



Original Article

# Career choice and future plan of Chinese 8-year stomatology medical doctor program students

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## Abstract

**Background:** This elite education reform that commenced in 2001 aims to improve the quality of Chinese dentists. It is expected to be one of the biggest drivers that lead dental education of China to a new stage. The authors identified and analyzed the perspectives of Chinese 8-year stomatology medical doctor (SMD) program students toward their career choice and future plan.

**Methods:** The data from a self-administered questionnaire (4 items regarding career choice and 6 items about future plan), administered to 87 8-year SMD program students from the School of Stomatology, Peking University, Beijing, China, were used. The authors performed a comparison of the students of different sexes and home locations using the Chi-square test.

**Results:** Of the students, 34.5% indicated interpersonal motives as the reason to choose the 8-year SMD program, and only 52.9% thought that they had made good choices. The top three popular careers were those of prosthodontists (20.7%), oral surgeons (14.9%), and orthodontists (13.8%). The majority of students preferred first-tier cities (85.7%) and university hospitals (71.3%).

**Conclusion:** In China, most 8-year S.M.D students would like to work as clinical dentists of university hospitals in first-tier cities. The top three career choices of graduates would be prosthodontists, oral surgeons, and orthodontists.

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**Keywords:** career choice; China; dental education; 8-year stomatology medical doctor program

## 1. Introduction

In a previous study, we compared the comprehensive quality between doctoral dental students of Japan and 8-year stomatology medical doctor (SMD) program students of China (unpublished data). We found obvious differences and similarities between dental students in the two nations. The results showed that the comprehensive quality of Chinese 8-year SMD program

students was good. An elite-level education reform began in 2001, aiming at improving the quality of Chinese dentists, their participation in international education programs,<sup>1</sup> as well as international cooperation and competition. Despite the total program having been reduced by 2–3 years, educational objectives of the Chinese 8-year SMD program are the same or even higher than those of regular doctoral dental program,<sup>2</sup> and they are much higher than those of 4-year plus 4-year Doctor of Dental Surgery (DDS) program in North America.<sup>3</sup> Although this new program of dental education in China is still in the trial stage, it is thought to be a big revolution in Chinese dental education. It is expected to be one of the biggest drivers that lead dental education in China to a new era.<sup>4</sup>

Taking Peking University, for example, which have already been 5 graduates about 200 doctoral dental students since 2000.

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Most of these graduates are concentrated in Peking; only a small number of them are working in second-tier cities such as Shenyang and Chongqing. The majority are working in college hospitals or big state hospitals, with a few working in high-end dental offices. Although the graduates are highly appreciated by their employers, many problems still exist. All previous efforts made in Chinese dental education reform were from the vantage point of dental educators. With the education focus shifting from educators to students, more attention has been paid to the views of students with regard to their career choice and future plan. A comparison of dental students' career choice between Japan and Sweden has been reported.<sup>5–8</sup> It is widely known by dental educators that knowing their students' motivations for choosing dentistry, which may have a big influence on their future life, is very important. Questions about students' motivations are normal and important in the interview for admission in many countries.<sup>9</sup> All aspects of education should serve students' future work and development. Knowing their future plan can improve teaching methods and contents. In this study, we surveyed career choices and future plans of Chinese 8-year SMD program students who are different sexes and home locations, to get a better understanding of this new dental education program and hopefully to provide some references for further advancing dental education in China.

## 2. Methods

The 6<sup>th</sup>-, 7<sup>th</sup>-, and 8<sup>th</sup>-year doctoral dental students of the 8-year SMD program of the School of Stomatology, Peking University, Beijing, China, were involved in this study. All the students volunteered and were exposed to clinical practice, research work, and education work in their university hospital during the study. All participants gave verbal consent when joining this study. The questionnaire was self-administered in June 2013. The study was conducted in full accordance with the World Medical Association Declaration of Helsinki. The Human Research Ethics Committee involved in this project approved the study protocol.

