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Original Article

Overview of dental education system and gender distribution of undergraduate dental students in Taiwan

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Abstract *Background/purpose:* The gender distribution of dentists in Taiwan has been dominated by male dentists for a long time. This study analyzed preliminarily the appearance of the current dental education system and the gender distribution of undergraduate dental students.

Materials and methods: This study used documentary analysis and secondary data analysis to survey mainly the current dental education system and the gender distribution of undergraduate dental students in Taiwan.

Results: There were a total of 2474 dental students and 394 dental graduates in Taiwan in 2021. The numbers of male students (1435, 58.00%) and male graduates (207, 52.54%) were

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higher than those of female students (1039, 42.00%) and female graduates (187, 47.46%). The numbers of male dental students in the northern (629), central (428), and southern (378) regions were all higher than those of female dental students (423, 373, and 243, respectively). The chi-square test indicated the significantly higher proportion of male dental students in the northern and southern regions ($P < 0.01$). Besides, there were a total of 15,857 registered dentists. The number of male dentists (10,997, 69.35%) was higher than that of female dentists (4,860, 30.65%). Compared with population, the chi-square test showed the significantly higher proportion of male dental students and male registered dentists (all P -values < 0.001).

Conclusion: In Taiwan, the dental education system must promote female students' interest in dentistry and elevate the proportion of female dental supervisors to increase the proportion of female dental students and female dentists in the future.

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Introduction

During the Japanese colonial period (1895–1945), the western medical system was introduced to Taiwanese society. Since then, Taiwanese medicine has gradually taken on the appearance of modern medicine. At that time, the Taiwan Government Medical School aimed to cultivate male physicians for its educational purpose, while the nursing training institutes also set a policy to cultivate female nurses. Therefore, Taiwan's medical system has established a healthcare system dominated by male physicians and female nursing staff since its inception.¹

The educational situation of Taiwanese women in Japanese-ruled Taiwan was polarized. At that time, there were not many opportunities for women to receive education, while girls from wealthy families could receive higher professional education through certain channels. In those days, Taiwanese young women could not get the opportunity to study medicine in Taiwan, and they chose to study medicine in Japan if they wanted to. Most of them chose girls' medical schools, followed by girls' dental schools and girls' pharmacy schools.²

The first Taiwanese who studied dentistry in a Japanese dental school returned to Taiwan to practice in 1920, and he is a male dentist. However, eight years later, the first Taiwanese woman who studied in a girls' dental school in Japan returned to Taiwan to practice in 1928. It is possible that during the Japanese colonial period or after the Second World War to today, the gender distribution of dentists in Taiwan has been dominated by male dentists for a long time. It was not until 1984 that the first female head of dentistry appeared and served as the head of the School of Dentistry of National Taiwan University (NTU) and Department of Dentistry of National Taiwan University Hospital (NTUH).³ However, there were 3148 dentists all over Taiwan in the same year. Among them, there were only 144 female dentists in Taiwan Province, accounting for only 8.9% of the total dentists in Taiwan Province.⁴

Analyzing the gender distribution of medical personnel in Taiwan in 2018, the proportions of female physicians, dentists, and traditional Chinese medicine (TCM) physicians were 19.8%, 29.1% and 31.2% of the corresponding medical personnel, respectively. It indicates that the female

physicians, dentists, and TCM physicians are significantly lower than the male physicians, dentists, and TCM physicians, respectively. On the contrary, the female nursing staff, nutritionists, speech therapists, respiratory therapists, and audiologists were more than 80% of the corresponding medical personnel, respectively. The largest gender gap was in the nursing staff. The proportion of female nursing staff accounted for 97.1% of all nursing staff.⁵

Since the rise of the women's movement in the 1980s in Taiwan, the government followed the United Nation's human rights guidelines in 2005 and advocated the promotion of "gender mainstreaming" policy in areas such as health care, education, internal affairs, and national defense. The gender-related issues have gained prominence in the medical field in recent decades. After the implementation of National Health Insurance (NHI) since 1995, the medical environment and medical manpower structure have changed rapidly, and the ratio of female medical students has increased year by year.⁶ Due to the lack of research on the gender distribution of dental students in Taiwan, this study attempted to preliminarily analyze the appearance of the current dental education system and the gender distribution of undergraduate dental students.

Materials and methods

This study used documentary analysis and secondary data analysis to find the appearance of the current dental education system and the gender distribution of undergraduate dental students in Taiwan. The brief history of dental schools and their current status were obtained from the websites of these dental schools. Besides, the distribution of dental schools and their academic programs, and the numbers of dental schools, their newly-registered undergraduate dental students, total students with official student status and dental graduates in 2021 were obtained from the Ministry of Education.

