

Assessing the Viability of General Practice in China

*Thesis submitted in fulfilment of the requirements for the
Degree of Doctor of Philosophy*



By
Jiming Zhu

St Edmund Hall
and
Nuffield Department of Population Health
University of Oxford
Trinity Term, 2016

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ABSTRACT

Jiming Zhu | St Edmund Hall | DPhil in Public Health | Trinity 2016

Background: China has had a well-known tradition of primary care, particularly its barefoot doctors in the 1960s and 1970s, and it contributed to the Declaration of Alma-Ata. In 2011 China formally launched a new, ambitious plan of establishing a system of general practitioner (GP) care by 2020; and aims to train 300,000 GPs. My thesis assesses whether this new strategy for general practice is viable.

Methods: I used a systematic approach with a rigorous pre-set protocol to review the government documents at national level in relation to GPs. I undertook a policy implementation study, in Henan Province, using a mixed methods approach. The qualitative element was a thematic analysis of focus group discussions (FGDs) and semi-structured interviews. The quantitative element comprised structured questionnaires. Two rounds of fieldwork generated eight FGDs, seven semi-structured interviews, and 1,887 quantitative questionnaires covering medical students, grassroots doctors and GP residents (together called the policy implementation targets [PITs]).

Main findings: The document analysis shows that the Chinese government has made great efforts in GP capacity building. However, the government definition of GPs, based on an idealistic primary care framework, is too broad to be a practical guide to the training and work of GPs. The PITs have some intuitive awareness of the attributes of general practice (comprehensiveness, first contact, continuity and coordination), but often misinterpret what GPs actually do, or base their understanding on their knowledge of the existing hospital-dominated system. Eight factors (such as low income) are identified as deterrents to medical students opting to be GPs. Understandings of what being a GP entails is more likely than the deterrents to influence the students' decision to become a GP.

Conclusions: China is unlikely to have a GP system by 2020. Pursuing the quantity of GPs on its own is meaningless, as the number depends on how to define GPs. Top priority is to establish clarity about the GP role, which requires rigorously regulating China's medical pluralism, reversing the dominance of hospital and specialist practice model, and reforming the wider political and social environment in respect of health care.

ACKNOWLEDGEMENT

I am deeply indebted to my supervisors Dr. Proochista Ariana and Professor Michael Goldacre. Dr. Proochista Ariana has always been responsive, encouraging, patient and insightful. She has kept the research and thesis on the right track, and I have benefited tremendously from those weekly meetings. Professor Michael Goldacre is extremely supportive. I still vividly remember that one midnight he sent a short email, saying that one space is needed between two words – that represents the rigorousness I have learned from Oxford.

I also appreciate the financial support from the China Scholarship Council, the research allowances from the Nuffield Department of Population Health, some grants from St Edmund Hall, and the fellowship from the China Medical Board (CMB). Special thanks go to Dr. Wenkai Li, Dr. Lincoln Chen and Dr. Kun Tang, all from the CMB who have contributed to my deeper understanding of health policies and medical education.

I am grateful to many key informants in Henan Province who are open-minded, especially Xu Hongwei, Li Keqin, Zhang Wenxuan and Zhou Huiru who greatly facilitated my fieldwork and data collection. I must also thank my local research assistants, particularly Yang Lichao, Wang Shangyi, Yang Tielong, Deng Xiang, An Chaoyang, Li Jingyi, Wang Jin, Zheng Hao, Zhang Wenyuan and An Yan, who helped with data entry and transcription. I want to extend my warm thanks to all the medical students and doctors who participated in my research. It was productive to talk with all the nice people I met (I can only name a few in this short acknowledgement), and made me feel the responsibility to do this research well.

I would like to express my sincere gratitude to many of my friends and colleagues at Oxford, particularly Dr. Han Wei (a fantastic Stata expert), Dr. Marco Haenssger, Dr. Olena Seminog and Dr. Elizabeth Radin. Their experience sharing, stimulating discussions and strong support are well appreciated.

I owe a particular debt to all the examiners (Professor Raymond Fitzpatrick, Professor KK Cheng, Professor David Mant and Dr. Emma Plugge) from Transfer, Confirmation to Viva. They offered encouraging, constructive and pragmatic suggestions for me to improve the research continuously. Professor Fitzpatrick witnessed and helped the whole “longitudinal” process of this thesis.

Last but by no means least, I am profoundly grateful to my family who accompany and support me. A doctorate research is a long journey, and mine goes with my daughter’s growth from an infant to a 4-year sweet girl. Her unconditional love is always great comfort to the challenging journey. Without the family, this research is impossible to be completed, and this thesis is dedicated to them.

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LIST OF ABBREVIATIONS

Abbreviations	Full Name
AGP-RT	Assistant GP Residency Training
BMA	Bureaus of Medical Administration
CHC	Community Health Centre
CHO	Community Health Organisation
CHS	Community Health Station
DHSTE	Department of Health Science, Technology and Education
DOP	Department of Personnel
DPH	Department of Primary Care
FGD	Focus group discussion
GHOs	Grassroots Health Organisations
GO	General Office
GPs	General practitioners
GP-BT	Backbone GP Training
GP-IST	GP In-Service Training
GP-SPP	GP Special Position Plan
GP-SRT	Standardised Residency Training in General Practice
GP-TR	Training for GP Trainers
GP-TT	GP Transfer Training
MHRSS	Ministry of Human Resources and Social Security
MOE	Ministry of Education
MOH	Ministry of Health
MPM	Medical Professional Master
NCMS	New Rural Cooperative Medical Scheme
NDRC	National Development and Reform Commission
NHFPC	National Health and Family Planning Commission
NMLE	National Medical Licensing Examination
PCPs	Primary care providers
PHC	Primary Health Care

PITs	Policy Implementation Targets
SARS	Severe acute respiratory syndrome
SATCM	State Administration of Traditional Chinese Medicine
SCOPSR	State Commission Office for Public Sector Reform
SRT	Standardised Residency Training
TCM	Traditional Chinese Medicine
TRUMP	Tuition-waved Rural-oriented Undergraduate Medical Programme
WHO	World Health Organisation
UE-BMI	Urban Employees Basic Medical Insurance
UHC	Universal health coverage
UR-BMI	Urban Residents Basic Medical Insurance

GLOSSARY

Medical pluralism	Medical pluralism in this study means the phenomenon that Chinese doctors with very different levels of education are often lumped together under one label, disguising great heterogeneity.
Graduate medical education (GME)	I divide medical education into three stages: medical school education, GME and continuing education. GME in the UK includes the Foundation training and the Specialty (including General Practice) Training. UK may also use vocational training. For instance, GP Specialty Training is the same to GP Vocational Training. GME in the US includes Residency and Fellowship. In this study I use residency, vocational training and GME interchangeably. For China's residency, see the next explanation below. For more details, please see Appendix 3.
Standardised Residency Training (SRT)	China is promoting a "5+3" model which mandates 5 years of medical school education (leading to a bachelor degree similar to the MBBS in the UK) followed by 3 years of residency (called the SRT). The SRT will become mandatory nationally by 2020. It consists of 36 specialties, and general practice is one of them, called GP-SRT in this study. For more details, please see Appendix 3.
GP residents	Those joining the GP-SRT are called GP residents in this study. I also use GP resident doctors .
General practitioners (GPs)	GPs in the UK are the medical doctors on the GP register managed by the General Medical Council (GMC). Eligibility for inclusion requires attendance of medical school (leading to MBBS degree), Foundation training and GP Specialty Training (leading to a Certificate of Completion of Training [CCT]). In China, education of GPs tries to follow the international standards (medical school education plus GME). Ideally, China's GPs are those trained through the 5+3 model. However, currently most GPs in China have come through the retraining of the existing grassroots doctors. For definition of grassroots doctors, please see the next explanation below.
Grassroots health organisations (GHOs)	The GHOs in China consists of township hospitals, village clinics in rural areas, and community health centres (CHCs) and community health stations (CHSs) in urban areas. For more details, please see Section 2.5.5, Chapter 2. The doctors working in the GHOs are called grassroots doctors in this study.
GP Transfer Training (GP-TT) trainees	GP Transfer Training is to retrain mainly the township hospital doctors for one year to become GPs. Those enrolled in the GP-TT are named GP-TT trainees. Some other grassroots doctors (such as doctors working the community health centres) are found to join the GP-TT as well. But most GP-TT trainees are township hospital doctors. In this study, I use GP-TT trainees and township hospital doctors interchangeably.
Tuition-waved Rural-oriented Undergraduate Medical Programme (TRUMP) medical students	Tuition-waved Rural-oriented Undergraduate Medical Programme (TRUMP) is designed to sponsor some medical students (of the five-year undergraduate medical programmes) mainly from rural China through government sponsorship. In return, these medical students are required by the government to

	assume general practice positions in assigned township hospitals in the future. The medical students enrolled in the TRUMP are named TRUMP medical students or TRUMP students.
Policy Implementation Targets (PITs)	GP residents, township hospital doctors and TRUMP medical students are defined in my study as Policy Implementation Targets (PITs). As its name suggests, the PITs are the research targets of the empirical analysis as most government policy documents for China's GP capacity building involve these three groups.

CHAPTER 1 INTRODUCTION

Primary Health Care (PHC) has been promoted as the backbone of an effective health care system and the favourable way of delivering health for all. This is evident by the World Health Organisation's (WHO) Declaration of Alma-Ata in 1978¹ to the World Health Report 2008.² Now universal health coverage (UHC), one key target of the United Nations Sustainable Development Goals, is supposed to be firmly based in PHC.^{3, 4} The evidence supporting PHC is substantial. A study on 102 low- and middle-income countries shows that weaker PHC is significantly negatively associated with life expectancy, infant mortality, and under-five mortality.⁵ When it comes to high-income countries, those with stronger PHC orientation have better health outcomes (such as all-cause mortality and all-cause premature mortality),⁶ higher satisfaction of health services,⁷ and lower cost.⁸ Notable are the two PHC role models – the United Kingdom (UK) and Denmark, which always rank the top two in comparative studies of high-income countries.⁶⁻⁸ In the UK and Denmark, general practitioners (GPs) are the cornerstone of the health system, and provide primary care characterised by person-centeredness, comprehensiveness, first contact, continuity and coordination.⁹

Mainly inspired by the UK model, in 2011 China's State Council (the central government) formally launched its ambitious plan of establishing a GP system by 2020 with two to three GPs per 10,000 people.¹⁰ In particular, within 10 years, 300,000 more GPs will be trained.^{11, 12} The education and training for these newly-planned GPs will gradually follow the “5+3” model which mandates five years of undergraduate medical studies (leading to a bachelor degree similar to the MBBS in the UK) followed by three years of residency in general practice. Furthermore, in 2013 seven government ministries jointly launched nationwide residency (called the Standardised Residency Training [SRT]) as a national strategy, which would become mandatory also by 2020.¹³ The SRT resembles the “specialty (including general practice) training” in the UK, and it consists of 36 specialties, among which general practice is the most notable. In late 2014, the first cohort

of SRT resident doctors (totalling 55,000) were recruited in 30 Chinese provinces, around 10% of whom (5,158) were enrolled as GP residents.¹⁴

It can be seen that the terminology GP has become the most heated key word of China's health reform for the past several years. Even when WHO Director General Margaret Chan discussed her Chinese Dream with President Xi Jinping in 2016, she wanted to be taken care of by a well-trained GP when retiring back to China.¹⁵ It seems that increasing the number of GPs is the magic panacea for China's health care problems.

Accordingly, the Chinese government has been keen on the expansion of GPs through three major programmes. The first one is the abovementioned SRT in General Practice (GP-SRT) which follows the international standards of GP training – the specialty training in general practice (UK) or family medicine (United States [US]) is three years.ⁱ In the long run, China's newly-planned GPs are supposed to be trained through the rigorous GP-SRT programme. Second, the central government has initiated a Tuition-waved Rural-oriented Undergraduate Medical Programme (TRUMP). TRUMP is designed to sponsor some medical students mainly from rural China through government sponsorship. In return, these medical students are required by the government to assume general practice positions in assigned township hospitals in the future. The central government subsidises RMB 6,000 Yuan each year for each TRUMP student. This can cover the tuition fee and living allowance. The first cohort of TRUMP students (in total 5000 nationally) enrolled at medical schools in 2010, and they could only join the GP-SRT in 2015. The third programme is GP Transfer Training (GP-TT), mainly for township hospital doctors. The township hospital doctors, though most of them do not even have a bachelor degree, were trained to be specialists (such as internists, paediatricians and surgeons). Those doctors joining the GP-TT programme are asked to suspend their work and have a full-time training for around one year.

ⁱ There is a two-year foundation programme before GP specialty training in the UK. China's 5+3 model does not incorporate any foundation programme.

Then they will get a certificate that allows them to be “transferred” to GPs. The central government provides all 22 provinces in middle and western China with funding for this training programme each year since 2010.

These three programmes will determine whether China will have sufficient supply of GPs, a prerequisite for a viable and sustainable GP system. The participants of these three programmes are GP resident doctors, TRUMP medical students, and the township hospital doctors (i.e. GP-TT trainees). These three key groups referred to in this thesis as **Policy Implementation Targets (PITs)**, are the focus of my research, since most government policies for China’s GP capacity building involve these groups.

Through great efforts, the latest government statistics available showed that the number of GPs in China successfully reached 172,597 in 2014.¹⁶ By no means were all of them educated through the 5+3 model. Actually, the vast majority of them were trained through the GP-TT programme or the previous similar but even shorter retraining programmeⁱ for existing doctors in the community (both urban and rural), so that after the retraining they can become so-called GPs. The reality is that most GPs in China still do not have a bachelor degree, let alone rigorous residency. My study explores this latest fad of China’s health care – the “GP phenomenon”. The most urgent research question for the ongoing health reform is the viability of general practice by 2020 in China. In particular, instead of concentrating on the quantity of so-called GPs, more important is how general practice is understood in China and the factors affecting the choice of a GP career. My research questions concern the critical aspects of a viable GP system.

China is not new to PHC. When thinking of primary care in China, people’s first response is probably its influential barefoot doctors in the 1960s and 1970s who served as an important

ⁱ This will be introduced in further detail through government document analysis in chapter 4.

inspiration for PHC and the Declaration of Alma-Ata.^{17, 18} **Chapter 2** of this thesis provides background information from barefoot doctors to the newly-planned GPs. It introduces China's transition from more PHC orientation to the current hospital-dominated and specialist practice model, with the excessive growth of tertiary hospitals, many of which have over ten thousand outpatients per day. It also, for the first time in literature, depicts the medical pluralism and current doctors in China thoroughly from the perspectives of diverse medical education, licensure and registration, career progression (China's unique professional title system called *Zhicheng*), job security (another unique system called *Bianzhi* which means a permanent job position with salary, pension and benefits guaranteed by government public finance), and health organisations (such as hospitals and community health centres) where doctors work. This chapter provides the necessary context of the recent "GP phenomenon" of extraordinary complexity.

The "GP phenomenon" is a major central government initiative. The central Chinese government is very strong and it takes many responsibilities for what are not conventionally considered to fall under the role of government (e.g. professional matters like the SRT). In contrast, the Chinese professional associations are very weak.¹⁹ As a result, even the detailed syllabi of many GP training programmes are drawn up in government policy documents. My research takes into account how the Chinese government defines GPs, which is generally neglected but an integral part of how general practice is understood in China.

Chapter 3 presents the methodology of my thesis, which is twofold. The first is a systematic approach to review the national government documents in relation to GPs. The second is a mixed-methods approach targeting the PITs (i.e. the three GP-related groups). I conducted two rounds of fieldwork in China (mainly in Henan Province but also in Beijing and Shanghai) between 2014 and 2015. Reviewing the government documents systematically relied on an Internet search of two influential databases, supplemented by information collected while on fieldwork. Importantly, during my fieldwork in Henan Province, I collected substantial qualitative data (through focus group discussions [FGDs] and semi-structured interviews) and quantitative data (through

questionnaire surveys) about the PITs. The qualitative and quantitative data were analysed with the help of the software NVivo 10 (for thematic analysis) and Stata 13 (for descriptive quantitative analysis, χ^2 test and logistic regression), respectively.

In **Chapter 4**, I present the results of the government document analysis. In total, 91 documents are identified for inclusion. The analysis shows the trend of policy development, and confirms the government strategies of GP capacity building. It also discerns the main government players in this “GP phenomenon”. In addition, the research also finds the direct definition of GPs by the government, as well as the definitions reflected in government operations and the syllabi (designed by the government).

Chapter 5 and **Chapter 6** are the results of the mix-methods approach on the PITs. In Chapter 5, I explore how PITs understand the roles and responsibilities of GPs. Five big themes emerge: (1) comprehensiveness; (2) first contact and continuity; (3) referral, coordination and the “gate”; (4) Traditional Chinese Medicine (TCM) and general practice; (5) prevention, public health and general practice. Each theme is also elaborated by the quantitative analysis. These five themes demonstrate PITs’ various understandings of GPs which include, I discover, confusion and ambiguity. Chapter 6 firstly shows that most PITs are not willing to become GPs. In particular, a large proportion of TRUMP students do not value the programme at all, and intend to violate the contract with the government – which means they do not plan to become GPs. I have found that the top five factors which deter TRUMP medical students from opting for a long-term GP career are low income, unclear and uncertain policies, disadvantage for further education and training, inferior medical equipment, and disadvantage for life and family. The logistic regression examines how the emerged understandings of GPs (chapter 5) and the deterrents identified in Chapter 6 are associated with whether a TRUMP student is going to be a GP or a specialist in the long-term medical career plan. The results show that medical students are making decisions about their career plans based on inappropriate understandings of GPs.

In **Chapter 7**, by considering all the evidence, I discuss the discrepancies between the government-promoted concept and PITs' interpretations. In addition, based on the evidence found in comparison with the literature and international experiences, I argue that though China will train 300,000 or even more GPs by 2020, it is quite unlikely to have a viable GP system, since (1) the fundamental issue is not resolved in that the roles of GPs are neither clearly delineated nor well interpreted; (2) historical legacies in China lead to medical pluralism - even the terminology of doctors used vary, let alone the new concept of GPs; (3) China still has a hospital dominance and specialist practice model, which will take time to change; (4) the wider political and social environment such as the abovementioned *Bianzhi* and *Zhicheng* system is restrictive and beyond the control of the health sector. Solving these challenges requires the close coordination of many government departments, consistency of the policies, and perseverance (i.e. time).

I conclude the thesis in **Chapter 8** by summarising the main findings, contributions and policy implications. I also point out the limitations of my research as well as further studies required.

My research is by no means addressing an isolated Chinese problem. Like the barefoot doctor movement which led to the Declaration of Alma-Ata, China's ambitious plan of establishing a GP system within such a vast and diverse country in transition may also shed some light on the global challenge of building well-functioning PHC and realising UHC in a world of specialization, commercialization, limited budget and people's increasing expectations. Even high-income countries such as the US and UK which are reforming their health systems and training the controversial physician assistants or associates may learn from China's experiences.

CHAPTER 2 BACKGROUND: FROM BAREFOOT DOCTORS TO GENERAL PRACTITIONERS ⁱ

In this chapter, I depict a big picture of China's health workforce. To fully understand the world's largest medical doctor group, I provide a historical review from barefoot doctors to GPs. Through this review, I present the comprehensive health system in China from the perspective of its doctors. The medical pluralism due to historical legacies (shown from barefoot doctors to GPs), the hospital dominance, and the attributes of doctors in China are the key contexts in which the newly-planned GP system is built.

2.1 China's health workforce

China is the world's most populous country and, not surprisingly, China has the world's largest health workforce: one out of every five doctors in the world works in China.²⁰ Understanding the status of this large share of global human resources is important in our interdependent world.

2.1.1 Landscape

China's total health workforce rose dramatically from 6.7 million in 2006 to 10.2 million in 2014 which consisted of 2.9 million officially-recognised doctors,ⁱⁱ 1 million village doctors, 3 million nurses and 3.3 million allied professionals (such as pharmacists and technicians).¹⁶ Noteworthy is the sheer scale of China's health workforce that exceeds the total population of many countries. Moreover, the structure of China's health workforce differs from many other countries. Chinese doctors with very different levels of education are often lumped together under one label,

ⁱ During the writing of my thesis, part of this chapter has been published in *The Lancet* (Appendix 3; Zhu J, Li W, Chen L. Doctors in China: improving quality through modernisation of residency education. *Lancet* 2016.) as well as the background report for Peking Union Medical College Hospital International Conference on Residency Education.

ⁱⁱ Officially-recognised doctors will be defined and explained in Section 2.1.2.

disguising great heterogeneity. In addition, nurses only account for slightly more than one-fourth of the entire health workforce, and China is one of the few countries that has more doctors than nurses.²¹

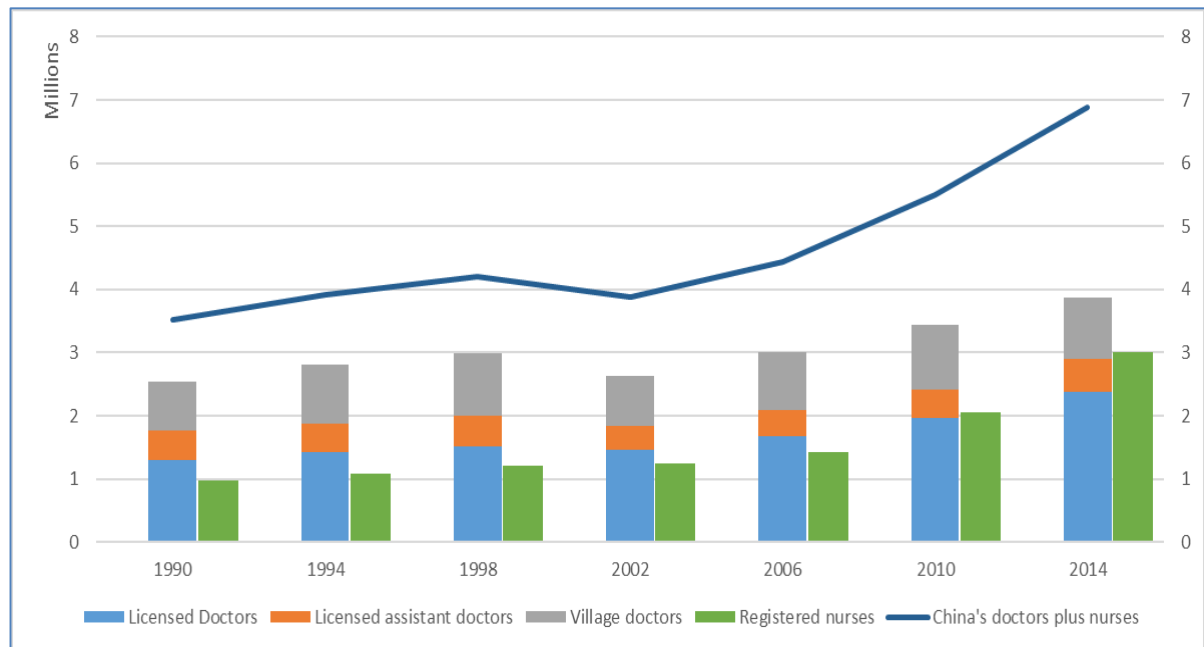


Figure 2.1: China's doctors and nurses

Data are from National Health and Family Planning Commission.¹⁶

Since 2006 the surge of China's health workforce has been mainly driven by the increase of licensed doctors and nurses. As shown in Figure 2.1, from 2010 to 2014 there was an average increase of 100,000 licensed doctors, 240,000 nurses and 20,000 licensed assistant doctors each year. These data suggest a steady shift towards more licensed doctors and nurses, as well as slower growth of assistant doctors. Meanwhile, village doctors' share of the total workforce is declining.

2.1.2 Doctors in the context of China

My thesis focuses on China's doctors. However, the terminology 'doctor' has been variably used in China, and it is necessary to clarify what it means. Of the 10.2 million health workforce in 2014, 2.4 million were licensed doctors and 0.5 million were licensed assistant doctors (Figure 2.1).

These 2.9 million doctors are defined as China's **officially-recognised doctors** in my thesis. They mainly work at state-owned health organisations – township, county, prefectural, provincial, and national hospitals.

International comparison usually applies this number of the officially-recognised doctors to calculate China's doctors per 1,000 people, which is 2.1. However, only 47% of them have a bachelor or higher degree, let alone residency education. In other words, more than half of China's officially-recognised doctors do not have a bachelor degree but only lower-level diplomas (Figure 2.2). Following the definition of International Standard Classification of Occupations (ISCO, 2008 revision) where doctors should have a university-level degree plus residency training, China has at most only 1.4 million such doctors. In this setting, China's doctors per 1,000 people ratio is around 1.

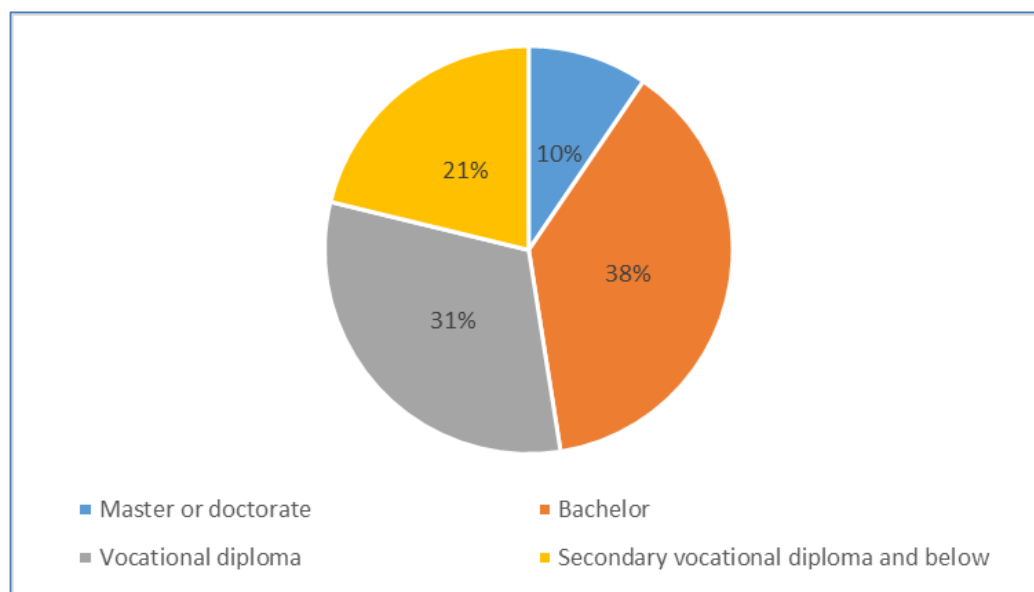


Figure 2.2: China's officially-recognised doctors by education level in 2014

Data are from National Health and Family Planning Commission.¹⁶

In addition to the officially-recognised doctors, China maintains approximately 1 million village doctors, many of whom today are survivors, children, family members or apprentices of the

internationally famous barefoot doctors of the 1960s and 1970s. With China's transition in the late 1970s to a market-oriented economy, the barefoot doctor system collapsed, and in the early 1980s, barefoot doctors became village doctors if they could pass an examination.²² Village doctors, who are not counted officially as doctors, are usually private practitioners working in their own clinics practising a combination of western medicine and Traditional Chinese Medicine (TCM). Many village doctors have not studied beyond grammar school, but they have been primary care providers (PCPs) for a long time in rural China. If we add these 1 million village doctors, China's doctors per 1,000 people ratio increases to nearly 3.

The big picture of Chinese health workforce shows the complexity of doctors in China. Depending on how to define doctors, the doctors per 1,000 people ratio can vary from 1 to 3. Due to its vastness, diversity and unique history, China has formed its own medical doctor system which has not been systematically explored elsewhere in the literature. The lack of background information creates a barrier for international knowledge exchange and further in-depth research (including my thesis). For instance, what are the licensed assistant doctors and vocational diplomas? Why do half of the officially-recognised doctors in China not have a bachelor degree? In fact, the huge diversity of Chinese doctors' education and the medical pluralism is a historical legacy. In order to fully understand Chinese doctors and the associated health system, I will review some history.

2.2 Barefoot doctors

2.2.1 Before barefoot doctors

In its long history, China had been dominated by Traditional Chinese Medicine (TCM), when the practice venue was mainly the community (actually patients' homes). "Western" medicine was introduced to China firstly by missionaries from the nineteenth century. With the development of missionary work, many hospitals were established in urban areas by these foreigners. These hospitals also trained local Chinese to become western-medicine doctors. Some Chinese had

opportunities to study medicine abroad and then become doctors when they returned to China. Gradually, a dual health system emerged – rural China was still dominated by TCM but more and more western-style doctors practised medicine in urban hospitals.

In 1949 when the People's Republic of China (PRC) was established, there was an estimate of 40,000 doctors,ⁱ who were mainly western-style and concentrated largely in urban hospitals. In other words, for a population of approximately 540 million at that time in China (the vast majority of whom were in rural areas), the main health resources were in urban hospitals.²³ These western-style doctors were more like their counterparts in high-income countries. A classic case was the Peking Union Medical College (PUMC) and its affiliated hospital, which was established by an American foundation called China Medical Board, endorsed by the Rockefeller family. It completely followed the Johns Hopkins model.

The new PRC's Ministry of Health (MOH) at that time was mainly staffed by these western-style health professionals. The health policies in China at that time was mainly affected by these elite doctors and top medical schools such as the PUMC. Furthermore, the new country had a very tight budget but enormous tasks for the MOH. Many factors finally led to the reinforcement of an urban focus on curative health services.

On the other hand, the top leadership of the communist party, led by Chairman Mao, paid special attention to public health and primary health care (PHC). Chairman Mao valued the TCM, and emphasised prevention, a core value of TCM practitioners' philosophies. In addition, China at that time had a high prevalence of infectious diseases such as schistosomiasis. In late 1955 the Party

ⁱ This figure is from reference 5. However, some scholars (reference 25) gave an estimate of 363,000 doctors by 1949, of whom 76% were TCM doctors and 24% were western-medicine doctors. Probably reference 5 did not take into account TCM doctors. However, even only considering western-style doctors from reference 25, there were around 90,000 doctors in 1949. This may imply that from 1949 different scholars had different definitions of Chinese doctors.

Central Committee established the Nine Man Sub-committee on Schistosomiasis (NMSS), which had a very high political status and was independent of the MOH. NMSS (composed entirely of bureaucrats without any health professionals) actually soon took over the authority of all the anti-parasite programmes from the MOH, and then medical professionals played little role in relevant policy making.²⁴

During the Great Leap Forward (1958-1960), people's communes (similar to present townships in scale) were established, and there were around 24,000 communes in China. Each commune had one health centre (which gradually became the current township hospital). The MOH did not think it could support so many commune health centres. With limited resources, in order to guarantee the quality of services, it thought the lowest level it was able to deal with was the county hospital. Accordingly, those county hospitals and above were within the jurisdiction of the MOH. Meanwhile, each Commune Party Committee ran its own commune health centre which relied on the commune's economic condition. Accordingly, the commune health centre was based on collective economy and provided free health services for those within the commune. China actually had three political arenas in relation to health policy making – the 24,000 commune party committees, the MOH system (representing medical professionals) and the NMSS (trying to reduce the autonomous power of the MOH).²⁴

Before 1949, China's medical education to train western-style doctors mainly followed that in high-income countries such as the US and UK. However, after the establishment of the PRC, the influence of the Soviet Union prevailed. In fact, the whole education system was changed from the US and European model to the Soviet model. When it came to the medical field, 44 medical colleges were taken out of the comprehensive universities to become independent stand-alone medical universities. This reflected the Soviet model in which doctors were educated as mechanics of the body. Meanwhile, in addition to higher education, secondary vocational training was emphasised – many secondary vocational medical schools were set up in order to meet the urgent

demand for rapidly expanding the health workforce. These secondary vocational medical schools provided 3-year training to the middle school graduates (aged around 15) who then became doctors.

To sum up, this period (1949 to 1965), before the advent of barefoot doctors witnessed the “divided” health policy making among three political arenas. The lack of coordination in health policies was evident in the medical workforce. The MOH, valuing professional independence, scientific medicine and quality of care, even lengthened some higher medical education programmes from five years to six years. On the other hand, following the Soviet mode, many secondary medical schools were set up. This alternative pathway discussed in Section 2.5.3 is still open today in China. The commune health centres’ demand for qualified workforce was largely neglected by the MOH. Instead, they had many health workers. In this period, the medical professionals did not value those secondary medical schools and suggested lengthening their training as well. They also resented the acquisition of clinical tasks by nonmedical personnel (i.e. health workers).

With the failure of the Great Leap Forward campaign, some commune health centres failed to survive and the NMSS ceased to function. As a result, from 1961 to 1965, the MOH mainly regained authority. However, a much more influential political campaign was awaiting China.

2.2.2 The establishment of a barefoot doctor system

I introduced the tension between the Party leadership (mainly Chairman Mao) and the MOH (elite medical professionals). Also, many factors (such as the divided policy making) led to the urban-rural health inequalities. In this context, the Cultural Revolution (1966-1976) was initiated by Chairman Mao. Not surprisingly, the MOH was one of those mostly criticised. Its minister and six vice ministers were dismissed after the ministry was criticized for being too urban and too focused on quality rather than quantity of health personnel; the medical associations were disbanded for being elitist.²⁵ To some extent, the Cultural Revolution was anti-intellectual. Chairman Mao was

popularly reported as saying “study is useless”; “the more knowledge you have the more reactionary you are”; “the basic theories of natural scientists are fabrications by bourgeois scientists of the West”.²⁶ Higher medical education halted or was reduced to a maximum of three years. More seriously, even the leavers from primary schools and junior middle schools were allowed to be admitted to higher medical education. In fact, during the Cultural Revolution, formal education was not respected, and higher education was almost completely abandoned.

There was no longer divided policy making, as the MOH had been completely “destroyed”. The dysfunction of the MOH system and the lack of regulations created space for the development of barefoot doctors. As formal education was not respected, the barefoot doctors were peasants, who after usually three to six months of medical training, undertook healthcare duties such as assisting births and administering basic treatments, while continuing to conduct their farm work.²³ The nationwide barefoot doctor movement started in 1968. In addition, during the Cultural Revolution many medical students and health professionals in urban areas were required to go to rural areas to be “educated” by the peasants. They provided health services to rural residents and helped train the barefoot doctors.²⁷

From 1968 to the early 1980s, barefoot doctors played a critical role in China’s health care system. They were often accredited with China’s miraculous improvement in health exemplified by a reduction in infectious diseases (e.g. smallpox, plague, measles, tetanus) and a surge in life expectancy from 35 in 1949 to 65 in 1980.^{25, 28} Moreover, barefoot doctors were internationally influential – they served as an important inspiration for PHC and the Alma-Ata Declaration.^{17, 18}

The role of barefoot doctors might be exaggerated. Some would argue that by 1968 (when the nationwide barefoot doctor movement just started) life expectancy had already been improved greatly compared to 1949. Barefoot doctors obviously could not take all the credit for the increase in life expectancy from 1949 to 1980. Given the lack of formal monitoring more than half a century

ago in China, no rigorous evaluation of the barefoot doctor programme was possible. Some argue that it was the improvement of education, housing, water, nutrition and living standards that contributed more to China's health achievements than any intervention by the barefoot doctor.

2.2.3 Further reflections on barefoot doctors

Taking into account all the controversial discussions, I offer the following reflections.

First, were barefoot doctors health workers or medical doctors? Their education and qualification may be even lower than the present health workers in high-income countries. However, they were very different from those health workers in the commune health centres during the Great Leap Forward who mainly conducted auxiliary health work at the village level (such as collecting stool samples), though this group formed a core recruitment base for the barefoot doctor programme. At that time in China, below the commune (similar to the present township) are production brigades (similar to present villages). Each production brigade had its barefoot doctor who had his/her clinic there. Barefoot doctors actually conducted both epidemic prevention work as well as diagnosis and treatment. With the accumulation of their experiences, they gradually regarded themselves as fully trained doctors capable of practising medicine. In fact, the healing roles of barefoot doctors were so increasingly significant that they gradually took over medical practice in the local community, which had previously been provided by commune health centres. The three-tier health system in rural China (barefoot doctor clinic, commune health centre and county hospital) formed a dumbbell shape with the commune health centre in a weak position (barefoot doctor clinics and county hospitals dealt with most patients).

Second, were barefoot doctors TCM practitioners? Partially, yes. Many barefoot doctors had been TCM healers or from TCM families. They were praised for solving health problems by using “one sliver needle (referring to acupuncture) and a bunch of herbs (referring to TCM herbal medicine)”.

However, Chairman Mao encouraged the combination of TCM and western medicine from 1950s. In fact, barefoot doctors practised both western medicine and TCM. A rigorous study showed that they actually used western medicine more, and actually it was barefoot doctors who introduced western medicine to rural China on a massive scale for the first time in history. They increasingly practised western medicine. Accordingly, China's health miracle from 1949 to 1980 was also partially due to the wide spread of western medicine through barefoot doctors. Some scholars described this as the spread of western medicine through the agent of TCM doctors.

Third, many people might have neglected the clear referral role of barefoot doctors. Barefoot doctors referred those patients they could not deal with to commune health centres or county hospitals. As described above, hospitals were dominated by western medicine doctors. In this sense, referral was another way that barefoot doctors promoted western medicine maybe unconsciously. More importantly, they also introduced the hospital, which was a new concept to most villagers at that time. They contributed to China's present hospital-based medicine, as detailed in Section 2.3.

Fourth, there was no doubt that barefoot doctors improved general public's access to health care greatly. This was probably a key reason for the success of the barefoot doctor movement. However, they might sacrifice quality of care from time to time. We could not expect a person with three to six months of medical training to be able to practise medicine very well. Some of them might have special talents to learn medicine; some of them might be born in a TCM family and immersed in the medical world long before becoming barefoot doctors; most of them probably accumulated their medical skills through everyday practise after becoming barefoot doctors. Through many years of experiences, the quality of care might be guaranteed someday. But they probably made many mistakes that were deliberately ignored by the government or unknowingly neglected by the rural patients with little medical knowledge. At that time in China, probably access was more important than strict quality of care – barefoot doctors maintained the subtle balance between access and quality and met people's health needs in that context.

Last but not least, the establishment of a barefoot doctor system was due to politics. It was built on Communist China's collective economy and political campaigns such as the Cultural Revolution. It cannot be insulated from China's social policies and development. With the end of the Cultural Revolution in 1976 when Chairman Mao passed away, it gradually collapsed, as elaborated below.

2.2.4 The collapse of the barefoot doctor system

With China's transition in the late 1970s to a market-oriented economy, the barefoot doctor system gradually collapsed. In 1981 the use of the title "barefoot doctor" came to an end and the barefoot doctor system was officially abolished in 1986. Barefoot doctors were required to pass an examination to receive a certificate as qualified "village doctors". If they failed the exam, they would become "village health aides".²²

According to the discussions above, barefoot doctors may not be as ideal as praised by many international scholars. The successful part of the barefoot doctor system reflected the large-scale urban-rural transfers of health resources, including workforce. The urban youths, who were supposed to have formal education, were also sent to villages to receive re-education by the poor peasants. Some of these youths became barefoot doctors in receipt of short training. When the supreme leader Deng, who opened China to the global market, came to power in 1978, these urban youths started to return to cities, and many of them had the opportunities to receive formal higher education, which was restored after the Cultural Revolution. One of these urban youths was Dr. Chen Zhu, China's former Minister of Health, who publicly claimed several times to be a barefoot doctor when he was young.

However, the barefoot doctor system cannot be sustained at least for two reasons. First, it was at the expense of the fully-fledged doctors – the formal higher education halted during the Cultural Revolution. Second, there were no rigorous health regulations. Health officials and administrators (including ministers of health, as described above) were condemned as the “Capitalist Roaders” or “revisionists”.²⁹ They lost their jobs, which were filled by those who had no training in health. In addition, a large number of persons were able to enter the state-owned health facilities (mainly hospitals) regardless of their qualifications – since 1966 the start of the Cultural Revolution, over 40% of those recruited to the nation’s health system had no prior training in health care whatsoever.³⁰

Recognising the drawbacks, with the introduction of the free market and the collapse of the barefoot doctor system, China went to the other extreme of the health system – specialist hospital-based medicine – as elaborated below.

2.3 Hospital-dominated health care system

2.3.1 An invasive species – hospitals

In the long history of China’s medicine, the concept of hospital is actually very new, especially for those in rural China, though it is now dominating China’s health care system. The modern western-style hospitals were firstly mainly established by missionaries in urban regions. But for rural China, villagers were mainly treated by TCM healers in a relatively isolated medical world, and they might never hear of the term ‘hospital’. The medical encounters occurred in the TCM practitioner’s solo practice clinic (which was also the practitioner’s home) or mostly in the villager’s home until around mid-1960s.

In urban China (especially those metropolises such as Beijing and Shanghai), hospitals developed very well. They, together with those western-style medical universities, trained many medical doctor elites who profoundly affected the whole country's health policies. Though clearly China had a dual health system (western-style hospital-based medicine step by step took over urban China; TCM healers had more control over rural China), generally TCM healers' influence on policy making was weak.

The proliferation of hospitals halted and medical elitism was undermined greatly during the Cultural Revolution. However, this period sowed the seeds of dominance of hospitals not only on urban cities, but over the whole country. Barefoot doctors, together with the rural cooperative medical scheme, helped establish a three-tier hierarchical rural health system – barefoot doctors' production brigade clinics, commune health centres and county hospitals. The referral and coordination role of barefoot doctors (as PCPs) facilitated villagers' exposure to the "remote and strange" hospitals. Those referred by barefoot doctors could get some reimbursement for the care in the hospital. More and more villagers were impressed by the hospitals' fancy equipment, facilities and the western-style specialists there. Barefoot doctors served as agents of introducing Western medicine as well as western-style hospitals staffed with specialists to the rural masses. These seeds sprouted rapidly after the Cultural Revolution.

From the 1980s until early 2000s, China's health care system saw decentralization, privatisation and commercialization. Barefoot doctors became village doctors, and the majority of village doctors became fee-for-service private practitioners, who were no longer incentivised to do public health and preventative work due to the fee-for-service payment model.²² Meanwhile, the heavily damaged formal health sector (mainly in cities) during the Cultural Revolution were restored and most health resources went back to urban China. Many health officials and administrators who were still alive got their power back. Many health professionals also got their jobs back in hospitals. Naturally, big hospitals were strengthened and developed. These state-owned hospitals were called public hospitals but government subsidies gradually accounted for less than 10% of their

income.³¹ Similarly, the specialists working in these hospitals were mostly state employees in a way similar to civil servants, rather than independent medical professionals. As state employees, they got basic salaries from government financing, which were low and controlled by the government. However, the government allowed them to get bonuses, which usually depended on the profits of the hospitals they contributed to. Consistent with the successful experiences in many other sectors leading to China's economic growth miracle from China's transition to a free market, the government encouraged competition in the health sector. The competition was not only restricted among urban big hospitals. To some extent, all the health facilities, such as the urban tertiary hospitals, county hospitals, township hospitals and village clinics competed for patients in order to get more profits which meant higher incomes for doctors. In this free market, each hospital got a high degree of autonomy, while doctors were affiliated to powerful hospitals. In this market competition, big hospitals won more and more patients. The over-crowded outpatient department of a tertiary hospital was like the combination of numerous specialist clinics in many high-income countries.