Information was gathered from a questionnaire consisting of three parts: basic information on sex and home location, four questions for career choice (Items 1–4), and six questions for future plan (Items 5–10). The questions were similar to those in our previous comparative study between dental students in China and Japan, but added some questions about characteristics of the 8-year SMD program.<sup>10</sup> There were three multiple-choice questions (Items 1, 6, and 8), four descriptive questions (Items 2, 4, 7, and 10), and three mixed questions (composed of 1 multiple-choice question and 1 descriptive question; Items 3, 5, and 9; Table 1). The questionnaire was originally developed in Chinese, and later translated into English with assistance from native English speakers.

### 2.1. Statistical analysis

Simple frequency tables for group comparison were developed. In Items 3–5, 8, and 9, students were classified again based on their responses as Items 3a, 4a, 5a, 8a, and 9a,

respectively. For analysis of the results, the Chi-square test was applied between four kinds of students of different sexes and home locations (except for Items 3a, 9a, and 10). Mann–Whitney *U* test was used for Item 10. For Items 3a and 9a, statistical analysis could not be employed, only the percentages are shown in the tables. Statistical significance was based on  $p < 0.05$ . Data were analyzed by the Graph Pad Prism 5 project (Kyushu University, Fukuoka, Japan).

## 3. Results

A total of 87 questionnaires (male: 39, female: 48) were returned. The response rate was 98.9% (87/88). The home locations of the dental students were classified as first-tier city and other city, town, or country.

Responses to the questions regarding the motivation toward career choice are shown in Table 2. The three most important reasons for choosing dentistry for most of the students were “help and value,” “money/social,” and “flexibility.”

If there was a chance to reselect their career (Item 3), only 52.9% of responding students would still choose an 8-year SMD program. Nearly one-fifth of students would not choose an 8-year SMD program again. More than one-fourth of students were not sure. Among all students, the most complained problems were long school time and no chance to quit and reselect (70.6%). The next common complaint was disappointment with the future social position and income of dentists (64.7%).

In Item 4, we categorized the strength of 8-year SMD program students compared with other normal doctor-degree dentists. The results showed that “professional” (55.2%), “young” (48.3%), and “prominent” (39.1%) were the main advantages of them. For weaknesses (Item 4a), the majority of the students were worried about their “lack of experience” (65.5%) and “poor research ability” (65.5%).

Responses to the questions regarding the future plan are shown in Table 3. Generally, about half of students wanted to become general dentists (46%) and half of students wanted to become specialist dentists (47.1%). Only a few students wanted to be occupied in dental education (5.7%) and research work (2.3%; Item 5). Furthermore, prosthodontics (20.7%), oral surgery (14.9%), and orthodontics (13.8%) were the three most popular specializations (Item 5a). Only 14.9% of students had plans to work abroad, and 42.5% wanted to stay and work in China. For choice of work unit (Item 7), the top-rated unit was “university hospital” (71.3%), followed by running one's own dental office (21.8%). Only one student wanted to work in each of a scientific institute, community hospital, and others' dental office. For Item 8, 85.1% students wanted to work in first-tier cities, while only 14.9% of students wanted to work in second/third-tier cities. No students wanted to work in small cities, towns, or villages. For Item 9, nearly 5% of students wanted to give up their clinical work after their graduation.

## 4. Discussion

We used data from a self-administered questionnaire of 87 8-year SMD program students from the School of

Table 1  
Questionnaire for Chinese 8-year stomatology medical doctor (SMD) program students.

Basic information

Gender: Male Female

Home location: First-tier city Other city, town or country

Did you choose dentistry of your own will?

Yes No Uncertain

What is the reason that you want to become a dentist?

As far as you know about your future working conditions and payments, if you have a chance to reselect your career, would you choose eight-year graduate dental program?

Yes No Uncertain

If you will not choose eight-year graduate dental program, what is the reason?

Compared with other normal doctor degree dentist, what are your strengths and weaknesses?

What kind of dentist would you like to be in the future?

General dentist Specialist Researcher Educator Undecided

If you want to be a specialist dentist, then what career you prefer?

After graduation, if possible, would you like to work in a foreign country?

Yes No Undecided

What kind of work unit you prefer?

What kind of cities do you prefer to work in?

First-tier cities as Peking, Shanghai and Guangzhou et al.

Second or third-tier cities as Shenyang, Nanjing and Wenzhou et al.

Normal cities, towns and villages

Would you like to return home and work in your hometown?(For outsider only)

Yes No Uncertain

After graduation, do you have any plans not to be a clinical dentist?