In addition, the information of qualified teaching hospitals for dental internship including their hospital level and hospital location were obtained from the query system in the website of the Ministry of Health and Welfare by the time of October 2022. The population and the number of registered dentists by gender in 2021 were obtained from

the websites of the Ministry of the Interior and the Ministry of Health and Welfare, respectively. This study further compared the gender distribution among the undergraduate dental students, the registered dentists, and the population.

All document and secondary information and data were accessible from the respective websites. The research data of documentary analysis and secondary data analysis were stored in excel files and used for the descriptive statistics. Moreover, the chi-square test was used for trend analysis. The *P*-value less than 0.05 was considered to be significant.

Results

The education system for dentistry in Taiwan

The dental school of National Defense Medical Center, which was established in the mainland China in 1941 and

moved to Taiwan in 1949, is the earliest dental school in Taiwan, while the dental school of National Taiwan University, which was established in 1953, is the earliest dental school established in Taiwan. In addition to Chang Gung University which only provided graduate program for degree of dentistry-related master, there were currently 8 dental schools in Taiwan. Among them, three belonged to public universities, four private universities, and one a military university (Table 1). Moreover, there were totally 406 approved enrollment quotas of undergraduate program of dentistry in 2021, including 371 for general students, 15 for overseas Chinese students, and 20 for students of the military university. Of these 8 dental schools and Graduate Institute of Dental and Craniofacial Science of Chang Gung University, five were located in the northern region, two in the central region, and two in the southern region of Taiwan. However, there was no dental school in the eastern region of Taiwan (Table 1).

Table 1 The dental education system in universities in Taiwan.

No.	University name	School or department name	Enrollment quotas ^a	Established time of dental school			Location	Region of Taiwan
				Undergraduate program for DDS	Graduate program Master	PhD		
Public university								
1	National Taiwan University	School of Dentistry and Graduate Institute of Clinical Dentistry	29 + 2	1953	1988	1991	Taipei City	Northern
2	National Yang Ming Chiao Tung University	Department of Dentistry	38 + 2	1976	1992	2000	Taipei City	Northern
3	National Cheng Kung University	School of Dentistry and Institute of Oral Medicine	20 + 1	2019	2002	—	Tainan City	Southern
Private university								
4	Kaohsiung Medical University	School of Dentistry	80 + 3	1957	1985	1990	Kaohsiung City	Southern
5	Taipei Medical University	School of Dentistry	82 + 3	1960	1993	2004	Taipei City	Northern
6	Chung Shan Medical University	School of Dentistry and Graduate Institute of Oral Sciences	76 + 1	1960	1995	2005	Taichung City	Central
7	China Medical University	School of Dentistry and Graduate Institute of Dental Sciences	46 + 3	1980	2007	2018	Taichung City	Central
8	Chang Gung University	Graduate Institute of Dental and Craniofacial Science	—	—	2002	—	Taoyuan City	Northern
Military university								
9	National Defense Medical Center	School of Dentistry and Graduate Institute of Dental Science	20	1941	1986	—	Taipei City	Northern

^a Approved enrollment quotas of undergraduate program of dentistry in 2021 (for general students and overseas Chinese students, excluding other additional quotas).

Table 2 The graduation conferring degree of dental education system in Taiwan^a.

No.	University name	Graduation conferring degree		
		Undergraduate program	Graduate program for Master	Graduate program for PhD
1	National Taiwan University	Doctor of Dental Surgery (DDS)	Master of Dental Science (MDS)	Doctor of Philosophy (PhD)
2	National Yang Ming Chiao Tung University	Doctor of Dental Surgery (DDS)	Master of Dental Science (MDS)	Doctor of Philosophy (PhD)
3	National Cheng Kung University	Doctor of Dental Surgery (DDS)	Master of Science (MS)	–
4	Kaohsiung Medical University	Doctor of Dental Surgery (DDS)	Master of Dental Science (MDS)	Doctor of Philosophy (PhD)
5	Taipei Medical University	Doctor of Dental Surgery (DDS)	Master of Science (MS)	Doctor of Philosophy (PhD)
6	Chung Shan Medical University	Doctor of Dental Surgery (DDS)	Master of Dental Science (MDS)	Doctor of Philosophy (PhD)
7	China Medical University	Doctor of Dental Surgery (DDS)	Master of Dental Science (MDS)	Doctor of Philosophy (PhD)
8	Chang Gung University	–	Master of Science (MS) Master of Medical Science (MMS)	–
9	National Defense Medical Center	Doctor of Dental Surgery (DDS)	Master of Dental Science (MDS)	–

^a The table is organized according to the information at the website of the Ministry of Education.

