCM Shuguang Hospital (West Campus) [11], 4. SUCM Shuguang Hospital (Baoshan Campus) [7], 5. SUCM Yueyang Hospital [40], 6. Xiangshan Hospital of Chinese Medicine [5]	1,559	96	6.16%
Jiangsu Province (7 hospitals)	1. NUCM Jiangsu Provincial Hospital of Chinese Medicine Hospital [29], 2. NUCM Jiangsu Provincial Second Hospital of Chinese Medicine [14], 3. NUCM Nanjing Municipal Hospital of Chinese Medicine [15], 4. Suzhou Municipal Hospital of Chinese Medicine [7], 5. Wuxi Municipal Hospital of Chinese Medicine [7], 6. Changzhou Municipal Hospital of Chinese Medicine [8], 7. Kunshan Municipal Hospital of Chinese Medicine [6]	1,567	86	5.49%
Guangdong Province (15 hospitals)	1. GUCM Guangdong Provincial Hospital of Chinese Medicine [63], 2. Guangdong Provincial Second Hospital of Chinese Medicine [22], 3. GUCM First Hospital [23], 4. Guangzhou Municipal Hospital of Chinese Medicine Hospital [48], 5. GUCM Bone and Trauma Hospital [16], 6. Foshan Municipal Hospital of Chinese Medicine [7], 7. Dongguan Municipal Hospital of Chinese Medicine [2], 8. Shenzhen Municipal Hospital of Chinese Medicine [14], 9. Guangzhou Municipal Hospital of Integrated Medicine [8], 10. Shunde Hospital of Chinese Medicine [0], 11. Zhuhai Municipal Hospital of Chinese Medicine [9] 12. Zhanjiang Municipal First Hospital of Chinese Medicine Hospital [4], 13. Zhanjiang Municipal Second Hospital of Chinese Medicine [0], 14. Huizhou Municipal Hospital of Chinese Medicine [5], 15. Zhongshan Municipal Hospital of Chinese Medicine [10]	2,872	231	8.04%
Anhui Province (7 hospitals)	1. Anhui University of Chinese Medicine Anhui Provincial Hospital of Chinese Medicine [16], 2. Wuhu Municipal of Chinese Medicine [1], 3. Tongling Municipal of Chinese Medicine [6], 4. Huaibei Municipal of Chinese Medicine [5], 5. Lu'an Municipal Hospital of Chinese Medicine [4], 6. Taihe County Hospital of Chinese Medicine [4], 7. Chuzhou Municipal Hospital of Integrative Medicine [2]	794	38	4.41%

(continued)

TABLE I. (CONTINUED)

Region	Hospitals included [No. of acupuncture practitioners]	No. of No. of acupuncture CMDs practitioners	No. of of acupuncture practitioners	The ratio of acupuncture practitioners to CMDs
Sichuan Province (4 hospitals)	1. Chengdu University of Chinese Medicine system Sichuan Provincial Hospital of Chinese Medicine [21], 2. Sichuan Provincial Second Hospital of Chinese Medicine [5], 3. Sichuan Provincial Hospital of Integrated Medicine (Main Campus) [3], 4. Sichuan Provincial Hospital of Integrated Medicine (North Campus) [13]	757	42	5.55%
Total	49 Hospitals	9,927	619	6.23%

BUCM, Beijing University of Chinese Medicine; CACMS, China Academy of Chinese Medical Sciences; CMDs, Chinese medicine doctors; GUCM, Guangzhou University of Chinese Medicine; NUCM, Nanjing University of Chinese Medicine; SUCM, Shanghai University of Chinese Medicine.