In this period, China still had a dual health system. Those urban residents, when having a formal job (such as civil servants and the employees of state-owned enterprises), had health insurance. They usually directly went to the outpatient departments of tertiary hospitals. With the collapse of the rural cooperative medical care, most rural residents did not have health insurance. They mainly went to village clinics or township hospitals through out-of-pocket payment. As they got wealthy, they tended to directly go to the outpatient department of the county hospital or even higher-level hospitals if they could afford them. From the barefoot doctor period, they started to know and be attracted by hospitals. Now the market was "open" – there was no referral restriction. They could go as long as they could afford. More people did go with China's economic development and the unregulated competition among health facilities. They valued hospitals – according to the historical review above – they thought the higher level the health facility, the better health care even for minor health problems.

Of course many people went to higher-level hospitals because they found that their diseases were so serious that they could not be solved by the lower-level health care. But this was mainly self-referral. Those without insurance such as most rural residents found that health care became a huge burden for the whole family, especially when they had more serious diseases which required hospitalisation.

2.3.2 Further expansion of hospitals

In response to the complaints of the general public, the Chinese government recognised its low spending in health care and started a new round of health reform in 2003 characterised by the establishment of the New Rural Cooperative Health Scheme (NRCHS). The coverage of this new health insurance increased dramatically from 9% in 2003 to 96% in 2010. In addition, Urban Residents Basic Health Insurance (UR-BHI) was launched in 2007. Together with the old Urban Employees Basic Health Insurance (UE-BHI), these three health insurance schemes covered the vast majority of Chinese population.

However, the overall funding of the two new health insurance schemes (i.e. NRCHS and UR-BHI) was very limited and they could only provide a modest health benefit package. With limited funding, the government prioritised the reimbursement of hospital expenses, which drove many into poverty. Though the government had the best intention to relieve people's burden of hospitalisation, it also encouraged those who did not require hospitalisation to be hospitalised so that they could be reimbursed more. In addition, the insurance generally increased people's financial capacity to skip primary care to go directly to county or higher-level hospitals. Fed by the insurance schemes (which means much additional funding), hospitals in China had a new round of expansion with more buildings and expensive high-tech equipment.³² The tertiary hospitals staffed by specialists got further advantages in competition with lower-level health facilities. An increasingly large number of tertiary hospitals had more than ten thousand outpatient visits each day. China's hospital-based medicine was further strengthened.

2.4 The development of general practice in China

With the dominance of hospital-based medicine, general practice in China struggled but did not stop developing. As described above, after the end of the Cultural Revolution, the use of the title “barefoot doctor” came to an end in 1981 and the barefoot doctor system was officially abolished in 1986. However, from the same year (1986) some international experts in general practice visited Beijing, including Dr. Peter Lee (president of the Hong Kong College of General Practitioners) and Dr. Rajakumar (president of the World Organization of Family Doctors). They were keen on introducing general practice to China. They thought that PHC was inspired by China’s barefoot doctor system and that it was a shame that general practice was not better developed there.³³ With their assistance, China’s first regional general practice society – the Beijing Society of General Practice – was established in 1989.³⁴ However, some top leaders in China then thought general practitioners were private family physicians affordable only by the rich. Accordingly, it was not considered appropriate for China given the low national GDP at that time. General practice was therefore not promoted widely and only developed slowly in China. The first general practice training centre was founded at Capital Medical University in 1989, but the first national training course was only organised in 1992.³⁴ In 1993, the founding of the Society of General Practice, Chinese Medical Association represented the formal birth of the discipline of general practice in China.³³

In 1997, the central government started to pilot urban community health services. Community health centres (CHCs; similar to township hospitals in rural areas) and community health stations (CHSs; similar to village clinics in rural areas) were gradually established in cities. The urban community facilities were supposed to be staffed by GPs. Since the late 1990s, China’s grassroots health organisations have consisted of township hospitals and village clinics in rural areas as well as CHCs and CHSs in urban areas, which will be elaborated later in Section 2.5.5.

As introduced above, in 1980s and 1990s the slow progress of general practice occurred in the context of a deteriorating health care system. Most Chinese people did not have health insurance then and PHC and preventive services were shrinking in terms of government's spending and the quantity of relevant organizations, especially in disadvantaged regions.³² Many of the problems were finally exposed when the Severe Acute Respiratory Syndrome (SARS) struck from the end of 2002 to 2003. SARS obviously affected the abovementioned health reform in 2003 greatly, and public health started to draw much attention. China's national Centre for Disease Control (CDC) was established and received a total investment of ¥10.9 billion (around £1.12 billion) from the government.³⁵ The emphasis on public health after 2003 SARS epidemic would benefit China's health prevention, but this did not necessarily mean robust development of general practice in China. In 2000 some pilot GP residency training programmes were started in the developed eastern China – 4-year GP residency training in Shanghai and Zhejiang Province and 3-year GP residency training in Beijing. However, by the end of 2006 there was an estimate of 600 GPs in China who were trained through rigorous residency education.³⁶ In 2000s, general practice in China slowly developed with all kinds of pilot programmes. One particular characteristic of China's general practice in this period was that it accompanied the relatively strong rise of public health in China due to the alarming effect of the SARS.

Though the health reform from 2003 to 2008 expanded the health insurance coverage greatly and improved people's access, it was still based on market principles and mainly followed the USA model, as did China from its opening-up. This probably reflected the government's limitations in understanding the importance of competent primary care providers, Chinese people's preference for hospitals as well as big hospitals' power in related decision making. As a result, many health problems were still not solved and people continued to complain.

Accordingly, a further reform was carried out from 2009 with the aim of providing affordable basic health care for all by 2020. From 2009 to 2011, the government offered an additional funding of CN ¥850 billion (approximately £87 billion).^{37, 38} This time, China's health care started to

appreciate the UK model. Three key documents by the Central Committee of the Communist Party and State Council identified five priorities of the reform, two of which directly concern PHC – improving PHC delivery at grass-roots level and providing basic public health services equally.³⁹⁻

⁴¹ The focus of organisational upgrade was on county hospitals and grassroots health institutions. For 2011 alone more than 300 county hospitals, over 1,000 township health centres and over 13,000 village clinics were built or renovated.⁴⁰ From 2009-2011, 3,700 community health centres and 11,000 community health stations were planned for urban areas.³⁹ This round of reform has invested a lot in grassroots health organisations, especially the infrastructure. Consequently, the newly-built urban community health organisations (centres and stations) require health workforce. Actually, since the late 1990s when the urban community health organisations started to be established, China has started to ask the existing health professionals working at the grassroots level to join some short training-in-service programmes so that they can become GPs. The majority of GPs in China have been trained through these short training-in-service programmes rather than rigorous GP residency training. Most doctors with higher education level are still specialists in hospitals. Though grassroots health organisations have developed, the expansion of big hospitals is probably faster with the surge of the overall patient visits fuelled by the sudden huge government funding.

The 2009 health reform is still ongoing and it finally realises the importance of health workforce, especially quality GPs. In 2011 “State Council’s Guidance on Establishing General Practitioner System” was issued. The overall objective was to set up a well-functioning and active GP system by 2020 with two to three GPs per 10,000 people. Furthermore, in 2013 seven government ministries jointly launched the Standardised Residency Training (SRT) as a national strategy with the aim that residency education would become compulsory nationally for all practicing doctors by 2020. China is trying to establish a 5+3 medical education model which mandates 5 years of undergraduate medical studies (leading to a bachelor degree) followed by 3 years of residency (called SRT in China) in one of the 36 specialties. General practice is one of these 36 SRT specialties, and has been emphasised most. By the end of 2014, the first cohort of SRT resident

doctors (totalling 55 000) were recruited in 30 Chinese provinces, around 10% of whom (5158) were enrolled as GP residents. In other words, nationwide GP residency training has finally started. Now GP has become the most striking key word of China's health reform in 2010s. After the long review, I finally go back to the ambitious plan and fast development of China's GPs mentioned at the beginning of my thesis, which serve as the key inspiration of my doctoral research.

2.5 Doctors in China – six attributes

With the historical review presented above from barefoot doctors to GPs, it is easier to understand contemporary doctors in China from six dimensions.

2.5.1 Medical school education

As introduced above, China's medical education to train western-style doctors first changed from the US and UK model to the Soviet Union model after 1949 – top medical schools were taken out of the comprehensive universities to become independent stand-alone medical universities. However, with China's opening-up and transition to a market-oriented economy, it started to learn again from the high-income countries such as the US. Starting in 1998, most medical schools were merged back into comprehensive universities by following the model of the high-income countries. For instance, Beijing Medical University became part of Peking University called Peking University Health Science Centre. The national strategy then was to build up world-class comprehensive universities. When medical schools became part of universities, it was expected that China's medical science capacity would improve. With the merger, the ultimate control of these medical schools shifted from the MOH to the Ministry of Education (MOE).

Not all the stand-alone medical universities/colleges have been merged back, and some of them keep their independence. These stand-alone medical universities/colleges and medical divisions

of some comprehensive universities constitute China's Institutions of Higher Education (HEIs) for medicine (Table 2.1).

With the turbulence of these higher-education-level medical schools which are not identical at all even in the same period, the clinical medicine programmes provided by them are different. In history (still the case today), the length of China's clinical medicine programmes can vary from 3 to 8 years. An article in The Lancet in 2010 shows that:

*"China's educational programmes are complicated. Students of clinical medicine enrol directly from high school for degrees that last 3 (diploma), 5 (bachelor), 6 (bachelor), 7 (master), or 8 years (MD). A stepwise system also exists, in which students progress from bachelor to master for 3 years, and then to MD or PhD for another 3 years, with a possible gap between degree courses."*⁴²

Here, the 3-year programmes, which focused on practical training and less on theoretical study, were provided by some less-privileged medical schools. In fact, as introduced in Section 2.2.2, during the Cultural Revolution, all the higher education for medicine was abandoned or shortened to 3 years. Today these less-privileged medical schools and the 3-year programmes still exist widely to train doctors mainly working in rural China. The 3-year programme leads to a diploma called a vocational diploma (*Zhuan Ke* in Chinese; lower than a bachelor degree) in this thesis.

The most common higher-education-level medical schools provided 5-year clinical medicine programmes (leading to a bachelor degree similar to UK's MBBS). The 5-year programme has become China's current national standard.

The 2010 Lancet article also mentioned the 6-year programme (leading to a bachelor degree as well). As introduced in Section 2.2.1, before the Cultural Revolution some 5-year programmes

were lengthened to 6 years and some medical schools kept this tradition for a long time. The 6-year programmes were phased out soon after 2010.

Meanwhile, some leading medical schools were privileged to provide 7-year run-through programmes (leading directly to a master degree) or even 8-year run-through programmes (leading directly to a doctorate degree). With the establishment of the nationwide SRT, the 7-year run-through programme was suddenly phased out in 2015.

Now in 2016 (six years later after that Lancet paper was published), China's medical education has again changed greatly. With several decades' efforts, China's medical school education has become clearer with only 3, 5 and 8 years of programmes left – still not identical but much more orderly.

Table 2.1 China's medical schools and associated diplomas/degrees

Level	Provider	Diploma/degree
Institutions of Higher Education (HEIs)	(1) Medical divisions of some comprehensive universities	Doctorate
		Master
	(2) Stand-alone medical universities/colleges	Bachelor (five years from high schools)
		Vocational diploma (called <i>Zhuan Ke</i> in Chinese; three years from high schools)
High-school level education	Secondary vocational medical schools (SVMSs)	Secondary vocational diploma (SVD; called <i>Zhong Zhuan</i> in Chinese; around three years from middle schools)

In addition to higher-education-level medical schools, China has many Secondary Vocational Medical Schools (SVMSs; Table 2.1). After middle schools in China (9th grade), some students may go to a SVMS. Three-years of study at a SVMS can lead to a secondary vocational diploma

(SVD) called *Zhong Zhuan* in Chinese. The SVD is even lower than the vocational diploma. As introduced in Section 2.2.1 many such schools were set up soon after the establishment of the PRC in 1949. They expanded greatly during the Great Leap Forward (1958 – 1960). In addition, during the Cultural Revolution (1966 - 1976) they were more active than the halted or shortened higher education.⁴³

The vocational diploma from the less privileged medical schools and the SVD from the SVMs explained why half of China's officially-recognised doctors nowadays do not have a bachelor degree. The literature in English tends to ignore those two diplomas, which are lower credentials than a bachelor, partially because they differ so markedly from medical education systems in high-income countries. Nonetheless, the graduates with these two diplomas constitute about half of China's current doctors. More importantly, the vast majority of the current GPs in China are graduates with these two diplomas. Many of the 1 million village doctors even do not have these diplomas.

2.5.2 Residency educationⁱ

There was no nationwide residency in China when I started this doctoral research in 2012. Residency was strictly implemented only by some time-honoured teaching hospitals individually. China's first formal clinical residency programme following the Johns Hopkins model started in 1921 at the Peking Union Medical College Hospital and then several other leading national university hospitals; for most general medical graduates in China, the importance of residency education to become a quality doctor did not get the attention it deserved.

ⁱ For China's residency and the new 5+3 medical education model in comparison with the UK and US model, I have written a paper published in *Lancet* in June 2016 (which has drawn some content from this chapter). For the detailed introduction and analysis of China's residency education, please see the paper (Appendix 3 of this thesis). China's residency is a huge topic which deserves another thesis. The focus of this thesis is China's GPs. Accordingly, I will only introduce some basic content here, especially China's degree-centred system.

In late 2013 the central government started to make great efforts to change this situation, and was determined to establish a 5+3 medical education model – 5 is the abovementioned five-year undergraduate medical programme (leading to a bachelor degree) and 3 is the residency called Standardised Residency Training (SRT). SRT will become mandatory nationally by 2020. SRT consists of 36 specialities, and general practice is one of them. The training length for each of the 36 specialities (including general practice) is 3 years.

To fully understand China's residency, I have to go back to Section 2.5.1 but from another perspective. Medical education in China has been dominated by the degree-oriented system for a long time. In the eyes of most Chinese, there is a ladder of the three degrees – bachelor, master and doctorate, applicable for most disciplines; medicine is only one of them. Based on test scores of the National University Entrance Examination which takes place all around the country every year in June, high school students compete for entrance into universities. After obtaining a bachelor degree, those who wish to advance to a master degree have to take the National Master Entrance Examination. Similarly, through the National Doctorate Entrance Examination, a student can pursue a doctorate degree. Usually in medicine, the bachelor, master and doctorate takes 5, +3, and +3 years, respectively. Like other disciplines in China, this is a step-wise system. It takes a total of 11 years (5+3+3) to progress through bachelor, master and doctorate in medicine.

Some leading medical schools in China are privileged to offer fast tracks for these three medical degrees. China's best medical schools are authorised to offer an 8-year program after high schools directly leading to a doctorate degree. Some offered a 7-year run-through program, where successful completion could lead to a master degree, but the 7-year degree has just been phased out as introduced in Section 2.5.1.

One problem especially in China was that these medical master or doctorate degrees are considered in the same way as other academic disciplines. Most Chinese do not distinguish a PhD from a MD. For instance, although it is clear that the 8-year run-through programmes can lead to a doctorate degree, it is often vague as to whether it is a MD or PhD or possibly both. In fact, the leading medical schools offering the 8-year run-through programs have different understandings of the programs' nature and accordingly differing curriculums. In some extreme cases of mismatch, some have found that a prestigious doctorate graduate cannot diagnose diseases well while s/he is able to fluently write academic papers.

Realising this serious problem, as early as April 1997, China's State Council approved the trial guideline on professional degrees in clinical medicine, which was released in February 1998.⁴⁴ The Guideline authorizes two levels of professional degrees in clinical medicine: Master of Medicine (MM) and Doctor of Medicine (MD). However, in practice, the related academic science degrees – Master of Science in Medicine (MSc) and Doctor of Philosophy (PhD) in Medicine – were more prestigious than MM and MD, respectively.⁴⁵ The boundaries between academic science degrees and professional degrees in medicine were not clear. For instance, different top medical schools might have different understanding of MM. A survey on 17 medical schools which offered MM programmes found that the admission requirement was different and the required length of clinical skills training varied from 12 months to 30 months.⁴⁶

All in all, China historically had neither formal nationwide residency nor clear clarification of professional degrees (e.g. MM and MD) versus academic science degrees (e.g. MSc and PhD in medicine). Under these circumstances, paralleling the US model, the master and doctorate programs in medicine often served as China's de facto residency and fellowship training, respectively: a master or doctorate student usually practised medicine in the department of and under supervision of his/her supervisor. In other words, he/she gradually became a specialist in the specialty of his/her supervisor. That partially explains why the Chinese medical students

enrolled in the bachelor programs made every effort to prepare for the national medical master or doctorate examination – the progress of medical degrees meant improved clinical training.

More importantly, in China's degree and hospital centred system, the medical degrees help students find a job in relevant hospitals. Roughly, a bachelor, a master and a doctorate degree corresponds to a job in a county hospital, a prefecture-level hospital and a provincial or national-level hospital, respectively. When becoming a formal employee of the hospital (often with a *Bianzhi* as introduced in Section 2.5.6), the doctor may also receive training organised by the individual hospital. This is another kind of de facto residency training in China. It is also a self-strengthened system: those with a higher degree are more likely to find a job in a higher-level hospital where they are more likely to receive more rigorous training, and vice versa. This is another reason why Chinese medical students try their best to improve their degrees. In addition, medical degrees are also associated with their future medical career progress, their income and welfare, as introduced in Section 2.5.4.

This degree-centred system exerts a significant influence on China's residency. For a long time, this system blurred the domains between the medical school education and the graduate medical education in hospitals and, at least to some extent, led to the general neglect of residency education in China. Residency is essentially advanced vocational training for professional practice. However, China's degree-centred system has forced its residency to be connected with degrees. There are two tracks of doing residency in China now. One is the SRT led by hospitals under the jurisdiction of the National Health and Family Planning Commission (NHFPC).ⁱ The other is the MM degree programmes led by medical universities under the control of the MOE which has changed most medical master programmes to MM programmes and have kept only a small proportion of MSc in Medicine programmes. This arrangement represents two strategies of China's medical

ⁱ NHFPC was established in March 2013 as a result of the merge between the MOH and National Population and Family Planning Commission. In other words, the NHFPC is the successor of the MOH.

education reform, and is a compromise between the NHFPC and the MOE.ⁱ However, behind the degree is often the academic science competency, while the residency training should mainly lead to clinical competency. The combination has obscured the function of the residency training, compromising the clarity and distinctiveness of academic and clinical competencies.

2.5.3 Licensure and registration

The graduates with vocational diplomas will firstly become licensed assistant doctors. Some may think that these licensed assistant doctors are like health workers or physician assistants in the US, or physician associates in the UK. However, the essential difference is that these diplomas offer a legitimate alternative pathway to obtain full doctor licensure and registration.

I will first introduce the main pathway. According to Chinese Law on Licensed Doctors, those with a medical bachelor degree, after one-year work experience in a health institution supervised by a licensed doctor, are allowed to take the China Examination for Becoming Licensed Doctors (CEBLD). After passing the examination, they become a qualified licensed doctor who must register at a health authority at country or higher level. After successful registration, they formally become licensed doctors.

Compared with the UK and US, the biggest difference of China's medical licensure and registration is that the main route is not the exclusive pathway of becoming a licensed doctor. Those with vocational diplomas, after one-year work experience in a health institution, are allowed to take an examination to become licensed assistant doctors first. Those licensed assistant doctors

ⁱ In Section 2.5.1, I introduced that from 1998 the stand-alone medical universities were merged to comprehensive universities and accordingly the ultimate control of these medical schools were changed from the MOH to MOE. The establishment of the nationwide SRT led by the NHFPC, to some extent, is the latest “fight” between the NHFPC and the MOE over the control of the medical education. NHFPC can regain some lost power (at least the graduate medical education).

with a vocational diploma or a SVD, after 2 years or 5 years, respectively, of work experience in a health institution, are eligible to take the CEBLD to become fully licensed doctors.

In addition, though theoretically a licensed assistant doctor needs to practise under the supervision of a licensed doctor, in reality most of them practise independently and legally in rural China. Clause 30 of the China Law on Licensed Doctors states that in rural counties or “backward towns” a licensed assistant doctor can practise independently.

These licensed doctors and licensed assistant doctors have been defined as China’s officially-recognised doctors in this study at the beginning of this chapter. They are categorised into four **practice categories**: clinical medicine, TCM, dentistry, and public health. The doctors with the practice category of clinical medicine are China’s western-style doctors. They (clinical doctors) account for the vast majority (76.8%) of the 2.9 million officially-recognised doctors (Figure 2.3) – western medicine has dominated China. Meanwhile, TCM doctors are still a significant proportion (14.5%; Figure 2.3).

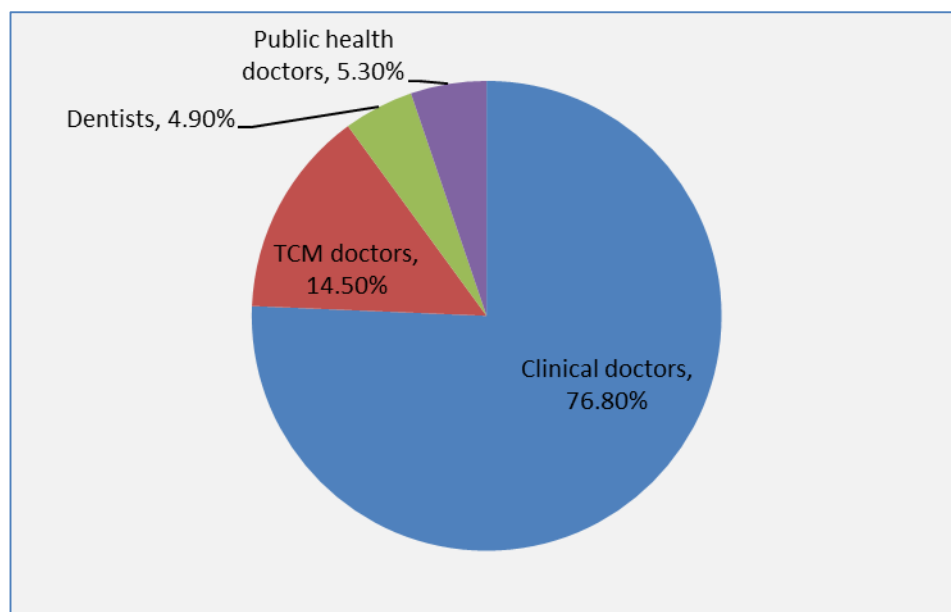


Figure 2.3: China’s officially-recognised doctors by practice categories

Under each of the four practicing categories, there are some **practice scopes**. Each provincial health authority has the right to modify the practice scopes. Nationally there are approximately 16 practice scopes under clinical medicine such as internal medicine, surgery, and paediatrics. The registration of each officially-recognised doctor shows his/her practice category and practice scope. International literature, when mentioning doctors in China, may only mean those clinical doctors, as they are the vast majority of China's officially-recognised doctors and are more familiar to international audience. A paediatrician in China means an officially-recognised doctor (practice category: clinical medicine, and practice scope: paediatrics).

2.5.4 Medical Career Grades - *Zhicheng*

In the US and UK models, specialty certification is the highest professional credential. Those successfully completing the residency in the US are called attending physicians. In the UK, those completing the specialty training in general practice become GPs, and those completing the specialty training in other specialties are called Consultants who usually work in the hospitals.

However, China uses its special professional title (called *Zhicheng* in Chinese) system to organise its medical career grades. In fact, China has this *Zhicheng* system for all the major professions. It is easier to understand *Zhicheng* in the setting of universities. Professorship, associate professorship and lectureship are all *Zhicheng* (professional titles and ranks). *Zhicheng* is divided into three tiers – junior, intermediate and senior grades. Licensed assistant doctors and licensed doctors fall into the junior grade. Intermediate-grade *Zhicheng* for a medical doctor is a Doctor-in-Charge. Senior-grade *Zhicheng* consist of Associate Director Doctor and Director Doctor.^{47, 48} Associate Director Doctor in medical sector is equivalent to Associate Professor in educational sector; Director Doctor is equivalent to Professor. *Zhicheng* is directly related to salaries and other benefits.

Medical diplomas and degrees play a significant role in progression of *Zhicheng*. This strengthens China's degree-centred system and also explains why medial students and doctors in China make every effort to improve their degrees. There has been a national examination for becoming Doctors-in-Charge since 2001.^{48, 49} Those with a doctorate degree in medicine are qualified to take it without any work experience; those with a master require two year work experience; those with a bachelor degree, vocational diploma or SVD, after formally becoming licensed doctors, require future work experience of four, six or seven years, respectively (Table 2.2).⁵⁰

Doctor-in-Charge is the ceiling *Zhicheng* for those who only have a SVD; Associate Director Doctor for a vocational diploma. No national examinations are required in order to become an Associate Director Doctor or a Director doctor. To make progress in this *Zhicheng* system, especially to get the senior-grade *Zhicheng*, to a large extent, depends on academic publications rather than clinical competency, which may not be very relevant to practice skills.

Table 2.2: Work experience for progress in China's medical career grades

Degree/ diploma	Licensed Assistant Doctor	Licensed Doctor	Doctor-in- Charge	Associate Director Doctor	Director Doctor
Doctorate	NA	0	0	+2	+5
Master	NA	0	+2	+4	+5
Bachelor	NA	1	+4	+5	+5
Vocational diploma	1	+2	+6	+7	Not possible
SVD	1	+5	+7	Not possible	Not possible

Before the nationwide SRT in China, a medical doctorate graduate could find a job in a top hospital and soon might pass the examination to become a Doctor-in-Charge. If everything went well, in two years he/she would become an Associate Director Doctor and then a Director Doctor in another five years. Each step of the progress of the *Zhicheng* serves as a milestone of the medical profession. From this perspective, China's *Zhicheng* system, to some extent, served as another

kind of de facto residency and fellowship training, leading to the competency of independent practice. In terms of clinical competency, China's Director doctors were more comparable to the attending physicians who have completed the fellowship training in the US or the consultants in the UK.

2.5.5 Practice venue – health organisations in China

In the hospital-based health system, the most distinguishing characteristic of doctors in China, to some extent, is that they are not independent medical professionals. They rely heavily on the health organisations where they are working. To fully know doctors in China, it is imperative to understand these health organisations.

In this study, health organisations are defined as those places where doctors work such as clinics and hospitals. In particular, China's public hospitals (most health facilities in China are state-owned) have three main levels. Most village clinics are private but they are guided by township hospitals. For instance, township hospitals monitor the public health work of the village clinics. Village clinics are considered below the first-level health organisation (Table 2.3). In rural areas, the township hospital falls in the first-level health organisation. It has inpatient beds and can conduct some simple operations such as an appendectomy. The county hospital falls in the second-level health organisation.ⁱ The famous three-tier health system of rural China consists of village clinics, township hospitals and county hospitals, which have been developed from barefoot doctor clinics, commune health centres and county hospitals, respectively.

ⁱ A county hospital is a second-level health organisation in China's three-level system. In function, it is a tertiary hospital. A county hospital is usually the medical centre (the best hospital) of a county which often has a population of more than 500 thousand.

Table 2.3: Category of China's health organisations

Category	Rural health organisations	Urban health organisations	Doctors in the organisations
Third level		City central hospitals (prefecture or above)	Licensed doctors
Second level	County hospitals	City district hospitals	Mainly licensed doctors and some licensed assistant doctors
First level	Township hospitals	Community health centres	Licensed assistant doctors and licensed doctors
Below first level	Village clinics (mainly private)	Community health stations	Village doctors, licensed assistant doctors and a small number of licensed doctors

In urban areas, China has started to establish community health organisations (CHOs) since 1999. CHOs consist of community health centres (CHCs) and community health stations (CHSs), which are the urban counterparts of township hospitals and village clinics, respectively, in terms of the level of the health organisations. Grassroots health organisations (GHOs) in China mean the first-level health organisations and below. In other words, GHOs include township hospitals, village clinics and CHOs (CHCs and CHSs).

These CHOs (where urban GPs are supposed to work) are relatively new – most of them start to emerge in 2000s. They are newly constructed or converted from very small hospitals in cities. Alternatively, with China's extremely fast urbanisation, a township hospital may automatically become a community health centre as the whole region (where the township hospital is) becomes urban from rural. It is not surprising that many CHOs, especially CHCs, still have some patient beds.

City central hospitals here mean the Third-Level-A (*Sanjia* in Chinese) hospitals in China. A city central hospital is usually the regional health care centre of a prefecture (a catchment area of several million residents). It is usually in the city of prefecture level or above. Some top city hospitals are the teaching hospitals of medical universities. An extreme case is Beijing, which has

more than 100 such Third-Level-A hospitals, attracting patients from all over the country. Urban residents and, increasingly, rural residents (with the economic growth and convenient transportation) tend to directly go to the outpatient departments of these city central hospitals. The over-crowded outpatient department of a city hospital is like the “combination” of numerous specialist clinics in many high-income countries. An increasingly large number of these city hospitals’ outpatient visits exceed 10,000 or even 20,000 per day.

Each medical doctor’s registration shows his/her affiliated health organisation (i.e. practice venue). Strictly following the law, this doctor can only be allowed to practice in the registered practice venue. This also shows the strong power and control of hospitals over doctors. However, the enforcement is looser in China’s increasingly “open” market.ⁱ Some places are conducting pilot reforms allowing doctors to practise medicine in multiple venues.

2.5.6 China’s *Bianzhi* system

During China’s central planning period, it used *Bianzhi* to control all the formal job positions. Though China has been in transition from central planning to market-orientated economy for more than thirty years, the *Bianzhi* system still plays a significant role. A *Bianzhi* is considered to be an “Iron Rice Bowl” which indicates a permanent job with salary, pension and benefits guaranteed by government’s public finance. To a large extent, China is still using its *Bianzhi* system to plan

ⁱ A typical case is named “see you on Friday evening” by an anonymous health expert in China. Many top surgeons in China are working in those leading teaching hospitals in Beijing – the surgeon’s registered practice venue is a single hospital which strictly speaking is the only legal place where that surgeon can do operations. However, many big hospitals in other provinces often invite these top surgeons to use their weekends to fly there to do operations, as patients like these experts from capital Beijing. This is a grey area but many top surgeons do so as the payment is very high. These top surgeons are called “flying lancets”. It is often very difficult for common people to see these top surgeons as they are popular and very busy with operations. The half joking is that if you want to find them (probably find them all together), just go to the executive lounge of Beijing Capital International Airport on Friday evening. They are all there, waiting for their planes flying to various cities of the whole country every Friday. That is also the time they “bump into” each other. That is why the leading surgeons in Beijing say “see you on Friday evening” to one another.

health workforce (especially those highly qualified ones). For instance, the local *Bianzhi* office usually sets up a ratio of “doctor *Bianzhi*” to the number of patient beds.

China has been reforming the *Bianzhi* system for many years. However, those with *Bianzhi* are still better off compared to those without it. For instance, a recent publication showed that in China on average 51% of nurses were contract-based while the rest had *Bianzhi*, and contract-based nurses were significantly more dissatisfied compared to *Bianzhi* nurses who had more job security ($P < 0.01$).⁵¹

Bianzhi is a historical legacy of socialist China, but today it is still influential. Only the employees of the state-owned health organisations, though these so-called public organisations quite often are profit-driven in China’s market-oriented society, are likely to have *Bianzhi*. Similarly, only the employees of these public health organisations can make progress in China’s professional title system (the de facto career progression). To put it another way, *Bianzhi* and the professional title system have trapped most officially-recognised doctors in China in the state-owned health organisations (especially those high-quality doctors in big tertiary hospitals). Together with the registered practice venue regulation introduced above, they often lock a doctor in a public hospital for a lifetime. (This also means high-quality and low-quality practices are perpetuated in silos of individual hospitals.) This has contributed to the hospital-based medicine and the strong power of hospitals in China. Though some places of China are having some pilot reforms about the *Bianzhi* and the *Zhicheng* system, generally there is no breakthrough.

2.6 Summary

In this chapter, I reviewed the evolution of doctors in China – the largest doctor group in the world – with particular focus on barefoot doctors, the newly-planned GPs and the latest reforms. I established a six-attribute framework to view doctors in China thoroughly.

Since its modernization, China has formed a dual health system. A dual system existed before the establishment of the PRC in 1949. Even today it is still a dual health system with three different social health insurance schemes. The dual system corresponds with the medical pluralism – a large variety of medical doctors with different educational background coexist.

Through more than a century's development, hospitals have dominated China's health care system. Even the grassroots-level township hospitals and CHCs are organised in the same way to the big tertiary hospitals. It is a clear hierarchy with those city central hospitals (which are large in scale and equipped with expensive machines) at the top. Hospitals, as collective workforce management units, together with the socialist traditions from 1949, have gained great power and probably the biggest invested interest in China's health care. Hospitals in China consumed 76% of the whole country's health spending, while in the US and Australia this figure was 31% and 33%, respectively.⁵² Each city central hospital is like an independent kingdom and has a large flexibility to make its own decisions. In my thesis, I call this the hospital autonomy. In the dominance of hospitals, China has strong hospital autonomy rather than health professional autonomy. Doctors are highly controlled by hospitals.

Yet another healthcare issue apparent in China's history is that of specialisation. In a hospital-dominated system, most relevant policies eventually serve the needs of hospitals, including the training and usage of doctors. The purpose of doctors' education is to provide employees of hospitals – specialists. The vast majority of doctors in China are still specialists. Even the grassroots-level township hospitals and CHCs are staffed with specialists or so-called GPs (who are retrained from specialists), though these specialists may only have the secondary vocational education. The *Bianzhi* system, the *Zhicheng* system, the degree centred system, the licensure and registration all cater for the interests of the city central hospitals. Since the introduction of western

medicine, hospitals have developed well (maybe too successfully) in China, but the complimentary western tradition of general practice has been poorly learned.

With more than a century's development towards a hospital-based system and specialization (pushed by advanced technology and medical sciences), China suddenly finds it has no GPs. Especially compared with those high-income countries (even US has a large number of family physicians), China realizes the lack of GPs is probably an essential reason of its failure of several rounds of health reforms. In 2010s, GP has become the hottest key word of China's health reform, and it seems that training sufficient GPs is the best solution to China's health care problems. If China successfully establishes a GP system, it means it has reversed more than a century's trend towards a hospital-based health care. It is by no means easy.

2.7 Research questions

Given the contexts, my thesis explores the most urgent issue for China's ongoing health reform – whether the planned GP system is viable. Much attention has been given to the quantity of GPs – it seems that the viability of general practice in China depends on the achievement of its ambitious goal of training 300,000 GPs by 2020. However, given China's medical pluralism and historical legacies, I argue that deliberately pursuing a figure on its own is not meaningful as the number of GPs in China rest on how to define them. Accordingly, I establish three research questions which are fundamental to the viability of general practice in China:

- 1- How does the Chinese government define GPs?

In late 1980s it was the government's misunderstanding that impeded the wide development of general practice in China. Either the previous barefoot doctor movement or the current "GP

phenomenon” is mainly a government initiative. In fact, China’s strong government even performs many functions generally carried out by the professional societies in high-income countries. Accordingly, the first step of examining the viability of general practice in China is to analyse government’s understanding of and strategies towards newly-planned GPs.

- 2- How do GP-related medical students and doctors (i.e. PITs defined in Chapter 1) immersed in a hospital-oriented system view the “new” GPs?

Everyone (including the PITs) in China’s health sector is aware of or discussing GPs. However, this does not necessarily mean that they have a shared understanding of general practice. If the PITs (let alone the general public) do not fully understand the roles and responsibilities of GPs, the foundation of China’s newly-planned primary care remains shaky.

- 3- What are the factors preventing medical students from becoming GPs?

Medical students are the future of China’s GP system. If there are not sufficient medical students who opt for a GP career, China’s general practice will not be viable.

CHAPTER 3 METHODOLOGY

To address the first research question regarding how the government defines GPs, I systematically reviewed government policy documents issued by China's central government related to GPs. This systematic approach is illustrated in further detail in Section 3.1.

In China, the central government makes policies, while the provincial governments comply with the policies and are mainly responsible for implementation. Consequently, I analysed the government documents at national level, and examined the implementation at provincial level. It was impossible for a doctorate study to investigate all the provinces of such a huge country. Accordingly, I selected one province – Henan (as explained in Section 3.2.2) to do the fieldwork.

To address the second and third research questions regarding PITs' understanding of GPs and medical students' motivation to practice as GPs, I employed a mixed methods approach using the case study of Henan Province (Section 3.2). I chose to focus on a provincial case study given the unfeasibility of answering the question for China as a whole. Even a single province in China was huge and diverse. I carried out two rounds of fieldwork, travelling across the entire province (area: 167,000 km²; larger than England plus Wales). The fieldwork included eight focus group discussions (FGDs) and seven semi-structured interviews which involved almost 300 pages (more than 160 thousand words) of transcription. For the quantitative component, I administered 1,887 questionnaires covering medical students, township hospital doctors and GP residents, as detailed in Section 3.2.

3.1 A systematic approach to review government documents

I use a systematic approach to review these government documents. Given the nature of my study (targeting the government documents), this systematic approach is slightly different from the

traditional systematic review.^{53, 54} Some scholars may call this approach a structured review.^{55, 56} This approach complies with the protocols of the systematic review widely used in health care research,^{57, 58} as detailed below.

3.1.1 Search strategy and databases

My study uses two databases, “PKULaw” and “PLOC (Policies & Laws of China)” for searching. PKULaw is the largest and most reputable database for Chinese laws, regulations and policy documents. It is jointly built by Chinalawinfo Co., Ltd. and the Institute for Legal Translation Studies of Peking University. PLOC is one of the databases maintained by Wanfang Data, which leads the development of China’s electronic information and is affiliated to the Ministry of Science and Technology of China. It covers a comprehensive range of policies, regulations and Laws at both the national and regional level from 1949 onward in China. These two databases are most inclusive for Chinese government documents, laws and regulations. Their influence has been well recognised internationally. Many non-Chinese universities (e.g. University of Oxford) have purchased these two databases and the full texts of the documents can be accessed.

Though these two databases both have English interfaces, only some documents have been translated into English and the bulk of the content is in Chinese only. Therefore, my research uses a Chinese search strategy “全科医学+全科医生+全科医师+家庭医学+家庭医生+家庭医师”, which means “general practice or general practitioner(s) or family medicine or family doctor(s) or family physician(s)”. The adoption of this search strategy is self-evident, as my study targets Chinese government documents in relation to GPs. By applying the search strategy, the two databases (PKULaw and PLOC) were searched in February and March 2015.

3.1.2 Selection criteria

In systematically identifying relevant documents, I set the following inclusion criteria in advance:

(1) The government document needs to directly mention general practice or GP(s) for at least a paragraphⁱ in its full text. (2) The document should be issued at a national level such as the State Council and its ministries/commissions.

The main exclusion criterion is that this research does not include the documents issued by local authorities. In this study local authorities refer to the governments and their departments/bureaus at provincial level and below. In China the government documents are mainly transmitted vertically – e.g. from the State Council to its related ministries or/and the governments at the provincial level; from the National Health and Family Planning Commission (previously Ministry of Health) to the provincial health and family planning commissions under the provincial governments (previously provincial departments of health). The local authorities have to comply with the national policies, and are mainly responsible for implementation rather than policy making.^{59, 60} This explains why my research explores government policy documents at national level and carries out analysis on policy implementation targets (e.g. related medical students and doctors) at provincial level. Another reason for adopting this exclusion criterion is for time and resource limitations.

In addition, the general government documents which only briefly mention general practice/GPs will be excluded. Some documents are written very broadly for general issues, and may occasionally mention general practice/GPs once in a sentence. These documents will not help identify the government's understanding of GPs, and accordingly are not included in this review.

ⁱ This will be further explained in the following exclusion criteria.

The records of the search results were first screened through their titles and then the full texts, according to the inclusion and exclusion criteria. My search found 324 documents in the database PKULaw, and after the title screening 212 were left. Through checking the full texts of these documents, 77 documents met the inclusion criteria. Similarly, the search of the database PLOC retrieved 1816 records, most of which were issued by regional authorities. Then, 258 documents were identified by screening the titles. After review of the full texts, 55 documents were identified for inclusion. After removing duplicates of the two databases, a total of 77 documents were identified for inclusion in this study. Finally, the study was supplemented with an additional 14 documents through my fieldwork collections, a further search of the Internet (mainly the official websites of the identified government playersⁱ) and checking the sources that emerged through review of identified documents (some documents refer to other related documents). In total, 91 government documentsⁱⁱ are included (Figure 3.1). All the identified documents were uploaded into the software NVivo 10 for extraction and analysis.

ⁱ See chapter 4 for a detailed list of government players

ⁱⁱ See Appendix 1 for a list of the 91 government documents

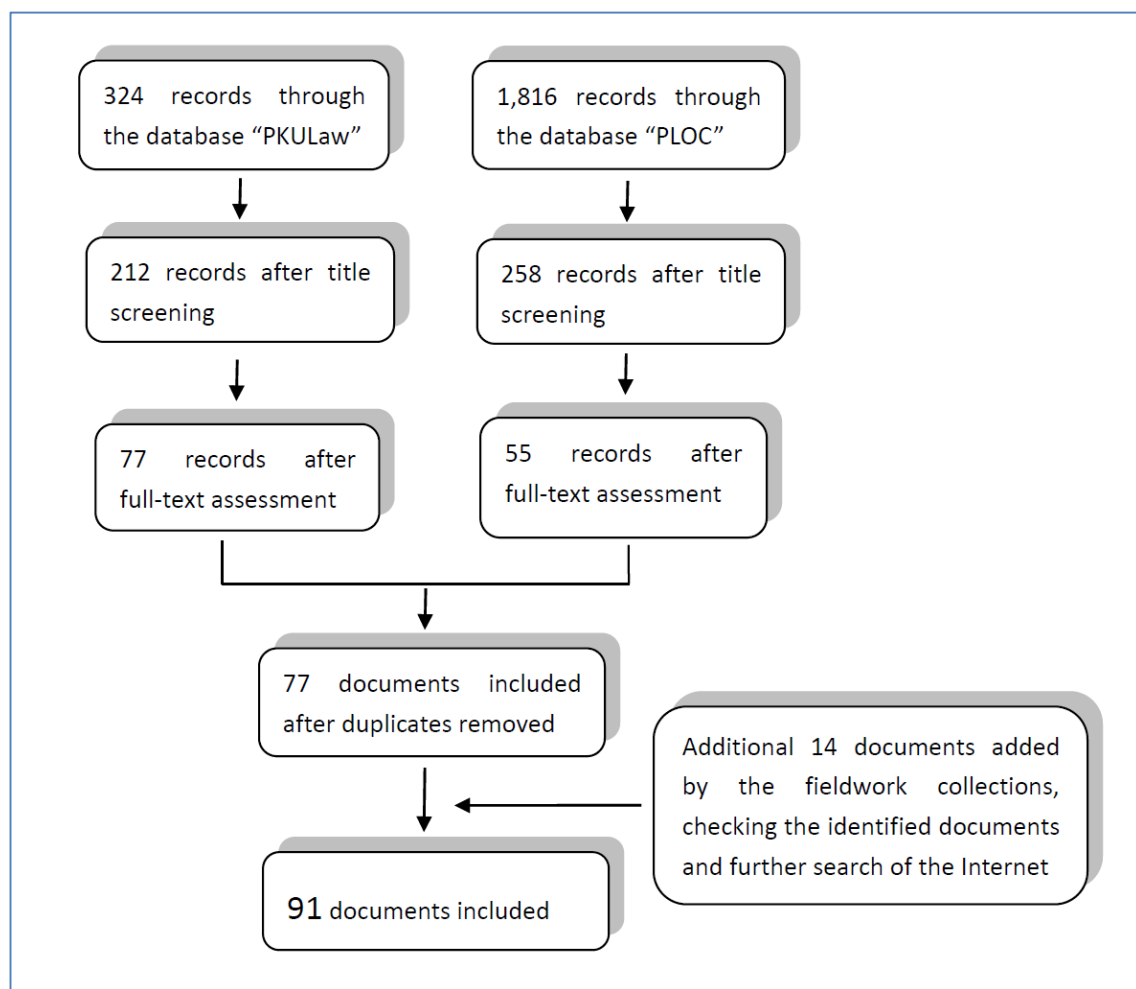


Figure 3.1: Flow Chart of the document searching

3.1.3 Data extraction

To reveal the government's understanding of GPs and the objective of establishing a GP system, my extraction of the documents focuses on the definition of GPs/general practice given by the government and the roles assigned to GPs. In addition, the roles of GPs rely on the education and training they receive, and therefore my study explores the training programmes and their curricula. Furthermore, I extract additional information on the issuers of the documents (the specific government department making the policy) and the release time, in order to identify the key government players as well as the government's strategies of GP capacity building over time.