Of these 8 dental schools, all provided the undergraduate program for the degree of Doctor of Dental Surgery (DDS) and the graduate program for the Master degree. Among them, six dental schools also provided the graduate program for the degree of Doctor of Philosophy (PhD) (Table 2).

The gender distribution of undergraduate dental students and dental graduates in Taiwan in 2021

According to the results of analyzing the statistics of the Ministry of Education, excluding the military university, there were a total of 382 newly-registered undergraduate

dental students in the 7 dental schools in Taiwan in 2021 (Table 3). The number of the newly-registered dental students in private dental schools (290, 75.92%) was much higher than that of public dental schools (92, 24.08%) (Table 3). Based on the school location, there was the highest number of the newly-registered students in the northern (155, 40.58%) region of Taiwan, followed in a descending order by the central region (125, 32.72%) and the southern region (102, 26.70%) (Table 3).

In terms of total undergraduate dental students with official student status, there were a total of 2474 dental students in Taiwan in 2021 (Table 3). The number of male

Table 3 The numbers (proportions) of dental schools, their newly-registered undergraduate dental students, total students with official student status and graduates by gender, school location, and public or private school in 2021.

	Dental schools ^a	Newly-registered students ^b	Total undergraduate dental students with official student status			Dental graduates		
			Male	Female	Total	Male	Female	Total
Public or private								
Public	3	92 (24.08%)	337 (13.62%)	229 (9.26%)	566 (22.88%)	41 (10.41%)	31 (7.87%)	72 (18.27%)
Private	4	290 (75.92%)	1098 (44.38%)	810 (32.74%)	1908 (77.12%)	166 (42.13%)	156 (39.59%)	322 (81.73%)
			Chi-square test: $P > 0.05$			Chi-square test: $P > 0.05$		
School location in Taiwan								
Northern	3	155 (40.58%)	629 (25.42%)	423 (17.10%)	1052 (42.52%)	97 (24.62%)	77 (19.54%)	174 (44.16%)
Central	2	125 (32.72%)	428 (17.30%)	373 (15.08%)	801 (32.38%)	62 (15.74%)	65 (16.50%)	127 (32.23%)
Southern	2	102 (26.70%)	378 (15.28%)	243 (9.82%)	621 (25.10%)	48 (12.18%)	45 (11.42%)	93 (23.60%)
			Chi-square test: $P < 0.01$			Chi-square test: $P > 0.05$		
Total	7	382 (100%)	1435 (58.00%)	1039 (42.00%)	2474 (100%)	207 (52.54%)	187 (47.46%)	394 (100%)

^a Excluding the military university.

^b Newly-registered undergraduate dental students from general students and overseas Chinese students, excluding other students through additional quotas.

dental students (1435, 58.00%) was higher than the number of female dental students (1039, 42.00%). The number of dental students in private dental schools (1908, 77.12%) was much higher than that of public dental schools (566, 22.88%) (Table 3). The numbers of male dental students in public dental schools (337) and private dental schools (1098) were both higher than those of female dental students (229 and 810, respectively). Based on the school location, there was the highest number of dental students in the northern (1052, 42.52%) region of Taiwan, followed in a descending order by the central region (801, 32.38%) and the southern region (621, 25.10%) of Taiwan. The numbers of male dental students in the northern (629), central (428), and southern (378) regions were all higher than those of female dental students (423, 373, and 243, respectively). The chi-square test for trend analysis showed a significant difference ($P < 0.01$), indicating a higher proportion of male dental students in the northern and southern regions of Taiwan (Table 3).

In terms of dental graduates, there were a total of 394 dental graduates in Taiwan in 2021. The number of male graduates (207, 52.54%) was higher than the number of female graduates (187, 47.46%) (Table 3). The highest number of dental graduates in private dental schools (322, 81.73%) was much higher than that of public dental schools (72, 18.27%). The numbers of male dental graduates in public dental schools (41) and in private dental schools (166) were both higher than those of female dental graduates (31 and 156, respectively) (Table 3). Based on the school location, there was the highest number of dental graduates in the northern (174, 44.16%) region of Taiwan, followed in a descending order by the central region (127, 32.23%) and the southern region (93, 23.60%) of Taiwan. The numbers of male dental graduates in the northern (97) and southern (48) regions of Taiwan were both higher than those of the corresponding female dental graduates (77 and 45, respectively), while the number of male dental graduates in the central (62) region was lower than that of the corresponding female dental graduates (65) (Table 3).