DISCUSSIONS AND LIMITATIONS

Acupuncture has been most heavily practiced in China;³⁰ however, in recent decades, there were some significant changes. In China, during the *Cultural Revolution* (i.e., 1966–1976), the government called for integration of Traditional Chinese Medicine with Western medicine, which led many Western-style doctors to learn Chinese Medicine. Many doctors, trained in both Chinese Medicine and Western medicine, widely use acupuncture. It is difficult to accurately count the number of doctors who actually used acupuncture in clinical practice at that time. In the majority of the more rural areas, there were 1.5 million “Barefoot Doctors” who had undergone short-term training and served as primary health care providers (dispenses medicine, gives first aid, assists at childbirth, etc.); this kind of medical auxiliary routinely used acupuncture.³¹ However, since the end of the *Cultural Revolution*, especially since the health care reform and the policy of “opening the door,” “Barefoot Doctors” have disappeared. While Western-style doctors and the majority of CMDs have rarely engaged in clinical acupuncture treatment, although all of clinical doctors may be eligible to use acupuncture as long as they had enough training in acupuncture, only the doctors working in acupuncture and related departments practice acupuncture. This caused the number of actual acupuncture practitioners, that is, “acupuncture doctors” in China to significantly decrease. Currently, the practitioners who legally conduct acupuncture treatments in China have all undergone Chinese Medicine Colleges or Universities with 5–8 years of study and have been awarded at least a “bachelor’s degree” or above (equivalent to the MD level in the United States). Many Universities and Colleges in Chinese Medicine in China are large in size and with a good reputation in academics nationally and even internationally.³² After graduation, they have to pass rigorous *Residents Standardized Training* for 3 years or more and obtain a practicing license. The pass rates of China’s practicing

license examination have been pretty low (25%–30%).^{12,13,32} In the United States, the main body of acupuncture practitioners is the LAC; its requirements of entry level are getting a bachelor’s degree program in which one completes at least 60 credits (equivalent to at least 2 years’ college study) after high school plus 3 years’ study in Chinese Medicine or acupuncture and obtaining a master’s degree in acupuncture or Chinese Medicine (or called Oriental Medicine), although in recent years some education institutions already started professional doctoral degree in this field. In the United States, no rigorous *Residents Standardized Training* is required and the licensure examination for LACs has relatively a high passing rate. The practice of LACs falls within *complementary medicine*, and their academic and social status is relatively lower than that of a medical doctor. In other words, the requirements for China’s acupuncture practitioners are relatively higher, being at that of the physician level and they work in the mainstream medical field. The number of doctors who engage in acupuncture has represented a small portion of all CMDs; in this study, they accounted for 6.23%. In contrast, in the United States, the number of LACs (or equivalent titles such as Acupuncture Physician, Oriental Medicine Doctor in some states) represents the total number of Chinese Medicine providers (of course, in most cases, it is also called “Oriental Medicine Doctors”). Compared with acupuncture practitioners in China who usually work full time, many LACs may have other side jobs because many of them only work part-time in an acupuncture practice.^{1,2} Furthermore, it should be made aware that there are ~6,000 acupuncture practitioners in the United States with the LAC title who actually came from China, where they had been CMDs.^{1,2,32} When comparing acupuncture practitioners in China and those of the United States, such differences should be noted.

It is not a suitable method to calculate the number of acupuncture practitioners in China by simply multiplying the workload ratio of acupuncture practitioners’ to the whole CMDs’ or to the whole number of CMDs and physician

assistants. Nor is it suitable to estimate based on personal feelings. Therefore, the numbers mentioned in the introduction, such as 20,000, 80,000, and 54,000, are not correct. The calculation by Jiang¹¹ could not represent the real ratio of acupuncture practitioners to the whole population of all doctors, in that Shanghai is a much more developed region for acupuncture practice; many regions in China may have a much lower ratio of acupuncture practitioners to all doctors than that in Shanghai. The China Association of Acupuncture and Moxibustion has 32 secondary academic committees (or branches); based on our observation, almost all acupuncture practitioners in China have joined this association, but its members also may include some nonacupuncture practitioners, such as acupuncture researchers who only conduct studies in basic science. Furthermore, it is difficult to know whether the members from secondary academic committees are counted once or twice. With this caveat, the number of acupuncture practitioners in China may be less than the number of its members of 28,935. However, the mentioned number can roughly be used as a reference.

