2018-05-15

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Recommended Citation
Wang, Shuang; Fu, Xiaojie; Liu, Ziyan; Wang, Bing; Tang, Youcai; Feng, Huifen; and Wang, Jian (2018) "General Practitioner Education Reform in China: Most Undergraduate Medical Students do not Choose General Practitioner as a Career Under the 5þ3 Model," Health Professions Education: Vol. 4: Iss. 2, Article 8.
DOI: 10.1016/j.hpe.2017.05.001
Available at: https://hpe.researchcommons.org/journal/vol4/iss2/8

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This original research report is available in Health Professions Education: https://hpe.researchcommons.org/journal/vol4/iss2/8
General Practitioner Education Reform in China: Most Undergraduate Medical Students do not Choose General Practitioner as a Career Under the 5+3 Model

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Received 14 December 2016; received in revised form 11 April 2017; accepted 10 May 2017
Available online 17 May 2017

Abstract

Purpose: In order to train more high-level general practitioners (GPs) to work in primary care institutions, China launched the 5+3 model in 2015 as a way to educate GPs nationwide. In this study, we investigated the awareness of the 5+3 model, career choices after graduation, and influences on GP career choice of undergraduate medical students from Zhengzhou University.

Methods: The study population consisted of 288 undergraduate medical students from Zhengzhou University. We explored the students' awareness of the 5+3 model, career choices after graduation, influences on general practitioner career choice and mental status by using a self-report questionnaire and the Chinese version of the 21-item Depression Anxiety Stress Scale.

Results: We found 34.2% of students did not understand the new policy. Only 23.2% of students would choose to work as a GP after graduation, and those tended to be female, to have a monthly family income less than 4000 ¥, or to be from rural areas. Only 10% of undergraduate medical students expressed a preference to work at primary care institutions. The participants showed higher anxiety and stress scores than did a previously published group of Chinese college students, and those who chose to pursue higher education had more anxiety and stress than those who decided to become general practitioners.

Discussion: More efforts should be made to popularize the 5+3 model and mental intervention among medical students. More efforts should be tried to increase the income/welfare benefits and strengthen the infrastructure of primary care institutions to attract more medical students.

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Keywords: 5+3 model; General practitioner; Health care reform; Hierarchical medical system

1. Introduction

China is working to improve its health care system, and one of its ambitious goals is to provide equitable universal health coverage for every Chinese citizen by ...
2020. However, fragmentation in the hierarchical medical system is one of the biggest obstacles to achieving this goal: patients bypass the community health centers and local hospitals to go to the tertiary hospitals for a higher level of medical treatment, even for diseases like influenza or diarrhea. This practice has caused overcrowding in top hospitals and a huge loss of medical resources in China.

The promotion of a hierarchical medical system in China faces many challenges. First, according to the China Health and Family Planning Statistical Yearbook of 2015, only 23.8% of doctors in the community health centers have a bachelor’s degree or higher education, which has led to patient mistrust. Second, compared with primary health care institutions like community health centers and secondary hospitals, the tertiary hospitals offer doctors higher income, greater social respect, and better career prospects and advancements; thus they attract the most skilled and highly educated doctors, hindering the outflow of talent to the community health centers. Last, but most important, China lacks general practitioners, which are the foundation for establishing a primary care system. China has only 60,000 licensed general practitioners, which account for just 3.5% of all doctors.

To overhaul the unequal distribution of health professionals and promote a hierarchical medical system in China, the National Health and Family Planning Commission (NHFPC) of China has launched an overarching strategy to deepen health care reform, including consolidating the rural-urban social health insurance schemes, pushing forward public hospital reforms, increasing government subsidies for primary health care infrastructure, and reforming general practitioner education. General practitioner education reform is the key method for enhancing the primary care system.

General practitioner education reform is a key component of medical education reform. The main model of medical education in China used to be “4+1”. In that system, medical students earn their bachelor’s degree of medicine after completing 4 years of preclinical and clinical courses and a 1-year internship in hospital. Then, they can receive a doctor’s license after passing the National Medical Licensing Examination or pursuing higher education such as a master’s degree or PhD. Ironically, it is difficult for doctors with a bachelor’s degree to find an “ideal” job in China. Because of the huge inequality among the tertiary hospitals and primary care institutions, medical students must pursue higher education to be qualified to work in the top hospitals. The 1-year medical internship is not sufficient to learn clinical skills, and many students spend their last year preparing for the examination of higher education.