The distribution of qualified teaching hospitals for dental internship in Taiwan in 2022

According to the results from the query system at the website of the Ministry of Health and Welfare, there were currently 62 qualified teaching hospitals for dental internship in Taiwan (Table 4). Of these 62 qualified teaching

hospitals, 21 (33.87%) were medical centers, 38 (61.29%) regional hospitals, and 3 (4.84%) district hospitals. Based on the hospital location, 30 (48.39%) hospitals were in the northern region, 10 (16.13%) in the central region, 18 (29.03%) in the southern region, and 4 (6.45%) in the eastern region of Taiwan. The teaching hospitals for dental internship were mainly medical centers and regional hospitals, and these large hospitals were concentrated in the northern region of Taiwan (30, 48.39%) (Table 4). However, it should be noted that most dental schools designated their dental students for internship in their affiliated hospitals or medical centers.

The comparison among population, dental students, and registered dentists by gender in Taiwan in 2021

According to the demographic database at the websites of the Ministry of the Interior and the Ministry of Health and Welfare, the total population were 23,375,314 people in Taiwan in 2021. The female population (11,796,618, 50.47%) was slightly larger than the male population (11,578,696, 49.53%) (Table 5). Besides, there were a total of 15,857 registered dentists in Taiwan in 2021. The number of male dentists (10,997, 69.35%) was higher than that of female dentists (4,860, 30.65%). To correspond to the age of dental students and registered dentists, the population of 19–24 years of age and 25–65 years of age was calculated by gender, respectively. The population of 19–24 years of age and that of 25–65 years of age were 1,669,102 and 14,343,585 people, respectively (Table 5). The male population of 19–24 years of age (869,364, 52.09%) was larger than the female population of 19–24 years of age (799,738, 47.91%). On the contrary, the female population of 25–65 years of age (7,219,996, 50.34%) was slightly larger than the male population of 25–65 years of age (7,123,589, 49.66%) (Table 5).

The chi-square test for trend analysis of gender distribution between the dental students and the population of 19–24 years of age or the total population as well as between the registered dentists and the population of 25–65 years of age or the total population showed significant differences (all P -values < 0.001), indicating the significantly higher proportion of male dental students and male registered dentists in Taiwan. Besides, the same comparison between the dental students and the registered dentists as well as between the dental graduates and the

Table 4 The numbers (proportions) of qualified teaching hospitals for dental internship by hospital level and hospital location in Taiwan in 2022^a.

Hospital level	Hospital location (region of Taiwan)				Overall
	Northern	Central	Southern	Eastern	
Medical center	11 (17.74%)	4 (6.45%)	5 (8.06%)	1 (1.61%)	21 (33.87%)
Regional hospital	17 (27.42%)	6 (9.68%)	12 (19.35%)	3 (4.84%)	38 (61.29%)
District hospital	2 (3.23%)	0	1 (1.61%)	0	3 (4.84%)
Overall	30 (48.39%)	10 (16.13%)	18 (29.03%)	4 (6.45%)	62 (100%)

^a This table represents the distribution of qualified teaching hospitals, but in fact most dental schools designate their dental students for internship in their affiliated hospitals or medical centers.

Table 5 The numbers (proportions) of dental students and registered dentists by gender in Taiwan in 2021.

Group	Item	Number (proportion)			Comparison (chi-square test)	
		Male	Female	Total	Group	P-value
Dental students and dentists						
A	Total dental students with official student status	1435 (58.00%)	1039 (42.00%)	2474	A vs B	$P < 0.05$
B	Dental graduates	207 (52.54%)	187 (47.46%)	394	A vs C	$P < 0.001$
C	Registered dentists	10,997 (69.35%)	4860 (30.65%)	15,857	B vs C	$P < 0.001$
Population						
D	Population of 19–24 years of age	869,364 (52.09%)	799,738 (47.91%)	1,669,102	A vs D	$P < 0.001$
E	Population of 25–65 years of age	7,123,589 (49.66%)	7,219,996 (50.34%)	14,343,585	A vs F	$P < 0.001$
F	Total population	11,578,696 (49.53%)	11,796,618 (50.47%)	23,375,314	C vs E	$P < 0.001$

registered dentists also showed significant differences (all P -values < 0.001), indicating the significantly higher proportion of male registered dentists (69.35%, 10,997/15,857) than those of male dental students (58.00%, 1435/2474) and male dental graduates (52.54%, 207/394) (Table 5).