It is theoretically a more accurate solution to estimate the total number of acupuncture practitioners by multiplying the ratio of acupuncture practitioners to CMDs. Current authors surveyed the regions where acupuncture has been well developed, such as in eastern and some western regions in China. This study included data from 49 large hospitals of Chinese Medicine in 6 provinces and metropolitans. There were 9,927 CMDs, of which 619 were acupuncture practitioners, accounting for 6.23%. It should be noted that we are aware that this actually may be an overestimated ratio, as many provinces of China may have less acupuncture practitioners than the regions that the current authors surveyed. The number of acupuncture practitioners in all of China, based on the ratio of 6.23%, was 28,360. It can be regarded as the upper-end or higher range calculation for the number of acupuncture practitioners. However, we should point out that in a few regions of China, for example, in Anhui Province, there are acupuncture specialized hospitals. These hospitals have many acupuncture practitioners, and the ratio of acupuncture practitioners to the whole population of CMDs in that hospital is very high. However, because there are such few hospitals in China, in a larger perspective, such a factor may not affect the ratio overall. Furthermore, it is worth noting that the total number of CMDs (and physician assistants) published by central government^{17,24} may not actually represent the total number of CMDs in real clinical practice.¹³ Many CMDs with or without a practicing license may leave the practice for further studying or training in various universities at home and abroad, or engage in teaching, scientific research, and other occupations, some actually immigrate to other countries.^{10,13} Moreover, aside from acupuncture practitioners practicing in hospitals and outpatient departments, many Chinese Medicine clinics mostly practice Chinese Herbal Medicine with very few acupuncture practitioners. Furthermore, during the surveys, current authors noticed that the acupuncture departments of

some hospitals of Chinese Medicine have been mixed with rehabilitation doctors, neurologists, and physical therapists; therefore, the ratio of acupuncture practitioners to all CMDs should be <6.23%. So as to the actual number of acupuncture practitioners, it should be far <28,360.

It is difficult to count the number of acupuncture practitioners based on their workload (or patients seen), although this method may also be more accurate. There are no exact statistics published on the workload of acupuncture practitioners in China.⁸ Current authors used 3 methods to estimate the range of acupuncture practitioners in China. First, the authors assumed that acupuncture practitioners across China were as busy as acupuncture practitioners in the Acupuncture Department of Jiangsu Province Hospital of Chinese Medicine, with a daily workload of 19.40 patient visits per acupuncture practitioner. From this number, we can get the number of acupuncture practitioners in all of China to be 6,950. It could be treated as an estimate on the low-end. Second, if the acupuncture practitioners in China like their American counterparts had a daily workload (median) of 4.56, then the number of acupuncture practitioners could be 29,568, which can be used as a potential unlikely upper-end number. Third, if the workload of acupuncture practitioners in China for each doctor was the same as the average of other doctors in China (average 7.0 patient visits per day), then the number of acupuncture practitioners could be 19,262. From fieldwork current authors conducted in China, the majority of acupuncture practitioners in China have been pretty busy; the average daily workload seems unlikely to be <7.0. Therefore, current authors believe that the reasonable upper-end of the actual number of acupuncture practitioners in China should be 19,262 instead of 29,568. In fact, the China Association of Acupuncture and Moxibustion surveyed 678 acupuncture practitioners⁸ in 1997, the median daily patient visits for acupuncture practitioners was 12.61; and in 2007, it was 18.38. If this survey is credible, then the number of acupuncture practitioners in China nationally should be ~10,000. We believe that the reasonable number of acupuncture practitioners in China in 2018 from this perspective should be between 6,750 and 19,262, with a median at 13,006.

Estimating the number of acupuncture practitioners in China from these doctors' income level is another objective method. There are differences in acupuncture fee schedules doctors actually charged patients and the incomes of acupuncture practitioners, among different regions. The actual income of an acupuncture practitioner and the level of acupuncture fee schedule determine the workload of acupuncture practitioners. The authors find that the majority of acupuncture practitioners in China have worked in various hospitals, outpatient departments, and big clinics. If 70% of gross income of an acupuncture practitioner is needed to pay for overhead (such as pay for the salaries of clinical assistants and administrative tasks), utilities, and for business improvement and development, the actual net income of

individual acupuncture practitioners is ~30% of total gross clinical income. The governments' financial support for Chinese Medicine hospitals is ~26%. Therefore, the daily workload of an acupuncture practitioner is 16, and the number of acupuncture practitioners in China in 2018 could be 10,618. If the contribution of acupuncture practitioners to the hospital in overhead, utilities, etc. was decreased to 50% and the workload of acupuncture practitioners would be 9.6 patient visits per day, then the acupuncture practitioners nationwide in 2018 would be 17,697. From this perspective, we could get a range of 10,618 to 17,697, with a median 14,157.