To increase the level of standardized medical education and train more high-level general practitioners to work in the rural areas and primary care institutions, the NHFPC has launched the new “5+3” model of medical education. Medical students who have received a bachelor’s degree now have two choices: to become a general practitioner after finishing 3 years’ standardized clinical training, or to pursue a master’s degree of medicine or higher education, during which time they can finish 3 years' clinical training. They receive the degree after completing their medical research. China has decided to train over 10,000 highly skilled general practitioners for primary health care, and 5+3 is going to be the main model to achieve this goal.

Henan is the most populous province in China (over 94 million people, 2014). However, Henan is facing increasing medical pressures because of relatively weak medical schools and medical resources. Zhengzhou University (ZZU) is the best university in Henan and the only one that belongs to “211” universities, which means the top 112 universities in China. The medical school of ZZU is one of the most famous medical schools in China and is the main source of skilled medical students in Henan. Last year, Henan province started the 5+3 medical education model to train general practitioners, and all medical students would be affected by this policy. In this questionnaire survey, we investigated the fourth- and fifth-year medical students’ understanding of this new policy and how the 5+3 model affects their mental status and their preference for pursuing a general practitioner career or higher education.

2. Methods

2.1. Participants and ethics review

We used a self-report questionnaire and the Chinese version of the 21-item Depression Anxiety Stress Scale to explore the students’ awareness of the 5+3 model, career choices after graduation, influences on general practitioner career choice and current mental status. One hundred forty-four fourth-year medical students and 144 fifth-year medical students from the ZZU medical school were chosen randomly to participate in this research. All students were informed in advance of the purpose of this survey, that participation was voluntary, and that data would be anonymized and treated confidentially. All protocols in this study were approved by the Ethics Committee of ZZU.
2.2. Questionnaire

A self-report questionnaire was administered in December 2015. The questionnaire consisted of four parts: (1) Demographics, including age, sex, monthly household income, and hometown location; (2) Understanding of the 5 + 3 model, including “do you understand the 5 + 3 model,” “what is the meaning of the ‘3’ in the 5 + 3 model,” and “do you think 5 + 3 is necessary in China;” (3) Career choice after graduation, including General Practitioner (after finishing 3-year clinical training), Master Professional Degree, Master Academic Degree, Higher Degree Abroad, Medical-Related Company, and Other. (4) Students who wanted to work in a hospital were also asked to choose their preference of institution, including Primary Care Institution, Secondary Hospital, and Tertiary Hospital.

We also assessed the mental status of the participants by using the Chinese version of the 21-item Depression Anxiety Stress Scale (DASS21). The Chinese version of DASS21 was developed by the Chinese Academy of Sciences and has been proven to be reliable, valid, and suitable for use in Chinese college students. Participants respond to the questions on a 4-point scale: 0, “does not apply to me at all;” 1, “applies to me to some degree;” 2, “applies to me to a considerable degree;” 3, “applies to me very much.”

2.3. Statistical analysis

All data were collected and transferred to EpiData version 3.1 using checklist and double data entry verification and exported to SPSS version 15.0. We used descriptive statistics to analyze the data collected for demographics, understanding of the 5 + 3 model, career choice, hospital preference, and mental status of all participants. We used chi square tests to examine the potential demographic factors that may influence the students’ career choice after graduation. We used Z tests to examine the differences in mental status between the participants of this study and those of a published sample of Chinese college students. We used t tests to determine the mental status differences between participants who chose to work as a general practitioner and those who chose to pursue higher education. The significance level was set at $P < 0.05$.

3. Results

3.1. Response rate

The response rate of fourth-year medical students was 85.4% (123 out of 144 potential respondents), and that of fifth-year medical students was 79.1% (114 of 144). The overall response was 82.3%.

3.2. Demographic factors

Of the 237 respondents, 59.9% were female (4th year, 60.2%; 5th year, 59.6%). The average age of students was 23.3 years (4th year, mean age, 22.6 years; SD, 1.1; 5th year, mean age, 23.9 years; SD, 1.1). Most participants had a monthly family income under 4000 ¥ (< 4000, 64.1%; 4000–8000, 27%; > 8000, 8.9%) and lived in rural areas (urban, 41.4%; rural, 58.6%).