3.2 A mixed methods approach based in Henan Province

My study on the policy implementation targets (PITs) employs a mixed methods approach. As a method of breaking down the qualitative and quantitative divide, the mixed methods approach has been widely accepted and used since 1990s,⁶¹⁻⁶³ especially in the field of health.^{64, 65}

The mixed methods approach was deemed most appropriate to effectively address my research questions, examining the breadth and depth of understanding of GPs by the PITs and the factors affecting their choice of a GP career. Contemporary GPs are very new to China (with little systematic research), a huge and diverse country with complex histories and traditions. As a new “phenomenon”, there is a dearth of reliable data about GPs which will allow us to conduct rigorous quantitative analysis as done in high-income countries where the system has been well established. Accordingly, understanding of China’s GPs requires a qualitative contribution, without which quantitative questionnaires cannot be designed. The qualitative study (thematic analysis of Focus Group Discussions (FGDs) among TRUMP students and semi-structured interviews with GP-TT trainees) will be elaborated in Section 3.2.4. In addition, the quantitative study (standard summary statistics, chi-square test, and logistic regression; Section 3.2.5) on 418 TRUMP students, 1349 GP-TT trainees and 120 GP resident doctors helps confirm and mutually adjust findings from the qualitative one and further answer the research questions. This mixed methods approach is not limited to simple cross-checking. The qualitative and quantitative elements help one another in several ways, and are triangulated (Section 3.2.3) to “locate” the answer to the research questions and make the research more robust.⁶⁶⁻⁶⁸ Before moving to the specific methods, I will firstly introduce the ethics clearance (Section 3.2.1) and the research setting (Section 3.2.2).

3.2.1 Ethics clearance

The whole research project has been reviewed by, and received ethics clearance through, the University of Oxford Social Sciences and Humanities Inter-Divisional Research Ethics Committee

(IDREC) – Ref No: SSD/CUREC1A/13-282. Medical students were informed that there would be no academic penalty for non-participation or withdrawal.

3.2.2 Research setting – Henan Province

As discussed above, the policy making related to establishing a GP system is mainly at the central government level, while the implementation takes place in the province. Accordingly, one province, Henan, was selected to explore the PITs. China (excluding Hong Kong, Macau and Taiwan) has 31 such provincial level jurisdictions: 22 provinces, 4 direct-controlled municipalities (i.e. Beijing, Shanghai, Tianjin and Chongqing) and 5 autonomous regions (such as Tibet). Henan Province, located in central China (Figure 3.2), is in the middle of the 31 provincial level jurisdictions in terms of economic development. More importantly, as the most populous province in China, Henan is one of the key loci for the GP capacity building. For instance, the TRUMP students in Henan, a single province, account for around 10% of the whole country's number of TRUMP students (5,000).

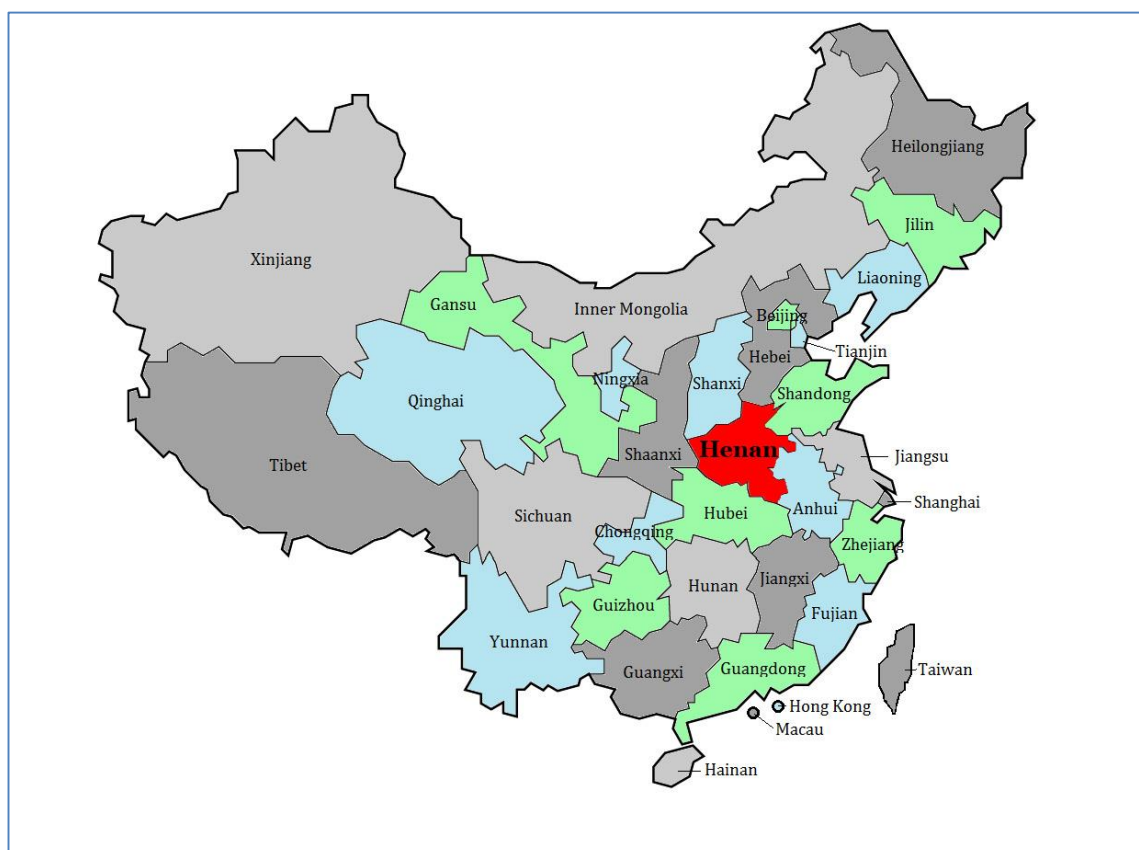


Figure 3.2: Henan Province (in red) among China's Provinces

All the main medical universities in Henan Province have taken part in the TRUMP (Table 3.1). Zhengzhou University (ZU), Henan University of Science and Technology (HUST) and Henan University (HU) are so-called China's comprehensive universities, each of which has a school/division of medicine. Xinxiang Medical University (XMU) and Henan University of Traditional Chinese Medicine (HUTCM) are both stand-alone medical schools. In China most medical schools are for western medicine, while some are for traditional Chinese medicine (TCM). In this study, HUTCM, as its name suggests, is a medical school for TCM, while the rest are all "western medicine" schools. Henan provincial government is keen on the TRUMP programme. For the first two years (2010 and 2011), it provided funding to allow extra TRUMP quotas. In 2011 additional 571 medical students enrolled in the TRUMP with the funding from the provincial

government (Table 3.1).ⁱ Accordingly, the annual enrolment of the TRUMP across the whole country may exceed 5,000.

Table 3.1: The number of TRUMP students in Henan Province from 2010-2014

	2010		2011		2012	2013	2014
	National	Provincial	National	Provincial	National	National	National
Zhengzhou University (ZU)	100	142*	0	50	48	50	50
Xinxiang Medical University (XMU)	147	0	300	174	200	200	200
Henan University of Science and Technology (HUST)	100	0	0	208	44	50	50
Henan University (HU)	0	0	0	47	0	46	50
Henan University of Traditional Chinese Medicine (HUTCM)	0	46	50	92	47	48	50
Total	347	188*	350	571	339	394	400

Source: the figures are provided by Henan Health and Family Planning Commission.

*This figure includes 80 students majoring in preventive medicineⁱⁱ

ⁱ It should be noted that a TRUMP medical student usually does not know whether he or she is sponsored by the central or provincial government.

ⁱⁱ This, to some extent, implies that the provincial government did not have a very clear understanding of general practice and public health in 2010 when the TRUMP started. It sponsored 80 TRUMP students learning preventive medicine, who were required to work in local CDCs after graduation. In other words, these 80 students would essentially become public health practitioners. This arrangement (making TRUMP students learn preventive medicine rather than clinical medicine) never happens again from the second year (2011). The later analysis of this research would exclude these 80 students.

In addition, Henan Province has four GP-TT centres: Shangqiu, Henan, Luohe and Nanyang, which trained 283, 491, 337 and 367 GP-TT trainees (mainly township hospital doctors) from 2014 to 2015, respectively. The qualitative survey targets the Henan GP-TT centre (the largest one among the four centres), while the quantitative survey covers all the four centres.

Moreover, there are 24 tertiary hospitals in Henan Province, responsible for its GP-SRT (Figure 3.3). These hospitals serve as Henan's GP-SRT base. It is fair to say that these 24 hospitals are the largest and best tertiary hospitals in Henan Province. Nine of them are randomly selected for the quantitative study (Figure 3.3).

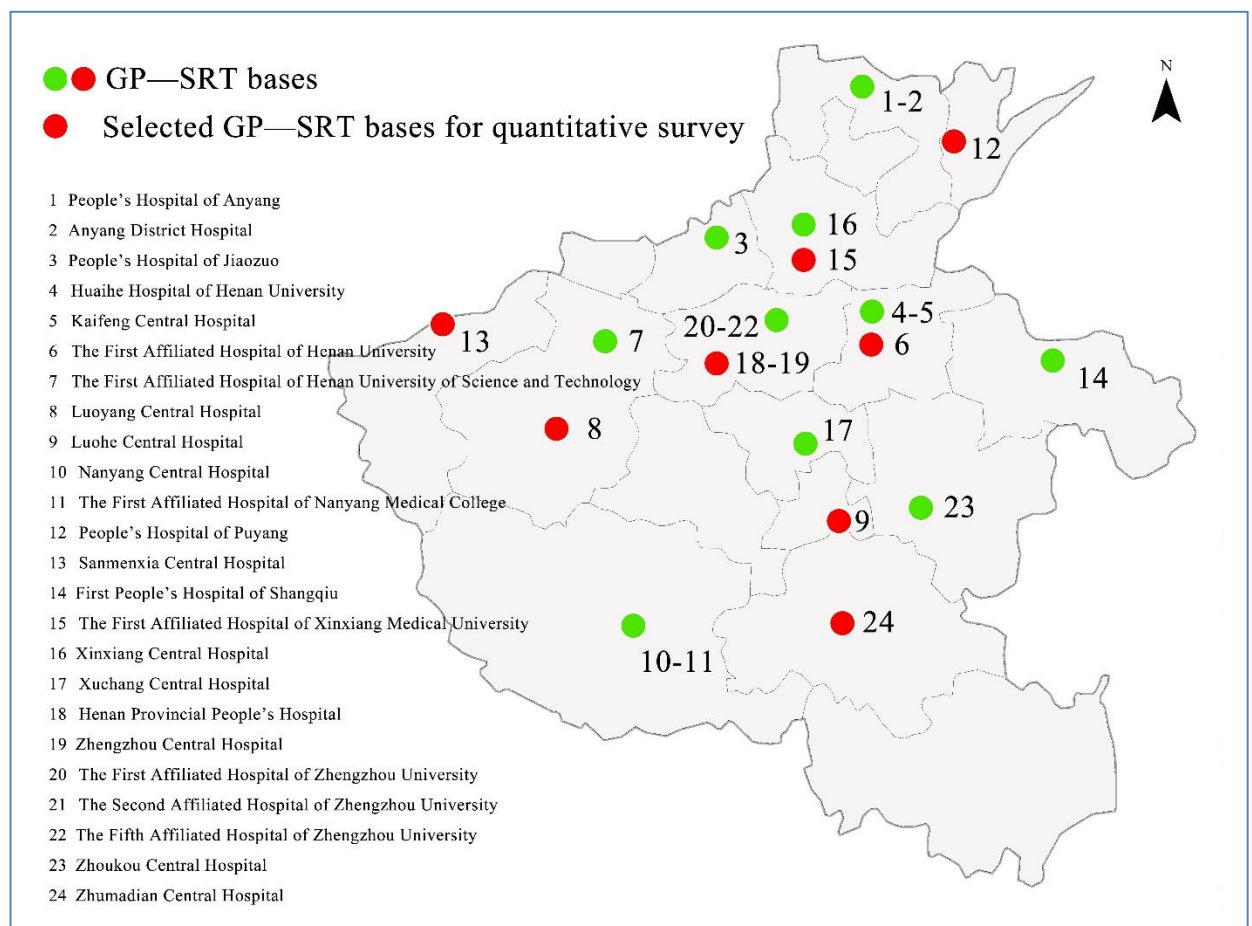


Figure 3.3: 24 GP-SRT bases in Henan Province and 9 selected for the quantitative study

3.2.3 Overview: triangulation of qualitative and quantitative elements

Focusing on the PITs, two rounds of fieldwork were carried out (Figure 3.4). The first round was conducted from 20 January to 28 April 2014, involving semi-structured interviews and FGDs. At that time the GP-SRT was not started nationally, and there were no such GP resident doctors in Henan Province. Therefore, the qualitative study was only applied to the first two groups of the PITs: medical students and township hospital doctors.

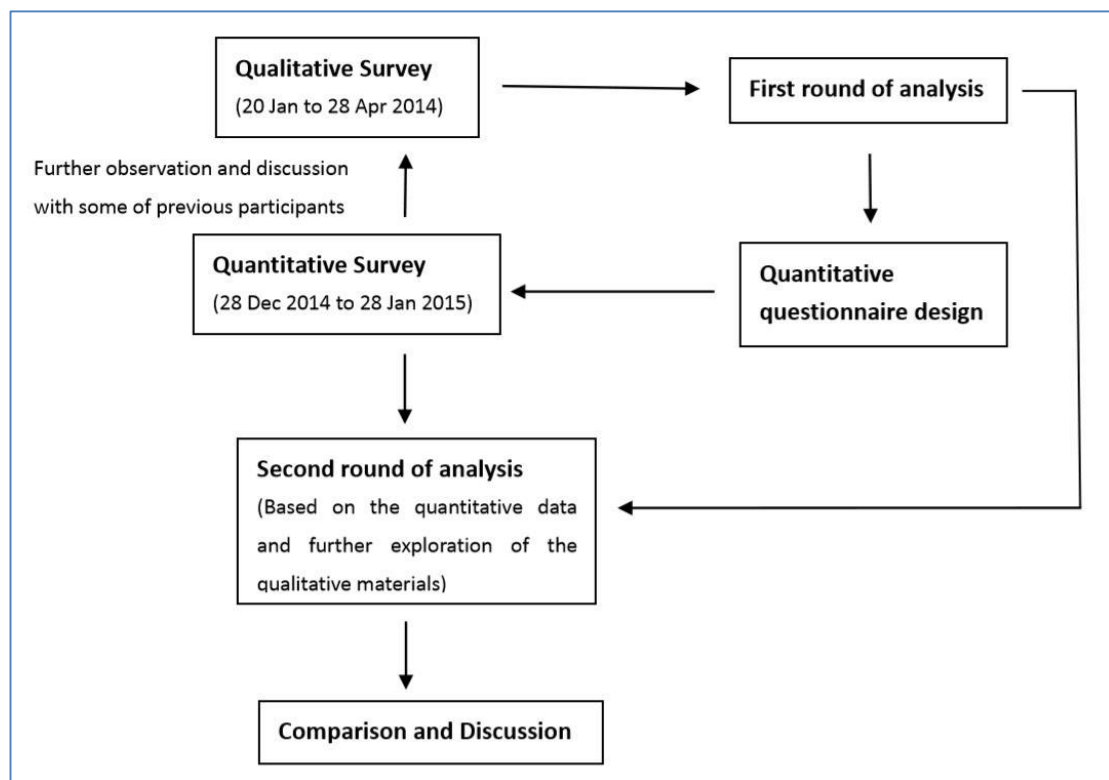


Figure 3.4: Triangulation of qualitative and quantitative research

Analysis of the qualitative findings informed the design of the quantitative questionnaires which was administered in the second round of fieldwork from 28 December 2014 to 28 January 2015 (Figure 3.4). The questionnaires were tailored to each of the three groups of the PITs. In the beginning of the second fieldwork, further qualitative interviews were conducted with participants of my first-round qualitative fieldwork, so that the questions in the quantitative questionnaires were revised appropriately in order to be understood by the respondents in the same way

understood and interpreted by the researcher. This second round of interviews allowed the iterative approach and the respondent validation of the qualitative research.^{69, 70} It can be seen that this second round of fieldwork was mainly for the quantitative survey, but also involved further observation and discussion with some previous participants of the qualitative study.

Finally, the quantitative data were analysed together with the further exploration of the qualitative materials (Figure 3.4). This allows me to examine whether the findings from the qualitative and quantitative studies converge, diverge or relate – they help each other strengthen the reliability and validity. Additionally, the qualitative study gives many questions of the quantitative questionnaires a “story” behind them – the “numb” numbers can become vivid – I “put meat on the bare bones”. This is especially important for research questions in this research with complex contexts.

3.2.4 Qualitative study

3.2.4.1 Focus Group Discussions (FGDs) and semi-structured interviews

I used FGDs and semi-structured interviews for the qualitative study. In particular, FGDs are mainly applied to investigate TRUMP students, while semi-structured interviews are conducted for GP-TT trainees, as detailed below:

I firstly organised FGDs among TRUMP medical students for several reasons. Obviously, the FGDs allowed me to approach more research targets. This was particularly helpful at the beginning of the fieldwork. More importantly, FGDs could effectively elicit comments related to my research questions. Students within the same FGD were all colleagues who knew each other well and could speak freely. From the cultural perspective, there were no hierarchy which might inhibit the conversation, and nowadays in China gender difference did not affect this kind of discussion and

actually many female students were more active. This meant that a potential problem that FGDs might cause discomfort among participants, as raised by some scholars,⁷¹ did not affect my research. In fact, the medical students (especially those nearing graduation) were very keen on the discussions, as the topics concerned their own future career development. Sometimes some participants even became a little over-active, and I as the moderator paid special attention to those relatively quiet students and encouraged each participant's voice to be heard. Consequently, the FGDs with medical students led to a set of salient themes and achieved saturation. The FGDs not only allowed the analysis of the conversation content, but also the medical students' interaction (such as agreement, disagreement and how a theme was reached).⁷²

I mainly conducted semi-structured interviews with the GP-TT trainees. The GP-TT trainees had some or many years of work experiences, and were more sophisticated than the medical students. In addition, they did not know each other very well and felt reluctant to speak freely in front of "strangers". Accordingly, compared with medical students, it was much more difficult to organise FGDs among them. Only one small-scale FGD was organised and the others were all semi-structured interviews. During the interviews with the GP-TT trainees, the same themes that emerged with medical students re-emerged frequently. Thus, the sample size for GP-TT, reaching saturation, was much less than that for medical students.

3.2.4.2 Purposive sampling

The sampling aimed to reach thematic saturation rather than a particular sample size. In other words, recruitment continued until saturation was achieved. In particular, for the whole qualitative study, purposive sampling (in order to maximize variation),^{73, 74} was employed to recruit participants, as detailed below:

TRUMP students

Among the five medical schools participating in the TRUMP (Table 3.1), there was only one for TCM. To represent this proportion of medical students, HUTCH was selected. For the remaining four “western medicine” schools, XMU was the most active participant of the TRUMP, accommodating around half of the TRUMP students in Henan Province (Table 3.1). Accordingly, it was chosen and identified as a key institution to investigate TRUMP.

In addition, the senior medical students were the preferred participants since (1) they would graduate soon and it made more sense to ask them about their career plan; (2) they received more education about general practice and had more thoughts on GPs (which meant more themes might emerge from their discussion). This preference reflected that the “logic and power of purposeful sampling lies in selecting information-rich cases for study in depth. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the research, thus the term purposeful sampling” (p. 169).⁷⁵

Consequently, at XMU, two FGDs were organised for those enrolled in 2010, and one FGD for each cohort of those enrolled in 2011, 2012 and 2013, respectively. At HUTCM, one FGD was conducted for each cohort of those enrolled in 2010 and 2011, respectively. In total, seven FGDs were carried out, covering all the cohorts of TRUMP students – three for those enrolled in 2010, two for those enrolled in 2011, one for those enrolled in 2012 and one for 2013 (Table 3.2).

Table 3.2: Characteristics of student participants for the qualitative study

	Number of Participants	Number of FGDs
<i>Medical schools</i>		
XMU	38	5
HUTCM	12	2
<i>Cohorts/grades of medical students</i>		
Enrolled in 2010	25	3
Enrolled in 2011	13	2
Enrolled in 2012	6	1
Enrolled in 2013	6	1
<i>Gender</i>		
Male	27	
Femail	23	
<i>Age</i>		
Born in 1989	4	
Born in 1990	17	
Born in 1991	10	
Born in 1992	10	
Born in 1993	5	
Born from 1994 to 1996	4	
<i>Rural or urban</i>		
Rural	42	
Urban	8	
Total	50	7

The number of participants for each FGD ranged from six to ten, recommended by Morgan as the typical group size.⁷⁶ Also, when selecting participants, the gender balance was considered. Accordingly, the seven FGDs organised for TRUMP medical students involved 50 participants with an appropriate gender balance (Table 3.2). Moreover, as the TRUMP targets rural China, most TRUMP medical students were from rural areas, as shown in Table 3.2. The participant recruitment was facilitated by the TRUMP tutors according to the criteria above. The FGDs were held in the absence of the tutors.

GP-TT trainees

As these GP-TT trainees were “specialists” who were supposed to be “transferred” to become GPs, I tried to diversify their original specialties when recruiting participants. In other words, to maximise variation, I made every effort to recruit “specialists” in more fields. The included specialisation consisted of internal medicine, surgery, obstetrics and gynaecology, paediatrics, preventive medicine, and TCM (Table 3.3).

Table 3.3: Characteristics of GP-TT participants for the qualitative study

	Number of Participants
<i>Health organisations where they work</i>	
Township hospitals	9
Community healthcare centres/stations	1
Village clinics	2
<i>Specialisation</i>	
Internal medicine	3
Surgery	1
Obstetrics and gynaecology	3
Paediatrics	1
Preventive medicine	1
TCM	2
<i>Gender</i>	
Male	6
Female	6
<i>Age</i>	
20-29	3
30-39	6
40-49	2
50-59	1
Total	12

In addition, most GP-TT trainees were township hospital doctors, but some trainees were from other grassroots health organisations (GHOs; Section 2.5.5, Chapter 2). I tried to cover those from other GHOs as well (Table 3.3). I also considered age and gender during the recruitment. The selection of participants was facilitated by the administrators of the GP-TT programme at Henan GP-TT centre, but all the interviews and the FGD were conducted in their absence.

As a result, the small-scale FGD for GP-TT trainees involved three females and one male. In addition, seven semi-structured interviews were conducted – six of them were one-on-one interviews; one interview involved two participants. It was not very common to have two persons interviewed together. But these two trainees were roommates, available at similar time and preferred to be interviewed together. Since they knew each other well, interviewing together did not appear to prevent them from speaking freely. Also, given the small proportion of them in the overall large sample size of the qualitative study, it should not be expected that this two-person small group interview would affect the qualitative data collection negatively or cause particular bias. In total, 12 GP-TT trainees participate in the qualitative study, most of whom (nine) were township hospital doctors (Table 3.3). In addition, these trainees were deliberately selected to cover a diversity of specialisation. Many of them were in their 30s, but the age range was large from 20s to 50s (Table 3.3).

3.2.4.3 Thematic analysis

In the qualitative study, I used thematic analysis which drew from some principles of grounded theory.^{77, 78} To conduct the thematic analysis, all the FGDs and interviews involving medical students and GP-TT trainees, with the informed consent of participants, were recorded and transcribed in Chinese. The seven FGDs among medical students produced 589 minutes of audio recording (on average 84 minutes per FGD), which meant 171 pages of transcription (103,318 words in Chinese). The qualitative investigation with the GP-TT trainees led to 495 minutes of

recording (on average 58 minutes per semi-structured interview; 91 minutes for the FGD), transcribed to 104 pages (59,896 words in Chinese).

In total, I had almost 300 pages (more than 160 thousand words) for analysis. All the data were uploaded into the NVivo 10 software, and the themes of the data were coded and analysed. My thematic analysis systematically took the six steps: (1) familiarisation with the data, (2) coding, (3) elaboration of many codes into themes, (4) review, evaluation and restructure of the codes and themes, (5) examination of possible connections to establish networks of themes, and (6) writing-up of a convincing narrative about the data.^{67, 79} The analysis was conducted in English and whenever necessary the pieces of transcripts were translated from Chinese to English. The whole qualitative research followed the checklist of criteria of good practice identified mainly by Fitzpatrick and Boulton.^{69, 80, 81}

3.2.5 Quantitative study

During the second round of fieldwork, Henan's first cohort of SRT residents were just enrolled, and consequently this study had the opportunity to explore all the three groups of the PITs through the quantitative questionnaire survey.

3.2.5.1 Sampling

TRUMP students

Consistent with the qualitative survey, in the quantitative study I paid special attention to those senior TRUMP students. In fact, the quantitative survey covered all the first cohort of TRUMP students in Henan Province. All the four medical universities participating in the TRUMP in 2010

were visited, with an overall response rate of 92% - 418 out of 455 registered medical students completed the questionnaire (Table 3.4). For each medical university, several medical student leaders were selected and trained to administer the quantitative questionnaires.

Table 3.4: Response of TRUMP medical students enrolled in 2010 in Henan Province

Medical Universities	Number of response	Real total number (planned quota) *	Response rate (%)
Zhengzhou University (ZU)	154	162 (170)	95
Xinxiang Medical University (XMU)	134	147 (150)	91
Henan University of Science and Technology (HUST)	87	100 (100)	87
Henan University of Traditional Chinese Medicine (HUTCM)	43	46 (50)	93
Total	418	455 (470)	92

*Real total number means those still enrolled when the survey was conducted in January 2015, while the figure in brackets refers to the quota given to each medical university by the central and provincial government in 2010. Some students might drop out or be suspended or not start the programme during these five years due to illness, poor performance and other reasons. The overall attrition rate is low.

Among the respondents, 53% were males, while 47% were females. This cohort of students was mainly born in 1989 (15%), 1990 (38%), 1991 (32%) and 1992 (11%). In addition, the vast majority of them (90%) were from rural China.

GP-TT trainees

The quantitative survey targeted all the GP-TT trainees (mainly township hospital doctors) in all the four GP-TT centres of Henan Province from 2014 to 2015. The sample size was the largest among the three PIT groups – 1349 out of 1478 GP-TT trainees (response rate: 91%) participated

in the survey (Table 3.5). I designed the research and the questionnaire which was administered in collaboration with the Division of Science and Education, Henan Health and Family Planning Commission (the provincial authority in charge of health).

Table 3.5: Response of GP-TT trainees from 2014 to 2015 in Henan Province

GP-TT centres	Number of response	Total number	Response rate (%)
Shangqiu	268	283	95
Henan	449	491	91
Luohe	272	337	81
Nanyang	360	367	98
Total	1349	1478	91

It can be seen from Table 3.6 that the majority of GP-TT trainees (73%) were township hospital doctors. Also, there were more male than female trainees (58% versus 42%). The age of the trainees was hugely diverse. Most of them were in their 30s (44%) or 40s (32%). Some (16%) were in their 20s and 7% were in their 50s. Nearly 1% were 60 years old or above.

Table 3.6: Characteristics of GP-TT trainees for the quantitative study (n=1,349)

	Number of GP-TT trainees	
<i>Health organisations where they work</i>		
Township hospitals	934 (73%)	
Village clinics	101 (8%)	
Community healthcare centres	149 (12%)	
Community healthcare stations	81 (6%)	
Others	9 (1%)	
<i>Specialisation</i>		
Clinical (western) medicine	(n=1,114)	1,114 (85%)
Internal medicine	394 (35%)	
Surgery	164 (15%)	

Obstetrics and gynaecology	138 (12%)	
Paediatrics	24 (2%)	
EENT (eye, ear, nose & throat)	17 (2%)	
Other specialties and invalid data*	69 (6%)	
Missing data*	308 (28%)	
TCM		161 (12%)
Dentistry		17 (1%)
Public health		25 (2%)
<i>Education</i>		
High school or below	4 (0.3%)	
Secondary vocational diploma	404 (30.7%)	
Vocational diploma	706 (53.7%)	
Bachelor	201 (15.3%)	
Master	1 (0.1%)	
Doctorate	0	
<i>Gender</i>		
Male	781 (58%)	
Female	555 (42%)	
<i>Age</i>		
20-29	214 (16%)	
30-39	566 (44%)	
40-49	419 (32%)	
50-59	91 (7%)	
60 above	11 (1%)	
Total	1,349 (100%)	

*This is based on one of the two questions on the quantitative questionnaire, which are not multiple choice questions. Some respondents just opt to ignore this question, and accordingly there are a relatively big proportion (28%) of missing data here. Some may write down many specialties together, which makes the information invalid. Also, other specialties include mental health, occupational health, etc.

More complex were the GP-TT trainees' specialisation fields. Though most of them (85%) did not even have a bachelor degree (Table 3.6), they were trained to be "specialists". Through the GP-TT, they were supposed to be "transferred" to be GPs. According to China's doctor registration

system (Section 2.5.3, Chapter 2), China's officially-recognised doctors were categorised into four practice categories: clinical (western) medicine, TCM, dentistry, and public health. These GP-TT trainees surveyed included all four of these categories. Most of them (85%) were clinical (western medicine) doctors, and 12% were TCM practitioners (Table 3.6). Within the category of clinical medicine were the western-style “specialists” – many of them were internists (35%) or obstetricians and gynaecologists (12%), and 15% were surgeons.

GP resident doctors

There were no qualitative data collected from these new GP resident doctors for the reasons explained above. However, 9 out of 24 GP-SRT bases in Henan Province were randomly selected and visited (Figure 3.3), and 120 GP resident doctors completed the questionnaire, with an overall response rate of 93% (Table 3.7). Among these GP resident respondents, 46% were males, while 54% were females. Most of them were born in 1987 (15%), 1988 (23%), 1989 (19%), or 1990 (19%). Also, their educational level was high: most of them (88%) had a bachelor degree; the rest (12%) even had a master degree.

Table 3.7: Response of GP resident doctors enrolled in 2014 in Henan Province

Hospitals (GP-SRT bases)	Number of response	Total number	Response rate (%)
Henan Provincial People's Hospital	28	31	90.3
Luohe Central Hospital	2	2	100.0
Luoyang Central Hospital	4	4	100.0
Zhumadian Central Hospital	29	31	93.6
People's Hospital of Puyang	12	12	100.0
Sanmenxia Central Hospital	5	7	71.4
The First Hospital Affiliated to Henan University	11	11	100.0
Zhengzhou Central Hospital	18	19	94.7
The First Affiliated Hospital of Xinxiang Medical University	11	12	91.7
Total	120	129	93.0

3.2.5.2 Analysis

In total, I collected 1,887 copies of quantitative questionnaires (418 TRUMP medical students, 1349 GP-TT trainees and 120 GP resident doctors). I recruited and trained six local research assistants for data entry. Then the data were cleaned and analysed by using the software Stata 12.

Standard summary statistics were reported about PITs' understanding of GPs (Chapter 5) as well as their career plans (Chapter 6). These three PIT groups would decide the supply of GPs in China. However, before my research there were very few quantitative data for us to understand their characteristics, thinking or plans.

χ^2 Chi-square statistics were used to test statistical significance.⁸²⁻⁸⁴ The three groups were compared whenever necessary, and some associations were tabulated, as detailed in Chapter 5 and 6.

In addition, I used logistic regression (detailed in Chapter 6) to explore how a set of factors identified contributed to medical students' choice of a GP career in the future.

This study was the first time that original, first-hand data have been used to cover all the three GP-related groups in China, to articulate and examine their characteristics, understanding of general practice, future career plans as well as potential associations among them, through rigorous descriptive analysis, significance testing and logistic regression.

CHAPTER 4 THE ESTABLISHMENT OF A NEW PROFESSION: A GOVERNMENT DOCUMENT ANALYSIS

The first government document mentioning general practice can be traced back to 1997⁸⁵ and there have been numerous documents since. Few studies to date have systematically reviewed these official government documents. However, they are important particularly as the government leadership is essential in China. In fact, even the detailed syllabi of many GP training programmes can be found in these government documents. These policy documents provide a rich and reliable resource for understanding general practice in China, especially at this transitional, chaotic but key period towards the establishment of general practice.

Through the structured review approach (Section 3.1, Chapter 3), I answer the first research question how the government defines GPs, by presenting in this chapter the results of the policy analysis on the 91 identified government documents.ⁱ Section 4.1 shows the evolution of the GP policies, and confirms the government strategies of GP capacity building. Section 4.2 discerns the main government players and their roles. Section 4.3 finds the direct definition of GPs by the government, as well as the definitions reflected in government operations and the syllabi (designed by the government). Section 4.4 summarises the main findings.

4.1 Overview of the documents – government strategies of GP capacity building

The issuing years of the 91 identified government documents have been extracted. According to their distribution across time (Figure 4.1), China's GP evolution has experienced three waves, which centre the year 2000, 2006 and 2010, respectively.

ⁱ See Appendix 1 for a list of the 91 government documents

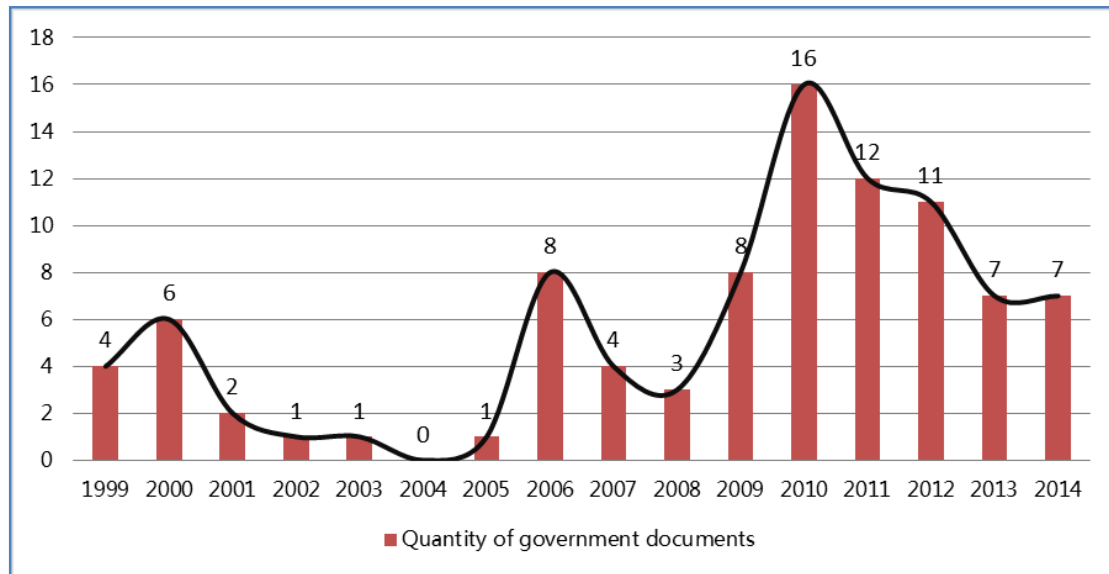


Figure 4.1: Distribution of government documents according to issuing years

The first wave (1999 to 2004; 14 documents) witnessed the ambitious initiation of China’s GP training. As China started to establish urban community health organisations (CHOs)ⁱ in 1999, it was natural to “make effort to establish community health workforce with qualified GPs as the backbone”.⁸⁶ On the last several days of 1999, the first National Conference on General Practice Education was held with the attendance of then Minister of Health.⁸⁷ Many key documents (10 out of 14 documents during the first wave) were released in 1999 and 2000, such as *Opinions on Developing General Practice Education* issued in early 2000 by then Ministry of Health (MOH).⁸⁸ Based on these documents, the long-term strategy was to train GPs through a four-year Standardised Residency Training in General Practice (GP-SRT) programme (graduate medical education after receipt of a bachelor degree in medicine), while the short-term attention was the GP In-Service Training (GP-IST) programme - 600 to 620 hours of training for practicing doctors. For this first wave, the central government offered “policies” (including detailed outlines and requirements for the GP-SRT and GP-IST) to encourage local governments to train more GPs, but no documents showed any sign of financial support from the central authority. Accordingly, the

ⁱ Please see Section 2.5.5 in Chapter 2 for detailed introduction to the CHOs.

implementation of related policies depended on funding capacity of the local governments. Some wealthy and developed regions did more explorations, especially eastern China such as Beijing, Shanghai, Zhejiang and Jiangsu. However, the GP development at the national level became quiet – even no eligible document was found in 2004. Therefore, the first wave was characterised by the pilot programmes of some wealthy urban areas.

The second wave (2005 to 2008; 16 documents) was a rousing period for GP development. *State Council's Guiding Opinions on Developing Urban Community Health Services* was issued in February 2006,⁸⁹ as part of that round of China's health system reform with special attention to public health and primary care, which, to a large extent, was triggered by the serious outbreak of SARS in 2003. The provision of urban community health services required GPs, and *Guiding Opinions on Strengthening the Establishment of Urban Community Health Workforce* was jointly issued by five ministries in June 2006.⁹⁰ This time the central government allocated funding for 22 provinces in middle and western China to carry out Urban Community Health Workforce Training (mainly consisting of GP-IST and Community Nurse Training) from 2006 to 2010. During this period, nationally, many doctors (especially those in CHOs) in urban areas participated in the GP-IST programme and successfully received the Certificate of Completion of GP-IST.

It can be seen from the first and second waves (1999 to 2008) that (1) these ten years exclusively focused on the urban regions, and (2) the GP development accompanied the establishment of urban CHOs. The main GP expansion strategy during these ten years was GP-IST, which usually took several months and led to a certificate. As for the GP-SRT, only some wealthy cities initiated some pilot programmes on a small scale, mainly during the second wave, and nationally few government documents provided details.

The third wave of GP evolution (2009 to present; 61 documents) has been comprehensive and strong. 2010 and 2011 ranks first and second, respectively, in terms of the number of documents

issued for a single year. The documents issued in these two years almost equals all the documents issued together during the first and second waves. Two of the most important documents so far for the GP development were issued in these two years - *Plan on Establishing GPs-centred Grassroots Health Workforce (The Plan)* in 2010¹² and *State Council's Guiding Opinions on Establishing a GP System (The State Council Opinions)* in 2011.⁹¹ Based on these two documents, four main strategies to expand GPs are identified:

The first strategy is the GP Transfer Training (GP-TT). It can be considered to be the extension of the previous retraining programme (i.e. GP-IST) – it is similar to but stricter than the GP-IST. Theoretically, it usually asks the trainees to suspend their job and have a full-time training for around one year. Rather than only for those in urban areas, GP-TT is for the doctors at grassroots health organisations (GHOs).ⁱ In other words, it covers both urban and rural regions. In fact, as many doctors at CHOs have taken GP-IST, in many provinces GP-TT is mainly for the doctors in township hospitals (rural areas) and some doctors in newly-established/transformed CHCs. Also, central government provides the 22 provinces in middle and western China with more funding for this training each year, starting from 2010.

The second strategy is the Tuition-waived Rural-oriented Undergraduate Medical Programme (TRUMP). This programme is designed to sponsor some medical students mainly from rural China by using government funding. In return, these medical students are required by the government to do general practice in assigned township hospitals in the future. The central government subsidises RMB 6,000 Yuan each year for each TRUMP student. The first group of TRUMP students (in total 5000 nationally) enrolled at medical schools in September 2010.

ⁱ Please see Section 2.5.4 in Chapter 2 for detailed introduction to the GHOs.

The third strategy is the GP Special Position Plan (GP-SPP) – doctors who obtain this special position will be sent to work in a township hospital to conduct general practice for four years. The GPs holding the special position will receive a higher annual salary (on average 60,000 Yuan), around half of which are offered by the central government. Four provinces (Anhui, Hunan, Sichuan and Yunnan) have been chosen to pilot this programme since 2014.

The fourth strategy is the GP-SRT. This was mentioned at the beginning of the first wave as the main way to train GPs in the long run. Finally, after around 15 years' experiments in many regions (mainly developed cities) of China, GP-SRT is just initiated nationally and will become compulsory for all of China by 2020.ⁱ The length of the training is shortened to three years compared to the original ambitious idea in 1999.

Most documents during this third wave relate to the four strategies summarised above.ⁱⁱ They follow and supplement *The Plan* and *The State Council Opinions* with more implementation details.

4.2 Government players

The issuers of the government documents are extracted and analysed. By exploring which government authorities release which documents, we can discern the key players involved as well as their roles and influence.ⁱⁱⁱ

ⁱ Please see Section 2.5.2 (Chapter 2) about residency in China for more details.

ⁱⁱ Later chapters will use Henan Province as an example to both qualitatively and quantitatively analyse three out of these four strategies – GP-TT, TRUMP and GP-SRT. GP-SPP is not national wide – four provinces have just piloted it but Henan is not one of them. But in Section 4.3.2 of this chapter, the GP-SPP will be analysed in more detail.

ⁱⁱⁱ It should be noted that some documents are issued jointly by two or more authorities.