From the mentioned calculations and discussions, it can be concluded that a reasonable number of Chinese acupuncture practitioners in 2018 were 10,618 to 17,697, and the authors prefer the median 14,157. Considering that some acupuncture practitioners are also engaged in teaching, scientific researching, and performing management, and there may be other routes of paying their wages, we weigh the mentioned number (14,157) by 30%, that is, to 18,404. The population in China in 2018 was 1,395.38 million,³³ therefore, the density of acupuncture practitioners in China in 2018 was 1.31 per 100,000 population.

The statistics on the number and density of acupuncture practitioners reflects the current state of the industry. During the course of China's health care reform and performing "open-door" policy, the acupuncture industry in China was severely impacted by fast Westernization of China society and the market economy. Many acupuncture departments in various hospitals, especially in comprehensive hospitals, were revoked or down sized. Many acupuncture practitioners had to change their job or went abroad. Another typical example is that of the Anhui Provincial Hospital of Acupuncture. The hospital was established in 1985 and was the earliest and the largest acupuncture specialty hospital in China, in which the majority of doctors were acupuncture practitioners. However, the health care fee schedule in China has been controlled by governmental agencies, and acupuncture-related fee schedules were kept very low for a very long time; at the same time, the government does not allow the hospitals to adjust the fee schedule by themselves according to the market. This caused the acupuncture department or specialty hospitals to have a difficult time competing with comprehensive (or Western medicine) hospitals, or even with Chinese Herbal Medicine departments or hospitals. Anhui Provincial Hospital of Acupuncture eventually developed into a comprehensive hospital in Chinese Medicine. It includes various branches of Chinese Medicine and Western medicine, no longer using acupuncture as the major therapy. As the result, its "color" in acupuncture specialty dimmed. Now the hospital is called the Second Affiliated Hospital of Anhui University of Chinese Medicine. As another example, Jiangsu Provincial Second Hospital of Chinese Medicine was also originally an acupuncture specialty hospital. However, because the gross income

from acupuncture practice of that hospital could not pay the salaries of acupuncture practitioners and medical staff, and at the same time, comprehensive medical practice was needed by local patients, the hospital was also developed into a comprehensive hospital. It has lost its original characteristics of an acupuncture specialty hospital. The reality is that the acupuncture hospital has evolved into a smaller acupuncture department in the hospital, although leaders still had hoped that it would be an acupuncture specialty hospital. Although the government has adjusted the acupuncture price system in recent years, the income level of acupuncture practitioners in China is still not very high. This is one of main factors that limits the growth of the number of acupuncture practitioners in China. It is gratifying that the Chinese government has paid more and more attention to the application and development of Chinese Medicine in recent years, and the number of CMDs has increased significantly year by year.^{12,13,16,25} Last year, the Chinese central government classified acupuncture as a first-level discipline in the academic field,²⁵ which is a sign that acupuncture can become an independent academic field in China. Many hospitals have expanded their acupuncture department and continue to recruit more doctors in acupuncture. We foresee a fast increase in the number of doctors who practice acupuncture in China in the near future.

The major limitation of this study is that it is short of direct accurate data and official information released by any government agencies. Therefore, our study was based on authors' own field research, some information from sources online, and our own judgment. The good news is, in early 2020, *National Survey System of Chinese Medicine Management Statistics* started to be implemented by (China) National Administration of Traditional Chinese Medicine.³⁴ This means that official statistics in the profession of acupuncture and other Chinese Medicine specialties will be collected and reported routinely in the near future.

CONCLUSIONS

There were ~18,404 doctors of acupuncture in China in 2018, and the density of acupuncture doctors was 1.31 per 100,000 residents; this can be compared with the United States that had 38,000 LACs and a density of acupuncturists was 11.63 per 100,000 population during the same period.

DISCLAIMER

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AUTHORS' CONTRIBUTION

Dr. Fan is the primary researcher of this project. He designed, implemented, and drafted the original article. Other authors participated in investigating, discussing, drafting, and editing, and approving the final article. The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

AUTHOR DISCLOSURE STATEMENT

The authors declare that they have no competing interests.

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Address correspondence to:
 Arthur Yin Fan, MD(CHN), PhD, LAc
 McLean Center for Complementary
 and Alternative Medicine, PLC
 8214A Old Courthouse Road
 Vienna, VA 22182
 USA

E-mail: arthurfan@chinesemedicinedoctor.us