

# The Impact of Urbanization on Medical Students' Employment Intentions towards Primary Health-care Institutions\*

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**Abstract:** Objective explore into the employment intentions towards primary healthcare institutions among medical students, analyze the impact of urbanization on it, and to provide reference for occupational guidance in medical colleges, as well as talent introduction, with the lack of qualified doctors in rural places of China. Methods 150 medical undergraduates were surveyed randomly by a self-designed questionnaire. The respondents are composed of freshmen, sophomores and juniors whose major is clinical medicine in Xi'an Medical University. Additionally, information of graduates' employment were available via Student Affairs Office. They graduated in the years of 2013, 2014, and 2015 in School of Clinical Medicine. Results a) Among 150 questionnaires distributed, 146 were reclaimed (response rate 97.3%). b) 93.8% of medical students would prefer to work in medical institutions in city or county. c) More than 70% medical students' employment intentions to grass-roots areas were reluctant and unwilling, while 92.4% of medical undergraduates prefer to take the Postgraduate Entrance Exam. d) More graduates choose to take the Postgraduate Entrance Exam, with the percentage of 51.4%, 52.7% and 65.0% in the years of 2013, 2014 and 2015 respectively. e) The impact of urbanization was positively correlated to medical student grassroots employment intentions. Conclusion Positive policy making, good publicity, increase of investment by government, strengthened guidance in employment and improvement of students' service awareness are the significant measures to encourage medical graduates serve in primary healthcare institutions.

**Key words:** urbanization, medical students, primary healthcare institutions, employment intentions

## 1. Introduction

Since reform and opening-up, the process of urbanization in China has been developed rapidly. Nobel prize-winning economist Joseph E. Stiglitz had put China's urbanization is known as "one of the most crucial things which influence human society process in the 21st century". Our country's urbanization level exceeded 50% for the first time in 2011, and urban population first exceeded rural population. These meant that the process of urbanization will enter a more rapid development stage. Population urbanization rate increased to 17.9% in

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1978 to 51.3% in 2011, average annual growth of about 1%, and especially since the beginning of the new century, the average annual growth rate was more than 1.5% (Hu C. X., 2013). It is projected that some 350 million people will be added to the country's urban population by 2025, and 1 billion people will live in Chinese cities by 2030 (Zhu et al., 2011).

Undoubtedly, urbanization has brought us many benefits in many ways, for example, it provides the population with more access to modern civilization. However, it is also clear that urbanization has brought many negative impacts on our life. According to the most recent national statistics released in 2014, the population of the rural-urban migrants in China increased from 140 in 2008 to 166 in 2013 (Li X. H., Song J. C., Lin T., Dixon J., Zhang G. Q., & Ye H., 2016). Characterized by large-scale rural-urban migration, many rural places where large numbers of residents, especially children and the old, living under poor living conditions with low access to health care. Unequal distribution of health workers between urban and rural areas has drawn public attention in virtually all countries, such as Senegal, Canada, China and so on. Lack of access to health workers in rural regions often leads to relatively high costs for rural residents seeking care at urban health facilities (Buchan J., Couper I. D. et al., 2013).

When it comes to China, the Chinese government started a rural-oriented tuition-waived medical education (RTME) program in 2010, which aimed to make enroll students from rural areas to work in rural places for 6 years after their graduation. However, the number of Chinese medical school applicants has decreased greatly in recent years, even in the best medical schools, only a few applicants reach the required score line (Yang P., Huang Q., & Liu J., 2014). Moreover, with the development of urbanization, almost all graduates with a university level of education choose to work in big cities, as well as medical students. And facing the great employment pressure, many medical students prefer to take part in the Postgraduate Entrance Exam. Consequently, there is still a large shortage of doctors in rural places.