Discussion

From 1900 when the content of dentistry was taught under the subject of surgery at the Taiwan Government Medical School and 1918 when the dentistry became an independent subject to 1941 when the first dental school appeared in Taiwan and 1990 when the first PhD graduate program was established among Taiwan's dental schools, "Taiwan Dentistry" took 90 years to build the comprehensive education system for dentistry. From 1896 when the first licensed dentist opened his dental clinic in Taipei City and before the end of Japanese colonial rule in 1945 when there were the registered dentists of 738 in total (including 245 Japanese and 493 Taiwanese) in Taiwan to nowadays (the year of 2021) when there were a total of 15,857 dentists who practiced here, the Taiwan's dental community has always been dominated by male dentists for more than 100 years.^{7–11}

According to a name list of contract dentists for the Postal Savings Insurance, there were 368 contract dentists (including 143 Japanese and 225 Taiwanese) in Taiwan in 1939. Of these 225 Taiwanese dentists, 33 were female dentists, accounting for only 14.67% of all Taiwanese contract dentists.¹² Because the hospital dentists were not included, this name list presented the clinic dentists who were actually practicing in those days. Nearly 40 years after the Second World War, however, there were 1617 dentists in Taiwan Province in 1984, of which only 144 were female dentists, accounting for only 8.9% of all dentists in Taiwan Province.⁴ This means that the opportunity or willingness of postwar Taiwanese women to receive dental education lags seriously behind those of colonial times. Even by 1980, there were already 6 dental schools in Taiwan's university entrance examination. Furthermore, from 1906 when the Surgery Department of Taiwan Government Taipei Hospital (predecessor of the NTUH) set up a dental treatment room

to 2022 when there were totally 199 dentists who registered in NTUH and its associated branches, including 145 in the NTUH, 41 in its branches, and 13 in the National Taiwan University Children's Hospital, there were totally 20 dental supervisors in the NTUH and its predecessor, including 10 during Japanese colonial period and 10 after the Second World War to now.³ Regarding the gender of the 20 dental supervisors, only one (1/20, 5%) was female. Moreover, in terms of ruling period, her tenure (1984–1988) was only 4 years, comprising only 3.42% of 117 years of the history of the Dental Department of NTUH.

Dr. Hsueh-Wan Kwan (1923–2022) is the first female dentist in the NTUH and the first female teacher of the School of Dentistry of NTU.³ She is also the first female dental supervisor in Taiwan's dental community and the founder of oral pathology in Taiwan. She started teaching oral pathology in the School of Dentistry of NTU in 1963. She is also the first female dentist who teaches oral pathology. Before that, the oral pathology was taught by general pathologists of the College of Medicine of NTU. In the early years, there was a serious shortage of dental teachers in the NTU. In the 1960s, she was responsible for eight subjects covering basic and clinical dentistry. Although such a classic figure of female dentist and dental teacher appeared in the early postwar period in Taiwan's dental education history, Taiwan's dental profession has always been dominated by male dentists. Overall, the proportion of female dentists in all dentists grew rather slowly in Taiwan.

The purpose of medical education during the Japanese colonial period in Taiwan was to cultivate the male physicians.¹ At that time, the development of dental courses in the medical school was to train medical students to obtain dental practice qualifications.^{7,10,11} Therefore, only the male dental practitioners were locally cultivated in those days. In addition, because there was no domestic dental school in Taiwan, Taiwanese regardless of gender who wanted to study dentistry needed to study abroad and usually in Japan or Chosen (Korea).⁷ With the relocation of the dental school of the National Defense Medical Center to Taiwan and the establishment of new dental schools after the Second World War, there have been 8 dental schools with undergraduate programs, of which 6 offer PhD

programs. Therefore, Taiwan's dental education up to date has become very complete and comprehensive.

According to the results of this study and the statistics of the Ministry of Health and Welfare, in Taiwan, the proportion of the female dentists in all dentists increased from 29.1% in 2018 to 30.1% in 2020 and further to 30.65% in 2021.^{5,13} In this study, the proportions of the female undergraduate dental students in all students and the female dental graduates in all dental graduates were 42.00% and 47.46% in 2021, respectively. These findings indicate that the proportion of the female dentists is growing rather slowly, while the increase in recent years becomes approximately 0.5% per year in average. However, this also means that the proportion of the female dentists may continue to increase slowly in the future. The proportion of the female dental graduates (47.46%) was significantly higher than that of the female dental students (42.00%) in 2021 (Table 5), indicating that the male dental students may be more likely to change their career, or there may be a difference in the ratio of male to female dental students in recent years. However, these inferences need further researches.