4.2.1 State Council and its ministries/commissions

In total, nine main government players have been identified (Figure 4.2). Among them, the State Council is most influential - it is China's central government and headed by China's Premier. It consists of ministries and commissions. In fact, all the other players involved, except for the State Administration of Traditional Chinese Medicine (SATCM), are directly under the State Council. 13 identified documents are issued by the State Council (including its General Office and its leading groups/committees), which implies the special attention given to the issue of GPs by the central government. In particular, the document issued in 2011 (*The State Council Opinions*) is one of the two most important policy documents for China's GPs. It is not common for the State Council to issue such a detailed document for a particular issue. This suggests the central government's strong determination to establish a GP system.

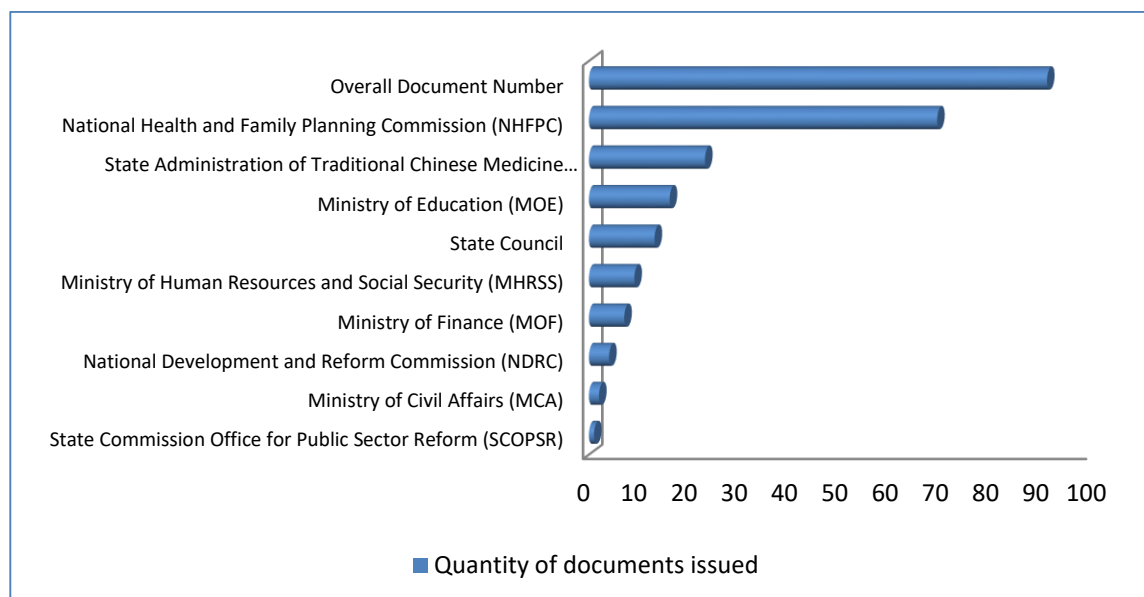


Figure 4.2: Main government players and the number of relevant documents issued by each player

It is natural to see that the NHFPC (previously the MOH) has played a central role in China's GP capacity building. In fact, more than two thirds (69 out of 91) of the documents in relation to GPs

are released solely or jointly by the NHFPC.ⁱ It is the most active player and will be analysed in further detail in section 4.2.2.

The SATCM is a national-level organisation, but it is not directly under the State Council. On the one hand, it is part of the NHFPC, and one vice commissioner of NHFPC heads it. On the other hand, it often independently deals with TCM-related issues (including the management of the TCM practitioners), while NHFPC (excluding SATCM) is in charge of western medicine. Relevant Chinese government documents often list their issuers of both the SATCM and the NHFPC side by side. For instance, it is often said that seven government ministries jointly launched the SRT in China – here the “seven ministries” include the NHFPC as well as the SATCM. Accordingly, my government document analysis follows this tradition and considers them two separate ones (if not particularly specified), though strictly speaking the SATCM is part of the NHFPC. It should be noted the fact that in China the NHFPC sometimes include the SATCM and sometimes not may lead to problems, as discussed in Chapter 7. In addition, the fact that a considerable number of documents (23 documents) are issued by the SATCM may indicate the opportunities TCM anticipates in the establishment of China’s GP system.

Increasing the number of GPs relies on medical education, and obviously the MOE is a major player with the participation in making 16 policy documents (Figure 4.2). Chapter 2 (especially Section 2.5.1 and 2.5.2) introduced the turbulent control over medical education between the MOE and the NHFPC (including the SATCM). The MOE is now in charge of the medical schools in China, and it has changed most medical master programmes to MM programmes (Section 2.5.2, Chapter 2). As a result, there are two channels to receive graduate medical education (i.e. residency) in China: medical students may opt either to go to a hospital for the three-year SRT (this is more hospital dominated, and more controlled by the NHFPC) or go to a medical school to take an MM

ⁱ NHFPC was established in March 2013 as a result of the merge between the MOH and National Population and Family Planning Commission. This study does not distinguish the NHFPC from its predecessor MOH. In other words, the documents here (69 in total) include those issued by the MOH before March 2013.

programme (this is more medical school dominated, and more controlled by the MOE). The MM programme also takes three years and follows the same curricula of the SRT. This arrangement is extremely strange and difficult to be understood. I will discuss this in Chapter 7.

GP capacity building requires financial support. The first wave of GP development in China only saw pilot programmes in wealthy regions, as the first wave mainly relied on the local government. The poor regions, which demand GPs most, could not afford the capacity building. Accordingly, the Ministry of Finance (MOF), which allocates funding from the central government, is another influential player. Seven documents have been issued by MOF: only one each is issued in the first and second wave, respectively; the other five are all issued in the third wave. This indicates deeper commitment from the central government to establishing a GP system. In fact, the two GP retraining programmes (GP-IST from 2006 to 2010, and GP-TT from 2010), the TRUMP for medical students, the GP-SRT for GP residents, and the GP-SPP are all funded (or partially subsidised) by MOF.

The participation of the government players above in GP-related policies is fully expected. Nonetheless, the involvement of the three players below is special:

It can be seen that the Ministry of Human Resources and Social Security (MHRSS) issued more documents than the MOF (Figure 4.2). The MHRSS is in charge of two out of three social health insurance schemes in China.ⁱ How it reimburses the GHOs will affect GPs' income. In addition, MHRSS manages the *Zhicheng* system (China's special professional title system) - *Zhicheng* is highly associated with income and other benefits, and it serves as medical doctors' career

ⁱ There are three social health insurance schemes in China: New Rural Cooperative Medical Scheme (NCMS), Urban Employees Basic Medical Insurance (UE-BMI) and Urban Residents Basic Medical Insurance (UR-BMI). NCMS is managed by the NHFPC, while both UE-BMI and UR-BMI are controlled by the MHRSS.

development system in China.ⁱ One requirement for making progress in the *Zhicheng* system is the years of working, and to encourage a GP career, the MHRSS allows GPs to make progress in the *Zhizheng* system one year earlier than other doctors. All in all, the MHRSS plays a key role in the attractiveness of and incentives for the profession as a GP.

The second special player is the National Development and Reform Commission (NDRC), which is a legacy of socialist China and functions like a little state council. It deals with the whole country's macro-economy and social development, and has a huge range of administrative and planning roles. The first one of the two most important documents for China's GPs issued in 2010 (*The Plan*) was released by six ministries, and the leading one is NDRC. The Office of State Council Healthcare Reform Leading Group actually used to be under NDRC and is now moved to NHFPC. In addition, the big construction and investment such as building GP clinical training bases within large hospitals has to be approved by NDRC.

The most special player is the State Commission Office for Public Sector Reform (SCOPSR). It has dual identities – directly under the State Council and also directly under the Central Committee of the Communist Party. It is also a legacy of socialist China, and it controls the “Iron Rice Bowl” – *Bianzhi*.ⁱⁱ One identified document by SCOPSR sets up the *Bianzhi* standard for those CHCs established by the government – according to this document, there are two to three quotas of *Bianzhi* for GPs per 10,000 residents. To some extent, China still uses its *Bianzhi* system to plan health workforce. Another example about *Bianzhi* is the TRUMP programme for medical students, who, once starting their work in a township hospital, are promised to have the *Bianzhi* – *Bianzhi* can be a policy lever.

ⁱ Please see Section 2.5.4 (Chapter 2) for more details about *Zhicheng*.

ⁱⁱ Please see Section 2.5.6 (Chapter 2) for detailed introduction.

4.2.2 Departments within the NHFC

Many documents issued by the NHFC can be traced to its specific department(s) (Figure 4.3). According to the documents they made, some departments demand particular attention in terms of GP capacity building.

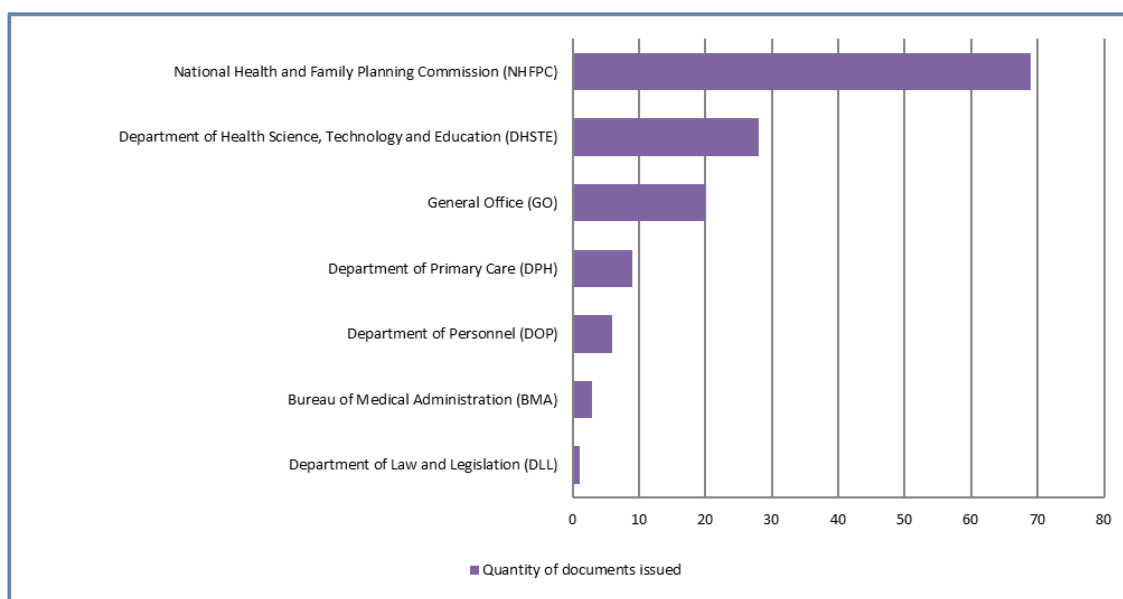


Figure 4.3: Main relevant departments within the NHFPC and the number of documents issued by each

The most important one is the Department of Health Science, Technology and Education (DHSTE), which has issued the largest number of GP-related documents (28 documents). This department manages all kinds of GP training programmes, and the outlines and standards of these programmes are usually designed and issued by it. Those certificates of the completion of these training programmes are also controlled by the DHSTE. With the launch of the nationwide SRT and many GP training programmes, this department becomes increasingly powerful.

While the DHSTE manages the training of GPs, the Department of Primary Care (DPH) is in charge of GPs' "usage". The DPH makes policies about the GHOs where most GPs work. The

village doctors are under the jurisdiction of the DPH. However, the tertiary hospitals are overseen by the Bureau of Medical Administration (BMA). The BMA also manages clinical trials as well as the doctor licensure and registration system.ⁱ It is easy to understand that this bureau is enormously powerful and influential in China's hospital-dominated system – it regulates hospitals and the vast majority of officially-recognised doctors with high education levels who work like semi-civil servants in the state-owned tertiary hospitals.ⁱⁱ

The Department of Personnel (DOP), as its name suggests, manages the medical workforce. China's overall medical workforce plan is designed by it. In particular, it works with the MHRSS and SCOPSR on *Zhicheng* (Section 2.5.4) and *Bianzhi* (Section 2.5.6), respectively. Moreover, the GP-SPP is managed by the DOP. Similar to the DPH, the DOP is mainly for the “usage” of GPs and other doctors.

In addition, each ministry/commission has a General Office (GO), which deals with the everyday work. The GO can issue documents solely on behalf of the whole NHFC or jointly issue documents with other departments.

4.3 Definition of general practice/GPs by the Chinese government

I explore how the government defines GPs in China from the three perspectives as follow:

4.3.1 Direct definition of general practice/GPs

ⁱ For more details, please see Section 2.5.3 (Chapter 2).

ⁱⁱ Please see Chapter 2 for the introduction of China's hospital dominance and the relationship between hospitals and doctors.

The definition of general practice/GPs is clearly stated in 11 government documents. The first one appeared in *GP-SRT Outline (Pilot Version)* in November 1999, in a statement of the training objective:

Through postgraduate GP-SRT, to train qualified general practitioners who have high standards of professional ethics; are person centred; aim to maintain and promote health; provide the individual, family and community with six-in-one (medical treatment, prevention, health promotion, rehabilitation, health education and technical guidance on family planning) grassroots health services; reach the qualification required by GP positions and become the cornerstone of the community health care team.

The roles of GPs, according to *Trial Measures on GP-SRT* issued in December 1999, were similar with two additional requirements:

To help community residents make proper use of health care resources and enjoy economical and effective health services.

To generally master the methods to do medical research and to be capable of writing academic paper of a certain level based on the community health care work experiences.

Later in January 2000, Ministry of Health clearly defined general practice as follows:

General Practice is person centred; aims to maintain and promote health; is a new medical discipline which provides the individual, family and community with continuous, comprehensive and convenient basic health services.

The same document also stated that:

The objective of the education in general practice is to train health technical workforce who can apply the biopsychosocial model, and integrate medical treatment, prevention, health promotion, rehabilitation, health education and technical guidance on family planning.

It can be seen that the definitions and requirements in this period emphasised the six-in-one function of general practice - medical treatment, prevention, health promotion, rehabilitation, health education and technical guidance on family planning. This six-in-one function was exactly the same requirement for the CHOs, which started to be established from 1999.

Most subsequent outlines and standards of the GP training programmes, such as the *GP-IST Outline* in 2007, mention the requirements for GPs in the training objective part. They are almost the same to the *GP-SRT Outline (Pilot Version)* in 1999.

The Plan in 2010 mentioned GPs in the following way.¹²

To make every effort to train general practitioners who provide the individual and family with integrated (prevention, health promotion, diagnosis, treatment, rehabilitation and health management), continuous, coordinated, convenient, accessible and active services

In 2011 *The State Council Opinions* gave the most authoritative definition of GPs so far from Chinese government.⁹¹

General practitioners are medical workforce with relatively high integration level; mainly at the grassroots (community) take the responsibility of integrated services such as prevention and health promotion, diagnosis, treatment and referral of common and frequently-occurring diseases, rehabilitation of patients and management of chronic diseases, as well as health management; are considered to be “gatekeepers” of residents’ health.

The statements in bold are the two most straightforward definitions of general practice and GPs, respectively. All the definitions above are consistent with the understanding of general practice/GPs internationally. They all reflect the essential attributes of general practice: person-centeredness, comprehensiveness, accessibility, continuity and coordination. China obviously expects its newly-planned GP system to deliver these theoretical advantages. The definition

implies an ideal primary care model, which is well-recognised by the international community. Moreover, while all the definitions emphasise the comprehensiveness, the most recent one starts to pay special attention to referral and gatekeeping roles of GPs. However, the articulation (such as the “gatekeepers” of residents’ health) is ambiguous, as discussed in Chapter 5 and Chapter 7.

In addition to the western-style GPs, China has a unique category of TCM general practice/GPs.ⁱ The SATCM added the practice scope of general practice to the practice category of TCM in 2006, and the outlines of the TCM GP training programmes (Table 3.2) touched on the requirements for TCM GPs in the training objective part, just like what those outlines of GP training programmes did. Finally, in 2013 the *TCM GP-SRT Standards (Pilot Version)* deliberately gave the definition of both TCM general practice and TCM GPs.

TCM general practice is a secondary clinical discipline under TCM which integrates TCM and general practice.

TCM GPs are TCM doctors with relatively high integration level; master basic theories, knowledge and skills of TCM and general practice through TCM general practice training; can apply the diagnosis and treatment mind-set of TCM and general practice; mainly at the grassroots (community) provide integrated services such as prevention and health promotion, diagnosis, treatment and referral of common and frequently-occurring diseases, rehabilitation of patients and management of chronic diseases, as well as health management

It can be found that the definition of TCM GPs is remarkably similar to the definition of GPs given by *The State Council Opinions*. This implies, to some extent, the TCM GPs are “imitators” of western-style GPs – each time the NHFPC starts a GP training programme, the SATCM will follow up and initiate a TCM counterpart (Table 4.2). The definition of TCM GPs does not reflect

ⁱ To fully understand the TCM GPs in China, please see Section 2.5.3 (Chapter 2).

any nature of the TCM which arguably would have already encompassed all the (or at least many) features of general practice in its traditionally holistic approach.

4.3.2 GPs in the government's operation

According to China's doctor licensure and registration system,ⁱ understanding the **practice category** and the **practice scope** is the key to understanding GPs in China. Ideally, GPs are those officially-recognised doctors with the registered practice category of clinical medicine or TCM and the registered practice scope of general practice, as shown by the first requirement of the two most recent government documents in Table 4.1. The majority of these GPs are western-style GPs (practice category: clinical medicine, and practice scope: general practice). When China first started the GP training in the first wave, there was no such thing as a TCM doctor with the practice scope of general practice. In 2006 the SATCM revised the practice scopes for TCM doctors by adding an additional one – general practice.

Ideally, to register as a GP, after achieving a bachelor degree in clinical medicine or TCM, the candidate can join the three-year GP-SRT or GP TCM GP-SRT, respectively. Upon successful completion of the residency training, one can register as a GP or a TCM GP. This is the 5+3 model - the main pathway in the long run.

However, in this transitional period, the existing officially-recognised doctors (more than half of whom do not have a bachelor degree), upon completion of the retraining programme (the GP-IST or GP-TT), are allowed to alter their registered practice scope to general practice. In this way, they can become registered GPs as well. In 2010, *The Plan* (one of the two most important GP

ⁱ Please see Section 2.5.3 (Chapter 2) for a detained introduction.

documents in China) showed that China had around 60 thousand such GPs with the registered practice scope of general practice (Table 4.1).

Table 4.1: GPs in government operation documents

Year	Government document	Who are considered GPs
2014	<i>Announcement on recruiting GPs who take the GP special positions</i> ⁹²	Those who meet ONE of the following requirements can apply for the GP Special Position (join the GP-SPP): (1) doctors whose practicing category is clinical medicine or TCM and whose practicing scope is general practice (2) doctors whose practicing category is clinical medicine or TCM and who have got the certificate of completion of GP-SRT or GP-TT or GP-IST (3) doctors whose practicing category is clinical medicine or TCM and who have practised for more than two years in a second-level hospital or above
2013	<i>Temporary measures on piloting the GP-SPP</i> ⁹³	
2010	<i>The Plan</i> ¹²	China has approximately 60 thousand officially-recognised doctors with the registered practice scope of general practice
2003	<i>Circular on issuing “Implementation Plans on the competition for national demonstration regions of community health care”</i> ⁹⁴	The doctors with an intermediate-grade <i>Zhicheng</i> (professional title) who have had the GP-IST are the equivalents of GPs
2000	<i>Circular on issuing “Guiding criteria for CHOs (consultation paper)”</i> ⁹⁵	

However, many doctors, though having successfully completed the retraining programme (GP-IST or GP-TT), do not like changing their practice scope to general practice. They prefer keeping their previous practice scope such as internal medicine, surgery or paediatrics. China’s official statistics showed that it had 172,597 GPs in 2014 (Chapter 1) – it actually contained those who completed a retraining programme but did not change their practice scope to general practice - this group were as large as 108,441. In other words, among the 172,597 GPs in 2014, 108,441 actually had a registered practice scope of other specialties; only 64,156 GPs (similar number to that mentioned in 2010 by *The Plan*) had a registered practice scope of general practice. Accordingly,

in government's operation as shown by the second requirement of the most recent two documents in Table 4.1, the doctors completing a retraining programme, though their registered practice scope is not changed to general practice, can still be considered GPs

The third condition of the two most recent documents in Table 4.1 further relaxes the requirement for being a GP in China. A doctor (practicing category: clinical medicine or TCM) can become a GP directly even though he/she does not have GP-SRT, GP-IST or GP-TT, as long as the doctor has worked for more than two years in a second-level hospital or above. A county hospital is a second-level hospital, providing tertiary care.ⁱ This implies that the government well knows that the quality of care in China is confined to tertiary hospitals, and the main intention of the government is to ask doctors of higher education levels (mostly in tertiary hospitals) to work in the GHOs, especially township hospitals in rural regions. Whether the doctors are registered as GPs does not appear to be a particular concern. As long as these doctors agree to work in rural regions (take the GP Special Position in this case), their registration can be modified to general practice, giving them immediate qualification as GPs.

In contrast, during the first wave, the initial idea of GPs in China seemed more ambitious and strict. At that time, *Zhicheng* (professional titles) were also considered (Table 4.1). The doctors with an intermediate-grade *Zhicheng* who had the GP-IST were considered to be GPs.⁹⁴ It is very difficult for the Doctor-in-Charge to work in rural China even now, let alone 15 years ago. That is probably why the current document does not require the intermediate-grade *Zhicheng* anymore.

All in all, the government operation more reflects the nature of GPs as front-line doctors. It adopts a more and more pragmatic approach of defining GPs. This compromise is based on China's

ⁱ See Section 2.5.5 (Chapter 2)

reality of enormous mal-distribution of qualified doctors, and the government's desperation of increasing the number of GPs expeditiously.

4.3.3 GPs reflected in the syllabi

Upon successful completion of the GP-SRT, GP-TT or GP-IST, a doctor can register or alter the practice scope to general practice. Accordingly, it helps to have more in-depth understanding of GPs in China by exploring the details of these training programmes. The first three rows of Table 4.2 show the three major GP training programmes in China over the implementation timeline, which are followed by their three TCM counterparts. The last three rows are three other GP training programmes, namely, Assistant GP Residency Training (AGP-RT)ⁱ, Backbone GP Training (GP-BT)ⁱⁱ and Training for GP Trainers (GP-TR)ⁱⁱⁱ. In total there have been nine GP training programmes to date. My study will pay more attention to the GP-IST, GP-TT and GP-SRT, which have “generated” the vast majority of GPs in China.

ⁱ AGP-RT is for those medical graduates from the three-year vocational diploma programme (Section 2.5.1 of Chapter 2). AGP-RT takes two years, after which the trainees can become assistant GPs (licensed assistant doctors; practice category: clinical medicine; practice scope: general practice). Some think assistant GPs are more suitable for rural China. Though AGP-RT standard was issued in 2012, the training programme has just started when I am finishing this thesis. AGP-RT will be discussed in Chapter 7.

ⁱⁱ GP-BT coincided with the GP-IST from 2006 to 2011. It actually was a strengthened version of the GP-IST. Trainees taking the GP-IST were doctors with junior-grade *Zhicheng*, while trainees taking the GP-BT were Doctors-in-Charge (Section 2.5.4 of Chapter 2). Thus, GP-BT was for more senior doctors. However, the number of doctors taking GP-BT was tiny compared to those taking GP-IST.

ⁱⁱⁱ Ideally, a system needs to firstly have qualified trainers and then have trainees. However, China is still establishing the profession of general practice and it simply does not have many qualified GPs. It has mainly used specialists to train trainees in the GP-TT, GP-IST and GP-SRT. Like GP-BT, GP-TR is to train Doctors-in-Charge with the hope that they can become GP trainers. GP-TR Outline was issued in 2012, and there have not been many senior doctors joining it.

Table 4.2: GP training programmes from 1999 to 2015

	1999 to 2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
GP In-Service Training (GP-IST)	Piloted in some developed urban regions; GP-IST Outline (Pilot Version) issued in 1999		National scale with funding from central government for 22 provinces in middle and western China; GP-IST Outline issued in 2007; GP-IST Outline (2010 Version)									
GP Transfer Training (GP-TT)							National scale with funding from central government for 22 provinces in middle and western China; GP-TT Outline (Pilot Version) issued in 2010					
Standardised Residency Training in General Practice (GP-SRT)	Piloted in some developed big cities; GP-SRT Outline (Pilot Version) issued in 1999								GP-SRT Standards (Pilot Version)	Nationwide with funding from central government; initiated from the end of 2013; first cohort enrolled in late 2014; mandatory nationally by 2020.		
TCM GP-IST		General practice is added to the practicing scopes of the practicing category of TCM	National scale with funding from central government for 22 provinces in middle and western China; TCM GP-IST Outline (Pilot Version) issued in 2007									
TCM GP-TT				National scale with funding from central government for 22 provinces in middle and western China; TCM GP-TT Outline (Pilot Version) issued in 2011								
TCM GP-SRT				TCM GP-SRT Standards (Pilot Version)						The same to GP-SRT		
Assistant GP Residency Training (AGP-RT)									AGP-RT Standards (Pilot Version)			
Backbone GP Training (GP-BT)				Small scale; GP-BT Outline issued in 2007; GP-BT Outline (2010 Version)								
Training of GP Trainers (GP-TR)									Opinions on Implementing GP-TR (Pilot Version)			

The NHFPC (particularly its DHSTE) makes at least one training outline or standard for each of the nine training programmes. In total, there are 13 such documents for these nine programmes, as highlighted in Table 4.2. These training documents have detailed arrangements and requirements for the training, and they actually serve as the syllabi of the training programmes.

The close scrutiny and comparison of these syllabi is illustrated in Appendix 2. It can be seen that each training programme generally consists of three components. The first component is the theoretical classes, which played an important role in the earlier training programmes. For instance, these courses accounted for five sixths of the whole GP-IST programme at the beginning. However, these classes were reduced to less than a half in the revised outline in 2007. The GP-SRT syllabus even did not allocate specified time for these classes - the format of these courses can be flexible.

The second component is clinical training, which, in contrast to the classroom teaching, makes up most of the training time now. There is also a steady increase of training time in the third component – community placement – which means that trainees are required to practise in GHOs where most GPs are supposed to work. This resembles the training in the GP Surgery in the UK.

Overall, the syllabi have become more and more rigorous, and gradually followed the international standards. However, these syllabi, designed by the government, also reflect two problems regarding the specific roles of GPs.

First, the clinical training component of the syllabi, like half a century ago in the UK, implies that “the general practitioner is a pale image of a number of different specialists” (page 421).⁹⁶ For instance, the syllabus of the GP-SRT (the most rigorous GP training programme in China) requires

the GP residents to have a brief exposure to at least 13 departments of a tertiary hospital within 33 months (Appendix 2). This leaves a large space for confusions. Especially in China's hospital-dominated health system, it seems that the general practice is a simple combination of different specialties, as shown by the parallel rotations of various tertiary hospital departments.

Second, the community placement (the third component of the syllabus), in terms of appearance, looks like the training in the GP Surgery in the UK. However, the UK has a physical general practice there (setting the role models through everyday practice recognised by the health professionals and the general public), while China's medical practice in the community may greatly disappoint the trainees, and more seriously, the specific content (Appendix 2) of the community placement is to ask the trainees to do so-called national basic public health services (Table 4.3). Some training programmes even directly ask the trainees to do an internship in a public health organisation such as the Centre for Disease Control and Prevention (Appendix 2).

Since the outbreak of SARS in 2003, China has paid special attention to public health with substantial funding from central government (Chapter 2). In 2014 China had 11 national basic public health services (Table 4.3), most of which are dealt with by the GHOs. A significant proportion of GHOs do not have many patients, since many patients directly go to the tertiary hospitals. The income of the GPs working at GHOs relies heavily on the increasingly large amount of funding from the government for the national basic public health services. The government sets up strict quantitative targets (Table 4.3) for these public health services, the completion of which will directly affect GPs' income. Accordingly, it is not uncommon to see many GPs busy with public health services each day. This is quite often what the trainees see and are required to do during the community placement.

Table 4.3: National basic public health services and the required targets in 2014

No.	National basic public health services	Targets
1	Establishment of residents' health information files	Establish electronic health information files for more than 70% of the residents
2	Health education	
3	Vaccination	Maintain the coverage rate above 90%
4	Health management for children / child care	Cover more than 85% of the children aged under 7
5	Maternal health management / maternal care	Coverage rate – above 85%
6	Health management for the aged	Maintain the coverage rate above 65% for those aged above 65
7	Health management for those with chronic diseases (hypertension and type-2 diabetes)	Cover more than 38% and 25% of those with hypertension and type-2 diabetes, respectively. For the whole country, well manage more than 80 million and 25 million people with hypertension and type-2 diabetes, respectively.
8	Health management for those with serious psychiatric illness	Cover all the people with serious psychiatric illness who stay at home (not in hospital). For the whole country, well manage more than 3.5 million.
9	Reporting and addressing the emergent events of public health	
10	TCM health management	Cover more than 30% of those who are above 65 or 0 to 36 months old.
11	Assisting health inspection (e.g. report on food safety information, and check of drinking water)	More than 95% of state-owned GHOs need to participate in assisting health inspection.

Furthermore, these two problems found from the syllabi (emerged in the government documents) also together imply an understanding that the tertiary hospitals are the place to treat patients and apply clinical skills, while the GHOs (where the trainees do the community placement) are the place to do public health services. It may then follow that GPs mainly provide public health

services, as found in Chapter 5 and 6. The prevention, public health and general practice will be discussed in detail in Chapter 7.

4.4 Summary

China has made impressive progress in the recent past towards establishing general practice in its evolving health system. An increasingly large number of government documents concern GPs, and many government players are involved. The training of GPs has developed from some pilot programmes in developed urban cities to a national policy with more substantial funding from the central government to target underdeveloped regions. The relevant training programmes have been expanded dramatically – from the coverage of mainly those in urban areas to those in rural China; from continuing education to all the three stages of China's medical education system; from licensed doctors to licensed assistant doctor. The syllabi of the training have become more rigorous.

My government document analysis demonstrates the central government's passionate commitment to developing a GP system, which is characterised by the release of *The Plan* in 2010 and *The State Council Opinions* in 2011. These two documents serve as the blueprints for China's GP development, and this ongoing third wave of GP evolution in China is unprecedentedly strong. Furthermore, this time the GP development is not on its own – it accompanies the fundamental reform of China's medical education system, characterised by the establishment of the nationwide SRT. There is no doubt that the central government is promoting a GP system with the best intentions – based on all the documents identified, the ultimate objectives can be summarised as follows: (1) to strengthen the GHOs and equip them with more qualified doctors; (2) encourage people to seek health care at these GHOs to relieve the almost intolerable pressure on the tertiary hospitals' outpatient departments; (3) further emphasise prevention and public health; and (4) improve the overall quality of doctors in China.

However, this strong wave with good intentions does not necessarily mean it will naturally lead to a viable GP system in China. Many challenges are discerned, as detailed below:

Too many government players are involved. This implies the importance and also the complexity of establishing general practice in China. More cautiously, too many players (including ministries and commissions, and the departments within the health sector) imply a large opportunity space for divided health policy making and a risk of fragmented health care, as happened before the Cultural Revolution (Section 2.2.1 of Chapter 2). Also, many key aspects of establishing a GP system are beyond the control of the health sector. The power retained by the strong government players out of the health sector relates to China's general political and social reforms, which will greatly affect the viability of general practice in China.

The direct definitions of general practice and GPs by the government are very broad. They are based on the idealistic framework featuring the attributes of general practice, but may fail to articulate and perform realistic functions in implementation. Accordingly, the government operation more reflects a pragmatic approach of defining GPs as front-line doctors. The effort is more about asking qualified doctors to work in the community rather than developing general practice in China. The diverse syllabi reflect the chaotic medical pluralism, the hospital dominance and the rise of but equally ambiguous public health in China.

There is no doubt that TCM can play a role in primary care. Some of China's barefoot doctors were TCM practitioners or at least used TCM quite often such as herbs, acupuncture and massage. How to integrate TCM into China's own general practice paradigm deserves further research.

TCM, if well managed, has the potential to contribute greatly to primary care even internationally. Now it complicates China's efforts of establishing general practice.

It should be noted that many issues addressed by the identified government documents are often not considered government functions in high-income countries. However, professional associations are largely neglected in China, while internationally it is well recognised that government alone does not perform well in professional matters.

CHAPTER 5 UNDERSTANDING OF GPS

In this chapter, I address the second research question of the thesis – how PITs understand GPs. Through qualitative thematic analysis (Section 3.2.4, Chapter 3) on the TRUMP medical students (seven FGDs) and GP-TT trainees (seven semi-structured interviews and one FGD), five themes on the understanding of GPs have emerged, as shown from Section 5.1 to Section 5.5. Within each section, the theme is elaborated and discussed; I select the quotations which can typically represent the theme or raise a particular important point.

Each theme is also elaborated through the quantitative descriptive analysis and the χ^2 statistics comparing the three PIT groups (in total 1,887 respondents), as the questionnaires have been designed around the themes emerged (Section 3.2.3, Chapter 3). In this way, the qualitative and quantitative elements are triangulated to examine PITs' comprehension of GPs in each section from 5.1 to 5.5.

Section 5.6 reports a missing theme, which means it is not mentioned by the PITs during the qualitative surveys. However, this theme is well worth considering, and my quantitative analysis covers this topic. In the end, Section 5.7 is the summary. It should be noted that though each theme (including the missing theme) is presented individually, they are by no means isolated. Instead, they are essentially closely connected with each other.

5.1 Comprehensiveness

5.1.1 The formation of the theme

Comprehensiveness is one of the most important attributes of general practice, which often requires GPs to deal with a much larger variety of problems compared to the hospital specialists. To some extent, PITs realise the comprehensiveness demanded of GPs, as well as the necessity and advantage of comprehensiveness, as shown in Case 5.1 below.

At grassroots level. Only pure gynaecology. (I mean you) merely know gynaecology. (But) sometimes the content of gynaecology is not only restricted to pure gynaecology. It sometimes refers to some gynaecological symptoms caused by internal medicine. A while ago I met a young girl who sought health care due to amenorrhea. When other doctors saw her, they only considered her menstruation problem. But when I talked with her, I found her neck was abnormal and thought of a possibility of a thyroid problem. Next day, the result of the medical examination proved it was a thyroid problem –thyrotoxicosis, which caused the change of the endocrine system and further amenorrhea. So general practice is better because it offers comprehensive understanding – when you see one disease you are able to consider the combination of other various specialties.

(Case 5.1: Interview 1, GP-TT trainee, obstetrician and gynaecologist, at a township hospital, female)

However, all three groups of PITs tend to understand GP literally according to the Chinese translation. GP is translated to *Quan Ke Yi Sheng* 全科医生 – four Chinese characters. The last two *Yi Sheng* mean doctor(s); the first character *Quan* means all; *Ke* means discipline, specialty or department (of a hospital). Accordingly, if the terminology GP in Chinese is literally translated back into English, it means “all-specialty doctor” or “all-department doctor”. When asked regarding PITs’ understanding of what a GP is, the general confusion emerges as depicted by the following responses:

Participant 5, Male: GPs mean training us to be able to do internal medicine, surgery, etc. All the specialties.

A low voice (cannot identify which participant): Impossible.

.....

Participant 7, Male: GPs, I see, we are expected to conduct general practice. But based on the knowledge we have accumulated, (expecting that we are able to do) all the specialties, I feel the possibility is too low. All the specialties, I only know some basic stuff.....

Participant 8, Male: Our tutors are all professionals, (knowing) details, (a female voice: specialists), going in depth. Right?

Participant 7, Male: Yes, right.

Participant 8, Male: You cannot (expect) all our tutors are GPs, who (can treat) all the diseases - TCM, internal medicine, surgery, gynaecology, and paediatrics, he all knows.

.....

Participant 3, Female: (GPs) can deal with all the diseases.

Participant 2, Female: Know a little about all the diseases.

Participant 3, Female: But no expertise.

Participant 7, Male: To literally understand it (GP), it seems so

Participant 5, Male: Be capable of treating every (disease)

Participant 7, Male: Be capable of treating every, no matter what it is

(Case 5.2: FGD 4, students enrolled in 2010 at XMU)

The conversation shows that these medical students know GPs need to acquire the breadth of knowledge, while specialists go in depth of one specialization. However, the balance between breadth and depth required of GPs confuses them. This confusion is at least partially due to the existing organisation of care in China. These TRUMP medical students are supposed to work in township hospitals in the future. Though township hospitals are not as specialised as those tertiary hospitals in China, they usually have departments of internal medicine, surgery, paediatrics, obstetrics and gynaecology. Accordingly, the township hospital doctors were conventionally trained to be specialists who worked in these specialised departments of township hospitals, though most of them even did not have a bachelor degree. The GP-TT Programme, the current main source of GPs in China, is to train these township hospital “specialists” for one year so that they can be “transferred” to be GPs. Two trainees of this programme, who are also a TCM

practitioner (Case 5.3) and an internist (Case 5.4) in two township hospitals, respectively, understand GPs in the following way:

I am having a thorough systematic training (in general practice) and I will be able to work in each department (of a hospital). I can practice each specialty. You know I firstly conduct acupuncture (got a diploma in acupuncture at college, belonging to the big category of TCM). My practicing scope is suddenly extended so hugely that I am not able to (manage it). I have limited energy and I cannot learn that much (in the GP-TT centre). If there is a specialist/expert (in the related department of my township hospital), it is better to ask the specialist to do the job (in that department). If no, I will do it. That's it.

(Case 5.3: Interview 5, GP-TT trainee, TCM practitioner at a township hospital, female)

Though I am an internist, double certificates (general practice and internal medicine) is better than a single certificate (the internal medicine he has already had). I am currently registered in internal medicine. Double certificates. I mean the certificate of general practice will allow me to see patients pertaining to internal medicine, surgery, paediatrics, obstetrics and gynaecology. I can deal with all of them appropriately.....I think in the future, in order to motivate grassroots doctors, reform will be needed so that we will be paid by the workload (patients seen). Then, if I am still an internist, I can only see patients pertaining to internal medicine. If a patient pertaining to surgery comes to me, in order to increase my income, should I treat him or not? If I treat him, it is beyond my current (registered) practice scope. If I do not, I have the capacity to deal with that – assume that is a general minor injury, I stitch and bind up the wound. It is done and I get paid.....the practice scope is expanded and my income is increased.

(Case 5.4: Interview 2, GP-TT trainee, internist at a township hospital, male)

It is true quite often that GPs have a wider practice scope. Nonetheless, this comprehensiveness is neither unlimited nor unregulated. In Case 5.3, the TCM doctors obviously does not feel confident about her so-called sudden huge expansion of practice scope. She wants the “specialists” in related departments to do the job, but the fact that she “will do it” may pose a danger to the safety of patients. The internist in Case 5.4 probably never imagines he would conduct the coronary bypass surgery as a GP. But as he said, addressing the minor injuries may be a possibility. The specific roles and responsibilities of primary care providers vary from country to country, and even from region to region within the same country. At China’s current transitional stage from the conventional specialist practice model to the planned GP practice model, to what extent the GPs

can substitute some roles of the conventional specialists is a key factor for clarification. China needs to explicitly distinguish the practice of GPs from that of hospital specialists, so that GPs and specialists are complementary.

The clarification is neither easy nor will happen automatically, especially given that the roles of GPs and some specialists (including some roles among specialists) do overlap and sometimes a clear-cut distinction is unrealistic. The clarification obviously relies on the competencies of GPs and specialists. The first case of this chapter (Case 5.1), from one aspect, shows general practice's comprehensiveness and its advantage. On the other hand, it also alludes to the low quality of care provided by many township hospital "specialists" in China. In fact, any qualified GP, obstetrician and gynaecologist, or internist ought to know that amenorrhea can be caused by thyroid gland disorders. China's medical pluralism, leading to huge differences in quality of doctors, makes this clarification very difficult.

5.1.2 A quantitative perspective

According to the qualitative study, PITs base their understanding of comprehensiveness on the current organisation of care (the dominance of hospital and specialist model). To further explore this, structured questionnaire was designed to include four specific statements (Table 5.1).

Quantitative analysis confirms that PITs use their knowledge of existing hospital departments and the specialists there to interpret comprehensiveness. In specific, in the current organisation of care, most doctors establish their specialty identity through the hospital's department where they work. Accordingly, GPs are "all-department" doctors; around 80% of PITs agree that GPs can work in most departments of a hospital (Table 5.1). All the three PITs groups' opinion on this statement is not significantly different ($p=0.884$). In other words, they have a consensus on this issue. Similarly,

according to PITs' understanding, GPs are “all-specialty” doctors; general practice is the combination of all the specialities. Consequently, around 85% of PITs are intimidated by the comprehensiveness required of GPs; the three PIT groups all think general practice is more challenging and needs longer training compared to specialist training ($p=0.962$). Furthermore, half of them are worried that GPs are more difficult to make progress in China's *Zhicheng* system (Table 5.1).

Table 5.1 GPs as all-specialty doctors

	Medical students (n=418)	Township hospital doctors (GP-TT trainees) (n=1349)	Resident doctors (n=120)	Comparing three groups <i>P-value</i> (χ^2 test, df=2)
Statement 1. General practice consists of all the specialties in medicine				
%agreement	50	84	70	0.015
%disagreement	44	13	24	
%do not know	6	3	6	
Statement 2. General practice is more difficult to learn and needs longer training compared to specialist training				
%agreement	86	88	84	0.962
%disagreement	7	8	13	
%do not know	7	4	3	
Statement 3. GPs are qualified to work in most departments of a hospital				
%agreement	77	76	82	0.884
%disagreement	12	17	12	
%do not know	11	7	6	
Statement 4. It is more difficult for GPs to get promotion in China's Zhicheng system				
%agreement	50	50	42	0.670
%disagreement	22	33	36	
%do not know	28	17	22	

5.2 First contact, continuity and accessibility

GPs are supposed to be patients' first and regular contact. This first-contact care is interpreted in two opposite directions by the PITs, as detailed below:

5.2.1 "Privileged" family or private personal doctors

If there were these all-round and all-specialty doctors, who would have the privilege of their services? In late 1980s when general practice was first introduced to China, some top Chinese leaders decided not to promote it because they thought GPs were private personal doctors who could only be afforded by the rich in the west (Section 2.4, Chapter 2). Even now, some people still consider GPs in similar ways, as illustrated below:

Participant 3, Female: I quite like reading foreign novels such as Jane Eyre and Gone with the wind. Through those novels, (I find that) they have family doctors. I feel our country is copying them (i.e. high-income countries) in many aspects – of course those positive aspects. I think our GPs are copying their family doctors. But I think we need to wait until we turn better (in terms of financial capacity) and have the (economic) condition. Then we can be trained. Now even if it (the government) has trained us very well, there is no (appropriate) place to allocate us. Now our economic condition is limited, unlike foreign (developed) countries. They can hire this kind of doctors, while we cannot afford these family doctors. Our GPs are supposed to be like this in the future: like what has been written in foreign novels, I (one family doctor) is in charge of that family or the people in that area - their overall health. Our economic condition is still limited and still cannot reach that.