3.3. Understanding of the 5 + 3 model

Only 1.3% of students felt that they understood the 5 + 3 model (4th year, 1.62%; 5th year, 0.88%), whereas 34.2% stated that they did not understand the 5 + 3 model (4th year, 52%; 5th year, 28.1%). 55.2% of the students chose the wrong answer for the meaning of “3” in the 5 + 3 model. However, 80.1% thought it was necessary to establish the new model to train general practitioners and medical staff.

3.4. Career choice after graduation

Only 23.2% of undergraduates at ZZU said that they would choose to work as a general practitioner after graduation. Most students (69.6%) decided to pursue higher education. Of the latter, 53.6% were going to study for a master’s level professional degree, 13.5% for a master’s academic degree, and 2.5% for a higher degree abroad. The majority of students (74%) said they would like to work in tertiary hospitals; 10% preferred primary care institutions.

### Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>General practitioner</th>
<th>Other</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender, n (%)</td>
<td>X² = 7.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>53 (72.6)</td>
<td>89 (54.3)</td>
<td>d.f. = 1</td>
</tr>
<tr>
<td>Male</td>
<td>20 (27.4)</td>
<td>75 (45.7)</td>
<td>p = 0.08</td>
</tr>
<tr>
<td>Monthly family income (¥)</td>
<td>X² = 12.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 4000</td>
<td>59 (80.8)</td>
<td>93 (56.7)</td>
<td>d.f. = 2</td>
</tr>
<tr>
<td>4000–8000</td>
<td>11 (15.1)</td>
<td>53 (32.3)</td>
<td>p = 0.02</td>
</tr>
<tr>
<td>&gt; 8000</td>
<td>3 (4.1)</td>
<td>18 (11)</td>
<td></td>
</tr>
<tr>
<td>Hometown location</td>
<td>X² = 16.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>16 (21.9)</td>
<td>82 (50)</td>
<td>d.f. = 1</td>
</tr>
<tr>
<td>Rural</td>
<td>57 (78.1)</td>
<td>82 (50)</td>
<td>p &lt; 0.01</td>
</tr>
</tbody>
</table>

We used a chi-square test to examine the potential demographic factors that influence the students’ career choices after graduation. We found that female students (X² = 7.07, P = 0.08), students with less than 4000 ¥ monthly family income (X² = 12.83, P = 0.02), and those from rural areas (X² = 16.43, P < 0.01) were more likely to select general practitioner as a career after graduation (Table 1).

3.5. Mental status of medical undergraduate students

Compared with the published scores of 1779 Chinese college students,10 medical undergraduates of ZZU had higher anxiety scores (ZZU: mean score, 8.31; SD, 5.32; Chinese college students: mean score, 5.42; SD, 4.96, P < 0.05) and stress scores (ZZU: mean score, 9.97; SD, 6.02; Chinese college students: mean score, 6.12; SD, 5.54, P < 0.05) in the DASS21 test. Students who chose to work as general practitioners showed lower anxiety scores (mean score, 8.2; SD, 4.8) and stress scores (mean score, 9.7; SD, 6.1) than did students who chose another specialty (anxiety: mean score, 9.8; SD, 5.1; stress: mean score, 12; SD, 6. P < 0.05).

4. Discussion

In this study, we investigated the undergraduate medical students’ awareness of the 5+3 model, their career choices after graduation, and the model’s influence on their preference for a general practitioner career and on mental status.

Before the establishment of the 5+3 model, medical students had to complete standardized residency training before becoming a clinical doctor. However, the content, duration, and quality of the “standardized” training were different among institutions and provinces.11 After years of piloting the 5+3 model in developed cities such as Shanghai,12 this new training policy was implemented to all areas of China in 2015. Our research showed that 34.2% medical students at ZZU did not understand the 5+3 model, and less than half the students knew the correct meaning of the “3”. These findings indicate that the NHFPC and medical schools should make greater effort to publicize the new policy among medical students. Medical students should pay more attention to health care reform in China, as it will seriously impact their career. Compared with the former 4+1 medical education model, most medical students will need to spend 3 additional years to be qualified as a licensed doctor. However, according to our research, most undergraduate medical students supported the 5+3 model, indicating that the national standardization of clinical training is desirable in China.