Yes No Undecided

If you do not want to do clinical dental work, what are the main reasons?

After your graduation, in your opinion, your annual income should be at least \$

Stomatology, Peking University to identify and analyze the perspectives of Chinese 8-year SMD program students toward their career choice and future plan.

For 26.4% of students, dentistry was not their own choice. This result was similar to that of our previous study on

students' motivation to choose dentistry in China and Japan.<sup>10</sup> However, it was different from other European countries. This phenomenon may be due to two reasons. First and most important, the admission system of Chinese colleges shows inadequate attention to the aspirations and choices of students.

Table 2  
Analysis of career choice of Chinese 8-year stomatology medical doctor (SMD) program students.

Questionnaire item no.	MSF, <i>n</i> = 11	MSO, <i>n</i> = 28	FSF, <i>n</i> = 13	FSO, <i>n</i> = 35	Total, <i>n</i> = 87
1. Did you choose dentistry of your own free will?					
Yes	9 (81.8%)	20 (71.4%)	12 (92.3%)	21 (60.0%)	62 (71.3%)
No	2 (18.2%)	6 (21.4%)	1 (7.7%)	14 (40.0%)	23 (26.4%)
Not sure	0	2 (7.1%)	0	0	(2.3%)
2. What is the reason why you want to become a dentist?					
Help others, health-care related jobs, achieve self-worth, interest	5 (45.5%)	4 (14.3%)	7 (53.8%)	14 (40.0%)	30 (34.5%)
Financial and job security, status, prestige, qualified occupation	5 (45.5%)	10 (35.7%)	4 (30.8%)	9 (25.7%)	28 (32.2%)
Flexibility in scheduling work, free working environment	1 (9.1%)	7 (25.0%)	3 (23.1%)	7 (20.0%)	18 (20.7%)
Admitted by a famous college	1 (9.1%)	7 (25.0%)	1 (7.7%)	4 (11.4%)	13 (14.9%)
Parents' wishes	1 (9.1%)	4 (14.3%)	1 (7.7%)	6 (17.1%)	12 (13.8%)
Inherited family dental clinic	0	1 (3.6%)	0	1 (2.9%)	2 (2.3%)
Not sure or no reasons specified	0	1 (3.6%)	0	2 (5.7%)	(3.4%)
3. If you had a chance to reselect your career, would you choose the 8-year SMD program?					
Yes	5 (45.5%)	16 (57.1%)	7 (53.8%)	18 (51.4%)	46 (52.9%)
No	3 (27.3%)	3 (10.7%)	4 (30.8%)	7 (20.0%)	17 (19.5%)
Not sure	3 (27.3%)	9 (32.1%)	2 (15.4%)	10 (28.6%)	24 (27.6%)
3a. If you would not choose 8-year graduate dental program, what is the reason why? <i>n</i> = 17					
To get a better profession and work, with the same college entrance examination scores	2	2	1	3	8 (47.1%)
Dentistry not own choice	0	1	0	1	2 (11.8%)
Unsuited for dental work	0	1	0	1	2 (11.8%)
Disappointed with future social position and income of a dentist	3	1	3	4	11 (64.7%)
Lengthy schooling time and no chance to quit and reselect	3	2	2	5	12 (70.6%)
Heavy learning task and high pressure	1	1	3	4	9 (52.9%)
4. Compared with other regular Doctor of Dentistry degrees, what are your strengths?					
Much younger when they got the doctorate degree	9 (81.8%)	15 (53.6%)	4 (30.8%)	14 (40.0%)	42 (48.3%)
Rich clinical experience	2 (18.2%)	5 (17.9%)	0	1 (2.9%)	8 (9.2%)
Systematic learning and professional training	4 (36.4%)	16 (57.1%)	7 (53.8%)	21 (60.0%)	48 (55.2%)
Solid theoretical basis	3 (27.3%)	10 (35.7%)	7 (53.8%)	7 (20.0%)	27 (31.0%)
Excellent scientific literacy	0	2 (7.1%)	2 (15.4%)	4 (11.4%)	8 (9.2%)
Excellent comprehensive abilities	5 (45.5%)	6 (21.4%)	3 (23.1%)	16 (45.7%)	30 (34.5%)
Graduate from a famous college	4 (36.4%)	11 (39.3%)	4 (30.8%)	15 (42.9%)	34 (39.1%)
Huge potential for personal development	6 (54.5%)	5 (17.9%)	3 (23.1%)	10 (28.6%)	24 (27.6%)
4a. What are your weaknesses?					
Lack of clinical experience	9 (81.8%)	13 (46.4%)	9 (69.2%)	26 (74.3%)	57 (65.5%)
Poor scientific literacy	7 (63.6%)	19 (67.9%)	7 (53.8%)	24 (68.6%)	57 (65.5%)
Theoretical basis not good	3 (27.3%)	10 (35.7%)	0	5 (14.3%)	18 (20.7%)
Little space for personal development	0	2 (7.1%)	0	0	2 (2.3%)
Poor comprehensive abilities	0	2 (7.1%)	0	1 (2.9%)	3 (3.4%)