(Case 5.5: FGD 2, students enrolled in 2011 at HUTCM)

The counterparts of GPs and general practice in the US are called family physicians and family medicine, respectively. Actually, when general practice was introduced to China, experts discussed whether China should use term family doctors or GPs. They finally decided on GPs since they thought the terminology family doctor might lead to Chinese people's confusion that

the family doctor should come to my home and take care of me as my private personal doctors, as understood by the abovementioned leaders in late 1980s. Nowadays, many people use GPs and family doctors interchangeably, but some may still think family doctors are for the more “privileged” (Case 5.5 and Case 5.6).

Participant 1, Male: Family doctors in China – there are few those family doctors.

Participant 6, Female: Where are family doctors (to practise medicine)? At home?

Participant 3, Male: (Family doctors are) the doctors hired solely by people who have economic capacity and serve them (the rich).

Participant 1, Male: Basically there are few (in China).

(Case 5.6: FGD 6, students enrolled in 2012 at XMU)

In China, there are indeed a very tiny proportion of these privileged personal doctors, who take care of the everyday health of very top officials. If these officials have the needs, these privileged doctors of course will pay a visit to the officials’ houses and see them there. This fact may contribute to the understanding of GPs above. This “privileged” understanding of GPs implies domiciliary care. In this case, the GP (i.e. private personal doctor) serves as a medical friend, going to the privileged patient’s house if needed and taking care of him/her over time. This leads to continuity of care as well, another merit of general practice. In this case, the quality of care provided by these GPs (i.e. private personal doctors) is guaranteed. The rich and the powerful obviously would like to enjoy this “privilege” of first-contact and continuous care.

5.2.2 Barefoot doctors or village doctors

At the same time, for the general public, the first-contact care indicates that GPs are better to practice in the community out of the tertiary hospitals. This is supposed to imply another merit of general practice – accessibility. Nonetheless, unlike many physicians in the US or many GPs in the UK, most Chinese doctors of high education levels are not independent practitioners. They

work in the state-owned tertiary hospitals, and are like semi-civil servants (Section 2.5, Chapter 2). In other words, most doctors of high education levels in China work in a hospital setting rather than an office base. GPs' office and community based practice model easily make some PITs relate the newly-planned GPs to those internationally famous barefoot doctors in rural China during the Cultural Revolution period as well as their successors the current village doctors (Case 5.7).

Participant 1, Male: To my knowledge, there are no GPs in the hospitals of Zhengzhou (the capital and the biggest city of Henan Province). From those I am in touch with, they feel, when they hear of GPs, they consider them to be village doctors.

(Case 5.7: FGD 2, students enrolled in 2011 at HUTCM)

This interpretation (considering GPs to be barefoot doctors or village doctors) reflects the influence of China's current organisation of care. Most doctors of high education levels are concentrated in tertiary hospitals. Practice venue matters in China, as people (including medical students and doctors) naturally connect the practice venue to quality of care. Since first-contact care requires GPs to better practice in the community (i.e. in grassroots health organisations, in China's setting; Section 2.5.5, Chapter 2), GPs (a kind of grassroots doctors out of the tertiary hospitals) are regarded as inferior to the tertiary hospital specialists.

This understanding is also associated with the comprehensiveness of general practice. The nature of first level of care decides that primary care providers have a breadth of knowledge, as when people firstly seek health care there are various possibilities of diseases as well as differential stages of illness. Thus, primary care providers had better be GPs. There is an understanding that all the grassroots doctors in China (out of the tertiary hospitals) have been de facto GPs (Case 5.8). In addition, in the era of rapid technology advancement and increased specialisation, those with broad but relatively not in-depth knowledge have the risk of being considered low-end (especially in a health care system dominated by specialists). "All-specialty doctors" are naturally doubted, as shown by the interaction of medical students in Case 5.2. Accordingly, it is easy to go to the

opposite direction (as did many students in Case 5.2) - GPs know everything a little but master nothing. In other words, GPs know much knowledge superficially but have no expertise, and most people cannot safely put their health in the hands of those with superficial knowledge.

Participant 1, Female: My elder brother is a doctor in the township hospital. When I go back to my hometown and have time, I like to visit him. (Through him), I know a little (about general practitioners). The name of general practitioners has been introduced recently. Before, to their (my brother and his colleagues) understanding, the doctors in the township hospitals are all general practitioners, no matter which department you are in. Those farmers do not care about what you do (what your specialty is). In that place (the township hospital), if I (the farmer) do not feel comfortable, I want you to treat my disease as long as I see you are wearing a white robe (which means you are a doctor).

(Case 5.8: FGD 5, students enrolled in 2013 at XMU)

Nonetheless, GPs do have expertise. GPs have what I call “dual identities”. On the one hand, they are generalists as opposed to specialists. On the other hand, in those developed jurisdiction where general practice has been well established, it is mandatory for GPs to have the residency training. For instance, in Denmark one has to take 6 years of training after medical school in order to become a GP. Accordingly, contemporary GPs actually have become specialists in general practice. China’s PITs do not understand the “dual identities” very well, and they are confused.

The first-contact care, in the eyes of PITs, when applied to the rich and the powerful, GPs go to the direction of “all-specialty doctors” and become privileged family or private personal doctors. But this “all-specialty doctors” are too good to be true for the common people, and when the first-contact care is applied to the poor or the general public, GPs go to the direction of previous barefoot doctors or village doctors without solid concrete expertise.

5.2.3 A quantitative perspective

The two extremes of the opposite understandings are examined, as shown in Statement 2 and 4 of Table 5.2. More than 10% of PITs consider GPs to be private personal doctors, and a similar percentage of medical students and GP residents think GPs are like barefoot doctors or village doctors. For the “privileged” direction of understanding, the three PIT groups’ viewpoint is not significantly different ($p=0.568$) – equally low. For interpreting GPs as barefoot or village doctors, the opinions of the three PIT groups are different significantly, with the township hospital doctors (26%) much more likely to hold this interpretation (Table 5.2). Similarly, the three PIT groups have significantly different thinking on whether GPs mainly work in rural areas ($p< 0.001$; Statement 5 of Table 5.2). 43% of township hospital doctors agree with this statement. The vast majority of township hospital doctors do not have a bachelor degree, and they work in rural China. They tend to base their understanding of GPs on their education levels and work experiences.

One third of the PITs think GPs have no concrete expertise, and they just know everything superficially (Statement 3 of Table 5.2). In addition, most PITs think that GPs are family doctors (Statement 1 of Table 5.2). This may reflect the influence of British GPs and the American family physicians, and GPs and family doctors are gradually used interchangeably in China.

Table 5.2: GPs as first-contact care

	Medical students (n=418)	Township hospital doctors (GP-TT trainees) (n=1349)	Resident doctors (n=120)	Comparing three groups <i>P-value</i> (χ^2 test, df=2)
Statement 1. GPs are family doctors				
%agreement	54	70	54	0.232
%disagreement	40	25	38	
%do not know	6	5	8	
Statement 2. GPs are private personal doctors				
%agreement	14	16	11	0.568
%disagreement	79	76	78	
%do not know	7	8	11	
Statement 3. GPs know everything but master nothing				
%agreement	39	29	32	0.468
%disagreement	55	64	65	
%do not know	6	7	3	
Statement 4. GPs are like barefoot doctors or village doctors				
%agreement	14	26	9	0.012
%disagreement	81	66	88	
%do not know	5	8	3	

Statement 5. GPs mainly work in rural areas				
%agreement	20	43	12	< 0.001
%disagreement	75	51	79	
%do not know	5	6	9	

5.3 Referral, coordination and the “gate”

5.3.1 The formation of the theme

The balance between knowledge breadth and depth demanded of GPs also means that GPs cannot solve all the diseases on their own – whenever necessary, they should refer patients to specialists. In the UK, the top specialists in hospitals are called consultants. The origin of the terminology means that they are consulted by patients as well as GPs. When the inpatients taken care of by the specialists are discharged from the hospital, they are referred back to GPs. Many PITs in China have realised GPs’ referral role, as depicted below:

Participant 2, Male: GPs have a guiding relationship (with patients). Assume one person goes to seek health care and he/she does not know what disease he/she has. Then (GPs’ job is to) tell him/her what the disease is. Then tell (the patient that) I (the GP) cannot cure it and (you need to) go to find that certain...certain discipline’s doctor (specialist) in the department (of a hospital) in the city. Then you will be given professional examination(s) (by the medial equipment) for further treatment. That is a filtering role – distinguish between small and big diseases.

Participant 3, Male: Right.

Moderator: Since you understand it (the role of GPs) in this way, why do you want to treat rare and complicated diseases?

Participant 3: Not rare and complicated diseases. (I) aim to make more patients, as much as treatment can, get treatment near home. It is relatively convenient.

Moderator: Maybe your role (GP’s role) is to treat common diseases. You just refer those you are not supposed to be able to treat.

Participant 3: If so, now you do not need a doctor with a bachelor degree.

Participant 5, Female: He means gradually expanding the scope of small diseases (that GPs can treat).

Participant 3: If maintaining the status quo, there is no need to have doctors with a bachelor degree. The existing doctors in township hospitals are (qualified) enough to treat small diseases. (Those with) big diseases still need to go to a (big) hospital directly. Then this country’s problem of poor access to and high expenses of health care still cannot be solved.

Moderator: How do you define small diseases? To what extent?

Participant 3: This can only, gradually....Actually, becoming a GP, what to say, the boundary is not very clear.

(Case 5.9: FGD 5, students enrolled in 2013 at XMU)

China does not have such a mature double referral system (from GPs to specialists and from specialists back to GPs). The current Chinese health delivery system heavily relies on patients' self-referral. The confusion, which is probably not limited to the Chinese setting, is what are the "small diseases" which are supposed to be dealt with by GPs and what are the "big diseases" which should be referred, as discussed in Case 5.9. The identification varies greatly from country to country and from time to time. We cannot expect China's current GPs who often do not have a bachelor degree to solve the same set of problems to those GPs in Denmark receiving 6-year residency training after medical school. Similarly, nowadays the "small diseases" addressed easily by GPs might be "big diseases" 30 years ago. The key is to clarify the "boundary" (Case 5.9) which will affect the education of a country's GPs as well as the fair resource distribution of a health system.

With the unclear boundary, the PITs may have two tendencies. One is to treat as many diseases as possible, including those beyond the capacity of GPs, especially given that China does not have a well-established referral system. The other is to just simply refer patients without necessary efforts. Participant 2 in Case 5.7 above has this second tendency, while Participant 3 though seeming to agree with Participant 2, actually shows the first tendency.

The second tendency that GPs just simply refer patients is more evident in Case 5.10 below. In this case, guidance is more appropriate than referral for the role mentioned. When an individual first decides to seek health care, he or she has neither professional medical knowledge nor sufficient information of how the health system works. Therefore, GPs often have the responsibility of navigating the patients through the health care system. In the UK, GPs even used to have the fundholding role. It is still widely accepted that GPs help with the coordination of health care, and referral can be seen as one function of this coordination. With the lack of GPs in China, people

tend to skip primary care and directly go to the increasingly huge outpatient department of the tertiary hospital. It is increasingly common to see that the outpatient visits exceed 10 thousand per day for a single tertiary hospital. How does a tertiary hospital manage 10 thousand or more patients per day in China? Some of them have some health personnel very briefly talking with the patients who inform them which department of the hospital they need to go to. This is the inspiration of the “guide doctor” (who actually is often a nurse) business in case 5.10, which to some extent reflects the coordination role of GPs.

Participant 6, Male: Currently guide doctors are not well managed. Now what we (GPs) are doing is equivalent to referral – essentially the same to guide doctors. (In the future) I plan to do guide doctor business – set up an independent company (to provide professional guide doctor services).

(Case 5.10: FGD 7, students enrolled in 2010 at XMU)

The coordination does not solely rely on GPs. GPs also need help. They refer patients to specialists when necessary. In addition, some care can be provided by nurses or community health workers, especially some coordination work. The guide doctors above can often be nurses. In addition, many township doctors in China, in terms of education levels, are more like what is termed “community health workers” in high-income countries. Participant 3 in Case 5.9 is also confused with the role between the GPs and the community health workers. This confusion and the two tendencies discussed are also derived from the medical pluralism in China. The heterogeneity of doctors means their real competencies vary greatly from that of community health workers to that of qualified doctors according to the standards in the high-income countries. In this case, it is challenging to set the referral boundary in China.

The broad care provided by GPs may overlap with allied health professionals such as nurses and community health workers. This becomes more confusing if China wants to learn from successful experiences across various countries. To clearly define China’s own GPs, the key is to clarify the

boundaries between GPs, specialists and allied health professionals. Then the education and design of the health delivery system can follow. The subtle balance of breadth and depth demanded of GPs also relies on the identification of the boundaries identified.

GPs have the attribute of accessibility. But at the same time, the referral and coordination function also implies GPs' gatekeeping role. They serve as the "gate", and gate is barrier. This is another dual identity of GPs. On the one hand, GPs facilitate easy access. On the other hand, they prevent people from using health services freely. In the Chinese official promotion of GPs, as reflected by some Chinese government documents, the gatekeeping role is mentioned, but it is said that GPs are the gatekeepers of residents' health (Chapter 4). We do not know whether this means that GPs are people's health protectors or the gatekeepers of the health system. This reflects either government's vague understanding of GPs or its deliberate way of avoiding the mention of GPs' barrier role when promoting the GP system.

5.3.2 Quantitative analysis

According to the quantitative analysis, the vast majority of PITs (more than 90%) think that GPs are the gatekeepers of residents' health (Table 5.3), which is clearly written in government's documents. However, "the gatekeepers of residents' health" has two interpretations, as discussed above. Agreeing with this statement does not necessarily mean the PITs understand GPs' referral role appropriately. In fact, when directly asked whether they agree that GPs' one main responsibility is referral, the percentage of agreement reduces to less than 70% (Table 5.3). To put it another way, more than 30% of PITs do not recognise the imperative of GPs' referral role. Furthermore, my study also shows that 50% of medical students, 55% of township hospital doctors, and 35% of GP residents support the establishment of a strict gatekeeping and referral system. It should be noted that most GP residents (65%), who are currently practising in tertiary hospitals,

do not recognise strict gatekeeping. Putting all the evidence together, the government statement “the gatekeepers of residents’ health” is more interpreted in the first way as “people’s health protector”.

In addition, the proportion of PITs who think GPs do not need the assistance of nurses is not low. Especially almost 15% of township hospital doctors hold this viewpoint (Table 5.3). To fulfil the potential benefits of GPs’ gatekeeping, referral and coordination, it is of great importance to establish and regulate the delegation among GPs, specialists and allied health professionals. The boundary setting needs to be coordinated and harnessed clearly, so that the effective and efficient teamwork can be materialised.

Table 5.3: GPs as the “gate”

	Medical students (n=418)	Township hospital doctors (GP-TT trainees) (n=1349)	Resident doctors (n=120)	Comparing three groups <i>P-value</i> (χ^2 test, df=2)
Statement 1. GPs are gatekeepers of residents’ health				
%agreement	90	97	97	0.858
%disagreement	7	1	2	
%do not know	3	2	1	
Statement 2. GPs’ one main responsibility is referral				
%agreement	69	69	58	0.517
%disagreement	22	25	30	
%do not know	9	6	12	
Statement 3. GPs usually do not need the assistance of nurses				
%agreement	7	15	6	0.076
%disagreement	90	80	92	
%do not know	3	5	2	

5.4 TCM and general practice

5.4.1 An emerged compound

Traditional Chinese Medicine (TCM) makes boundary setting more complicated and chaotic. Though western medicine has been the mainstream of China's health care, TCM practitioners still account for 14.5% of China's officially-recognised doctors (Chapter 2). Now with the wide promotion of general practice in China, new confusion emerges. Some may think that general practice, as “all-specialty medicine”, includes TCM as well. This belief is more evident among those TCM doctors who join the GP-TT with the hope that through the training they will become GPs and practise western medicine as well, as depicted in Case 5.11 below.

Interviewee: (I am learning) general practice, which includes western medicine. I then can practise both (western medicine and TCM).

Moderator: So you come to this training because you can practise western medicine when returning (to the township hospital)?

Interviewee: That is the point. Basic issues pertaining to TCM and western medicine can be addressed (by myself). Otherwise, only rely on TCM. Now fewer and fewer people take traditional Chinese herbs – patients become impatient and it is too slow for TCM to show the effect. For many TCM hospitals such as the Anyang TCM hospital, 80% to 90% of their income is from western medicine. Only relying on TCM cannot sustain (the everyday operation of the hospital). Therefore, the intention (of taking this training) is to add western medicine. Otherwise, whenever I practise western medicine later, that will go beyond my (legal) practice scope.

(Case 5.11: Interview 4, GP-TT trainee, TCM practitioner at a township hospital, male)

In addition, most medical schools in China are western medicine universities such as XMU, Zhengzhou University and Henan University in my study. Medical students there will become clinical (western medicine) doctors in the future. China has some TCM universities such as HUTCM in my study, where medical students will become the category of TCM doctors. In these TCM universities, there is a discipline called “the combination of western medicine and TCM”. In terms of the four practice categories above, medical students in this discipline will in the future

still become TCM doctors, but compared with other TCM doctors they learn a little more western medicine. The TRUMP in Henan Province gives some quotas (though a relatively small proportion) to HUTCM, which naturally connects the discipline “the combination of western medicine and TCM” with general practice. This decision, by the Henan health authority, to some extent, implies either its recognition of connecting China’s general practice with TCM or weak regulation. As a result, medical students particularly at HUTCM tend to think general practice is kind of equal to the combination of western medicine and TCM, as shown in Case 5.12 below.

Participant 1, Female: My home is close to our village’s clinic. That clinic’s doctor is more than 70 years old. He has a very high reputation in our village – all the patients, male and female, the old and the young, all go to him to seek health care. Paediatrics, obstetrics and gynaecology, he knows all. He relies on the experiences he has accumulated for so many years. When a patient comes, without using advanced medical equipment, he is able to diagnose the disease or narrow down the diagnosis to a very small scope – must be either this or that disease. I think he is awesome. When I find general practice, I think it is nice – learning both TCM and western medicine and after graduation I can be like him. When I opted for this discipline (general practice), I went to consult him. He told me this discipline was good – after graduation you could use either the knowledge of TCM or the knowledge of western medicine, or combine both. At least in rural regions or township (hospitals) – he knew I must go back to work in a township hospital – it would be very useful. Because after all it is impossible to employ only one mode (TCM or western medicine) to solve all the diseases.

(Case 5.12: FGD 1, students enrolled in 2010 at HUTCM)

The quantitative analysis confirms that some PITs tend to associate general practice with TCM (Table 5.4). For each of the two statements below, the three PIT groups’ opinions are different significantly, since the township hospital doctors are much more likely to associate general practice with TCM. In particular, 83% of township hospital doctors agree that GPs can practise both western medicine and TCM; 62% of them even consider GPs to be the doctors specialising in combination of western medicine and TCM (Table 5.4).

Table 5.4: GPs vs. TCM practitioners

	Medical students (n=418)	Township hospital doctors (GP-TT trainees) (n=1349)	Resident doctors (n=120)	Comparing three groups <i>P-value</i> (χ^2 test, df=2)
Statement 1. GPs can practise both western medicine and TCM				
%agreement	54	83	47	0.003
%disagreement	32	11	42	
%do not know	14	6	11	
Statement 2. GPs are the doctors specialising in combination of western medicine and TCM				
%agreement	27*	62	28	< 0.001
%disagreement	59	31	67	
%do not know	14	7	5	

*For the 43 TRUMP students at HUTCM, 60% of them agree with this statement.

5.4.2 A comparative advantage for China's primary care?

It makes some sense that China's general practice incorporates some forms of TCM. Back to a century ago, even most western-style doctors across the world were generalists. Elaborate specialisation is a recent phenomenon in the long history of medicine. Some, especially those TCM practitioners, would think that it is with the "invasion" of the western medicine that TCM gradually starts to be divided into specialties such as TCM paediatrics. It is probably counter to the philosophy of TCM to incorporate specialties, as TCM regards human body and mind holistically. From this perspective, TCM practitioners have long been generalists. The principles and theoretical approaches of TCM and general practice do share many similarities. Consequently, those in favour of TCM may consider the establishment of general practice to be an opportunity of TCM's restoration.

Actually, the "combination" of western medicine and TCM, especially in primary care, is very common in China. The barefoot doctors and their successors village doctors are either TCM practitioners or practise some forms of TCM. A typical example is that highly respected senior village doctor mentioned in Case 5.12. The township doctors are quite close to village doctors as they all practise in rural communities. This probably explains why as high as 83% of township hospital doctors surveyed agree that GPs practise both western medicine and TCM (Table 5.4). Again, PITs interpret general practice based on the environment where they are immersed.

According to Chapter 2, the tension between TCM and western medicine in China has lasted for more than a century. The objective of this thesis is not to join the fight between TCM and western medicine and discuss which one is better. I discuss this issue from the perspective of clarification of concepts and avoidance of confusions. Generally, I support that TCM can play a role. Though most TCM interventions have not been tested in randomized controlled trials, TCM has

contributed to some powerful medical interventions. For instance, Tu Youyou was awarded Nobel Prize in Physiology or Medicine due to her participation in the discovery of artemisinin for malaria. Artemisinin was extracted from plants used in TCM. Another example is Chen Zhu's work on a compound used in TCM to cure childhood leukaemia. More importantly, there is a huge demand for TCM therapies such as acupuncture among the general public in China. TCM can play a role in the establishment general practice in China; if well designed and regulated, it will probably be a great opportunity for the modernisation and development of TCM as well. However, it is better to use primary care here rather than general practice. At this transitional stage, TCM causes more confusions of the understanding of GPs in China.

Someday TCM may become a comparative advantage of China's own GPs tailored to its health system. TCM even has the potential of contributing to primary care globally. However, the key is still on the boundary setting and the clear specifications of each category of health professionals' roles and responsibilities. Currently, the participation of TCM has made the establishment of general practice much more complicated and confusing. In the long run, neither TCM nor general practice will benefit from the current vague interpretations and the chaos incurred.

5.5 Prevention, public health and general practice

5.5.1 The formation of the theme

According to the Chinese government definition (Chapter 4), GPs have the roles of prevention and health promotion. These roles are widely praised by the general practice advocates internationally. Many PITs have appreciated the general importance of prevention, as reflected in case 5.13 below.

Interviewee: I have worked for 20 years. Through the 20 years' experiences, I feel prevention is better than disease treatment. If I can integrate all the stuff - the knowledge from public health and that from clinical medicine – all the basic knowledge is integrated to do health promotion among people, it is better than the treatment of diseases when people are sick. The investment and energy spent will be much less.

(Case 5.13: Interview 2, GP-TT trainee, internist at a township hospital, male)

Public health professionals are responsible for prevention and health promotion as well. Chinese government has paid special attention to public health especially after the alarming effect of the 2003 SARS epidemic (Chapter 2). In particular, the government provides the grassroots health organisations (GHOs; as defined in Section 2.5.5 of Chapter 2) with tremendous funding each year, exclusively used for the provision of 11 national basic public health services (as detailed in Table 4.3 of Chapter 4). In 2015 the central government of China offered RMB 40 Yuan per person – a total funding of around RMB 55 billion Yuan (approximately 6.2 billion pounds) for a single year. This is a lot of money, especially for those GHOs with few patients.

However, the GHOs are often not staffed with or short of public health professionals. Alternatively, people often confuse the roles of GPs with the organisations. The GHOs are responsible for these 11 public health services; in implementation many so-called GPs (i.e. township hospital doctors) spend much of their time on these public health services.

The name “public health services” is misleading, and it understandably gives people the impression that this work is done by public health practitioners. However, close scrutiny of these so-called 11 national basic public health services (Table 4.3 of Chapter 4) shows that some of them need to be done by public health practitioners; some are actually clinical services demanded of GPs; arguably, many of them should be done by nurses, community health workers or administrative staff. For instance, these public health services involve considerable paperwork. A typical one mentioned many times by the PITs is the “establishment of residents’ health

information files”, one of the 11 national basic public health services. The government’s intention is good – a strong health information system will contribute to China’s general practice and the continuity of care. However, in implementation the “establishment of residents’ health information files” often means knocking at the doors of the community’s residents, measuring their height and weight alike, and filling in the forms as residents’ health information files. In fact, much of the national public health work in implementation turns out to be filling in all kinds of forms, and those so-called GPs in China’s GHOs have to do this “prevention” work. The township hospital doctors surveyed are annoyed greatly by the trivial details of the paperwork, and complain a lot about this kind of work of general practice. A professor in public health in Shanghai, during a private conversation, calls them “table doctors” as they are responsible for filling in all kinds of forms. Though these GPs (i.e. township hospitals doctors) are more like community health workers in high-income countries in terms of education level, they think they are doctors and they have been trained to do clinical work rather than paperwork. They probably neither like nor are good at doing this public health work. Some of them may work very hard on these tables, while many of them just make them up, as an intense disagreement shows in case 5.14 below.

Participant 1, Male: Those (public health services) are to “go through the motions”.

Participant 2, Female: (They are) NOT going through the motions! Public health, we do what we should do.

Participant 1, Male: Public health, (is) filling in the tables. That is just making up those tables.

Participant 2, Female: We go to each resident’s home (in order to fill in the tables). Making up? Watch your words.

Participant 3, Female: Some (grassroots doctors) just make them up.

Participant 4, Female: That is true.

Participant 2, Female: In our place, it is not. I do not know your place. In our place, (for example) we must visit the newborn (to fill in relevant information in the table).

Participant 3, Female: In our place, maternal care (related table) is all made up.

Participant 4, Female: Just make up a name and fill in the table

Participant 2, Female: Every year we measure the blood pressure of those above 35 years old (to fill in relevant information in the table). Making up? You deny all my work. In your place (the tables are) made up, but in our place it is not true.

Participant 1, Male: All are made up.

Participant 2, Female: That is an insult to my hard work.

Participant 3, Female: More than half (of the tables) are made up.

(Case 5.14: FGD, GP-TT trainees)

Furthermore, the status quo makes some medical students surveyed who are supposed to become the newly-planned GPs in China’s GHOs in the future think they will do this prevention work of general practice (i.e. 11 national basic public health services), as shown by Participant 7 in case 5.15. Some students do not agree, such as Participant 1 who remind Participant 7 that “you are a doctor” which means you should do clinical work rather than paperwork. Nonetheless, Participant 1’s understanding of public health is obviously not appropriate either (Case 5.15).

Participant 7, Female: The GPs at our place (my hometown), last time they told me you (after graduation and training) would do this – they went directly to villages, to people's houses to (a male's voice: fill in forms) check (family's) information.

Participant 1, Male: What you said is public health. Public health is not to treat diseases.

Participant 6, Female: That's prevention, prevention.

Chaotic arguing which cannot be identified.

Participant 3, Male: Does the GP essentially belong to public health?

Participant 1, Male: No.

Participant 5, Female: Different from that (public health).

Participant 1, Male: You are a doctor, different from public health (practitioners). Public health, (you) randomly find a person (which means anyone) can do it – (public health is about) sending some questionnaires, surveys, etc.

(Case 5.15: FGD 3, students enrolled in 2011 at XMU)

5.5.2 A quantitative perspective

More than 60% of PITs think that GPs' main responsibility is public health work (Table 5.5). There are no significant differences in this opinion among the three PIT groups ($p=0.723$). But great caution is needed to figure out what public health means here in their eyes.

In addition, most PITs do not agree that GPs' main role is prevention rather than diagnosis/treatment of diseases. They think they are doctors (or future doctors) who should diagnose and treat patients. Meanwhile, a relatively large proportion of township hospital doctors (37.81%) do think GPs' main role is prevention rather than diagnosis/treatment (Table 5.5), probably because (1) they are more influenced by their current everyday work; (2) they are more like community health workers in terms of the education level.

Table 5.5: GPs vs. Public Health Practitioners

	Medical students (n=418)	Township hospital doctors (GP-TT trainees) (n=1349)	Resident doctors (n=120)	Comparing three groups <i>P-value</i> (χ^2 test, df=2)
Statement 1. GPs' main responsibility is public health work				
%agreement	60	69	65	0.723
%disagreement	31	25	26	
%do not know	9	6	9	
Statement 2. GPs' main role is prevention rather than diagnosis/treatment of diseases				
%agreement	16	38	14	< 0.001
%disagreement	74	56	82	
%do not know	10	6	4	

To sum up, it is fair to reach the conclusion that the PITs have a vague understanding of general practice, public health and prevention. The PITs' interpretation of GPs' responsibilities as public health work reflects what they experience or see in China's current health system – the so-called GPs are doing so-called public health services. Their comprehension of GPs in relation to public health is also derived from China's medical pluralism which even endangers the most important identity of GPs as being doctors.

5.6 GPs and professional association – the missing theme

None of the 62 participants (50 medical students and 12 grassroots doctors) in my qualitative study mentioned GP-related professional associations. I call this phenomenon “the missing theme”. In addition, my quantitative data show that 20% of medical students, 55% of township hospital doctors, and 42% of GP resident doctors heard of GP-related professional associations in China.

“The missing theme” indicates that professional associations are very weak and even not heard of in China.ⁱ In contrast, the importance of the Royal College of GPs (RCGP) in the UK is evident. The Membership of the RCGP (MRCGP) is compulsory for any doctor who wants to be a GP in the UK. Similarly, any doctor who wants to be a family physician must get the board certification from the American Board of Family Medicine. The trivial role of the GP professional association in China may contribute to the chaotic understandings of GPs.

ⁱ A top Chinese leader visited the UK in 2015 and asked whether the Royal College of GPs (RCGP) could help China with the establishment of general practice. A British diplomat in Beijing responsible for the follow-up approached me to ask if there was any GP-related professional association to contact, so that the embassy could facilitate the collaboration with the RCGP. The GP-related professional association was unknown. However, China does have two professional associations. The Chinese Medical Doctor Association (CMDA) has been designated by the National Health and Family Planning Commission (NHFPC) to manage the details of the SRT (including GP-SRT) accreditation. During the writing of the thesis, the CMDA just established its GP society. The other one is called the Chinese Medical Association (CMA), a much older and more influential professional body, but conventionally focusing on academics. Its GP society was established in 1993 (Section 2.4, Chapter 2).

5.7 Summary

I identified five themes from the FGDs and semi-structured interviews in relation to PITs' understanding of GPs. Generally, they had some awareness of the attributes of general practice, namely, comprehensiveness, first-contact care, continuity and coordination. However, it was common for PITs to interpret these theoretical advantages of general practice, from the perspective of China's existing organisation of care (the dominance of hospital and specialist practice model) and medical pluralism. Accordingly, GPs are possibly considered to be all-specialty doctors, all-department doctors, family doctors, private personal doctors, barefoot doctors, village doctors, guidance doctors, doctors combining western medicine and TCM, or public health practitioners.

In particular, GPs' comprehensiveness was interpreted in an intimidating way as all-round doctors who were capable of working in most departments of a hospital. Accordingly, general practice was thought to be more challenging and require longer training than any other specialty. The first-contact care was understood in two opposite directions: private personal doctors when applied to the rich and the powerful; barefoot or village doctors when applied to common people. Referral could be understood as simply guiding all the patients to respective departments of a hospital; gatekeeper (obstacle) to the service can be interpreted as protector of residents' health. TCM, despite potential contributions to primary care, now further complicated the confusions about GPs. GPs' main responsibility could be considered to be public health work.

China now faces a dilemma. On the one hand, a key barrier to the establishment of general practice is the lack of qualified GPs. Accordingly, China cannot soon change the hospital-based care or eliminate the doctors of low education levels. That is why China's establishment of general practice starts with its great efforts on education of GPs. On the other hand, the education, training

and comprehension of GPs is heavily influenced by (1) the existing not-soon-to-be-changed health system which has experienced increased specialisation, fragmentation and commercialisation since China's opening-up and market-oriented reform in late 1970s, and (2) the medical pluralism due to historical legacies. Within such a system, it is difficult to nurture qualified GPs with appropriate perceptions of general practice.

CHAPTER 6 ARE THERE WILLING GPs IN CHINA?

In this chapter, I address the third research question of the thesis – what are the factors which prevent medical students from opting for a GP career (Section 2.7, Chapter 2).

Before moving directly to the research question, Section 6.1 firstly explores the three PIT groups' career plans by using the quantitative data.

Then, I will focus on the medical students, the most relevant group among the PITs for China's GP capacity building. Section 6.2 will report the eight identified themes (such as income) affecting TRUMP medical students' choice of becoming GPs in the future, as a result of the thematic analysis (Section 3.2.4.3, Chapter 3) on the seven focus group discussions (FGDs; 50 participants; Section 3.2.4.2, Chapter 3) among them. In Section 6.3, I will present the importance of these themes through the quantitative summary statistics (418 respondents). In Section 6.4, I employ logistic regression to test how these themes and the understanding of GPs contribute to medical students' long-term career plan. Section 6.5 will summarise the main findings.

6.1 PITs' Choice of becoming GPs

6.1.1 Overview

As shown in Chapter 4 and 5, China has been importing the concept of GPs, who may neither be clearly defined nor well understood, to a hospital-based health delivery system in which specialists have been widely known. In this context, my hypothesis is that the training of the PITs (China's three major strategies of GP capacity building) does not necessarily mean that they will opt for a GP career in the future. The finding supports this hypothesis (Table 6.1).

Table 6.1: PITs' career plans – a long-term career as GPs versus specialists

Career plan	Medical students (n=418)	Township hospital doctors (n=1349)	GP residents (n=120)	Comparing three groups <i>P-value</i> (χ^2 test*)	Comparing medical students and GP residents <i>P-value</i> (χ^2 test*)
%GPs	23	44	19	0.002	0.752
%Specialists	77	56	81		

*Degree of freedom for the test (3 groups = 2df, 2 groups = 1df).

It is very serious that most PITs do not intend to become GPs (Table 6.1). The three PIT groups are significantly different ($p=0.002$) in planning a GP career, with the township hospital doctors more likely to become GPs. However, caution is needed to view that a relatively large proportion (44%) of township hospital doctors want to become GPs (replace their previous specialties with general practice). As shown in Case 5.11 (Chapter 5), some of them want to become GPs with the inappropriate intention to expand their practice scope. In fact, in order to encourage more doctors to become GPs after the GP-TT, some provincial health authorities allow them to keep their previous specialties and add general practice. When GP-TT trainees were asked about this “add-on” arrangement, the intention of becoming GPs increased to 85% from 44%. By doing so, the nominal number of GPs will be expanded very quickly, and the official statistics will look more general-practice-friendly soon.

The long-term career plan of medical students and GP residents are most similar ($p=0.752$; Table 6.1). In fact, TRUMP students are supposed to become GP resident doctors very soon after the medical school. They represent China's new 5+3 model of training qualified GPs, but only around 20% of them plan to become GPs.

6.1.2 TRUMP medical students

When it comes to TRUMP medical students, the focus of this chapter, they will be required to join the GP-SRT according to their contract. However, if they were given the opportunity to choose a SRT in other specialties, 67% of them would opt for other specialties instead of general practice – the vast majority of them want to be specialists (Table 6.2).

Table 6.2: TRUMP students’ preference between GPs and specialists and risk of violating the contract (n=418)

	GP		Specialist		
For your long-term career plan, are you going to be a GP or a specialist?	23%		77%		
If you could choose GP SRT or other specialties’ SRT, which would you choose?	33%		67%		
	Completely not regret	Not regret	A little	Regret	Deeply
Do you regret joining the TRUMP?	4%	21%	39%	17%	18%
	Highly recommend	Recommend	Neither recommend nor oppose	Not recommend	Highly oppose
Will you recommend high school graduates join TRUMP?	1%	6%	47%	29%	17%
	No	Probably not	Maybe	Probably	Determined
Will you violate the contract?	4%	37%	33%	20%	5%
If you can terminate the contract by paying the default payment without any other punishment, will you do so?	2%	18%	30%	28%	22%

More importantly, a significant proportion of medical students seem unhappy with the TRUMP. Around three fourths of them regret joining the TRUMP, and only 7% of them will recommend TRUMP to others (Table 6.2). Furthermore, 4 % of TRUMP students are determined to violate the contract; another 20% probably will do so as well (Table 6.2). If they can pay the default payment to terminate the contract,ⁱ almost half of them probably will do so (Table 6.2).

6.2 Identified themes affecting medical students' choice of becoming GPs

Through the analysis of my seven FGDs with medical students in Henan, I have identified eight themes related to TRUMP students' concerns about becoming GPs: income, further education and training, patients, government policies, life and family, *Bianzhi* system, facilities/medical equipment, and recognition and respect. I will report and discuss each of these emerged themes in close detail:

6.2.1 Income

When medical students consider their future job prospects, it is common to see income is high on their priority list. The TRUMP students are supposed to work as GPs in township hospitals, but the expected low income prevents them from wanting to undertake general practice there. Through analysis of my qualitative data, low income is reflected in three aspects. Firstly, the absolute income of township hospital doctors is generally meagre – it actually can be so low (especially at

ⁱ If the TRUMP students do not comply with the contract, they will be charged the default payment, and this will be recorded in their integrity file, which may prevent them from being registered as doctors in the future. However, as China does not have a mature national integrity file system, the enforcement may be a problem. Also, according to the discussion with health officials during the fieldwork, the health authority may not want to damage the medical career of those who want to break the contract, and the authority suggests that they can terminate the contract as long as they pay the default payment.

the beginning of a township hospital doctor career) that it is not even sufficient for a living, as depicted in Case 6.1. Secondly, the actual payment varies greatly from time to time, from province to province and even from one township hospital to another. This means these TRUMP students have to face an unstable and uncertain payment in the future as GPs in township hospitals. Thirdly, this not only concerns the absolute income. Medical students compare the income of GPs versus that of tertiary hospital specialists – the gap is substantial as described in Case 6.2.

The meagre income is probably one key reason why most TRUMP medical students (around 80%, Table 6.2) may terminate the contract by paying the default payment; their future economic loss will far exceed what they have got from the TRUMP.

Participant 5, Male: To my knowledge, the basic salary (at a township hospital) is around 800 (Yuan), around 800 to 1,000 (Yuan).

Participant 4, Male: Yes.

Participant 5, Male: Say, (according to) present time's living, 800 to 1,000, basically (only enough) for food.

Participant 3, Female: Basically not sufficient for monthly spending.

Participant 4: Actually it might not be like this. Last term when I did my placement in the department of emergency, there was a doctor from a township hospital who was doing continuing education there. Well, he said his wage can be 3,000 to 4,000 per month, sometimes more than 4,000. If you are outstanding, it is not impossible to get around 10,000. But normally, relatively it (income at a township hospital) is low.

Participant 3: Because it depends on the township hospital's profits.

(Case 6.1: FGD 4, students enrolled in 2010 at XMU)

Participant 2, Male: Why township hospitals cannot retain doctors is because of this: lose face and also the payment is too low.

Participant 6, Female: I think it is mainly due to payment. The gap with (the payment of) urban doctors is too huge.

Participant 2: Doctors in township hospitals ride electric bikes, while doctors in big hospitals drive BMW and Benz. That is the gap.

(Case 6.2: FGD 5, students enrolled in 2013 at XMU)

6.2.2 Further education and training

Systematic residency education is very new in China and will become mandatory nationally by 2020 (Section 2.5.2, Chapter 2). Medical students in China used to work directly after medical schools. Consequently, if they found a job in a prestigious tertiary hospital, they might learn from some qualified senior doctors. However, if they directly worked in township hospitals, they probably did not expect to learn much from those township hospital doctors, most of whom even did not have a bachelor degree. With the long-term lack of rigorous residency education in China, many medical students have a belief that where you work for the first several years of your medical career will determine your level of medical skills forever, as said by Participant 9 in Case 6.3 below. In other words, if you start to work in a township hospital, you will become a doctor like current township hospital doctors. If you find a job in a tertiary hospital, you will gradually become an expert in the future. Given the nature of medical practice which requires many hands-on experiences and close supervision/mentorship, this belief makes sense. As a result, the high and low quality practices are perpetuated in silos of individual health organisations in China. This is a key reason why China is making every effort to establish its residency education system by 2020.

At this transitional period, many medical students still hold the abovementioned belief. In fact, when I carried out my first round of fieldwork in 2014, some TRUMP students were not very sure about whether they would be required to join the SRT or be sent to work directly in township hospitals. In addition, for some medical students, working as a GP in a township hospital seems always a risk of falling behind their counterparts in higher-level hospitals, as discussed in Case 6.3.

Participant 5, Male: It is clear that after (working in a township hospital for) three years we learn nothing.

Moderator: You mean there (in a township hospital) no one will be like your supervisor at the current placement hospital to teach you?

Many voices: Yes, that is right.

Participant 5: (We hope that some qualified supervisors) can train us. For the three years (in a township hospital we can accept that) we will get very low payment, but in three years we (hope we) must learn something. But when we go to the low level (i.e. township hospitals), we gain nothing after three years and will fall behind greatly with the health care at the higher level.

Participant 8, Female: I think the first five years (of working) is the time you can learn more. Others go to a big hospital and can learn a lot, while we are at the low level and learn nothing. The gap (of medical skills) with others will be huge.

Participant 9, Female: I used to chat with (an experienced) nurse. (According to the chat,) the first three years (of working) will determine whether a doctor's skills are high or low. Where you are for the first three years to reach certain level will be your level of medical skills forever.

Many voices: Yes. Right.

Participant 8: In the future we may be at the level of village doctors. I think we have no future...I think I will leave (the township hospital). The facilities of the township hospitals at my hometown is not very good. Doctors there have nothing to do. A while ago I went back home and passed through it (the township hospital). Then the doctors, as that day the weather was relatively nice, were washing their cars in the yard. Had nothing to do. There was not any patient in the ward that afternoon. I think in that environment I will fall behind. If I have no pursuit (dream), my whole life is like that, over. I always think no matter how bad my study is, I at least (will) have a bachelor degree. If going directly to the low level (i.e. the township hospital), I feel aggrieved.

(Case 6.3: FGD 7, students enrolled in 2010 at XMU)

China has a dilemma here. On the one hand, lack of further education and training is a barrier of becoming GPs at the grassroots level. This implies the fragmentation of China's hospital-dominated health care, which puts the doctors at the grassroots level out of tertiary hospitals in a disadvantaged position (Case 6.3). On the other hand, if the opportunities for further education and training are increased, improved medical skills (especially with improved medical degree level) will greatly challenge these GPs' retention as they want to pursue their dreams as indicated by Participant 8 in Case 6.3. This dilemma reflects the medical pluralism in China - the TRUMP students, who will have a bachelor degree soon and then receive systematic residency education,

feel hugely reluctant to work as GPs in township hospitals with most of their colleagues also called GPs but probably even having no bachelor degree.

6.2.3 Patients

Participant 8 at the end of Case 6.3 above also touched on the theme of patients at the grassroots level. As stated before, township hospitals vary greatly even within the same province. Generally, many of them have fewer patients than tertiary hospitals. Some TRUMP students, who will be GPs in these township hospitals, are worried that they will have fewer practice opportunities, which may also affect the improvement of their medical skills. My analysis does not merge this theme with the previous one as fewer patients may have other implications. For instance, fewer patients may also mean lower profits for the township hospital and subsequently lower income of the doctors there.