Xi'an Medical University admits about 3000 undergraduates and junior college students annually. It is one of the colleges and universities which recruit the large number of medical students in Shaanxi and even in the whole country, the employment intentions of its students are representative. Therefore, we survey medical students of it, to know their employment intentions to primary healthcare institutions, analyze the main impacts, and to provide reference for occupational guidance in medical colleges, as well as talent introduction, with the lack of qualified doctors in rural places of China.

## **2. Methods**

### **2.1 Participants**

150 medical undergraduates who were majored in clinical medicine coming from 2013, 2014 and 2015 grade of Xi'an Medical University were surveyed. With the support of Student Affairs Office, the graduates' employment in School of Clinical Medicine about 2008, 2009 and 2010 grade had been analyzed.

### **2.2 Questionnaire**

This self-designed questionnaire was selected based on the accordance of its content to the aim of the current study. The questionnaire included four parts: demographic information, graduation whereabouts and factors influencing them, employment intention to work in primary healthcare institutions and related factors. The investigation significance and requirement were given before completing the questionnaire in order to ensure the

validity. Socio-demographic questions regarding gender, grade, nationality, family economic status, place of birth and whether or not coming from one-child family were included. Participants were asked to choose their preferred area of work after graduation: city, county, rural or other, and choose factors influencing their intentions to primary healthcare institutions. They were also asked to choose more than one reason for taking the Postgraduate Entrance Exam

### 2.3 Data Analysis

Completed questionnaires were collected and data analyzed using SPSS (version 16). The one-way ANOVA was used to compare students' characteristics of preferred working area. Differences of  $p < 0.05$  were considered statistically significant.

## 3. Results

Among 150 medical students invited to participate in the survey, 146 responded, yielding a response rate of 97.3%. Out of the total of 146 medical students, 137 (93.8%) of medical students would prefer to work in medical institutions in city or county. Characteristics of participants and comparisons by preferred area of work are summarized (Table 1). A one-child family of origin ( $p = 0.002$ ,  $< 0.05$ ) and place of birth ( $p = 0.039$ ,  $< 0.05$ ) were found to be significantly related to the preference of working area. Those not from a one-child family and those born in a rural place were more likely to work in a primary healthcare institutions. There was no significant difference in intention for rural place by gender, nationality, grade, and family economic status.

**Table1 Characteristics of Participants by Preferred Area of Work after Graduation**

Characteristic	Total	Preferred area of work after graduation, N (%)				P
		City	County	Rural	Other	
		(n = 130)	(n = 7)	(n = 3)	(n = 6)	
Gender	N = 146					0.216
Male	44 (30.1)	37 (84.1)	3 (6.8)	1 (2.3)	3 (6.8)	
Female	102 (69.9)	93 (91.2)	4 (3.9)	2 (2.0)	3 (2.9)	
Nationality						0.388
The Han nationality	140 (95.2)	127 (90.7)	4 (3.6)	3 (1.4)	6 (2.9)	
Minority nationality	6 (4.8)	3 (50.0)	3 (50.0)	0	0	
One-child family						0.002
Yes	59 (40.4)	54 (91.5)	2 (3.4)	0	3 (5.1)	
No	87 (59.6)	76 (87.5)	5 (5.7)	3 (3.4)	3 (3.4)	
Grade						0.237
Freshman	53 (36.3)	46 (86.8)	2 (3.8)	1 (1.9)	4 (7.5)	
Sophomore	49 (33.6)	45 (91.8)	2 (4.1)	2 (4.1)	0	
Junior	44 (30.1)	39 (88.6)	3 (6.8)	0	2 (4.6)	
Family economic status						0.150
Poor	41 (28.1)	33 (80.5)	5 (12.2)	2 (4.9)	1 (2.4)	
Non-poor	105 (71.9)	97 (92.4)	2 (1.9)	1 (0.9)	5 (4.8)	
Place of birth						0.039
City	41 (28.1)	38 (92.7)	0	0	3 (7.3)	
County	40 (27.4)	38 (95.0)	0	0	2 (5.0)	
Rural	65 (44.5)	54 (83.1)	7 (10.8)	3 (4.6)	1 (1.5)	
Male	44 (30.1)	37 (84.1)	3 (6.8)	1 (2.3)	3 (6.8)	