Pearson Chi-Square test (except item 3a, which could not be analyzed).

For items 1–4, there was no significant difference between the four kinds of students, different sexes, and different home locations.

All Chinese dental universities recruit students mainly based on the scores of the National Matriculation Test. No interviews are conducted to choose students who have a desire and positive motivation to become dentists for admission to dental universities. By contrast, high-school graduates, who are about 18 years old, may not know what a dentist really is. Some of the rural students may even never have seen a dentist. However, for European countries such as Sweden,<sup>11</sup> dental colleges recruit college graduates who are good enough and have a strong desire to become dentists. In the past 2 years, the Chinese government has noticed this problem and begun increasing the number of times the National Matriculation Test is conducted, to provide more chances to and encourage universities to recruit students autonomously.<sup>12</sup> The second reason is the culture of Asian countries.

Benjakul and Cheunarrom<sup>13</sup> and Mariño et al<sup>14</sup> found that Asian students were more affected by their families. In our study, about 13.8% of students chose dentistry as their major, following their parents' wishes. High school graduates are still treated as kids in most Asian countries and their parents make decisions on behalf of students, including choosing their colleges and majors. Our study also showed that 17.1% of female students from other relatively undeveloped cities were guided by parents in choosing their career, but for students from first-tier cities, it was more likely that they chose by themselves.

The most frequent (34.5%) reason for choosing dentistry as an occupation was “want to help others in health-care related jobs, and achieve self-worth and interest.” This result corresponded with those of the past studies in Sweden, the USA, and Denmark.<sup>8,15–17</sup> However, in the comparison between

Table 3  
Analysis of future plans of Chinese 8-year stomatology medical doctor (SMD) program students.