In addition, some TRUMP students not only care about the number of patients, but also the “quality” of patients, as raised by Participant 5 in Case 6.4 below. In 2010s China has seen escalating doctor-patient tension, distrust of doctors, and even increased violence in the workplace. The doctor-patient tension is an increasingly serious concern for many doctors. Some such as Participant 5 think the patients in township hospitals are ruder. Also, some may think that compared to the powerful big hospitals, the protection provided by township hospitals for their doctors is weaker. Accordingly, working as a GP in a township hospital is more vulnerable to violence.

However, most TRUMP students do not agree with this, as discussed in Case 6.4. Most of them think the doctor-patient relationship is better at the grassroots level, and that is an advantage of being a GP. Nonetheless, some of them do not attribute this better relationship to GPs’ engagement

with the community and the trust of patients, a huge advantage of PHC. Instead, they think this better relationship is due to another kind of “distrust” – patients’ low expectation of township hospital doctors (Case 6.4).

Participant 5, Male: Now the doctor-patient tension is high, and it is not easy to solve this. I think this is related to patients’ quality. If they who seek health care in township hospitals are not civilised, dealing with this (doctor-patient tension) is more difficult.

Moderator: You mean the doctor-patient tension in township hospitals is greater (than higher level hospitals)?

Participant 5, Male: Yes, I think so.

Participant 3, Male: I feel the opposite.

Participant 6, Female: Yes. When people go to a big hospital and are examined by the advanced medical equipment. They pay more. If you (doctors in big hospitals) do not cure my disease or the treatment does not show expected effect, the patient must be unsatisfied. (The patient) will think since you (doctors in big hospitals) have a doctoral degree and even you are a professor, how could you treat my disease like this.

Participant 1, Female: More importantly, when patients go to a better hospital in a city, they usually have already consulted some people (such as doctors in township hospitals, relatives or friends). More or less, they have known some (knowledge about their diseases). When patients seek health care in township hospitals, they know nothing. But when they go to a big hospital, they have known some (knowledge about their diseases). Accordingly, when those doctors in big hospitals see their diseases, the patients become more cautious.

Participant 4, Male: Therefore, when going to a township hospital, (patients’) expectation is not high and they do not expect many diseases to be cured in township hospitals. With the low expectation, the doctor-patient tension is lower in township hospitals.

Participant 1, Female: Yes, that is right.

Moderator: So generally you mean this is one benefit of working in a township hospital: the work pressure is low and you do not need to worry that you may be hurt by patients?

Participant 6, Female: Yes, the pressure is low, but your career prospect is also low there.

(Case 6.4: FGD 2, students enrolled in 2011 at HUTCM)

6.2.4 Government policies

6.2.4.1 The policy theme emerged from FGDs

According to Chapter 4, the central government has gradually had clear strategies to promote general practice especially in rural China. However, during the survey medical students repeatedly expressed their concern about unclear and uncertain government policies. Case 6.5 is a typical one and shows several aspects of the worries.

First, there is no authoritative and up-to-date source of information. The information transmission from the central government to each province and individual medical university and medical student seems to have many problems in this transitional period. Many TRUMP students such as Participant 8 in Case 6.5 expect “a person” of authority to tell them the policy so that they can follow the authority.

Second, the government policies mainly focus on the training and supply of so-called GPs rather than the usage of and demand for them. It is not very fair to say that the government only has “all kinds of constraints” (Case 6.5), as the TRUMP itself (though it may have many problems) is an incentive and encouragement for China’s GP capacity building. However, those who have enrolled in the TRUMP are more concerned as to what to do next. They need to “see the hope” (Case 6.5) – a clear and positive outlook of their future career, for which there has not been an existing and successful model. What they can see now is that they are restricted by the TRUMP contract.

Last but not least, the government policies actually have many “positive” principles, but with a lack of implementation details. Chinese government likes “to manage to cross the river by feeling the stones” since China’s opening-up. Many TRUMP students think they are “guinea pigs” (Case 6.5) who can be easily sacrificed. They are still confused by the policies and they need to be convinced of the government’s determination and good intentions through its clear actions rather than propaganda.

Participant 8, Female: I think the biggest problem is the higher level policies are not very clear. If a person can be sent to reply to us, say, keep us on an even keel, ask us to follow them (the authorities) faithfully to death. Now they themselves do not know what they want to position us. They are not clear about what on earth they want to train us to. How could we know?

Participant 6, Male: I think the higher-level orders and principles are not positive. What is implemented on us are all kinds of constraints rather than encouragement and guidance.

Participant 4, Female: Exactly.

Participant 8: Until now we do not know what we are required to do after graduation.

...

Participant 5, Male: If the government policy is good, I will proceed, continue staying in that position (in the township hospital) ...Now it (the policy) is not clear and only uses us as the first cohort of guinea pigs. That will not work. The government needs to have specific and detailed rules (implementation plans), which tell what is going to do in the future, how to train you and how to improve you.

Participant 10, Female: It means making you see the hope (positive prospects), in front of you.

Participant 5: To make progress, unlike those (doctors) in the hometown. Nothing is clear when you go back. You are with those village doctors and then you learn nothing, know nothing and gain nothing in the end. There is no need then to stay there.

(Case 6.5: FGD 7, students enrolled in 2010 at XMU)

6.2.4.2 Confirmation from the quantitative data

The quantitative analysis confirms these findings. In China the reform of the medical education system (characterized by the establishment of the SRT) and the establishment of a GP system have been developing very fast for the past several years. These two actually are also connected – general practice is one of the SRT specialties and SRT is a key strategy for China's GP capacity building (Chapter 2 and 4). However, only around 30% of medical students surveyed think they know the policies in relation to GPs and SRT, and more seriously only 10% of them think the relevant information transmission is timely and clear (Table 6.3).

Table 6.3: Information and policies related to GPs and SRT (n=418)

	Know very well	Know	Know a little	Do not know	Completely do not know
To what extent do you know the information and policies in relation to GPs and SRT?	5 (1.2%)	123 (29.4%)	134 (32.1%)	130 (31.1%)	26 (6.2%)
	Very timely and very clear	Timely and clear	Not very timely and not very clear	Not timely and not clear	Very delayed and very unclear
Do you think the transmission of information and policies related to GPs and SRT through the authoritative channel (e.g. notification from the medical university) is timely and clear?	3 (0.7%)	38 (9.1%)	185 (44.3%)	100 (23.9%)	92 (22.0%)

6.2.5 Life and family

Many TRUMP students mentioned the life and family in rural China when considering being GPs in township hospitals. Their concern regarding this theme consists of several aspects.

First, the quality of life in rural China is not as good as that in cities. These students have medical education for five years in cities, and they have been used to urban lifestyles – established infrastructure, convenient transportation, fancy shopping centres and various entertainment activities. Most of them are from rural China, but they have studied very hard for so many years to go to a city, read a bachelor degree there and see the world outside with the hope that they can finally go out of villages. Now they cannot reconcile themselves to returning to rural China (Case 6.6).

Participant 6, Female: From primary school to now (medial school), I have strived very hard (for a better life) for such a long time. Now I will return to the very beginning.

Participant 5, Female: Return to the very beginning.

Participant 7, Female: I feel. I feel kind of

Participant 3, Male: unacceptable

Participant 7, Female: Depressed. Yes, unacceptable

(Case 6.6: FGD 3, students enrolled in 2011 at XMU)

Second, the life in rural China also directly concerns their family such as marriage and their children's schooling in the future. Working as a GP in rural China may put them in a disadvantaged position to develop the family, as illustrated by Participant 2 in Case 6.7.

Participant 2, Male: My girlfriend is learning nursing in Luoyang city. She will have her career in nursing in Luoyang, while I will not be in the same place with her. When we get married, where should we buy our property?

(Case 6.7: FGD 1, students enrolled in 2010 at HUTCM)

On the other hand, some students' concern for the family may facilitate their returning back to rural China. Some TRUMP students can work as GPs in the township hospital of their hometown. As discussed in Case 6.8, the family concern can serve as a contributing factor as well. It depends on different students' preference and priority.

Participant 4, Female: Only my parents remain at home. The children (of my parents) are all working outside in big cities. But my parents do not like going out. I want to be close home so that I can take care of them.

Moderator: Close home

Participant 4, Female: Yes, I think this is the main reason (why I want to be a GP in rural China).

Participant 8, Female: I think the major attractiveness is near home. I can often see my parents. That is the only benefit.

(Case 6.8: FGD 7, students enrolled in 2010 at XMU)

6.2.6 Zhicheng system

China has a special *Zhicheng* system, a ladder each doctor has to climb (Section 2.5.4, Chapter 2). The TRUMP students, when becoming doctors, definitely would like to make progress in this *Zhicheng* system, which represents their career development. In Chapter 4 I found some favourable policies from China's central government to help GPs make progress in this *Zhicheng* system more easily. However, some TRUMP students (Participant 7 in Case 6.9 below) still think being a GP will prevent them from making progress, due to the required academic publications. The *Zhicheng* system, heavily counting on academic publications, is designed for the doctors (especially the physician scientists) in tertiary hospitals. When it is applied to GPs, it may become a deterrent (Case 6.9).

Participant 7, Male: If we become GPs, in the future, based on the status quo (of China's health system), the progress in the Zhicheng system requires (publishing) many papers, right? ... If writing (the academic paper), it definitely relates to academic research. It is impossible to conduct research in a township hospital! If no research, we cannot get that paper. (A female voice: then how could we make progress in the Zhicheng system?) As paper is needed to make progress in the Zhicheng system, how can we progress? That's it.

(Case 6.9: FGD 4, students enrolled in 2010 at XMU)

6.2.7 Facilities/Medical Equipment

6.2.7.1 Reliance on the machines – qualitative theme emerged

Many township hospitals, where these TRUMP students are required to do general practice in the future, have ultrasound scanners. Some rich and profitable township hospitals have X-ray and maybe an old CT scanner (as depicted by the example given by Participant 8 of Case 6.10 below). This is China's hospital-based health system: from the grassroots township hospitals to the largest tertiary hospitals, the main difference of the health care organisations is the scale of the hospital, the extent of specialisation of the hospital's departments, and the medical equipment. Hospitals

may compete with the medical facilities which represent the status of the health organisation – the medical students I interviewed were even taught so by a teacher (Case 6.10). Most medical students cannot think about general practice beyond the existing hospital-based model. Consequently, the poor medical facilities in township hospitals are huge deterrents for them to become GPs, as discussed in Case 6.10.

Participant 8, Male: Also, there is another question. After the training (GP-SRT) your medical skills will be improved. In township (a female voice interruption: [your skills] cannot be fulfilled), those medical facilities do not match (your improved skills), and will constrain your skills. It will still not work, (if) the hardware (i.e. medical equipment) does not achieve (a high level) though the software (i.e. workforce) has reached (a high level).

Participant 4, Male: Exactly. In other words, in big hospitals, whatever (medial) examinations you prescribed, you can do (them). But in township

Participant 8: (Let me) give you a very simple example. How accurate we can be, or the indicator, the resolution – for instance, the CT in township hospitals, say 2 slice compared with 32 slice, 64 slice in the big hospital, our hospital (the one they were doing the placement), the effect is completely different! So that is the status quo. That is the problem.

Participant 3, Female: The number of patients going to the township hospital is already small. If it gets such as big medical facility (CT), nobody will use it.

Participant 2, Female: I feel our training is not consistent with (the need of) doctors in township hospitals.

Participant 4: Right. I heard from a classmate that a doctor from a Class A Tertiary Hospital (the highest level of hospital in China) went to see patients in a township hospital. He went there but was not able to, did not know how to deal with a patient, could not make it (without the help of high-tech medical equipment). Ha, ha (followed by some others). That is the case. I mean the township hospital's facilities are too poor.

Participant 3: Generally, in big hospitals (firstly the doctors) prescribe some examinations. Then get more information (about the patients' diseases from the results of the examinations).

Participant 4: That is right.

Participant 3: Once when I did some practice with a teacher, the teacher said that the difference between big and small hospitals, the medications for treatment of diseases are basically similar, (the difference is) just your equipment (a voice interruption: for diagnosis). Yes. Yes. If the diagnosis is clear, medications (to treat that diagnosed disease) are almost the same.

.....

Participant 3: But now our teachers, what we are surrounded is all this way (of diagnosis and treatment). The education we have received is this approach.

Participant 2: Ask (patients) questions and then (prescribe) examinations. That's it.

Participant 3: This is the education we have got.

(Case 6.10: FGD 4, students enrolled in 2010 at XMU)

In China labour is cheap – the medical consultation fee is extremely low or even free in some hospitals. Hospitals rely on examinations to generate profits. Accordingly, a common practice, as described by Participant 2 above, is (1) to ask patients several short questions; (2) to prescribe many examinations; and (3) according to the results of the examinations, to do the diagnosis and give further suggestions. Based on this practice model, the specialist from the prestigious tertiary hospital who was sent to help the township hospital did not know how to deal with patients as depicted in Case 6.10.

6.2.7.2 Obsession with the equipment – confirmed by basic statistics

Diagnosis and treatment with the help of high-tech medical equipment has been rooted in China's medical education, training and everyday practice. As a result, Chinese medical students seem obsessed with medical facilities – they try to use as much high-tech medical equipment as possible. Some basic statistics is able to illustrate this well: there are 94%, 89%, 74% and 51% of medical students who think GPs should be equipped with ultrasound, X-ray, CT and MRI scanners, respectively, according to my questionnaire survey (Table 6.4).

Table 6.4: Equipment GPs should be equipped with (n=418)

	Yes %	No %
Ultrasound	94	6
X-ray	89	11
CT	74	26
MRI	51	49

6.2.7.3 Towards treating “big” diseases with high-tech equipment

Furthermore, immersed in this health system, many medical students have a tendency of using high-tech medical equipment to addressing “big” diseases (i.e. rare and complicated diseases) which other doctors may not be able to. They consider this to be the improvement of their medical skills (Case 6.11). Sometimes it is the “small” diseases (i.e. common diseases) they can only deal with at the grassroots level that worry them. They do not think they make any progress by only dealing with these “small” diseases with the help of basic medical equipment.

Participant 4, Female: I think the lower level are all small diseases such as headache and fever, because those with big diseases will not go to the lower level (health organisations) for treatment at all. I think this will not help improve your medical skills. I think if you want to be a doctor for a life time, it is impossible to stay at the lower level. So I think I will...

(Case 6.11: FGD 7, students enrolled in 2010 at XMU)

6.2.8 Recognition and respect

This theme of recognition and respect consists of three sub-themes: medical students do not think GPs are a well-recognised and respected occupation from three aspects.

First, they do not think they will be respected or valued by their patients. Case 6.4 is mainly a discussion about doctor-patient relationships. However, through thorough analysis of this case, it can also be seen that some TRUMP students think their future patients may be rude to them, and many TRUMP students think their future patients will have low expectations for them. These “low expectations” also imply that these TRUMP students do not expect to find fulfilment in helping their patients. TRUMP students do not feel honour and bright prospects are associated with being GPs.

Second, they do not think they will be recognised by their peers or relatives. Participant 2 in Case 6.12 below shows the strong peer pressure. It is natural for these TRUMP students to compare themselves with their fellow medical students who do not enrol in the TRUMP and may become hospital specialists in the future. They may think they have become “losers” already at the starting line. In addition, though family can become a positive factor for students to be GPs in rural China (as discussed in Case 6.8), family pressure can definitely work in an opposite direction as said by Participant 10 in Case 6.12 below.

Participant 2, Male: We are all medical students (receiving the same education). I believe if others can do something (becoming specialists in city hospitals), I can make it. I should not be inferior to others and be sent to small places (rural areas) only because of the (TRUMP) contract. If they (those classmates not enrolling in the TRUMP) go to work in county or city hospitals and I have to be in the township hospital, I will feel uncomfortable. Therefore, I do not want to go to the township hospital. I do not want the gap between my classmates, relatives, friends and me to be too big.

Moderator: Is this a concern of losing face?

Participant 2, Male: Yes, exactly. That is what I am thinking.

Participant 10, Female: I agree with him. My family are in the city. My elder sister, my dad and my younger sister are all in the city. I do not mind other things (except for losing face).

Participant 9, Female: I second her. My first concern is personal development; second is about losing face; third is...

Moderator: What do you mean by personal development?

Participant 9, Female: I do not mean to look down on them (doctors in the township hospital). Many doctors in our township hospital (the township hospital at her hometown) still do not have a license (not a licensed doctor). You can tell at what levels their skills are.

Moderator: Third is?

Participant 9, Female: Third is about my children in the future. I grew up in villages; still ask them to be in villages?! (I do not want them to grow up in villages like me)

(Case 6.12: FGD 7, students enrolled in 2010 at XMU)

Third, they do not think they will be recognised by their future colleagues. If a TRUMP student becomes a GP in a township hospital, he/she will work with the existing township hospital doctors. Many TRUMP students do not think these colleagues will get along with them well, as discussed

in Case 6.13 below. They find it hard to assimilate. In fact, this non-recognition is mutual. TRUMP students do not recognise township hospital doctors. They do not want to be classified to be one of them. From this angle, some of them probably do not want to be recognised by township hospital doctors either. Participant 9 in Case 6.12 above actually implies this identity issue, and she actually does look down on township hospital doctors. Again, the identity issue indicates the problem of China's medical pluralism.

Participant 6, Male: I can feel exclusion. When I did my placement there, only the township hospital director welcomed me. Others all asked why you came here and it was better for you to go to somewhere else (higher level hospitals).

Participant 3, Female: For the township hospital at my hometown, doctors there are clannish (running "family business"). When you go there (township hospitals), (you find) all the doctors are from several families. I do not feel I have a position there. Indeed, the township hospital at my hometown is like this.

Participant 4, Female: The same at my hometown. One doctor's son and daughter, after graduation from a secondary vocational medical school, immediately have started to work there (the township hospital). When I go there, I think I may be side-lined.....Like mentioned before by others, doctors there are clannish and almost all of them are relatives.

Participant 3, Female: According to my understanding of my hometown's township hospital, I do not think I can work there indeed. I also went to check several township hospitals nearby. Then I indeed do not think I can work there. For a person with a bachelor degree, they will exclude you greatly. If I work there for six years always in a side-lined position, I will definitely consider changing my job.....There is actually a precedent. A person with a bachelor degree went to work there. He stayed there for less than one year – the feeling of exclusion was so strong it was impossible to work there.....They (township hospital doctors) want to drive you out. Only the director wants you to stay and others exclude you. I feel I cannot work that way.

(Case 6.13: FGD 7, students enrolled in 2010 at XMU)

6.2.9 Eight themes as a whole

In sum, my analysis somewhat artificially illustrates the eight themes independently. However, they are closely associated. For instance, when we go back to the first theme income, Participant 2 in Case 6.2 seems persuaded to admit that income is the main deterrent. However, the two reasons he mentioned (low income and losing face) are not mutually exclusive. In a society of fast commercialisation, earning little money implies the lack of recognition of a person's value – they

feel losing face if they ride bikes while the hospital specialists drive luxurious cars, as said by Participant 2 in Case 6.2. This metaphor shows both the income gap as well as the recognition and respect gap, which jointly prevent TRUMP students from becoming GPs in rural China. Another example is about the few patients and indolence of some township hospital doctors, mentioned at the end of Case 6.3. Participant 8 in that case mentioned there were so few patients to treat that the doctors were washing their cars in the yard. Before that she said “The facilities of the township hospitals at my hometown is not very good. Doctors there have nothing to do.” She actually attributes the few patients to the poor medical equipment. From this perspective, the theme “patients” is also associated with the theme “medical equipment”. Accordingly, no matter how we “identify” themes, it is impossible to separate them or actually it is not right to view these eight themes in isolation.

6.3 The importance of the identified “themes”

As presented in the last section, medical students raised a large variety of factors preventing them from becoming GPs in rural China. It is imperative to know the significance of these factors. In my quantitative survey I asked the medical students to choose four of the most influential factors among those identified in the qualitative study and then rank them according to their importance. The results are as depicted in table 6.5.

Table 6.5: Factors deterring students from becoming GPs in rural China

Factors/themes	First choice	Second choice	Third choice	Fourth choice
Low income	151 (36.1%)	78 (18.7%)	45 (10.8%)	39 (9.3%)
Unclear and uncertain policies	91 (21.8%)	68 (16.3%)	53 (12.78)	72 (17.2%)
Disadvantage for further education and training	66 (15.8%)	96 (23.0%)	107 (25.6%)	111 (26.6%)
Poorer medical equipment	55 (13.2%)	82 (19.6%)	72 (17.2%)	54 (12.9%)
Disadvantage for life and family	37 (8.9%)	47 (11.2%)	64 (15.3%)	67 (16.0%)
Disadvantage for making progress in China's <i>Zhicheng</i> system	5 (1.2%)	17 (4.1%)	24 (5.7%)	23 (5.5%)
Do not know what GPs are	5 (1.2%)	5 (1.2%)	6 (1.4%)	6 (1.4%)
Lack of recognition and respect	2 (0.58)	8 (1.9%)	22 (5.3%)	14 (3.4%)
Fewer Patients and worse doctor-patient relationship	3 (0.7%)	13 (3.1%)	22 (5.3%)	22 (5.3%)
Missing data	3 (0.7%)	4 (1.0%)	3 (0.7%)	6 (1.4%)
Total	418 (100%)			

It can be seen from Table 6.5 that the first five factors are the main deterrents, and they together are responsible for more than 95% of the first choice.

6.4 How the factors contribute to students' decisions – a logistic regression model

It seems that so far I have answered the third research question of the thesis – what are the factors preventing medical students from becoming GPs. Eight deterrents have been identified through thematic analysis, and then quantitative statistics show the importance of these factors.

Nonetheless, the complexity of this case in China compared with that in the high-income countries is that China's GPs are not clearly defined or appropriately interpreted. My hypothesis is that at this early stage of establishing general practice in China medical students' plan of becoming GPs is more likely to be affected by their comprehension of what GPs do than the deterrents. To test this hypothesis, I build a multivariable logistic regression model, involving the deterrents and various understandings of GPs analysed in Chapter 5.

6.4.1 Logistic regression model

The multivariable logistic regression model is specified as follows:

$$\text{Log (odds of becoming GPs)} = b_0 + b_1 \text{ Comp} + b_2 \text{ Famdoc} + b_3 \text{ Pridoc} + b_4 \text{ Lowdoc} + b_5 \text{ Gateref} + b_6 \text{ Nurq} + b_7 \text{ Prab} + b_8 \text{ Cwtcm} + b_9 \text{ Phw} + b_{10} \text{ Pre} + b_{11} \text{ Inc} + b_{12} \text{ Pol} + b_{13} \text{ Edu} + b_{14} \text{ Equip} + b_{15} \text{ Lifam} + b_{16} \text{ Gen} + b_{17} \text{ Home} + b_{18} \text{ Know} + b_{19} \text{ Intent} + b_{20} \text{ Perform} + b_{21} \text{ Commun}$$

Where

(1) Explanatory variables regarding the understandings of GPs

Comp: Comprehensiveness

Famdoc: Family doctors

Pridoc: Private personal doctors

Lowdoc: Low-quality rural doctors

Gateref: Gatekeeping and referral

Nurq: Nurses required

Prab: Practise both western medicine and TCM

Cwtcm: combination of western medicine and TCM

Phw: Public health work

Pre: Prevention

(2) Deterrents

Inc: Low income

Pol: Unclear and uncertain policies

Edu: Disadvantage for further education and training

Equip: Poorer medical equipment

Lifam: Disadvantage for life and family

(3) Other explanatory variables

Gen: Gender

Home: Rural or urban origin

Know: Whether knowing at least a little about GPs when joining the TRUMP

Intent: Intention of joining the TRUMP

Perform: Performance at medical school

Commun: Communication with the local health authority

The dependent variable of the model is whether a TRUMP student is going to be a GP or a specialist in his/her long-term medical career plan (Table 6.1).

The first set of explanatory variables are medical students' all kinds of understandings of GPs, drawn from the statements in Chapter 5. The second set of explanatory variables are the major deterrents identified in this Chapter.

In addition, the “condition” of the students when entering the TRUMP may affect their future career plan. In particular, the first “condition” my fieldwork has found is that when choosing the TRUMP, some students did not know what GPs were at all. In other words, they might never hear of GPs when opting for the TRUMP. The second “condition” is that students choose the TRUMP for different reasons. For example, some are interested in medicine and want to become doctors, while some join the TRUMP only because their parents make the decision for them or the programme is free. These two “conditions” are also included in the model.

The fieldwork has also found that some TRUMP students do not study hard at medical universities, as they think no matter how bad their performance is they are guaranteed a job in a township hospital and similarly no matter how well they study they are not allowed to find a better job. Those with better performance may have stronger motivation to violate the contract to pursue a specialist career. Accordingly, the self-rated study performance at medical school is taken into account.

When joining the TRUMP, each student has signed the contract with the local health authority which will allocate him/her to a township hospital under the health authority. Many TRUMP students may find it very difficult to communicate with the local health authority, while some have smooth communications during their study at medical universities. This factor is also considered in the model.

6.4.2 Results of the regression

The results of the logistic regression are shown in Table 6.6. Broadly, the five major factors identified in this chapter seem not to greatly affect medical students’ long-term career plan of being GPs. None of these five factors contribute to medical students’ decisions significantly. More

importantly, the odds ratios of the first three factors (low income, unclear and uncertain policies and disadvantage for further education and training) are almost 1. Given that most TRUMP students (77%) do not plan to become GPs (Table 6.1), this result is better interpreted that those who do not care about these factors are equally possible not to become GPs in their long-term career plan compared to those who care about these factors. On the contrary, at this transitional stage for China to establish a GP system, generally the understandings of GPs are more important as they affect medical students' career plan more significantly – the odds ratios of those variables related to understanding of GPs are much more distant from 1 and some of them are significant (Table 6.6). This proves my hypothesis. Now TRUMP medical students are making messy decisions about their career plans based on their own inappropriate interpretations of GPs. At this stage, China's top priority is to precisely delineate the roles of GPs, which is the prerequisite for students' decision-making.

Table 6.6: Results of Multivariable Logistic Regression: odds ratio for the choice of GP as eventual career

		Odds ratio	P-value	95% Confidence Interval
Gender				
	Female	1		
	Male	0.82	0.458	0.48 to 1.39
Home origin				
	Urban	1		
	Rural	2.44	0.072	0.92 to 6.45
Know at least a little about GPs*		2.41	0.001	1.40 to 4.14
Intention of joining TRUMP*				
	Other reasons (e.g. decided by parents)	1		
	Interested in medicine	1.22	0.002	1.07 to 1.38
Good performance at medical school		0.70	0.215	0.40 to 1.23
Smooth communication with local health authority*		2.37	0.002	1.38 to 4.07
<i>Five identified themes preventing students from becoming GPs</i>				
Low income		0.97	0.763	0.78 to 1.20
Unclear and uncertain policies		1.06	0.623	0.85 to 1.32
Disadvantage for further education and training		1.01	0.947	0.83 to 1.22
Poorer medical equipment		0.94	0.569	0.75 to 1.17
Disadvantage for life and family		0.88	0.296	0.692 to 1.12
<i>Understanding of GPs</i>				
Comprehensiveness		0.46	0.115	0.18 to 1.21
First point of contact*	GPs are private personal doctors	1.47	0.350	0.66 to 3.30
	GPs are family doctors	0.79	0.417	0.45 to 1.39
	GPs are like barefoot/village doctors with superficial expertise	0.16	0.001	0.05 to 0.47

Referral and coordination		1.61	0.498	0.41 to 6.33
TCM				
	GPs can practise both western medicine and TCM	0.86	0.610	0.49 to 1.52
	GPs are the doctors specialising in combination of western medicine and TCM	1.30	0.412	0.70 to 2.43
Public health*				
	GPs' main responsibility is public health work	2.32	0.004	1.30 to 4.14
	GPs' main role is prevention rather than diagnosis/treatment of diseases	0.68	0.372	0.29 to 1.60

*significant at the 5% level

In particular, the TRUMP students who think GPs are like barefoot or village doctors are significantly unlikely to become GPs (OR=0.16; p=0.001; 95% CI 0.05 to 0.47). This means the medical pluralism in China still perplexes medical students greatly. For these TRUMP students, if they become GPs, they definitely do not want these newly-planned GPs to be categorised into the existing primary care providers in China. China's newly-planned GPs need a clear, new and well-recognised identity.

When it comes to TCM, the effects of the two statements are contradictory, showing TRUMP students' confusions between TCM and general practice. In addition, some TRUMP students expect to do so-called public health work – those who believe that GPs' main responsibility is public health work are 2.32 times likely to become GPs significantly (p=0.004; 95% CI 1.30 to 4.14). Here the key is how to interpret this public health work in China. Medical students are supposed to become doctors. Those who think GPs' main role is prevention instead of diagnosis/treatment of diseases are associated with a 32.5% reduction in the long-term career plan of being GPs (p=0.37; 95% CI 0.29 to 1.60). This finding demonstrates that TRUMP medical students are totally bewildered by the concepts of prevention, general practice and public health.

Compared to those from urban regions, the TRUMP students from rural China are 2.44 times likely to become GPs. This is significant at the 10% level but not at the 5% level ($p=0.072$; 95% CI 0.92 to 6.45). The TRUMP should continue to mainly recruit those students from rural areas.

More importantly, when joining the TRUMP, those who know at least a little about GPs or are interested in medicine are 2.41 times and 1.22 times likely to become GPs in the future, respectively. They are both significant even at the 1% level. When the students chose the TRUMP, they were aged around 18 and spent almost all their time and energy trying to get an as high score as possible at the National University Entrance Examination (NUEE) which was generally the only criterion for entry of universities. Accordingly, they usually did not have much knowledge of university majors, especially in rural China where the information and education beyond the preparation of the NUEE was relatively limited. They might be highly influenced by others such as their parents when opting for the TRUMP. Based on limited knowledge on majors and lack of their own careful consideration, their choice at this stage might be haphazard without serious commitment.

It should be noted that the smooth communication with local health authority contributes significantly to becoming GPs in the future (OR=2.37; $p=0.002$; 95% CI 1.38 to 4.07).

6.4.3 Strengths and limitations

The biggest strength of this logistic regression model is that the explanatory variables are derived from the rigorous thematic analysis of the rich first-hand qualitative data. Each variable has a

compelling “story” behind it, which helps with the valid justification and interpretation. The model is tailored to the reality and complexity of the case in China.

There are also limitations to this model. The sample size is small, though it has covered all the first cohort of TRUMP students in Henan Province. Too many factors need to be included in the model. It turns out that many variables are not significant. In addition, the dependent variable is medical students’ plans rather than their real career choices.

6.5 Summary

I found that most PITs were reluctant to become GPs in the future. More serious were the TRUMP medical students and the GP resident doctors, representing China’s new 5+3 model of training qualified GPs, who actually intended a long-term specialist plan. Some TRUMP students even risked violating their contract in order not to be GPs.

I identified eight themes that deterred medical students from becoming GPs and quantified the importance of these deterrents. “Low income” and “unclear and uncertain policies” were the top two deterrents. Striking was Chinese medical students’ obsession with high-tech medical equipment. The concerns about “further education and training” and “recognition and respect” both indicated the problem of medical pluralism in China. Overall, there seemed no reason for a medical student to want to be a GP in rural China. A viable and sustainable GP system could not be built on each individual’s sacrifice and reluctance.

Despite some limitations, my logistic regression model conveyed much useful information. At this early chaotic stage of establishing general practice in China, it was the interpretations of what GPs

do that more affected medical students' career plans. What's worse, the misunderstandings of GPs might attract inappropriate candidates. Notable were the confusing concepts of prevention, public health, and general practice, as interpreted in China. Explicitly defining the roles of GPs was a prerequisite for students' decision-making. A viable GP system could not be built on misperceptions.

In addition, barefoot doctors, despite its proud history, became a “negative asset” for China's establishment of general practice – relating GPs to barefoot doctors or the existing primary care providers significantly jeopardised the preference of a GP career.

CHAPTER 7 DISCUSSION: VIABILITY OF GENERAL PRACTICE BY 2020

In this chapter, I put the evidence generated from the government side (Chapter 4) and that from the implementation side (Chapter 5 and 6) together, in comparison with existing literature and international experiences, to discuss the viability of general practice in China.

I argue that it is quite unlikely that China will have a viable GP system by 2020 due to four obstacles (as elaborated from Section 7.1 to Section 7.4). Section 7.1 discusses the fundamental issue for the viability of general practice – the roles of GPs are neither clearly delineated nor well interpreted in China. Section 7.2 is about China's medical pluralism. Section 7.3 talks about the deep-seated hospital dominance and specialist practice model. Section 7.4 relates to the wider political and social environment in China.

7.1 Definition of general practice

To fully discuss the definition of general practice, in this section I will firstly talk about several concepts in relation to GPs (Section 7.1.1). Then I will examine the discrepancies between Chinese government-promoted concept and PITs' interpretations to reveal a big picture of problems (Section 7.1.2). Then, I discuss my framework of viewing general practice from three perspectives to facilitate a thorough and in-depth understanding (Section 7.1.3). Arguably, among the three perspectives, "service general practice" is most important at least for current China, and accordingly I explore potential service paradigms for China to better position GPs (Section 7.1.4). Last, I discuss the niche of GPs in a society (Section 7.1.5).

7.1.1 Several concepts

“Primary care is the subject of more charters, declarations, manifestos, and principles than any other medical discipline, except perhaps its similarly plagued cousin, public health.” (p.609)

Richard Horton, Editor-in-Chief of The Lancet, wrote this in 1999 and the problem persists.⁹⁷ In many cases, as Horton’s article suggests, the concepts of primary care, primary medical care, general practice, family medicine and primary health care are not distinguished.

In the UK, the terms general practice and GPs are used, while its counterparts in the US are called family medicine and family physicians. The international association WONCA stands for the World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians. WONCA's short name is World Organization of Family Doctors. Often, the term GPs, family physicians, and family doctors are used interchangeably.

Primary health care (PHC), adopted by the World Health Organization, for instance in the Declaration of Alma-Ata¹, is a broader concept. Not only does it consist of individual clinical care, but also health prevention, health promotion, as well as public health such as provision of adequate nutrition, safe water and sanitation. Accordingly, PHC workforce may consist of GPs, physician assistants, nurses, complementary therapists, nutritionists, social and community health workers, practice managers and related administrative staff.⁹⁸

In contrast, primary care is conceived to be more clinically focused. In order to emphasize this clinical characteristic, some may further use the term ‘primary medical care’ to further distinguish itself from the PHC.⁹⁹ Primary care/primary medical care can be considered to be part of the PHC

system, and accordingly, PHC providers are more inclusive than primary care/primary medical care practitioners. However, even the relatively narrower primary care practitioners can be diverse across countries. In the UK, primary care is a GP-led service; primary care practitioners normally mean GPs. However, in some other settings (such as North America), primary care practitioners may additionally cover specialists such as internists and paediatricians and nurse practitioners.¹⁰⁰ All in all, if we strictly distinguish these concepts, the sequence from broad to narrow is PHC, primary care/primary medical care, and general practice/family medicine.

In some cases, it is not necessary to differentiate these concepts within the context. However, sometimes their differences do matter. Some people use these concepts interchangeably but with the change of words the precise meaning may be modified subtly. John Howie, when reviewing the 60-year journey of academic general practice in 2008 said, "...the increasing frequent renaming of general practice as primary care warns of the possibility that general practice may in future not be a GP-led service". (p.622)¹⁰¹ When we go back to the sentence at the beginning of this section, to be more accurate, "primary care" may better mean PHC in terms of declarations and manifestos. But later in Horton's article, primary care mostly refers to general practice or family medicine. Quite often, even in a single article, authors do not distinguish these concepts, but actually move around (maybe even unconsciously) the precise meanings. The change of the scope with the modification of wording may sometimes be quite misleading. Particularly, these different concepts may imply hugely different workforce.

7.1.2 Discrepancies between government-promoted concept and PITs' interpretations

The Chinese government's understanding of general practice touches on all its essential attributes – comprehensiveness, first contact, continuity and coordination, which are consistent with the international community. However, this understanding is very general and broad. Probably

affected by the international community, the definition given by the Chinese government fails to distinguish between PHC, primary (medical) care, and general practice/family medicine. Accordingly, the specific roles and responsibilities of the newly-planned GPs can be diversely interpreted. This is not a China specific problem. Actually, in the UK, the originator of general practice, no official definition of its role or the services it offers is given.¹⁰²

The Chinese government shows its great determination to promote a GP system with the hope that general practice can deliver what it promises. The government depicts a beautiful vision which is difficult for people to deny but equally difficult to acquire. The government's understanding of GPs, based on my document analysis, quite often reflects a political rhetoric. A typical case is the statement that GPs are “gatekeepers” of people's health (Chapter 5).

The broad government understanding implies that the newly-planned GP system is built on an idealistic conceptual PHC framework which neither matches the reality of China's health system nor the current preference of medical doctors, students and the general public. This is a deadlock facing many countries which have not established a well-functioning PHC system, such as the US.¹⁰⁰ As a result, the theoretical advantages of general practice (such as comprehensive, accessible, coordinated and continuous) cannot materialise. In contrast, this situation is much better in the UK, which although does not specify the boundary of general practice very clearly, does have a physical GP system setting the necessary context. In other words, the roles and responsibilities demanded of GPs in the UK, which may gradually change, are widely accepted and understood by all the health professionals and the general public.

As PITs in this thesis are all GP-related, they firstly view general practice from their relevant knowledge and the government's promotion of general practice. More importantly, their understanding is affected greatly by the environment where they are living and working – the

reality of China's health care delivery system characterised by the hospital domination and specialist practice model, fragmented care, and medical pluralism (Chapter 2). They tend to imagine general practice's comprehensiveness based on the existing hospital departments and specialists – the all-department or all-specialty doctors cannot be taken seriously. The fragmented care does not allow PITs to have an appropriate sense of gatekeeping, coordination, first contact and continuity. The medical pluralism has produced a doctor group with huge diversity of education levels. It is easy for PITs to connect the GPs with the doctors of low education level such as barefoot doctors and village doctors. Also, they sometimes relate GPs to TCM or public health practitioners (Chapter 5).

Despite these discrepancies, China is aiming to have a GP system by 2020 with 300,000 GPs, which means 2 to 3 GPs per 10,000 persons. Depending on how GPs are defined, China probably will reach this target number or even more by 2020. But the foundation of its primary care may still be shaky and based on PITs' understanding of general practice.

Pursing a figure on its own is not very meaningful. Ranging from specialist care to broad PHC, internationally the roles assigned to GPs can be small or large according to each country's organisation of services. Different health systems demand different things from general practice, as reflected by the large variation of the proportion of GPs as a percentage of each country's total number of doctors: UK 60%, Canada 51%, France 50%, Spain 37%, Netherland 33%, Finland 32%, Denmark 25%, USA 20%, Germany 19% and Sweden 10%.^{9, 97}

There is no one-size-fits-all paradigm to develop a GP system. The first step is to clearly define and adjust the implementable boundaries of each country's own system of general practice. This is particularly important for a country like China which has a hospital dominated and specialist practice model with a historical legacy.

To define GPs seems easy but actually extremely challenging since it relates to every aspect of the viability of general practice. To have a further in-depth understanding of general practice, below I will present my framework of viewing general practice from three perspectives. The complexity of understanding and then establishing general practice is that these three aspects are not often straightforward, compatible or harnessed to best effects.

7.1.3 Three perspectives of viewing general practice

7.1.3.1 General practice as an academic discipline

Research is often the cornerstone of a profession. A common way to define and recognise a discipline is to go to the relevant university department. In the contemporary world, general practice is no doubt a discipline of medicine, and in most high-income countries, academic general practice has been established. But it is a special and various one. As a discipline, it is not as straightforward as most other disciplines of medicine such as paediatrics and ophthalmology. Arguably, its body of knowledge cannot be easily defined. Of course many disciplines in medicine inevitably overlap with others. However, the case of general practice is probably most complicated. Not only does it draw knowledge from most disciplines of medicine (especially internal medicine, paediatrics, gynaecology and geriatrics), but also its academic foundation requires other disciplines beyond medical science such as sociology and psychology. The breadth of general practice often intimidates and confuses people, as depicted in my interviews with China's PITs and their understanding of the comprehensiveness (Section 5.1, Chapter 5).

The nature of the art and science of general practice fuels ambivalence. Some may think that general practice is not a confined field for in-depth research. As general practice is not a

straightforward discipline, the development of academic general practice has struggled in universities for a long time even in the UK, as reflected by the arduous founding history of the department of general practice in almost every UK medical school.¹⁰³ Similarly, China is trying to establish the department of general practice in its medical universities. One reason in favour of this effort is that each medical school in the UK has a department of general practice.

Consequently, the natural question is why we should build these departments of general practice, especially with the enormous difficulties and resistance. Given the breadth of general practice, why not just use the existing expertise from many fields.

First, the establishment of a department and the development of academic general practice can help improve the quality of service in general practice. The Collings' Report uncovered the low quality of care provided by GPs and one priority response was to establish a department of general practice in each British medical school.¹⁰¹ Such a department could help with the teaching of general practice. The first scientific society, the Association of University Teachers of General Practice (AUTGP), as its name suggested, was to facilitate teaching. Then the AUTGP became the Association of University Department and General Practice (AUDGP) in 1992 and at present the Society of Academic Primary Care (SAPC).¹⁰⁴

Second, an academic department helps improve the status of general practice, and attract medical students to become GPs later. The academic appointments can give doctors (including GPs) a sense of pride and achievement. The research opportunities and the role models (who are both respected GP academics and clinicians simultaneously) can encourage a career in general practice.^{105, 106}

Though academic general practice has been established in China, its positioning is still unclear. General practice is promoting a biopsychosocial model. For the biomedical research and evidence, though GP academics may argue that much evidence is generated through the hospital settings and may not be well applied to general practice settings, it is still the physician scientists (normally specialists in teaching hospitals with academic appointments in relevant medical schools) who advance the overall medical science knowledge and eventually the development of general practice. In addition, the psychological and social aspects of general practice still rest more on common sense than on hard evidence.¹⁰⁷ After all, medicine is at the core of general practice, and most GP academics are firstly clinicians. Furthermore, much general-practice research in relation to health prevention, health promotion, health policies and management is done in the fast rising field of public health, epidemiology and health economics. In fact, most departments of general practice in the UK were firstly developed in the departments of public health and then got their independence.¹⁰¹ This is the case in China now – many departments of general practice are under the schools of public health.

Academic research usually lays a solid foundation for the development of relevant field. But the academic foundation of general practice is mixed. Sometimes the fact it belongs to everything also means it belongs to nothing. Though academic general practice may have lots of potential, so far it is still an intellectually underdeveloped discipline of medicine.⁹⁷ In the UK, around one in 16 hospital consultants (specialists) are clinical academics, but this figure is one out of 225 GPs.¹⁰³ Though 32% of the NHS medical workforce are GPs, primary care academics only make up 6% of all clinical academics.¹⁰⁵ General practice, to a large extent, is a service rather than an academic discipline.