Table 2 shows that factors influencing medical students contributed to their intentions to primary healthcare institutions. Hospital hierarchy, personal career development, availability of healthcare facilities, Income and Urbanization level were factors considered most important by students, accounting for 89.7%, 86.3%, 79.5%, 72.6%, and 71.2% respectively. Economic development and size of the city/town are also important factors contributing to medical students. There are no significant difference among freshman, sophomore and junior.

**Table 2 Factors Influencing Intentions to Primary Healthcare Institutions**

Characteristic	Grade			
	Total	Freshman	Sophomore	Junior
	N = 146 (%)	n = 44 (%)	n = 49 (%)	n = 53 (%)
Hospital hierarchy	131 (89.7)	40 (91.0)	42 (85.7)	49 (92.4)
Personal career development	126 (86.3)	36 (81.8)	42 (85.7)	48 (90.6)
Quality of education for children	65 (44.5)	19 (43.2)	21 (42.9)	25 (47.2)
Availability of healthcare facilities	116 (79.5)	36 (81.8)	39 (79.6)	41 (77.4)
Ability to practice specialized medicine	70 (48.0)	25 (56.8)	22 (44.9)	30 (56.6)
Income	106 (72.6)	30 (68.2)	36 (73.5)	40 (75.5)
Research Environment	75 (51.4)	20 (45.5)	26 (53.1)	29 (54.7)
Lifestyle	58 (39.7)	17 (38.6)	19 (38.8)	22 (41.5)
Climate and/or natural environment	57 (39.0)	16 (36.4)	20 (40.8)	21 (39.6)
Urbanization level	104 (71.2)	32 (72.7)	33 (67.3)	39 (73.6)
Economic development	99 (67.8)	29 (66.0)	32 (65.3)	38 (71.7)
Size of the city/town	97 (66.4)	30 (68.2)	30 (61.2)	37 (69.8)

As shown in Table 3, out of the total of 146 medical students, 12 (8.2%) of them had positive attitudes, 66 (45.2%) had negative attitudes, and 68 (46.6%) had neutral attitudes toward employment. Medical students' choices differ sharply according to graduate whereabouts, most of them preferred to take Postgraduate Entrance Exam with the percent of 92.4%, while others chose to working, self-employment or study abroad. Reasons for the choice of specialty by the participants are summarized according to their preference to take the Postgraduate Entrance Exam. Significant reasons for taking the Postgraduate Entrance Exam are "enhance employment power" (93.8%), "Improve qualifications and ability" (88.4%), "Alleviate employment pressure" (81.5%), and "Prefer to stay in the city" (71.2%).

**Table 3 Graduate Whereabouts of Undergraduates and Reasons For Taking the Postgraduate Entrance Exam**

Characteristic	Grade			
	Total	Freshman	Sophomore	Junior
	N = 146 (%)	n = 44 (%)	n = 49 (%)	n = 53 (%)
Employment attitude				
Positive	12 (8.2)	4 (9.1)	5 (10.2)	3 (5.7)
Negative	66 (45.2)	13 (29.5)	25 (51.0)	28 (52.8)
Neutral	68 (46.6)	27 (61.4)	19 (38.8)	22 (41.5)
Graduate whereabouts				
Take the Postgraduate Entrance Exam	135 (92.4)	40 (90.9)	46 (93.8)	49 (92.4)
Employment	6 (4.1)	1 (2.3)	2 (4.1)	3 (5.7)
Self-employment	3 (2.1)	2 (4.5)	0	1 (1.9)
Study abroad	1 (0.7)	1 (2.3)	0	0
Others	1 (0.7)	0	1 (2.1)	0
Reasons for taking the Postgraduate Entrance Exam				
Improve qualifications and ability	129 (88.4)	40 (90.9)	43 (87.8)	46 (86.8)

Table 4 shows the number of graduates taking the Postgraduate Entrance Exam which had been analyzed by Student Affairs Office in the last three years. More graduates chose to take the Postgraduate Entrance Exam, with the percentage of 51.4%, 52.7% and 65.0% in the years of 2013, 2014 and 2015 respectively.