Our research showed that only 23.2% of ZZU undergraduates were choosing to work as a general practitioner after graduation, and only 10% would consider working in primary care institutions. According to the Guidance on the Establishment of the General Practitioner System released by the State Council of China,7 all general practitioners should be trained by the 5+3 model. However, contradictions exist between general practitioner education and master’s degree of clinical medicine education. Medical students who are candidates for a master’s professional degree can complete the standardized residency training, earn the master’s degree, and receive a doctor’s license in 3 years. But medical students who decide to become a general practitioner also have to complete 3 years of training. Consequently, most undergraduate medical students decide to pursue higher education. Then, once a student earns a master’s degree, it is more difficult for him/her to choose to be a general practitioner in a primary care institution. In fact, studies have shown that only a small percentage of medical students would like to work in primary care institutions,13 regardless of whether they are from a top university (six famous medical schools, 1333 participants, 3.5%)14 or a regular medical school (5.77%). The reasons are comprehensive. Although the NHFPC of China has always been committed to strengthening the primary health care infrastructure, the gap in medical resources between primary care institutions and tertiary hospitals is still quite large. Researchers have reported that health staff from community health centers or primary care institutions of rural areas has substantially lower income and social security than those who work in tertiary hospitals.15 Thus, more efforts should be made to narrow the gaps in income and social security between the primary care institutions and higher level hospitals.

Our study indicated that female medical students, students from families that earned less than 4000 ¥ monthly, and those from rural areas were more likely to work as a general practitioner after graduation. Hou et al.13 also indicated that medical students from rural areas preferred to work in rural areas or as a general practitioner. To attract more high-level medical students to work in primary care centers of rural areas, the NHFPC has decided to provide tuition-free medical education for students from rural areas. Those government-contracted students enjoy special benefits in the college entrance examination, receive scholarships, and do not pay tuition, but they must work in rural community health centers as general practitioners.
for 6 years after graduation. Our findings and those of others support this policy.

We used the Chinese version of the 21-item Depression Anxiety Stress Scale (DASS21) to analyze the mental status of participants in this study. DASS21 is simplified from DASS and has been a widely used instrument for assessing mental health status of college students. Our study showed that medical undergraduates of ZZU felt more anxiety and stress than a historical population of Chinese college students, and medical students who had decided to pursue higher education showed higher anxiety and stress scores than those who were choosing to work as general practitioners after graduation. Medical students worldwide are expected to feel more anxiety and stress because studying medicine requires extensive study and a large investment in time and money. However, young doctors may undertake more in China. As mentioned above, under the 5þ3 model, it would take over 3 more years for medical students than for other non-medical college students to start to work. The relationship between patients and doctors is also an important factor. According to one report,16 over a third of doctors have experienced conflict and thousands have been injured during work. The overloaded work in the future may also lead to anxiety and stress. China has made efforts to change this situation, including increasing the scholarship of medical students, providing a living-expense subsidy for young doctors who attend the residential standardized training, and making comprehensive efforts to prevent the conflict between doctors and patients. But more should be done to create a decent study/work environment for medical students and doctors.

China has been pursuing health care reform for many years. Building a healthy hierarchical medical system is one of the key steps toward achieving this goal. The 5þ3 model is a promising reform to standardize the medical education and train high-level general practitioners needed for a hierarchical medical system. In order to attract more students to choose a career as a general practitioner, more efforts should be made to popularize the 5þ3 model among medical students. More efforts should be tried to increase the income/welfare benefits and strengthen the infrastructure of primary care institutions. Mental health intervention should also be accessible to medical students.

Disclosure

Ethical approval

This work is approved by the Ethics Committee of The Fifth Affiliated Hospital of Zhengzhou University (5 August 2015, 20150408051).

Funding

This work was supported by the Education Reform Research Funding of Zhengzhou University (Grant number 2015048), Key Project of Medical Science and Technology of Henan Province (Grant number 201702114) and Medical Research Funding of Henan Province (Grant number Wjlx2016066).

Other disclosure

None.

Acknowledgements

We thank Claire Levine (Department of Anesthesiology/Critical Care Medicine, Johns Hopkins University, School of Medicine, Baltimore, MD, USA) for assistance with this manuscript.

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