Questionnaire item no.	MSF, <i>n</i> = 11	MSO, <i>n</i> = 28	FSF, <i>n</i> = 13	FSO, <i>n</i> = 35	Total, <i>n</i> = 87
5. What kind of dentist would you like to be in the future?					
General dentist	3 (27.3%)	17 (60.7%)	6 (46.2%)	14 (40.0%)	40 (46.0%)
Specialist	8 (72.7%)	11 (39.3%)	7 (53.8%)	15 (42.9%)	41 (47.1%)
Researcher	0	(3.6%)	0	4 (11.4%)	5 (5.7%)
Educator	0	1 (3.6%)	1 (7.7%)	0	2 (2.3%)
Undecided	0	1 (3.6%)	0	4 (11.4%)	5 (5.7%)
5a. If you want to be a specialist dentist, then what career would you prefer?					
Prosthodontist	3 (27.3%)	7 (25.0%)	2 (15.4%)	6 (17.1%)	18 (20.7%)
Oral surgeon	3 (27.3%)	3 (10.7%)	0	7 (20.0%)	13 (14.9%)
Orthodontist	2 (18.2%)	3 (10.7%)	2 (15.4%)	5 (14.3%)	12 (13.8%)
Oral implantology	1 (9.1%)	6 (21.4%)	1 (7.7%)	3 (8.6%)	11 (12.6%)
Endodontist	1 (9.1%)	1 (3.6%)	3 (23.1%)	4 (11.4%)	9 (10.3%)
Pediadontist	0	3 (10.7%)	2 (15.4%)	4 (11.4%)	9 (10.3%)
Periodontist	1 (9.1%)	1 (3.6%)	1 (7.7%)	4 (11.4%)	7 (8.0%)
Preventive dentistry	0	2 (7.1%)	0	1 (2.9%)	3 (3.4%)
Undecided	0	2 (7.1%)	2 (15.4%)	1 (2.9%)	5 (5.7%)
6. After graduation, if possible, would you like to work in a foreign country?					
Yes	1 (9.1%)	6 (21.4%)	0	6 (17.1%)	13 (14.9%)
No	3 (27.3%)	14 (50.0%)	6 (46.2%)	14 (40.0%)	37 (42.5%)
Not sure	7 (63.6%)	8 (28.6%)	7 (53.8%)	15 (42.9%)	37 (42.5%)
7. What kind of work unit would you prefer?					
University hospital	7 (63.6%)	18 (64.3%)	10 (76.9%)	27 (85.7%)	62 (71.3%)
Run clinic office	4 (36.4%)	8 (28.6%)	2 (15.4%)	5 (14.3%)	19 (21.8%)
Scientific institute	0	0	0	1 (2.9%)	1 (1.1%)
Community hospital	0	0	0	1 (2.9%)	1 (1.1%)
Work in dental clinic	0	1 (3.6%)	0	0	1 (1.1%)
Not sure	0	1 (3.6%)	1 (7.7%)	1 (2.9%)	3 (3.4%)
8. What kind of cities would you prefer to work in?*					
First-tier cities	11 (100%)	20 (71.4%)	13 (100%)	30 (85.7%)	74 (85.4%)
Second/third-tier cities	0	8 (28.6%)	0	5 (14.3%)	13 (14.9%)
8a. Would you like to return home and work in your hometown? (For outsider only)*					
Yes	2 (40.0%)	7 (25.0%)	3 (75.0%)	6 (17.1%)	18 (25.0%)
No	1 (20.0%)	12 (42.9%)	0	14 (40.0%)	27 (37.5%)
Not sure	2 (40.0%)	9 (32.1%)	1 (25.0)	15 (42.9%)	27 (37.5%)
9. After graduation, do you have any plans not to be a clinical dentist?					
Yes	9 (81.8%)	21 (75.0%)	8 (61.5%)	25 (71.4%)	63 (72.4%)
No	1 (9.1%)	1 (3.6%)	1 (7.7%)	1 (2.9%)	4 (4.6%)
Undecided	1 (9.1%)	6 (21.4%)	4 (30.8%)	9 (25.7%)	20 (23.0%)
9a. If you do not want to do clinical dental work, what are the main reasons why?					
Laborious	0	0	1	0	3 (30.0%)
Money	1	0	0	3	4 (40.0%)
Medical care system	1	1	1	0	3 (30.0%)
10. After your graduation, in your opinion, your annual income should be at least: \$/Year <sup>a</sup>					
Average	36,800	32,400	30,450	28,500	31,100

Pearson Chi-Square test (except item 9a, which could not be analyzed).

For items 5–7, 8a, and 9, there was no significant difference between the four kinds of students, different sexes, and different home locations.

\**p* = 0.040, between the four kinds of students.

\*\**p* = 0.234, nonsignificant, between students of different sexes.

\*\*\**p* = 0.016, between students from different home locations.

FSF = female students of first-tier city; FSO = female students of other city, town or village; MSF = male students of first-tier city; MSO = male students of other city, town or village.

<sup>a</sup> Mann–Whitney *U* test, for item 10, there was no significant difference.

different sexes and home locations, the results were somewhat different. Male students (38.5%) and students from other cities (30.2%) valued “financial and job security aspects” more. This is similar to the trend in some European countries, including the UK.<sup>5,18</sup> The other reasons reflected the characteristics of Chinese culture. For the reason “admitted to a famous college,” 14.9% of students choose dentistry only to get admitted to Peking University. The admission score for dentistry in this university is a little lower than that for other subjects, which is

different from most other countries, where the admission standard of dentistry is much higher. Only two students chose dentistry in order to inherit family dental offices; Chinese dentistry is still in its early stage and there are only a few successive family dental offices.