In this study, the number of the dental graduates was more than that of the newly-registered dental students from the general admission way. This is because the admission system provides additional quotas of dental schools for students from certain groups.¹⁴ Based on personal communication with the department staff, the numbers of the male and female admitted students of the dental school of the NTU through individual application for admission were 39 and 30 for 2017 and 2022, respectively. Among them, there were 6 male students and 5 female students admitted to additional quotas. The proportion of the female admitted students in all admitted students of the School of Dentistry of the NTU was 43.48% (45.45% for additional quotas) and was slightly higher than the proportion of female dental students in all students of Taiwan (42.00%), indicating that under the influence of potential social and cultural factors, there are still more male high school graduates who choose dentistry as their career than female high school graduates. Therefore, it is still necessary to encourage the female students to choose dentistry as their career through a long-term change in social and cultural concepts to gradually reduce the gap between the male and female dentists.

According to our observations, due to the advancement of science and technology, the instruments used in the dental procedures have achieved light weight and convenience. In addition, due to the development of some auxiliary equipment (such as rotatory file, dental microscope, dental laser, etc.), some dental operations that used to require more physical force or a long period of time to complete have been improved. This reduces the associated constraints for dentists to invest in dental treatments and relatively increases students' interest in entering the field of dentistry. The introduction of digital dentistry, the simplification of the dental treatment process, and the advancement of dental imaging technology have simplified some procedures in dentistry that used to be laborious. The social atmosphere regards the dentists as similar to the ophthalmologists and dermatologists. Compared with other specialties, the dentists may have a better life quality and a

relatively high income, which also attracts some students to choose dentistry as their lifelong career. These situations may change some stereotypes that the dentists seem to be more suitable for males as a lifelong occupation in the past, and the dentist-related environment change may be more attractive to female students to choose the dentists as their lifelong profession in the present time than before. In addition, with regard to the change in the dental student admission way, the proportion of admission to dental schools through application is gradually increasing, which may also be a factor in increasing the number of female dental students.

There was an interesting finding in this study. The proportions of male dental students in the northern and southern dental schools were 59.79% (629/1052) and 60.87% (378/621), respectively. These data of male predominance were significantly higher than that in the central dental schools (53.43%, 428/801) ($P < 0.01$) (Table 3). According to the findings of our previous studies, although there were more dental freshmen from the northern region of Taiwan, there were also many dental freshmen who came from the central region of Taiwan but were admitted to the northern and southern dental schools. This finding indicates that male students in the central region may be more willing to leave home to study in the northern and southern regions of Taiwan. The uneven geographic distribution of dental students may also affect the uneven geographic distribution of dentists in the future.^{14–18} In addition, this study also found that the distribution of qualified teaching hospitals for dental internship was uneven, and these hospitals were more concentrated in the northern region (48.39%) than in the central (16.13%), southern (29.03%) or eastern regions (6.45%) of Taiwan (Table 4). In fact, the uneven distribution of various dentistry-related resources is a long-term problem in Taiwan.^{19–25}

Some studies have shown that the medical care quality of female physicians is significantly better than that of male physicians. This makes the increase in the proportion of female physicians an even more important issue.^{6,26,27} To the best of our knowledge, in Taiwan, there is currently no study on comparing the difference in the dental care quality between male and female dentists. However, it is important that the future development of dental education in Taiwan should strengthen the solid humanistic quality and communication skills of dental students, increase the femininity and reduce the masculinity of the educational content and skills, and emphasize the "patient-centered" dental care training.^{6,28} By controlling the total number of dental students and strengthening the training of clinical services for vulnerable patients, the problem of oversupply and uneven distribution of dentists can be avoided from exacerbation. We consider that the dental education system must promote female students' interest in dentistry in order to increase the proportion of female dentists in the future. By elevating the proportion of female dental supervisors, they may have a high potential to guide the development of dental education and dental health policy toward increasing more female dental students and using more female dentists in dental services. In this way, the "gender gap" in the current dental education and clinical training can be gradually filled.

Declaration of Competing Interest

The authors have no conflicts of interest relevant to this article.

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None.

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