7.1.3.2 General practice as a service

Given China's hospital-dominated health system (Chapter 2), in addition to the academic department in medical schools, doctors tend to define their identities according to the hospital departments where they work. A doctor working in a department of paediatrics is a paediatrician. That looks straightforward. However, it is rare to see a department of general practice in a tertiary hospital. Accordingly, a large proportion of medical students and doctors surveyed think that GPs can work in most departments of a hospital as GPs are all-department/all-specialty doctors (Section 5.1, Chapter 5).

Quite often, general practice is a service, normally conducted out of a hospital. In the UK, it corresponds to GPs who provide first point of care. In other words, the front-line doctors are mainly GPs who are the cornerstone of the British primary care system. However, in the international context, the front-line doctors can be diverse. That is the reason why internationally it is better to use primary care in terms of service provision. The primary care doctors in the US consist of family physicians, internists, paediatricians, obstetricians and gynaecologists.¹⁰⁰

In China the front-line doctors can be all kinds of doctors, ranging from village doctors to the specialists in the tertiary hospitals. It is fair to say that China's front-line doctors are almost all specialists: those doctors in the grassroots health organisations (such as township hospitals) are specialists though the majority of them even do not have a bachelor degree; patients tend to directly go to big tertiary hospitals' swollen outpatient department which is like a huge shopping mall made up of numerous clinics of all kinds of specialists. From this specific perspective, it can be said that all the doctors in China are specialists or all are GPs.

To respect China's current system and strengthen general practice, some top health leaders in China have pushed greatly every tertiary hospital to establish a department of general practice. In fact, some distinguished tertiary hospitals have started to do so. Nonetheless, the new department

of general practice is like a mini-hospital (even having its own patient beds) within a big hospital. It competes with other departments for patients. Alternatively, some departments of general practice are built through reformatting an existing department such as department of geriatrics or department of emergency medicine. All in all, these departments of general practice compete with other hospital departments for patients, and more seriously they probably also compete with grassroots health organisations for patients as well.

The establishment of a department of general practice in a tertiary hospital makes sense if its purpose is to help residency training in general practice. From this perspective, these departments of general practice in hospitals are like the postgraduate deaneries for general practice in the UK. In the short run, such a department may help people find the ‘identity’ of a GP – at least they will not think GPs can work in most departments of a hospital. However, instead, they may think GPs are those working in a hospital’s department of general practice. In this case, GPs then become hospital doctors, and many traditions and foundations of general practice are challenged.

Contrary to the effort of making GPs become a kind of “hospital doctor”, general practice can also be quietly (and maybe unconsciously) replaced by PHC. If the service general practice is considered to be the service provided by the PHC workforce, the tasks are enormously broadened. Accordingly, many so-called GPs in China are de facto PHC providers who do the everyday work which is supposed to be done by public health professionals, physician assistants, nurse practitioners, and even community health workers.

General practice as a service varies greatly in China at present, ranging from hospital specialist care to broad PHC. China’s current situation reflects the chaotic paradigms of PHC internationally. Even among the high-income countries where the health care systems are more mature, the general practice paradigms are diverse, and the large variation suggests that general practice may not mean

the same things in these countries. No research so far has proposed a convincing gold standard of this proportion. Though the US has such a small proportion of family physicians (20%) compared to the UK (60%), it must have more internists and paediatricians. GPs' roles can be delegated or substituted. Each country forms its own proportion and meanwhile defines its concrete roles and responsibilities demand of GPs, based on its own context such as history, economic conditions and values. In fact, even within one country, these roles and responsibilities are dynamic. In the UK, the consultations in general practice undertaken by nurses increased from 21% in 1995 to 34% in 2006; more responsibilities previously undertaken by GPs are taken over by nurses.¹⁰²

The complexity of China's case is that the heterogeneity of general practice as a service emerges within one jurisdiction and within a short period. The proportion figure in China can be tricky. According to the discussion above, it can be almost 0% or almost 100% depending on how GP is defined. Pursuing such a figure by itself is meaningless. Increasing this artificial figure will not automatically help China have a viable GP system and solve its health care challenges. Instead, it may lead to more confusions and chaos. China can rename many of its existing specialists of low education levels to GPs directly, and then this figure will improve overnight. However, this figure becomes valuable only when it is a natural result of the improvement of the health system and efficient allocation of health resources.

The heterogeneity of general practice as a service across the countries and/or across time is one reason why primary care is difficult to conceptualise. Each country, to establish a functioning primary care, has to define its own general practice. The effort of China, a huge country, is confused by the international community, and meanwhile China's various efforts are confusing the international community. The key is the well-recognised order of health care and consistent policies within certain period and within certain jurisdiction, which are able to materialise the

theoretical advantages of primary care. During the writing up of this thesis, China is piloting the health care referral reform, which is a promising direction.

7.1.3.3 General practice as a philosophy

Many people advocate general practice as they recognise the philosophy and values that general practice represents. This philosophy can be summarised in two broad aspects.

First, general practice is a person-centred rather than disease-centred care. This requires GPs to have a holistic picture of the human body, instead of an organ and irrespective of age. In the Chinese context, this reminds people of TCM practitioners who share the same beliefs. The age (such as paediatrics) and organ (such as ophthalmology) are typical factors based on which medicine is divided.¹⁰⁸ Accordingly, from this perspective GPs are generalists as opposed to specialists. Some may think that supporting general practice means neutralising unnecessary over-specialisation with the proliferation of hospitals. In addition, focusing on persons rather than diseases leads to the emphasis of health prevention, health promotion and social determinants of health – a field of public health.

Second, general practice is widely promoted as easy and equal access to health care. This is based on the belief that health is a basic human right that everyone is entitled to have. Yes, general practice can play a key role in tackling health inequalities.⁹⁷ Furthermore, in an increasingly commercialised world, general practice is considered to be based on people's needs rather than demands. This implies that specialists tend to use sophisticated technologies and manipulate people's demands. Accordingly, general practice, to some extent, has gradually stood for social justice and equity.

Though I have discussed separately these two aspects about general practice as a philosophy, they are highly associated. For instance, as a philosophy, it represents the humanities that the whole Chinese health system (including the medical education) apparently lacks.^{109, 110} Some will miss the strong sense of humanity contained within TCM.¹¹¹ This may further imply that the “invasion” of western medicine has damaged the comprehensiveness of care and Chinese traditions (Chapter 5). Consequently, sometimes the promotion of general practice can also represent the support of humanities in medicine or TCM. Particularly at present in China with increasing patient-doctor mistrust or even violence against doctors,¹¹²⁻¹¹⁴ the human centred care and the improvement of humanistic competencies (e.g. communication and empathy with patients, working with families in teams, cultural and human interactions, ethical standards, and dedication to patients), all of which are the benefits of general practice, become much more important.

All in all, general practice as a philosophy is appealing to politics. All the concepts/names mentioned at Section 7.1.1 represent this same philosophy. The philosophy perspective of general practice stands for the moral privilege and fits ideally the political agendas (e.g. reducing health inequalities, and controlling huge health spending attributed to excessive medical treatment and people’s greedy demands), which are better illustrated by the expanded version – PHC. This reinforces, what Richard said, “a subject of more charters, declarations, manifestos, and principles”.

7.1.3.4 Summary

Ideally, the academic discipline lays a solid foundation for the related service; the research and service articulate the philosophy and deliver the values of the field; the philosophy inspires and guides the research and service. This is a virtuous circle. However, according to the discussion

above, general practice is unique in health care. Unlike many fields, it is extremely difficult for general practice to form this virtuous circle. In some cases, the academic research may be not well developed, and the service may take ever-broadening tasks. Meanwhile, the philosophy and politics may depict a beautiful vision but often fall short of what it promises. As a result, general public are disappointed and the morale of general practice advocates is undermined. Few countries can really establish a viable GP system.

To view general practice from the three perspectives above, like the current case in China, its academic foundation is mixed; the service is too diverse and dynamic; the philosophy part is easily used to suit political purposes. When combining them, further conflicts emerge leading to confusions and chaos.

7.1.4 Service paradigms for China - single vs. multiple primary care specialties

Among the three perspectives above, arguably, well-functioning general practice as a service is of paramount importance at least in current China. As discussed above, general practice, to a large extent, is a service rather than an academic discipline even in high-income countries. After all, pragmatically speaking, the establishment of general practice in China is to provide satisfactory health services cost-effectively to overcome the health care challenges. Accordingly, in this section I will focus on service paradigms for China in order to better define the roles of GPs.

China has learned greatly from the high-income countries since its opening up. For instance, it has started to merge the stand-alone medical universities into comprehensive universities since 1998. This can be seen as one measure of transiting from the Soviet health model to the model of the high-income countries such as the US and UK (chapter 2). However, the problem of learning from

the successful models this time is that the health care systems in the high-income countries vary greatly and there are no perfect health care systems.¹¹⁵

China's health care has learned a lot from the US. But the recent effort of establishing a GP system is clearly following the UK model. The US and UK health models are quite often incompatible. In the UK, the primary care doctors are GPs, while in the US they consist of family physicians (US equivalents of GPs), internists, paediatricians, obstetricians and gynaecologists. So what paradigm does China opt for?

It seems that China has made up its mind to make GPs take care of its primary care – specialists such as internists, paediatricians and OBs are being “transferred” to GPs through the short training programme. Nonetheless, at the same time, China is making every effort to train more paediatricians as well. This is confusing and implies that China lacks a holistic plan. The single specialty primary care (UK paradigm) and the multiple specialties one (US paradigm) obviously requires different numbers of paediatricians. Also, for different paradigms, the education and training requirements (in this case for GPs and paediatricians) need to be adjusted to meet different demands.

It seems that in reality China is adopting a multiple specialties paradigm for its primary care. Then I would doubt the necessity of “transferring” its paediatricians, internists, obstetricians, gynaecologists and alike to GPs. Pursuing a particular number of GPs through this way is not very meaningful, and it may lead to confusions and chaos. Given China's reality, a multiple specialties paradigm may be more feasible – China can make good use of its existing health workforce to form a team of primary care doctors to jointly deliver the “general practice”. This paradigm can well accommodate TCM doctors as well. Of course this cannot be called a GP system any more, but it may lead to a neat and strong primary care system. Some may worry this arrangement will

not be good for the development of general practice as a discipline especially in the short run. However, the philosophy, values and principles of general practice can be really promoted through this way. Meanwhile, China can focus on its 5+3 model to produce qualified GPs, and in the long run general practice as an academic discipline will have a solid foundation.

At present China is still uncertain about the answer to the paradigm choice, and accordingly there are many policy uncertainties and inconsistencies. Is there a gold-standard paradigm? Interestingly, the influential US primary care scholar Starfield seemed to prefer a single specialty primary care (like the UK paradigm), as the inclusion of general internists and paediatricians in the US primary care undermines the comprehensiveness of family medicine/general practice;¹¹⁶ some time ago the UK professor McKeown proposed the future of general practice in the UK would be delivered by four types of doctors – obstetrician, paediatrician, general physician, and geriatrician – roughly the nowadays US paradigm, on the grounds that it would be increasingly unrealistic to require a single doctor to maintain the necessary competency in the care of all age-groups.¹¹⁷ Furthermore, the evidence in favour of one of these two paradigms is mixed, as shown by literature comparing GPs/family physicians with other primary care doctors. Some research shows the advantages of other primary care doctors: compared with GPs, internists can diagnose coronary heart disease more precisely;¹¹⁸ those taken care of by paediatricians have a lower rate of unresolved symptoms at one week (8.3% vs 12.5%) and subsequent hospitalization (0.8% vs 3.0%).¹¹⁹ In contrast, some research reports GPs do equally well in maternal or neonatal outcomes with obstetricians but are less interventional such as using narcotic analgesia and postpartum oxytocin less frequently.¹²⁰ Some research suggests no significant difference in the resource consumption and quality of care between GPs and other primary care doctors – hospitalization and ambulatory visit rates, and laboratory and radiology costs are found very similar between the patients of internists and GPs;¹²¹ the risk of perinatal mortality and adverse maternal outcome for obstetric deliveries by GPs and obstetricians is not significantly different in a large cohort study.¹²²

It is not easy for China to make this decision. Of course China can define its own general practice/primary care model, as argued in this thesis. China's final paradigm will neither follow the UK nor the US. For instance, its paradigm can incorporate TCM. The key here is to fix a clear decision and keep the consistency, as the ambivalence is more likely to jeopardise China's primary care.

7.1.5 Niche of GPs in the medical world - specialisation vs. comprehensiveness

A century ago, most doctors (no matter whether western-style doctors or TCM doctors, in China or elsewhere) were generalists. With the fast development of medical science, specialisation seems to become an inevitable trend as nobody is able to master so much knowledge. We see faster and deeper specialisation. More specialists and sub-specialists emerge. Meanwhile, TCM has specialised slowly. Accordingly, it makes some sense that some in China consider TCM practitioners to be GPs.

The paradox of GPs, leading to considerable confusion, is that contemporary GPs are specialists in “holism”. In theory, it is not difficult to justify this expertise of GPs, as an influential scholar Ian McWhinney said 60 years ago:

“It is a common fallacy to equate narrow specialisation with depth and a wide field with superficiality. The depth of a man's learning depends, not on the narrowness of his field, but on the quality of his mind and the training it has received. The specialist may be only a pedant: the man with a wide subject may have pondered on it deeply.” (page 420)⁹⁶

Though this “common fallacy” is still common now, medical students and doctors in China start to recognise the “narrow” expertise of GPs – more than half of them do not agree that GPs know everything superficially (Chapter 5). With “the quality of his mind and the training it has received”, the vast majority of them do not think GPs are like barefoot or village doctors. In addition, the

holism definitely has value. In the Chinese setting, it is an important reason for many to promote TCM and think TCM is general practice.

However, in reality, it is not straightforward for general practice to find its appropriate place. In a vicious scenario, GPs may be put in an embarrassing position: compared with specialists, their expertise may not be deep enough; meanwhile some benefits they can bring are “invaded” by the “lower” health professionals such as nurses and physician assistants. The imperative for GPs is to finding the niche which can lead to a virtuous scenario in which specialists find GPs’ holism unreplaceable and the “lower” health professionals relies on GPs’ expertise.

Many attributes of GPs such as comprehensiveness, continuity, fist contact and coordination are all relative concepts - sometimes they do not necessarily and automatically distinguish GPs from other doctors. In other words, these attributes can be the merits demanded of good doctors. The viability of general practice is an art of finding the niche of GPs recognised in a society.

7.2 Medical pluralism

The confusions about GPs in China, to a large extent, are derived from the chaotic usage of the terminology ‘doctors’ (called medical pluralism in my study). As shown in Chapter 2, depending on different definitions of doctors, the doctors per 1,000 people ratio in China can vary from 1 to almost 3. Clarification of GPs’ roles in China first of all rely on how to explicitly define doctors.

7.2.1 Doctors, public health practitioners or community health workers?

GPs are, first of all, qualified doctors. This is obvious in the high-income countries such as the UK, US, Denmark and Norway. In fact, sometimes in order to assert the equality of these qualified GPs in these high-income countries with the hospital specialists, we have to use specialists (in general practice/family medicine) to describe GPs.¹⁰⁷ In contrast, most GPs in China, are “transferred” from the doctors in GHOs, as discussed in this thesis. Their education may be lower than nurse practitioners or physician assistants in the high-income countries. In terms of education levels, they were more like community health workers. However, they have worked for a long time as doctors – through the work experiences some of them have got the necessary skills of being doctors, while some have not. Their real qualifications as doctors vary greatly.

In addition, my government document analysis shows the definition of general practice emphasises prevention, and all the curricula of GP training programmes pay special attention to those “national basic public health services” (Chapter 4). With the massive influx of funding from the central government, quite often the so-called GPs (mainly the doctors in township hospitals and community health centres) are providing the so-called “national basic public health services”, as found in Chapter 5. As a result, these grassroots doctors, before the start of the GP system movement, did see patients but now are busy with the “public health services” which consist of the work which should be done mostly by nurses and community health workers and partially by doctors and public health professionals (Chapter 5). In other words, before they all functioned as doctors, but now they may function as doctors, public health professionals, nurses or community health workers.

Public health and general practice do share the “honour” of prevention. However, prevention is another vague and sometimes even misleading concept. It covers primordial prevention (addressing the predisposing social and environmental factors leading to illness), primary prevention, secondary prevention, tertiary prevention and even “quaternary prevention”.¹²³ Much

of its comprehensiveness is beyond the health sector, let alone the role of a GP. Many articles talking about prevention like to use the case of hypertension, whose management is also one of China's key national public health services. In public health hypertension is a risk factor, and in general practice it is a disease which may need treatment. The boundaries between prevention and cure are increasingly blurred.¹²³ Moreover, Gervas also uses the case of hypertension to show that screening and prevention is not necessarily better than cure.¹²⁴

More importantly, even in the high-income countries such as the US where primary care physicians definitely function as doctors and they are well assisted by nurses and community health workers, they are frustrated by the endlessly growing preventive services required and found it impossible to accommodate them within clinical visits.¹²⁵⁻¹²⁷ When it comes to China, the GPs are completely confused by the mixed and ambiguous functions as doctors, public health practitioners, nurses and community health workers all together.

General practice/primary care, public health, and prevention are all very broad concepts. When these comprehensive concepts are put together, confusion may emerge, which is happening in China. Even in the UK, as mentioned in the last section, university's department of general practice/primary care was part of public health. It is not easy to clarify the boundaries of these disciplines. The vastness, endless expansion and conflicts of these concepts may make them dysfunctional. Whether internationally these concepts need to be more carefully delineated is beyond the scope of this thesis. This lack of clarification may not be a big problem in high-income countries where the health system and regulations are mature and stable. However, it may become a disaster in a huge transitional country like China whose GPs inherit its medical pluralism (the chaotic usage of the terminology doctors). Sometimes the "prevention" and "public health services" demanded of GPs in China go too far. GPs can do health promotion and prevention during the medical encounters. For instance, they can give advice and help in relation to stopping smoking

especially when seeing a patient with a lung problem. However, GPs should not be required to knock at the doors of the community's residents, measure their height, weight and blood pressure alike, and fill in the forms as residents' health information files, in order to improve these so-called public health services' coverage of the population as the indicator of their performance.

Consequently, my research finds that almost 40% of those poorly trained GPs (township hospital doctors) in China, based on their everyday work, think that GPs' main role is prevention rather than diagnosis/treatment of diseases. This proportion is lower for the medical students and GP residents (future GPs) who have a higher level of education - most of them still think they are doctors. More seriously, most PITs (medical students 59.81%; GP residents 65%; township hospital doctors 68.94%) agree that GPs' main role is public health work (Chapter 5). In addition, the medical students in favour of this are significantly more likely to intend a GP career ($p=0.004$; Chapter 6). There are two explanations here. First, general practice has attracted the wrong people (who actually want to do public health). Second, they have a misunderstanding of public health as well. Here the "public health work" means those real clinical prevention work required of a qualified GP; agreeing with this statement actually demonstrates that they want to become the doctors recognising the values, principles and philosophy of general practice. The current chaotic understanding will neither help the healthy development of public health nor general practice in China. It may even deter those with the ambition of being authentic qualified GPs.

China has to firstly clarify that GPs are qualified doctors. This is the paramount identity of GPs. There is no risk of this identity change in high-income countries at present. However, in the early years of the NHS, it had similar concerns, as argued by McKeown in 1962 in the Lancet:

"But this change in role would be wholly out of keeping not only what the doctor wants from his career but with what the public wants from its

doctor. His unique opportunity to influence the social situation has its base in public confidence that he is capable of treating the sick. If this were lost he would be reduced to the position of a rather badly trained social worker.” (p. 924)¹¹⁷

In addition to the importance of public health and prevention, at this early stage China has to emphasise repeatedly that GPs are doctors. China cannot get lost in the comprehensiveness of general practice, and have a GP team who are not competent in clinical medicine. From this perspective, without assured quality of care provided by the grassroots doctors, there is no viable GP system. There is simply no shortcut of building a GP system. Also, in order to clarify the roles of GPs, the roles of public health professionals, nurses and community health workers need to be defined simultaneously as well. In addition, it is better to rename those current GPs trained through short-term retraining programmes so that GPs in China only mean those through the 5+3 model. It may be extremely difficult for China to make this decision as it is desperately pursuing the number of 300,000 GPs by 2020.

7.2.2 GP medical education

7.2.2.1 “5+3” to follow the international standards – two steps within one move

The diverse medical education (both across the globe and within China) is one key source of confusions about GPs. In fact, even among high-income countries, one reason leading to the hugely various proportions of GPs⁹⁷ is the different medical education required of GPs in different countries. However, one similarity among high-income countries is that the medical education for GPs consists of the medical school education plus the graduate medical education (residency in the US or previously called vocational training in the UK), like other specialties in medicine. China’s recent effort of adopting a 5+3 model of medical education to produce GPs follows this standard. The mandatory residency actually has made China’s newly-planned GPs through the

5+3 model become specialists (in general practice/family medicine), like their counterparts in high-income countries.

It took a long time for the high-income countries to establish this education model of mandatory residency following rigorous medical school education. In the UK, the apothecaries (predecessors of GPs and originally members of the Company of Grocers) were not considered to be doctors, compared to the physicians at that time who were university educated and belonged to the prestigious society of physicians.¹⁰⁴ From the second half of 19th century, GPs became community doctors while physicians' practice were mainly confined within a hospital.¹²⁸ Similar to China, UK had a two-tiered health system then. The educational difference mainly focused on the university degree which many GPs at that time did not have but were more accessible to the poor. Then, by 1948 when the National Health Service (NHS) was launched, actually all the doctors (including GPs) had a university degree.¹²⁸ The educational difference started to move to graduate level. The influential Collings' Report condemned GPs' poor conditions and the low quality of care provided by them.¹²⁹ The Cohen Report by the British Medical Association in 1950 recommended a 3-year vocational training (residency) for GPs, but this finally became mandatory after 30 years in 1981.¹²⁸

In China, the 10-year Cultural Revolution (1966 to 1976) produced a large number of barefoot doctors but almost completely destroyed the higher education of producing the fully-educated doctors (chapter 2). As a result, half of China's 2.9 million officially-recognised doctors do not have a university degree, let alone the 1 million village doctors. It is fair to say that most doctors in China do not have a university degree, which was achieved by the British doctors more than half a century ago. China, as a whole, is still at the stage of struggling with the medical school education - standardising the education of its "apothecaries" to a bachelor degree level. However, meanwhile the battle is expanded to the graduate level by the new 5+3 model.

The complexity of promoting the 5+3 model (representing the international standard) to produce qualified GPs starts from the diversity of the medical school education in China. After a series of medical education reforms, currently medical schools in China still offer three types of programmes – three years leading to a diploma, five years leading to a bachelor degree and eight years leading to a doctorate degreeⁱ (chapter 2). The conflict here is that: (1) the three-year residency (SRT) has become a national strategy – it will become compulsory by 2020 for all the medical students (here referring to those with a bachelor degree or above). Actually it has already been mandatory in most places of China. (2) Meanwhile, the 3-year diploma programmes still widely exist. Probably China should first make sure all the doctors have a basic bachelor degree. It is trying to take two steps within one move – using several years to achieve what have been done through many decades’ efforts in high-income countries. It may not be realistic – the vast majority of TRUMP students and GP residents (representing the new 5+3 model) do not intend a GP career (Chapter 6).

7.2.2.2 Retraining programmes and the “3+2” model

What is more realistic is the retraining of many grassroots doctors - China’s short-term solution of expanding the number of GPs. The grassroots doctors, joining the retraining, are significantly more likely to opt for a GP career (Chapter 6), according to their own interpretations of GPs (Chapter 5). The retraining programmes in China have generated most GPs in China who are still those without a university degree. To put it another way, they help maintain the medical pluralism in China, and the heterogeneity of GPs widely exists in China.

ⁱ Even many leading medical schools in China are not sure whether this doctorate is a PhD in Clinical Medicine or a US-style MD.

Another realistic policy is the 3+2 model. During the writing of this thesis, China is formally initiating a 3+2 model – 3-year diploma programme plus 2-year residency, leading to assistant GPs (a type of assistant doctors)ⁱ. A new word is added to the lexicon of the messy medical pluralism in China, another evidence of China's ambivalence to the positioning of GPs and lack of thorough understanding. Like the retraining programmes, then 3+2 model contributes to medical pluralism and may lead to more confusions and problems.

The 3-year programme is one historical legacy of China's education, learning from the Soviet model. It is a concise one compared to the regular programme (such as MBBS). Its curriculum can be condensed by cutting much science content and focusing on clinical practice training. Though it helped China train many doctors within a short time, probably it is obsolescent as it cannot meet the requirement of contemporary medicine and people's demand for quality of care. In fact, for a decade China tried to gradually phase out the 3-year diploma programmes, but finally changed the policy in 2009.⁴² The majority of those with a bachelor degree or above are reluctant to work in rural China, providing the legitimacy of maintaining these 3-year programmes. However, possibly it is the existence of these doctors of lower education level that prevents those fully-fledged doctor from practising in the community. No research rigorously explores whether Gresham's Law (bad money drives out good) is applicable here. My thesis at least shows that the existence of the doctors of lower education level sets a bad example for medical students to fully appreciate general practice. The barefoot doctors and village doctors, that China was proud of, have become negative assets (chapter 5 and 6).

ⁱ Through the alternative pathway shown in Chapter 2, assistant doctors can become doctors; these assistant GPs can become GPs.

GPs are first of all qualified doctors (as argued in Section 7.2.1). One purpose of China's effort of establishing a GP system is to make the qualified doctors work in the community (chapter 4). Otherwise, the GP system will not fix the health problems it is supposed to solve. The 3-year diploma programmes admit those who fail to go to a university – from the beginning it is not an appropriate path leading to qualified doctors in contemporary medicine. As China is even standardising its graduate medical education, the bottom line for becoming a doctor should not be lower than a bachelor degree. The 3+2 model leading to assistant GPs is unusual. It may be necessary and can exist as a compromised and temporary way of improving peoples' access to health care. But at least it should have another name which has nothing to do with GPs or doctors.

China should clearly distinguish the “GPs” educated through the 5+3 model, the 3+2 model and the retraining programmes. Otherwise, the clarification of GPs' roles is impossible. We cannot expect a heterogeneous group of GPs to assume the same roles and responsibilities.

7.2.2.3 An alternative

Contemporary GPs are on the one hand generalists as opposed to specialists. On the other hand, they are specialists in general practice/family medicine. In Hong Kong, these dual identities are more evident. After medical school and one-year foundation programme, one can become a fully-licensed GP who is a generalist. After that, some may opt for a 6-year residency programme in general practice/family medicine, and after that become a specialist in this field. In Hong Kong, a GP can either be a generalist or a specialist. Actually, to distinguish this generalist and specialist issue, Hong Kong uses GPs (generalists) and family physicians (specialists in general practice/family medicine), respectively, who are both primary care doctors.

Why not learn the Hong Kong model – a decent medical school education plus one-year foundation for all the medical students – after which they can become fully-licensed doctors and work as general doctors (GPs). Then, some may choose to do the specialty training to become specialists in general practice. At least, the Hong Kong model guarantees that the minimum qualification of being a doctor (including a GP) follows the international standards.

7.2.2.3 Undergraduate programme in general practice?

The multiple medical school programmes give people an illusion that there may be an undergraduate programme in general practice. This illusion becomes stronger with the establishment of the department of general practice in universities – China’s university department tends to admit its own undergraduates. In fact, around 13 medical universities used to pilot the undergraduate programme in general practice.ⁱ This has been prohibited by the Ministry of Education.

The undergraduate programme is supposed to be a universal program for all the medical students who may specialise later. From this perspective, all the undergraduate medical programmes are generalist programmes – all the medical students should receive general education that all the doctors are supposed to receive. In the UK, the medical school plus the two-year foundation programme are universal to all medical students irrespective of what specialty they want to pursue later. From this perspective, the medical school education and the foundation programme are all generalist education. This arrangement respects the fact that all the specialties of medicine are

ⁱ This is based on the communication with a professor at Capital Medical University and National Training Centre for General Practice

inevitably overlapping. All the doctors, no matter what specialties they pursue, are first of all doctors.

At present China is promoting the TRUMP, one of the focuses of this thesis (chapter 5 and 6). These TRUMP students are often considered by many (including themselves) to be undergraduates in general practice. Many TRUMP students may think they are less privileged than the normal medical students from the first day they enter medical schools, though they are supposed to be the same. In addition, my study shows that those who knew GPs even a little bit or were interested in medicine are significantly more likely to opt for a GP career (Chapter 6). Accordingly, one possible solution may be to modify the TRUMP by using the same funding to reimburse any normal medical student who opts for the residency in general practice, as students are more mature to make rational decisions on their own after five-year medical school than immediately after high school.

7.2.3 Status vs. access

It should be noted that medical pluralism exists for a reason. Getting rid of medical pluralism sometimes means the sharp reduction in the number of “doctors” (especially those who function as GPs) at least in the short run, and the accessibility of care is affected. In the US, the 1910 Flexner revolution closed the second level medical schools and consequently poor patients were deprived of access.

My study indicates the importance of improving Chinese GPs’ status in terms of income, education, recognition and respect (Chapter 6). Many measures which have been discussed will help improve GPs’ status. For instance, the establishment of the department of general practice in medical universities can offer the academic prestige, like other specialties in medicine. In fact, through

several decades' efforts, in many places especially the high-income countries, GPs have won the status, which is a reflection of society advancement. China is following this trend. However, the accessibility, a core characteristic of primary care, may become a problem with the improved status of GPs.

Reviewing the history of GP development in the UK, the apothecaries, predecessors of GPs, were initially members of the Company of Groceries¹²⁸ – probably the quality of care provided by them were not better than that by barefoot or village doctors in China. However, a key benefit of apothecaries, barefoot doctors and village doctors was their accessibility. The apothecaries were squeezed out by the physicians belonging to the prestigious society of physicians who were mainly in big cities (especially London) and tried to maintain their monopoly in health care. The Rose Case, based on the principle of improving people's access to health care (especially the poor), finally legitimated apothecaries' role as doctors.¹⁰⁴ At present, with the improved status and GPs being specialists, accessibility gradually becomes a problem, as reflected by the longer waiting time. Now as the GP society becomes powerful, it forms a new monopoly, the same to the old day's society of physicians. Similarly, we see many “lower” health professionals (such as nurse practitioners, physician assistants, and physician associates) take over roles previously carried out by GPs on the same grounds of the old days when the apothecaries fought for their legitimacy. To what extent these “lower” health professionals can delegate or even substitute GPs may be still controversial. However, at least some large-scale research has shown that patients' acceptance for physicians, nurse practitioners and physician assistants is not significantly different.¹³⁰ Of course, the status and “monopoly” may help assure quality of care. It has helped the high-income countries to get rid of quackery. However, it may affect accessibility. Whether it is cost effective and each country can afford it is another story. A delicate balance needs to be maintained.

For China's newly-planned GPs trained through the 5+3 model, accessibility issue has not emerged as the vast majority of them are still in training. However, what is shown is the other side of the coin. Most of them do not want to become GPs and income is their first concern (chapter 6).

The complexity of the medical pluralism decides that simply getting rid of it is often not the best solution. There is a delicate balance between the quality of care and access, and any viable and sustainable general practice may have to solve this contradiction and adjust this balance with social development. With China's economic miracle and people's increasingly high expectation, the focus nowadays is probably more on the quality of care for the success of establishing a functioning GP system. Meanwhile, with the rise of GP status and the gentle phase-out of medical pluralism, accessibility of care needs to be monitored.

7.3 GPs under hospital dominance

7.3.1 Overview

In order to define the roles of GPs clearly, China has to clarify the relationships between GPs and hospital doctors (those specialists working in hospitals). This is the most challenging part. The vast majority of Chinese doctors with higher education levels are based in tertiary hospitals. Most TRUMP students and GP residents want to be specialists and find a decent position in a tertiary hospital (chapter 6).

For the past century, hospitals have assumed an influential role in health care, exemplified by the rising numbers. Of course hospitals bring tremendous benefits. The role models are the teaching hospitals. The synergy of hospitals, medical schools (often with their parent universities),

specialisation and technology often works successfully towards the mutual reinforcement of service, research and teaching. In sharp contrast to general practice, this hospital model soon forms a “virtuous circle” – it facilitates the academic research efficiently; the science and technology is up to date; the services are improved in terms of more diseases being conquered. Meanwhile, the advancement demands and accelerates specialisation. Moreover, this medical school-hospital model has improved and standardised medical education, producing many qualified doctors and scientists. Even the education of qualified GPs, to a large extent, relies on this model. This is a successful “virtuous circle”, but may be too successful. Without an appropriate control, it is easy for this model to naturally lead to a philosophy of emphasising curative care and specialisation at the cost of comprehensive care.

China’s hospital dominance (as described in chapter 2) and the success of this “virtuous circle” is flourishing. In an environment of medical pluralism, most qualified doctors with higher education levels are concentrated in big hospitals. The unique *Bianzhi* system of China (chapter 2 and Chapter 6) makes these qualified doctors become (state-owned) hospital employees – more precisely, they are more like civil servants. The socialist legacy has a tradition of emphasising an organisation rather than an individual. The hospitals in China have got great autonomy but professionalism never really develops.¹³¹ People (including many doctors, medical students and patients) tend to forget that hospitals cannot run without doctors but doctors can practise medicine without hospitals. Patients’ loyalty and trust is quite often not in doctors but hospitals,ⁱ which are interested in profits and market shares. Tertiary hospitals in China represent quality of care, reliable advanced medical machines, social status, academic prestige and more importantly power

ⁱ There is a widespread saying in China that “The people of the whole country prefer directly going to the Peking Union Medical College Hospital (PUMC hospital)”. PUMC hospital is one of the best tertiary hospital in China, one of the very few hospitals directly under the NHFPC. Here the saying emphasises the hospital rather than any doctor. According to many private communications with several doctors at the PUMC hospital, if they leave this hospital, patients will not continue to see them. People come, more likely for the reputation of the hospital than a particular doctor.

and vested interests. Practice sites matter greatly in China. PITs' understandings (chapter 5) and medical students' considerations of their career choices (chapter 6), to a large extent, reflect the deliberation of the practice sites rather than specialties. To really have a viable GP system and sort out the roles between GPs and hospital doctors, there are several points need to be considered.

7.3.2 Interests of hospitals

Developing general practice will inevitably harm the interests of the huge outpatient departments of hospitals. More than ten or even twenty thousand outpatients per day mean the market share and profits as well as the income of the hospital doctors. Though many tertiary hospitals complain about the huge outpatient burdens, they would be reluctant to give up the accompanying profits. In the UK, GPs are the gatekeepers to the hospital services. They even used to control the budget for the hospital services as well.¹²⁸ Developing general practice, to some extent, means empowering GPs. Is China ready for this? I see little evidence from the analysis of government documents where GPs are considered “gatekeepers” of residents' health (Chapter 5).

7.3.3 Medical machines and patient beds

To clarify the roles of GPs vs. hospital doctors, it is important to see two things that hospitals can offer – sophisticated machines and hospital beds. Medical students and doctors in China favour and rely on technology. To be more accurate, based on the education they have received and the environment they have been immersed in, they love machines – they are more likely to ask patients to do all kinds of laboratory tests and examinations. 94%, 89%, 74% and 51% of medical students surveyed think GPs should be equipped with ultrasound, X-ray, CT and MRI scanners (chapter 6). At least now it is impossible (and inappropriate) to equip GPs with CT and MRI scanners. However, what are the appropriate technology and machines for GPs? Like any other doctors, GPs

benefit from modern technology. With the fragmented health system in China, there is no functioning mechanism of sharing the machines which generate lots of profits. One advantage of hospitals in China is that hospital doctors working in the outpatient departments can prescribe laboratory tests or/and machine examinations (if we do not consider whether these are clinically necessary) so that patients can do that immediately that day without any appointment. Then the hospital doctors can diagnose/treat the diseases based on the results (often on the same day) – very efficient. This is the other side of the extreme compared to the GP Surgery in the UK. Without considering costs and the potential over-diagnosis, the immediate usage of sophisticated machines may be helpful for improving the accuracy of doctors' diagnosis. Improving this accuracy is what many doctors pursue and one philosophy of hospital medicine. That is one driver of the abovementioned “virtuous circle” synergy which advances the development of medicine. However, GPs often need to deal with undifferentiated symptoms – an art of medicine.¹³² Sometimes the consultation result is “further observation and wait with great patience”, requiring very good doctor-patient relationship, patients' trust and GPs' competency derived from their rigorous education, all of which China now lacks. If GPs have a CT or MRI scanner besides them, maybe they can find the problems more accurately and patients do not need to wait patiently. However, GPs are supposed to consider the necessity and costs: a scan may be more harmful than helpful; GPs need to do the cost-effective analysis (maybe sometimes unconsciously) from time to time. Maintaining this art of medicine is not easy, especially with the fast development of medicine. Labour and machine can sometimes substitute one another – different countries have different combinations of labour and machine in the health sector.⁹ Probably China is sometimes too machine-intensive, while UK sometimes is too labour-intensive. In some cases, it takes more than a month for a patient to finally have an X-ray examination in the UK, which is also beyond the imagination of many Chinese. Especially with the development of technology, some expensive machines in the past may become cheaper and cheaper now, while the labour cost is increasingly higher. The art of the balance needs to be examined repeatedly.

China needs to find its own delicate balance of this practice art required of GPs. In particular, most GPs in China work in the township hospitals or community health centres, many of which are or were lower-level hospitals. Unlike the GPs in the UK, they are equipped with many machines which often include X-ray and Ultrasound. Some even have lower-resolution CT scanners which are phased out by higher-level hospitals (chapter 6). China has to make good use of the exiting combination of labour and machines, and meanwhile develop new mechanisms.

Regarding hospital beds and inpatients, in the UK, GPs do not take care of hospitalised patients. This was not the case before 1948, the establishment of the National Health Service, when GPs started to practice in isolation from the general hospitals – a survey in 1966 showed that only 272 general-practitioner medical beds were left in general hospitals in the UK.¹³³ In the US, many primary care physicians are responsible for both hospital and home care. From this perspective, they provide more comprehensive services than the British GPs. More complicatedly, hospitalists started to emerge and draw increasing attention from 1990s in North America.¹³⁴⁻¹³⁶ As the name suggests, hospitalists (some may use the terminology hospital generalists¹³⁷) are based in hospitals and provide comprehensive care for inpatients. In the US, these hospitalists are primary care physicians – more accurately 82% of them are internists; In Canada, 90% of the hospitalists are GPs.¹³⁸ The emergence of the hospitalists provides a career path in hospitals for the primary care physicians, and their number has increased very fast – around 20,000 in 2009 and over 30,000 in 2012 in the US.¹³⁷ The distinction between inpatient and outpatient care is blurred to some extent.¹³⁹ Internationally, GPs can practise medicine completely out of hospitals; they can be responsible only for hospitalised patients. Either model is praised by some as the comprehensive care, and meanwhile criticised by some as the divorce of inpatient and outpatient care.^{108, 133, 140} Of course some GPs maintain the “marriage” – doing both. So the roles and responsibilities of GPs are actually more artificial than real. China’s case is different from that either in the UK or in North America, requiring it to clarify and regulate these “artificial” roles based on its reality. Many township hospitals and community health centres have patient beds, and accordingly many GPs in

China have access to medical beds. Also, some tertiary hospitals start to establish departments of general practice, some of which do have medical beds. This also implies that some GPs in China become hospital doctors as well. Will they become hospitalists in the US? More confusion may emerge and affect the definition of GPs in China.

7.3.4 The hidden primary care

Fourth, it should be noted that specialists (such as cardiologists) may play an important role in primary care, which is claimed to be a “hidden system of primary care”.^{141, 142} Though I have not found any research discussing this in the Chinese setting, this hidden system of primary care may be common in China based on three phenomena. (1) Many Chinese go directly to the tertiary hospitals even for minor problems, and accordingly many hospital specialists deal with undifferentiated symptoms. (2) Chinese tend to seek health care through their friends and acquaintances working in the tertiary hospitals. (3) Many hospital specialists may have a de facto list of regular clients (i.e. patients) who consider these specialists to be their principal source of care, and a hospital specialist may guide his/her regular client through the health system (at least the big tertiary hospital). The hidden system of primary care is much less common in the UK which has a compulsory referral system and clearly confined practice sites – GPs are deliberately designed not to have access to hospitals while consultants are excluded from giving primary care. The dermatologists in the UK are based in hospitals, though they mostly deal with outpatients. In contrast, according to the 2003 and 2004 National Ambulatory Medical Care Surveys, there were 311,200 office-based physicians in the US, and primary care physicians only accounted for a half of them.¹⁴³ In other words, many specialists in the US have an office-based tradition, and some specialists (such as some cardiologists and pulmonologists) actually identify themselves as primary care physicians.¹⁴⁴ Some research recognises the important contribution of specialists to primary care – in particular 58.2%, 43.8% and 42.3% of the care provided by cardiologists, gastroenterologists and pulmonologists, respectively, is classified into the category of principal

care which has the evidence of continuity and comprehensiveness.¹⁴¹ Some research, though does not fully agree with this argument, also finds that some selected specialties such as general surgery, pulmonology and rheumatology assume the generalist role more often.¹⁴⁵ It is also argued that following the attributes of primary care can be helpful for the health care improvement.¹⁴⁶

7.3.5 Summary

All in all, specialists may “invade” the traditional realm of GPs, and vice versa. The prerequisite is that in the high-income countries they are all qualified doctors who are capable of practising medicine independently. China has to deal with the qualification problems and meanwhile the boundary setting between GPs and hospitals doctors by carefully considering many imperative factors such as practice sites, medical equipment and patient beds. This requires the fundamental change of the whole organisation of health services in China. China may not fully appreciate the huge challenge of establishing a GP system.

The government’s intention of the cost containment is clear – obviously this is a key purpose of promoting a GP system. However, the PITs have no sense or incentives of controlling cost for the whole health system. Particularly, they are obsessed with the usage of medical machines without taking into account potential harms and cost effectiveness. Also, the powerful state-owned but profit-driven tertiary hospitals have successfully avoided the loss of interests during the latest several rounds of health reforms,¹³¹ and actually become stronger. We do not know whether they will be really reformed for the establishment of the GP system this time, but the viability of general practice in China, to a large extent, relies on the success of the tertiary hospital reform, as discussed above. China needs to clarify, well design and regulate the relationships among GPs, GPs’ practice sites (associated with medical equipment and beds), specialists and hospitals. This requires more research and informed debates to reach a consensus among the health community.

7.4 Wider political and social issues

7.4.1 Divided policy making

As a huge country, China seems to have a tradition of divided policy making. David Lampton, the most authoritative scholar on China affairs,¹⁴⁷ tried to use the case of health policy making to demonstrate that the failure of Great Leap Forward (1958-1960) movement actually “resulted from the very inconsistencies in leadership and programme characteristic of diverse policy-making arenas”. (p. 298)²⁴ In his case, health policy making only had three players, as introduced in Chapter 2.