We established hypotheses to reselect the career to see whether the students regretted their choice. Although only 52.9% of students would still choose an 8-year graduate dental program, nearly one-fifth of students would not. Despite the total

programs having been reduced by 2–3 years for a doctor degree, 8 years of continuous study makes the students feel no end and hope. The second important reason was “disappointed with the future social position and income of dentist.” In most countries, doctors and dentists are given high social recognition, but Chinese doctors and dentists are distrusted, injured, and sometimes even killed by patients.<sup>19,20</sup> These problematic doctor–patient relationships and the medical environment make the occupations of doctors and dentists high-risk ones. By contrast, the small payment is not equal to their expected pay and reward. All these make the students disappointed with their future career.

For the strengths of 8-year SMD program students, “professional” (55.2%), “young” (48.3%), and “prominent” (39.1%) were the main advantages. The top-level students of China enroll into this elite dental education program, and Peking University is the most famous university of China. All the teachers require special training to deliver lessons. The hand-on clinical trainings make sure that the graduates are professional. Owing to the reduction of school time, students may be concerned about a lack of clinical experience and be inadequate in research work. The desire for increasing clinical training is similar to the results of our previous study.<sup>21,22</sup>

Regarding future career options, 46% of students planned to work as general dentists and 47.1% wanted to specialize. The students of China were more likely to become specialists compared with the results of Karibe et al's<sup>5</sup> research on Canada and Japan. For most European countries, an increasing number of dental graduates have to immediately enter private practice to pay back their debts and high tuition fees.<sup>7</sup> In Japan, many graduates have to take over their parents' dental office, which may affect their future career options. Although more Chinese students wanted to specialize, they can only work as general dentists unless working in college hospitals or specialized dental hospitals. Research work is highly valued by the Chinese government, but still only a few SMD students would like to be researchers. The same thing happens in the area of dental education. For the education offered in the 8-year SMD program, colleges need to pay more attention to develop research interests and abilities of students and cultivate more teachers to guarantee high quality of teaching. The order of preference for particular specializations was the same as in our previous study comparing China and Japan. The difference was that most of the 8-year SMD students had already decided that their studies would be specialized.

Only 14.9% of students had plans to work abroad, while 42.5% wanted to stay and work in China. Compared to the general proportion, fewer first-tier-city students wanted to go abroad (4.2%). For most Chinese dentists, it is difficult to obtain overseas dental licenses. Most graduates who are working abroad can work only as researchers in overseas laboratories and must abandon clinical work, implying that all the clinical training is useless. Thus, staying in China, especially for students from first-tier cities, is a good choice. Working in a “university hospital” was thought to be the best choice. This kind of work was thought to be stable and safe. Most Chinese people are used to work for the country or the collective. This traditional ideology has remained unchanged for many years.

We are happy to see that more than one-fifth of students wanted to run their own dental offices. The quality level of dental clinics of China may be raised significantly in the future. Inviting successful dental office owners to give lectures to the 8-year SMD students may be helpful to them. First-tier cities were the top choices for most of the students; only a few students wanted to work in second/third-tier cities. Most students from undeveloped cities will not choose to go back to their hometowns. Therefore, concentration of many highly educated dentists in first-tier cities may lead to dentist oversaturation in these developed areas and deficiency in poor areas. This condition is not good for balanced development of dentistry in China. The government and university should encourage some good graduates to work in undeveloped areas to raise the level of dentistry.

Most students (72.4%) wanted to work as clinical dentists. Reasons for not becoming clinical dentists were attributed to poor payment, work overload, and poor medical environment. Most doctors and dentists in China work hard, but are paid less. Most of the dental treatments are not covered by Social Security and Medicare, and the dentists always need to face patients' queries and be thought as merely businessmen frequently. The annual income that the students hoped to gain was only \$31,100/y, which was very little compared with other developed countries. Still, earning a salary like that would not be easy for most graduates.

In conclusion, the 8-year SMD program is a great reform of Chinese dental education. The perspectives of dental students toward their career choice and future plan reflected the reform effect of Chinese dental education. Most 8-year SMD students would like to work as clinical dentists in university hospitals of first-tier cities. About half of the students want to be general dentists and others want to do specializations. The results presented may contribute to our understanding of dental students of the 8-year SMD program, and the information will also be useful for improving dental education system.

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