**Table 4 The Number of Graduates Taking the Postgraduate Entrance Exam**

Year	Total, N (%)	Take the Postgraduate Entrance Exam, n (%)	Admittance, m (%)
2013	779	401 (51.4%)	248 (62.0%)
2014	759	400 (52.7%)	228 (57.0%)
2015	854	555 (65.0%)	248 (44.7%)

## 4. Discussion

In recent years, shortages and an uneven distribution of the health workforce have been global issues. Although China started a rural-oriented tuition-waived medical education (RTME) program in 2010, there is still a large shortage of qualified doctors in primary healthcare institutions. In our survey, less than 6.2% of medical students would prefer to work in primary healthcare institutions. Those not from a one-child family and those born in a rural place were more likely to work in a primary healthcare institutions. Studies in other countries also show that phenomenon. In Indonesia, only 8.7% of medical students wanted to practice in rural areas, and the experience of living in rural areas affected the interest of the students for a career in rural areas (Syahmar I., Putera I., Istatik Y., Furqon M. A., 2015). A study among medical students in Japan also showed that growing up in a rural area are more likely to opt for rural practice (Kawamoto R., Uemoto A., Ninomiya D., Hasegawa Y., Ohtsuka N., Kusunoki T., Kumagi T., Abe M., 2015). These suggest that students' characteristics may be strongly correlated with intention to primary healthcare institutions, and it is imperative that Chinese medical schools promote admission by school recommendation of such students in order to solve the shortage of doctors in rural areas.

Various factors were considered influential for students in choosing careers in rural areas, such as hospital hierarchy, availability of healthcare facilities, Income and urbanization level. Urban hospitals bought expensive medical equipment without any regional coordination of their activities (Shi L., 1993). Health resources and serve utilization in urban areas are much greater than those in rural areas. The income disparities among residents mainly refer to the disparity between urban and rural areas. The rural population, whose income, on average, is less than half that of the urban population. In many metropolitan areas across China, one can see the phenomenon of prosperous cities and poor village coexisting. And migrant populations have been increased rapidly in recent years.

The results of this study also show that most of medical students preferred to take the Postgraduate Entrance Exam. They want to enhance employment power, improve qualifications and ability, alleviate employment pressure, and prefer to stay in the city. Living and working in the county was considered relatively unattractive, doctors too are attracted to larger cities. It is no doubt that taking the Postgraduate Entrance Exam can bring many benefits to medical students, but it lead to the decreasing employment rate and aggravate lack of doctors in primary healthcare institutions.

This study was not without limitations. First, this study measured students' intent for rural practice but not their actual choice. Second, as the participants are medical students in Xi'an Medical University, they could not represent the current situation of medical students in Shaanxi province or in a larger scale. Third, we only

surveyed 150 medical students in the School of Clinical Medicine, the sample size is small, and this may affect the results of this study.

## 5. Conclusions

Based on this study's results, the government should continuously offer favorable policies and financial incentives to attract and retain a rural health workforce, while at the same time, to improve the living conditions and social status of rural physicians. Designing a proper curriculum and offering rural clinical placement in medical education would increase medical students' knowledge of and capability to perform rural service. The medical colleges should strengthen guidance in employment and improve students' service awareness to encourage medical graduates serve in primary healthcare institutions. The findings would not only provide reference and talent introduction for occupational guidance in medical colleges, but also be beneficial for the Chinese government to further direct strategies to increase medical students' interest to fulfill the need for physicians in rural areas of China.

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