I identified nine ministry-level government players and eight players within health sectors for establishment of general practice in China (Chapter 4). Compared to Lampton’s case, China’s GP movement has a much larger space for divided health policy making. For instance, the Ministry of Human Resources and Social Security (MHRSS) is in charge of China’s two urban social health insurance schemes (Chapter 4). However, a survey in 2007 showed that only 57.3% of community health organisations (CHOs; which are GPs’ urban practice venues; Section 2.5.5, Chapter 2) under the jurisdiction of the National Health and Family Planning Commission (NHFPC) were recognized by social health insurance. In other words, for around 40% of CHOs, if people with social health insurance went there to see a GP, they could not be reimbursed. Another example is between the NHFPC and the State Administration of Traditional Chinese Medicine (SATCM). Chapter 4 shows that the SATCM is usually considered to be a ministry, dealing with all the TCM-related issues. When the NHFPC started the GP-TT programme (one focus of this thesis), strictly speaking, the programme should not recruit TCM doctors. However, as the SATCM is part of the NHFPC in administration (Chapter 4), in implementation my survey finds that some TCM doctors are in the GP-TT programme and complicate the confusions about GPs (Chapter 3 and 5). China’s

GP chaos, to some extent, is a natural result of the divided policy making based on the vague understandings of GPs. As Lampton put, “In some senses, the left hand did not know what the right hand was doing.” (p. 298)²⁴

The divided policy making is far beyond the health sector (as well as the scope of my thesis). It should be noted that some key aspects of establishing general practice is controlled by other powerful government players.

7.4.2 Control of graduate medical education – academics or practitioners?

The establishment of general practice in this round is not on its own (Chapter 4). It accompanies the huge reform of medical education characterised by the mandatory SRT. This is supposed to be a favourable factor for GPs’ development in China. However, broad political issues may make the establishment of the SRT and general practice not harness to best effects. Some confusions may emerge, as discussed below.

Before the start of the SRT, China did not have a nationwide residency. Accordingly, it formed a degree-centred system (chapter 2). The graduate medical education (GME) meant master and doctorate programmes, under the jurisdiction of Ministry of Education (MOE). This was compatible with the abovementioned synergy model of medical schools and teaching hospitals. Now the SRT makes the NHFPC regain the lost power in relation to the GME, and meanwhile, the MOE has changed most clinical masters to 3-year MM degree programmes – an equivalent of the SRT (Section 2.5.2, Chapter 2). So there are two tracks of doing residency in China – SRT under the jurisdiction of the NHFPC and the MM degree programmes under the jurisdiction of the MOE, as a result of a compromise between the two ministries.

At the individual organisation level, we see the departments of general practice in universities (ultimately under the jurisdiction of the MOE) and service departments of general practice in hospitals (like postgraduate deaneries for general practice under the Royal College of General Practitioners [RCGP]; some teaching hospitals ultimately under the jurisdiction of the MOE; some ultimately under the jurisdiction of the NHFPC). In some cases, they are actually the same unit within one medical university & teaching hospital system. But sometimes they are separate. The problem is the department itself may not know it is at the undergraduate or graduate level. More seriously, the academic competency and clinical service competency required is often blurred here. The mess is partially because the academic general practice and service general practice (as discussed in 7.1.3) are competing for influence. This issue is not clearly sorted out.

China's current situation resembles the early stages of creating vocational training (now called specialty training) for general practice in the UK. Now each British medical school has a department of general practice, but this department does not admit its own medical students. Instead, this department conducts academic general practice research and usually participates in all the medical students' education. The department of general practice participates in the medical school education, while the RCGP is in charge of the GME (specialty training in general practice). Before it was not this clear and well integrated, as many early vocational training programmes were created from within these undergraduate departments of general practice, and many research training posts were housed and supervised within them as well.¹⁰¹ The tension reflected the struggle between the first two perspectives discussed in Section 7.1.3 – academic general practice vs. service general practice, as shown by the establishment history of the Association of University Teachers of General Practice (AUTGP; nowadays Society of Academic Primary Care, SAPC) against the RCGP.¹⁰³

This tension also implies one underlying question – whether China’s newly-planned GPs are academics or practitioners. China’s unique *Zhicheng* system (Chapter 2) further complicates this tension - for the *Zhicheng* system (the ladder each doctor has to climb), the progress and promotion, to a large extent, depends on the academic publications rather than clinical skills.¹⁴⁸ This is the case even for township hospital doctors (the majority of whom do not have a bachelor degree). The compromise between two ministries (NHFPC and MOE) and the *Zhicheng* system controlled by a third ministry (the Ministry of Human Resources and Social Security; Chapter 4) totally confuse the academic competency and clinical practice competency demanded of doctors, and relevant incentives in China.

GPs, as a type of doctors, need to be firstly practitioners. Even in the UK, only one out of 225 GPs is a clinical academic (Section 7.1.3.1). On the other hand, some GPs should become academics as well for the development of general practice. We should also see that the synergy model of medical schools and teaching hospitals better help more hospital consultants (specialists) become clinical academics who in return contribute to their specialties and the improvement of medicine – one in 16 hospital consultants are academics.¹⁰³ GPs have a natural disadvantage here, and a balance is needed. What is clear is that in China the specific requirements for the clinical practice competency and the academic science competency need to be made explicit, though it is well recognised that the clinical practice competency is inherently associated with skills in the academic sciences.

7.4.3 Professionalism and empowering doctors

China’s effort of GP capacity building has been based on practice locations – it has been training the doctors mainly in township hospitals and community health organisations (who usually have a lower educational level) to be GPs. The vast majority of qualified doctors are still in tertiary

hospitals, setting the successful career models for the PITs. These doctors are like semi-civil servants, trapped by the powerful state-owned tertiary hospitals through the *Bianzhi* system and *Zhicheng* system. Accordingly, China seldom has any successful and respected practice model (such as a decent office-based model) outside the hospital for PITs to imagine an alternative privileged scenario,ⁱ except for very few cases of domiciliary care for the top politicians (chapter 5). It is very difficult to help people (including doctors) to separate the practice location with the quality of care and doctors' status.ⁱⁱ Empowering doctors is a solution when they form independent professionals. It is better to motivate some tertiary hospital doctors (such as the current internists in hospitals) with high education levels to have the “transfer” training and work in the community rather than hospitals. Then of course they can take the interests of the current hospital outpatient departments with them. This requires doctors in China to become authentic professionals rather than semi-civil servants. In China this means empowering doctors and developing professionalism. However, in the short run, this also means giving up the *Bianzhi* (Iron Rice Bowl) – the job security. It is not easy to make Chinese doctors believe that in order to get the Gold Rice Bowl, they have to forgo the Iron Rice Bowl. It is well recognised that “transferring” appropriate hospital doctors (such as internists) to be GPs will receive fierce resistance (also from hospital doctors themselves). In addition, much power is retained by various government players rather than the professional associations (Chapter 4). The professional associations are so weak in China that many medical students and doctors never hear of them (Chapter 5). This deadlock also implies the viability of a GP system cannot be achieved in the short term (say by 2020) in China, as the thinking of people (including doctors) and the whole social system changes slowly.

ⁱ That is one reason why some leading GP training programmes with strong financial capacity tend to send the trainees abroad (such as the UK) for some time to really see how this alternative model works.

ⁱⁱ In the eyes of PITs, those practising out of hospitals are inferior doctors – even given the obvious huge differences of education levels between barefoot doctors and contemporary GPs and the fact that barefoot doctor movement has ended for more than 30 years (chapter 2), some PITs (medical students 14.11%, township hospital doctors 25.65%, and GP residents 9.17%) still think that GPs are like barefoot doctors or village doctors (chapter 5).

CHAPTER 8 CONCLUSION

8.1 Summary

My thesis assesses the viability of general practice in China. In particular, I answer three research questions: (1) how the Chinese government defines GPs; (2) how the relevant medical students and doctors interpret GPs; and (3) what are the factors preventing medical students from opting for a GP career.

To address the first question, I employ a systematic approach of reviewing the Chinese government documents at national level in relation to GPs. In total, 91 government documents are included through the screening of more than 2,000 documents. The document analysis shows that since 2010 the Chinese government has made great efforts in establishing general practice. The main government strategies outline three training programmes to expand the number of GPs: (1) the GP Transfer Training (GP-TT), mainly retraining township hospital doctors to become GPs; (2) the Tuition-waived Rural-oriented Undergraduate Medical Programme (TRUMP) to sponsor undergraduate medical students so that they will become GPs in the future; (3) the Standardised Residency Training in General Practice (GP-SRT) to follow the international standards. Participants of these three programmes (i.e. GP-TT trainees, TRUMP medical students and GP residents) are defined as the Policy Implementation Targets (PITs) in this study, and are the focus of my two rounds of fieldwork.

To address my second and third research questions and examine the policy implementation, I conducted two rounds of fieldwork in the most populous province of China – Henan.

I employ a mixed methods approach so that the qualitative element (thematic analysis) and the quantitative element (standard summary statistics, χ^2 test, and logistic regression) are triangulated to explore how the PITs interpret GPs and the factors influencing their choice to practice as GPs.

The document analysis shows that the definition of GPs by the government is based on an idealistic primary care framework and is too broad to be a practical guide for the training and work of GPs.

The mixed methods approach finds that the PITs have some intuitive awareness of the attributes of general practice (comprehensiveness, first contact, continuity and coordination), but they often misinterpret what GPs actually do, or base their understanding on their knowledge of the existing hospital- and specialist-dominated health system. In particular, the comprehensiveness demanded of GPs was interpreted as all-specialty doctors who were capable of working in most departments of a hospital. GPs, as the first and regular source of care, in the eyes of PITs, can be interpreted to be the privileged private personal doctors, only affordable to the rich. On the contrary, first-contact care can also remind some PITs of China's barefoot doctors or village doctors without concrete expertise. I find that barefoot doctors, despite its proud history, have become a "negative asset" for China's establishment of general practice – relating GPs to barefoot doctors or the existing primary care providers significantly jeopardises medical students' preference of a GP career.

Most PITs are aware of GPs' referral and coordination roles. As there is no referral system in China, the understanding can go two directions: one is to treat as many diseases as possible, including those beyond their competency; the other is to just simply refer patients.

When it comes to traditional Chinese medicine (TCM), the documents analysis shows that the government tries to establish a role for it in the newly-planned general practice. However, there is

no appropriate approach to integration. Though TCM shares similar person-centred and holistic philosophy with general practice, PITs' knowledge of TCM complicates their misunderstandings of general practice. A large proportion of PITs think GPs can practise both western medicine and TCM. In addition, township hospital doctors are significantly more likely to think that GPs specialise in the combination of TCM and western medicine.

It is misleading that the diverse syllabi for GPs (found in the government documents) emphasise so-called public health services in China. The concepts of prevention, public health and general practice are ambiguous in China. Most PITs even think that GPs' main responsibility is public health work. My research shows that those with this belief are significantly more likely to opt for a GP career.

Meanwhile, I find through the documents that the government effort is more about asking qualified doctors to work in the community, no matter whether they are GPs or not. In other words, the government operation is not able to follow its own broad definitions of GPs.

In addition, I have also identified the involvement of a large number of government players (including ministries and commissions, and the departments within the health sector) in the establishment of general practice. They govern different key attributes of doctors (including GPs), and I argue that the divided health policy making endangers the viability of general practice in China.

The quantitative statistics shows that most PITs do not intend a GP career, though they are enrolled in a GP-related programme. More seriously, only around 20% of the TRUMP medical students and the GP resident doctors, who stand for China's new 5+3 model of training qualified GPs, plan

to become GPs in the future. In fact, in order not to be GPs, around half of the TRUMP students would like to terminate the contract by paying the default payment. In contrast, the township hospital doctors are more likely to become GPs, but some of them expect so according to their misinterpretations of GPs (such as the intention of extending their practice inappropriately).

Eight factors are identified as the deterrents to medical students opting to be GPs, namely, low income, further education and training, fewer patients and worse doctor-patient relationship, unclear and uncertain policies, disadvantage for life and family, disadvantage for making progress in *Bianzhi* system, inferior medical equipment, and lack of recognition and respect. “Low income” and “unclear and uncertain policies” were the top two deterrents. Striking was Chinese medical students’ obsession with high-tech medical equipment. It should also be noted that choice of GP as eventual career is significantly more likely to be affected by the comprehension of what GPs are.

In sum, China is unlikely to establish viable general practice by 2020. It may reach the target of training 300,000 GPs by then, but that figure may not be meaningful as it depends on how to define GPs. The fundamental issue for viable general practice is not resolved. The roles of GPs are neither clearly delineated nor well interpreted in China. The medical pluralism in China even put GPs’ identity as doctors in danger. The medical pluralism and the heterogeneity of GPs in China results from the diverse medical education and the pragmatic need to increase people’s access to health care. China still has a hospital dominance and specialist practice model. The understandings of GPs and medical career choices, to a large extent, are based on this existing model. The establishment of general practice will inevitably undermine the interests of the powerful tertiary hospitals. Last but not least, the wider political and social environment such as the abovementioned *Bianzhi* and *Zhicheng* system is restrictive and beyond the control of the health sector.

The confusions about GPs in China imply the inequality within the country; similarly, the heterogeneity of GPs internationally indicate the huge inequality between high-income and low-income countries, the big difference in organisation of care across countries, and the diversity of medical education. China, a transitional society where the high-income meets the low income, provides a valuable platform for a thorough understanding of positioning general practice. Any country that opts to establish, maintain or reform general practice, may learn from China's experiences.

8.2 Policy implications

The establishment of viable general practice is far beyond the proliferation of so-called GPs through various training programmes. Pursuing a figure of training 300,000 GPs on its own is not very meaningful, especially given that GPs in China are not clearly defined. Desperately striving towards this artificial statistic will not automatically help China establish viable general practice. Instead, it may be misleading.

The top priority for the establishment of general practice in China is to clarify what GPs are and what primary care China wants. Given the special nature of general practice, the conception of GPs cannot be established in isolation; clearly-defined and commonly-recognised job responsibilities, distribution and substitution of each category of health professionals (including GPs, specialists, public health practitioners, nurses, community health workers and TCM practitioners in China's case) have to be sorted out, so that (1) all the health workforce can work in harmony; (2) teamwork can be realised to improve efficiency; (3) medical education can be adjusted and integrated; (4) health resources can be allocated accordingly; (5) patients' health care seeking behaviours can be appropriated regulated; and (6) all the theoretical advantages of general practice can materialise.

China needs to regulate medical pluralism and use the terminology of doctors rigorously. The current medical pluralism has often put GPs' identity as doctors in question. In contemporary medicine, GPs must be first of all qualified doctors, which should be repeatedly emphasised in China. Chinese GPs generated through the 5+3 model, 3+2 model and the retraining programmes should be clearly distinguished.

The success of general practice, to a large extent, relies on reforming the powerful hospitals which have locked the quality of care in the tertiary level. Doctors need to become real professionals rather than semi-civil servants, trapped by the state-owned hospitals. The essential establishment of general practice in China means that the qualified doctors with high levels of education (whom we may only find in tertiary hospitals now) are willing to be "transferred" to be GPs working in the community (both urban and rural).

The establishment of general practice in China demands close coordination of various government players involved. It is extremely challenging to solve the divided health policy making and the inconsistency of policies in China. Actually, Chinese government should realise its limitations in managing some professional matters on its own. It may try to encourage the growth of professional associations and delegate some important roles to them. This means empowering professional associations and doctors. Some power that needs to be "conveyed" is beyond the control of the National Health and Family Planning Commission. It relates to broader political and social reforms in China such as the change of the *Zhicheng* system and *Bianzhi* system. However, as suggested above, doctors need to become real professionals, and China needs to develop professionalism instead of hospital autonomy.

8.3 Strengths and limitations

My thesis thoroughly documents doctors in China (the largest doctor group in the world) with particular focus on primary care workforce from barefoot doctors to the newly-planned GPs. It uncovers the detailed attributes of Chinese doctors whose complexity is often neglected by simplified introductions. However, these attributes of complexity are essential for understanding GPs and the viability of general practice in China.

My thesis employs a systematic approach to examine the original Chinese government documents in relation to GPs. The content, issuers, release time and evolution of the identified documents are all rigorously analysed. This contributes to the health policy research.

In addition, my research employs a mixed methods approach to analyse first-hand data of all the three GP-related groups in China. The qualitative and quantitative elements are complementary parts of the whole systematic and rigorous empirical research. The FGDs and semi-structured interviews identify relevant themes and the quantitative analysis allows me to explore the scale and importance of the themes, and examine some potential associations. They are triangulated to examine the interpretations of GPs and the factors preventing medical students from choosing a GP career.

The government document analysis and the mixed methods approach together depicts a holistic picture of China's general practice from both the "top-down" policy side and the "bottom-up" implementation side. The rich evidence concerns every aspect of viability of general practice in China.

There are limitations to my research. First, for the government document review and the qualitative thematic analysis, ideally it requires at least two persons to increase rigorousness. I did that on my own, but I did discuss very frequently with Dr. Proochista Ariana and other scholars. In addition, the protocol and analysis process was strict and transparent, as elaborated in Chapter 3. Accordingly, this issue is not expected to affect the results of the research. Second, I only use the case study of Henan Province, but China is a large and diverse country. It is not realistic to travel around the whole country to conduct the fieldwork on my own. On the one hand, the case of Henan (with a population of around 100 million) is strong enough to prove the unlikeliness of viable general practice by 2020 in China. On the other hand, it should be noted that the situation in western China such as Yunnan, Gansu and Guangxi can be worse; in some developed regions such as Beijing, Shanghai and Guangdong it may be better. In the future, some comparative studies will be helpful to better understand the “GP phenomenon” across the country. Some professors in Shanghai are actually very interested in the questionnaires I have designed in this study. They may be administered to examine and compare the Shanghai case in the future. Third, the quantitative study is based on cross-sectional data, and participants’ choices are their plans rather than what they really do. Accordingly, a follow-up study is being planned. Last, my research only focuses on the “supply” side – government, medical students and doctors. However, the viability of general practice also relies on the “demand” of the general public and patients’ health care seeking behaviours, which can be some further research.

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APPENDIX 1 LIST OF DOCUMENTS

Issue year	Documents (in Chinese)	Documents (in English)
1999	卫生部、国家发展计划委员会、教育部、民政部、财政部、人事部、劳动和社会保障部、建设部、国家计划生育委员会、国家中医药管理局关于印发《关于发展城市社区卫生服务的若干意见》的通知	Circular on issuing “Several opinions on developing urban community health care”
1999	人事部、卫生部关于印发《临床医学专业中、高级技术资格评审条件（试行）》的通知	Circular on issuing “Requirements for intermediate and senior technical qualifications in clinical medicine (pilot version)”
1999	卫生部科教司关于印发《全科医师规范化培训大纲（试行）》、《全科医师岗位培训大纲（试行）》的通知	Circular on issuing “Standardised residency training in general practice outline (pilot version)” and “GP in-service training outline (pilot version)”
1999	卫生部关于印发《全科医师规范化培养试行办法》的通知	Circular on issuing “Trial measures for standardised residency training in general practice”
2000	关于印发社区卫生服务机构指导标准（征求意见稿）的通知	Circular on issuing “Guiding standards for community health organisations (consultation paper)”
2000	卫生部关于印发发展全科医学教育的意见的通知	Circular on issuing “Opinion on developing general practice education”
2000	卫生部科教司关于印发全科医学临床和社区培训基地基本要求的通知	Circular on issuing “Basic requirements for clinical and community training sites for general practice”
2000	卫生部全科医学培训中心管理办法	Management measures for National Training Centre for General Practice, Ministry of Health (MOH)

2000	卫生部关于在首都医科大学建立卫生部全科医学培训中心的批复	Approval of establishing National Training Centre for General Practice, MOH at Capital Medical University
2000	卫生部关于印发城市社区卫生服务机构设置原则等三个文件的通知	Circular on issuing three documents such as “Set-up principles of urban community health organisations”
2001	卫生部关于 2005 年城市社区卫生服务发展目标的意见	Opinion on the 2005 development objectives of the urban community health services
2001	卫生部、人事部关于印发《预防医学、全科医学、药学、护理、其他卫生技术等专业技术资格专试暂行规定》及《临床医学、预防医学、全科医学、药学、护理、其他卫生技术等专业技术资格考试实施办法》的通知	Circular on issuing “Interim provisions on technical qualification examinations in preventive medicine, general practice, pharmacy, nursing and other health technical disciplines” and “Implementation measures for technical qualification examinations in preventive medicine, general practice, pharmacy, nursing and other health technical disciplines”
2002	中国 2001—2015 年卫生人力发展纲要	Development outline for China’s health resources for health 2001 – 2015
2003	卫生部、民政部、国家中医药管理局关于印发《创建全国社区卫生服务示范区活动实施方案》的通知	Circular on issuing “Implementation measure on establishing national demonstration district for community health services”
2005	卫生部科教司关于印发医学教育发展研讨会会议纪要的函	Letter on issuing the meeting minutes of the symposium on medical education
2006	国务院关于发展城市社区卫生服务的指导意见	Guiding opinions on developing urban community health services
2006	卫生部办公厅关于印发全科医师岗位培训工作评估指标体系的通知	Circular on issuing “Assessment system for GP in-service training”
2006	人事部、卫生部、教育部、财政部、国家中医药管理局关于加强城市社区卫生人才队伍建设的指导意见	Guiding opinions on strengthening the health workforce for urban community health care
2006	卫生部、国家中医药管理局关于印发《城市社区卫生服务机构管理办法（试行）》的通知	Circular on issuing “Management measures for urban community health organisations (pilot version)”

2006	国家中医药管理局关于印发中医药事业发展“十一五”规划的通知	Circular on issuing “Eleventh five-year plan on the development of traditional Chinese medicine (TCM)”
2006	国家中医药管理局关于修订中医类别医师执业范围的通知	Circular on revising the practice scope of licensed doctors in TCM
2006	教育部关于加强高等医学院校全科医学、社区护理学教育和学科建设的意见	Opinion on strengthening the education and discipline building of general practice and community nursing at higher education institutions
2006	卫生部关于加强“十一五”期间卫生人才队伍建设的意见	Opinion on strengthening the human resources for health during the eleventh five-year plan period
2007	卫生部办公厅关于印发社区卫生人员岗位培训大纲的通知	Circular on issuing community health personnel in-service training outline
2007	国家中医药管理局、卫生部关于印发中医类别全科医师岗位培训管理办法等文件的通知	Circular on issuing several documents such as management measures for TCM GP in-service training
2007	卫生部科教司关于印发《社区卫生服务人员岗位培训合格证书》样式的函	Letter on issuing the format of “certificate of completion of community health personnel in-service training”
2007	国务院城市社区卫生工作领导小组办公室关于开展社区卫生服务体系建设重点联系城市基线调查的通知	Circular on conducting the baseline investigation into the key cities establishing community health service system
2008	关于印发《社区卫生工作管理制度》的函	Letter on issuing “Management system of community health service”
2008	卫生部、教育部关于加强继续医学教育工作的若干意见	Several opinions on strengthening continuing medical education
2008	卫生部科教司关于开展社区卫生人员岗位培训督查工作的通知	Circular on conducting an inspection of community health personnel in-service training

2009	国家中医药管理局办公室关于 2009 年中医药重点工作任务及其分工的通知	Circular on the key TCM tasks and job delegation in 2009
2009	教育部、卫生部关于加强医学教育工作提高医学教育质量的若干意见	Several opinions on strengthening medical education and improving the quality of medical education
2009	国家中医药管理局关于加强中医药继续教育基地建设的通知	Circular on strengthening the construction of TCM continuing education sites
2009	卫生部办公厅关于印发《基于健康档案的区域卫生信息平台建设指南（试行）》的通知	Circular on issuing “Guide to the construction of the health informatics regional platform based on (residents’) health information files (pilot version)”
2009	卫生部办公厅关于进一步加强全国社区卫生服务体系建设重点联系城市工作的通知	Circular on further strengthening the work by the key cities establishing community health service system
2009	国务院办公厅关于印发医药卫生体制五项重点改革 2009 年工作安排的通知	Circular on issuing the work arrangements for the health system reform in five key aspects in 2009
2009	卫生部科教司关于开展社区卫生人员岗位培训督查工作的通知	Circular on conducting an inspection of community health personnel in-service training
2009	卫生部科教司关于报送 2009 年社区卫生人员培训情况的通知	Circular on submitting accounts of community health personnel training in 2009
2010	卫生部妇社司关于开展全国社区卫生服务体系建设重点联系城市第二次常规监测的通知	Circular on conducting the second investigation into the key cities establishing community health service system
2010	国家发展改革委、卫生部、中央编办、教育部、财政部、人力资源社会保障部关于印发《以全科医生为重点的基层医疗卫生队伍建设规划》的通知	Circular on issuing “Plan on establishing GPs-centred grassroots health workforce”
2010	国务院办公厅关于印发医药卫生体制五项重点改革 2010 年度主要工作安排的通知	Circular on issuing the key work arrangements for the health system reform in five key aspects in 2010

2010	卫生部办公厅关于印发《2009 年中西部地区城市社区卫生人员培训项目管理方案》的通知	Circular on issuing “Management scheme on training programmes of the urban community health personnel in middle and western China in 2009”
2010	国家发展改革委、卫生部、教育部等关于印发开展农村订单定向医学生免费培养工作实施意见的通知	Circular on issuing “Implementation opinions on the Tuition-waived rural-oriented undergraduate medical programme (TRUMP)”
2010	卫生部办公厅关于做好农村订单定向医学生免费培养工作的通知	Circular on well conducting the TRUMP programme
2010	卫生部办公厅关于印发《2010 年中西部地区城市社区卫生人员培训项目管理方案》的通知	Circular on issuing “Management scheme on training programmes of the urban community health personnel in middle and western China in 2010”
2010	卫生部办公厅关于印发社区卫生人员岗位培训大纲（2010 年版）的通知	Circular on issuing “Community health personnel in-service training outline (2010 version)”
2010	卫生部办公厅关于印发《2010 年中西部地区农村订单定向医学生免费培养项目管理方案》的通知	Circular on issuing “Management scheme on the TRUMP programme in middle and western China in 2010”
2010	国务院关于深化医药卫生体制改革工作情况的报告	Report on deepening the health reform
2010	卫生部办公厅关于印发《2010 年中西部地区全科医生转岗培训项目管理方案》的通知	Circular on issuing “Management scheme on GP transfer training programmes in middle and western China in 2010”
2010	卫生部办公厅印发《关于开展基层医疗卫生机构全科医生转岗培训工作的指导意见（试行）》的通知	Circular on issuing “Guiding opinions on conducting GP transfer training programmes in grassroots health organisations (pilot version)”
2010	卫生部办公厅关于印发《基层医疗卫生机构全科医生转岗培训大纲（试行）》的通知	Circular on issuing “GP transfer training outline (pilot version)”
2010	卫生部关于通过全科医师岗位培训转岗培训或规范化培训的医师变更执业范围的通知	Circular on the modification of licensed doctors’ practice scope through GP in-service training, transfer training or standardised residency training
2010	卫生部科教司关于报送 2010 年有关卫生人员培训情况的通知	Circular on submitting accounts of relevant health personnel training in 2010

2010	卫生部科教司关于开展基层社区卫生人员培训项目督查工作的通知	Circular on conducting an inspection of community health personnel training programmes at the grassroots level
2011	国务院办公厅关于印发医药卫生体制五项重点改革2011年度主要工作安排的通知	Circular on issuing the key work arrangements for the health system reform in five key aspects in 2011
2011	卫生部关于印发《医药卫生中长期人才发展规划（2011-2020年）》的通知	Circular on issuing “Plan on middle- and long-term development of human resources for health (2011–2020)”
2011	国家中医药管理局关于落实2011年农村订单定向医学生免费培养项目计划的通知	Circular on implementing the TRUMP programme in 2011
2011	卫生部办公厅关于做好2011年全科医生转岗培训工作的通知	Circular on well conducting the GP transfer training in 2011
2011	卫生部关于做好2011年中西部地区农村订单定向医学生免费培养工作的通知	Circular on well conducting the TRUMP programme in middle and western China in 2011
2011	卫生部科教司关于开展全科医生培训督导检查工作的通知	Circular on conducting an inspection of GP training programmes
2011	全民健康卫生人才保障工程实施方案	Implementation measure of the health talents project for national health
2011	国务院关于建立全科医生制度的指导意见	Guiding opinions on establishing a GP system
2011	国家中医药管理局关于印发《基层医疗卫生机构中医全科医生转岗培训大纲(试行)》的通知	Circular on issuing “TCM GP transfer training outline (pilot version)”
2011	国家中医药管理局关于开展首批中医全科医生规范化培训示范基地认定工作的通知	Circular on accrediting the first cohort of demonstration sites for standardized residency training of TCM GPs
2011	国家中医药管理局关于开展中医类别全科医师转岗培训工作总结的通知	Circular on reviewing the TCM GP transfer training programme

2011	卫生部妇社司关于征求社区卫生人员能力建设项目指导方案和培训大纲意见的函	Letter on seeking opinions regarding the guiding plan and training outline for the capacity building programme of community health personnel
2012	卫生部关于印发 2012 年卫生工作要点的通知	Circular on issuing the major health care tasks in 2012
2012	国务院关于印发“十二五”期间深化医药卫生体制改革规划暨实施方案的通知	Circular on issuing “Plan and implementation measure on deepening health system reform during the twelfth five-year plan period”
2012	国务院办公厅关于印发深化医药卫生体制改革 2012 年主要工作安排的通知	Circular on issuing “Key work arrangements for deepening health system reform in 2012”
2012	教育部、卫生部关于实施卓越医生教育培养计划的意见	Opinion on conducting the prominent doctor education project
2012	卫生部关于印发《全科医生规范化培养标准（试行）》的通知	Circular on issuing “Standardised residency training in general practice (GP-SRT) standards (pilot version)”
2012	国家中医药管理局医政司关于印发全国基层中医药工作先进单位检查评估专家手册 2012 年版的通知	Circular on issuing “Expert assessment booklet for national grassroots TCM institutions in 2012”
2012	卫生部、教育部关于印发《助理全科医生培训标准（试行）》的通知	Circular on issuing “Assistant GP residency training (AGP-RT) standards (pilot version)”
2012	教育部、卫生部关于实施临床医学教育综合改革的若干意见	Several opinions on conducting comprehensive education reform in clinical medicine
2012	卫生部办公厅关于印发《基层医疗卫生机构全科医生转岗培训合格证书》样式的通知	Circular on issuing the format of “certificate of completion of GP transfer training in grassroots health organisations”
2012	国务院关于印发卫生事业发展“十二五”规划的通知	Circular on issuing “The twelfth five-year plan on the development of health care”
2012	卫生部办公厅、教育部办公厅、财政部办公厅、国家中医药局办公室关于印发《全科医学师资培训实施意见(试行)》的通知	Circular on issuing “Implementation opinion on faculty development in general practice (pilot version)”

2013	卫生部关于印发 2013 年全国卫生工作会议文件的通知	Circular on issuing the documents of the national health conference in 2013
2013	卫生部关于印发 2013 年卫生工作要点的通知	Circular on issuing “Major tasks of health care in 2013”
2013	国家中医药管理局、卫生部、教育部关于印发《中医类别全科医生规范化培养标准（试行）》的通知	Circular on issuing “TCM GP-SRT standards (pilot version)”
2013	国务院办公厅关于巩固完善基本药物制度和基层运行新机制的意见	Opinion on improving the essential medicine system and the new operation mechanism at the grassroots level
2013	国务院学位委员会、教育部、国家卫生和计划生育委员会等关于做好临床医学（全科）硕士专业学位授予和人才培养工作的意见（试行）	Opinion on well conferring the master degree in clinical medicine (general practice) and cultivating talents (pilot version)
2013	关于印发开展全科医生特设岗位计划试点工作暂行办法的通知	Circular on issuing “Interim measures on piloting the GP special position plan (GP-SPP)”
2013	国家中医药管理局人事教育司关于开展首批国家中医药管理局中医住院医师、全科医生规范化培训(培养)基地申报认定工作的通知	Circular on conducting the declaration and accreditation of the first cohort of standardised residency training (SRT) sites for TCM residents and TCM GP residents
2014	国家卫生计生委医政医管局关于转发全科医生规范化培养基地设备配置标准的通知	Circular on forwarding the equipment allocation standards for the GP-SRT sites
2014	国家卫生和计划生育委员会、国家中医药管理局关于进一步深化城乡医院对口支援工作的意见	Opinion on further deepening the assistance from urban hospitals to their rural counterparts
2014	关于招聘特设岗位全科医生的公告	Announcement on recruiting GPs for the GP-SPP
2014	教育部、国家卫生计生委、国家中医药管理局等关于医教协同深化临床医学人才培养改革的意见	Opinion on deepening the education reform in clinical medicine through the coordination of the health and education sectors

2014	国家卫生计生委办公厅关于印发住院医师规范化培训基地认定标准（试行）和住院医师规范化培训内容与标准（试行）的通知	Circular on issuing “Accreditation standards of the SRT sites (pilot version)” and “Content and standards of the SRT (pilot version)”
2014	教育部办公厅、国家中医药管理局办公室关于开展卓越医生（中医）教育培养计划改革试点申报工作的通知	Circular on initiating the declaration of pilot reform sites for the prominent doctor (TCM) education project
2014	国家中医药管理局、国家卫生和计划生育委员会、教育部关于印发《中医住院医师规范化培训实施办法（试行）》等文件的通知	Circular on issuing the documents such as “Implementation measures of TCM SRT (pilot version)”

APPENDIX 2 SYLLABI

Issue Year	Outline/Standard	Who can join this training	Training Length	Training Arrangements			This training leads to	Comparisons and Comments
1999	GP-IST Outline (Pilot Version)	Licensed doctors who conduct the urban community health services	600 to 620 hours		Theoretical classes (hours)	Practice (hours)	Certificate of the completion of the GP-IST, which allows the doctors to change their registered practice scope to general practice	The most significant change from the 1999 Outline to the Outlines (2007 and 2010) is that theoretical classes are reduced greatly while the practice is increased.
				Brief introduction to general practice	48	4 - 8		
				Diagnostics	78	20 - 24		
				Preventive medicine	76	16		
				Common diseases	152	32 – 36		
				TCM	20	8		
				Care for the community's focal groups (the aged, women and children)	76	16 -24		
				Community rehabilitation	20	4		
				Total	500	100 - 120		
2007	GP-IST Outline	Licensed doctors (practice category: clinical medicine) who conduct the urban community health services	500 to 600 hours		Theoretical classes (hours)	Teaching in practice (hours)		
				Basics of general practice	40	16		
				GP medical care	136	192		
				Community prevention	32	28		
				Community care and rehabilitation	32	24		
				Total	240	260		
				Optional content	100			

				For the 260 hours of teaching in practice, the community placement should be no less than 60 hours				
2010	GP-IST Outline (2010 Version)		500 hours	Almost the same to the one above; drop the 100 hours of optional module				
2007	GP-BT Outline	Licensed doctors in urban CHOs; and Degree: vocational diploma or above; and Zhicheng: Doctor-in-Charge or above, or having more than five years' working experiences	10 months	1. Theoretical training (1 month) 2. Rotation of hospitals' clinical departments (8 months): internal medicine (4 months), surgery (0.5 month), obstetrics and gynaecology (0.5 month), paediatrics (0.5 month), infectious diseases (0.5 month), emergency (1 month), emergency before hospital admission (0.5 month), optional department (0.5 month) 3. Community placement (1 month): Theoretical training (1 week); Practice in the community (3 weeks): skills of general practice health care; care for community focus groups; general practice health care management; internship at (local) centres for disease control and prevention (CDCs) or preventive care organisations			Certificate of the completion of the GP-BT. No regulations can be found as to whether this certificate allows the doctors to change their practice scope, probably because this training is on a very small scale.	(1) From 1999 to 2011 (especially from 2006 to 2011), there was urban community health workforce training, which consisted of GP-IST, GP-BT and training for community nurses. (2) GP-BT is like a strengthened GP-IST for more senior doctors. (3) GP-BT, especially the 2010 version, is more like the following GP-TT.
2010	GP-BT (2010 Version)			Generally similar to the one above. Hospital department rotation is decreased to 7 months: internal medicine (4 months; compulsory), emergency (2 months; compulsory), optional departments (choose two from obstetrics and gynaecology, paediatrics, surgery and infectious diseases with each one taking 0.5 month) Practice in the community is increased to 7 weeks: skills of general practice health care; community chronic disease management; care for community focus groups; visit and internship at (local) centres for disease control and prevention as well as maternal and child health hospitals				
2007	TCM GP-IST Outline (Pilot Version)	Licensed doctors (practice category: TCM) who conduct the urban community health services	500 hours	Theoretical classes (hours)	Clinical practice (hours)	Practice in the community (hours)	Certificate of the Completion of TCM GP-IST, which allows the physicians	(1) TCM GP-IST is the TCM counterpart of GP-IST.

				Brief introduction to general practice	34	0	2	to change their practicing scope to general practice (practicing category is still TCM)	(2) Clinical practice means practice in the big hospitals, while practice in the community mainly means practice in the CHOs.
				Medical psychology and mental health	14	2	0		
				Preventive medicine	16	0	4		
				TCM care	24	0	24		
				TCM rehabilitation	12	4	8		
				Community basic diagnostic skills	16	16	0		
				Application of appropriate TCM skills (e.g. acupuncture)	32	32	0		
				Internal medicine	40	16	4		
				Surgery	36	16	4		
				Obstetrics	16	8	4		
				Paediatrics	16	8	4		
				Ophthalmology and otolaryngology	12	12	0		
				Skin diseases and sexually transmitted diseases	8	8	0		
				Infectious diseases	8	8	0		
				Emergency	16	16	0		
				Total	300	146	54		

2010	GP-TT (Pilot Version)	Officially- recognised doctors at GHOs	No less than 12 months	1. Theoretical training (no less than one month): 1) general practice and relevant theories, 2) doctor-patient relationship and interpersonal communication, 3) community rehabilitation, 4) community mental health, 5) preventive medicine (epidemiology and applied medical statistics; health education), 6) health information management, 7) others according to local needs 2. Clinical training (no less than 10 months) 1) Basic clinical training (no less than 40 hours or one week) 2) Rotation of clinical departments: internal medicine (4 months; compulsory), emergency (3 months; compulsory), departments such as surgery, obstetrics and gynaecology, psychiatry, infectious disease, psychiatry (in total 3 months, optional) In total, at least four departments should be chosen for rotation with the rotation time for each department no less than two weeks. 3. Grassroots placement (no less than one month): 1) skills of general practice health care, 2) community chronic disease management, 3) care for community focal groups, 4) visit and internship at (local) centres for disease control and prevention as well as maternal and child health hospitals, 5) grassroots health care management	Certificate of the completion of the GP-TT, which allows the physicians or assistant physicians to change their registered practicing scope to general practice	(1) From 2010 and 2011, the GP-TT replaces the urban community health workforce training (including GP-IST and GP-BT). (2) As many doctors have been trained through GP-IST in urban CHOs, GP-TT is mainly for those in township hospitals. Thus, it includes assistant doctors. (3) However, in terms of training arrangements, GP-TT is stricter than GP-IST and more like GP-BT.
2011	TCM Outline (Pilot Version)	Officially- recognised doctors at GHOs		1. Theoretical training (no less than one month): Brief introduction to TCM general practice (40 hours), medical psychology and mental health (16 hours), preventive medicine (16 hours), TCM care (24 hours), TCM rehabilitation (16 hours), Community basic diagnostic skills (16 hours), Application of appropriate TCM skills (e.g. acupuncture and massage) (32 hours) 2. Clinical training (no less than 10 months) 1) Clinical theory training (no less than 40 hours) 2) Rotation of clinical departments: TCM internal medicine (4 months; compulsory), emergency (2 months; compulsory), any four departments with each department taking no less than 1 month from TCM surgery, TCM obstetrics, TCM paediatrics,	Certificate of the Completion of TCM GP-TT, which allows the doctors to change their practice scope to general practice (practice category is still TCM)	TCM GP-TT is the TCM counterpart of GP-TT.

				TCM orthopaedics, acupuncture, massage, rehabilitation, and TCM ophthalmology and otolaryngology 3. Grassroots placement (no less than one month): 1) community TCM general practice health care, 2) community prevention and care (child care, the aged care, maternal care, the disabled care and family planning), 3) general practice health management		
1999	GP-SRT Outline (Pilot Version)	Those with a bachelor degree in medicine who plan to conduct urban community health services	4 Years	1. Theoretical study (3 months) General practice & family medicine (108 hours), preventive medicine (108 hours), rehabilitation (56 hours), oncology (16 hours), computer usage (24 hours) 2. Rotation of the hospital's clinical departments (33 months) internal medicine (14 months), surgery (3 months), infectious disease (1 month), paediatrics (2 months), obstetrics and gynaecology (1.5 months), ophthalmology (0.5 month), otolaryngology (0.5 month), dermatology (1 month), stomatology (0.5 month), psychiatry (1 month), emergency medicine (3 months), rehabilitation (1 month) 3. Community placement (12 months) 1) skills of general practice and community health services, 2) care for community focal groups (children, the aged, women and the disabled), 3) community health care management		
2012	GP-SRT Standards (Pilot Version)	Those with a bachelor degree in medicine who plan to conduct urban community health services	3 Years (Actual training time is no less than 33 months)	1. Theoretical training: 1) medical ethics and doctor-patient communication, 2) relevant laws and regulations, 3) research design and methods for clinical medicine, 4) relevant theories of clinical disciplines, 5) general practice, community health service and public health Certain period of time can be arranged to carry out all the theoretical training together. Alternatively, theoretical training can be distributed freely among the three-year training period. Theoretical training can be taken through diverse ways such as traditional classroom teaching, distance learning, lectures and clinical cases discussion.		

				2. Rotation of clinical departments in the hospital (in total 27 months): internal medicine (12), internal neurology (2), paediatrics (2), surgery (2), obstetrics and gynaecology (1), emergency medicine (3.5), dermatology (0.5), ophthalmology (0.5), otolaryngology (0.5), infectious disease (0.5), psychiatry (1), rehabilitation (0.5), traditional Chinese medicine (0.5), optional department(s) (0.5) 3. Grassroots placement (6 months) Skills on 1) general practice services, 2) prevention, health promotion and public health services and 3) grassroots health care management.		
2012	AGP-RT Standards (Pilot Version)	Medical graduates of the three-year medical school programme (with a vocational diploma)	2 years (104 weeks)	1. Theoretical training: 1) medical ethics and doctor-patient communication, 2) relevant laws and regulations, 3) research design and methods for clinical medicine, 4) relevant theories of clinical disciplines, 5) general practice, community health service and public health Certain period of time can be arranged to carry out all the theoretical training together. Alternatively, theoretical training can be distributed freely among the three-year training period. Theoretical training can be taken through diverse ways such as traditional classroom teaching, distance learning, lectures and clinical cases discussion. 2. Rotation of clinical departments in the hospital (in total 27 months): internal medicine (12), internal neurology (2), paediatrics (2), surgery (2), obstetrics and gynaecology (1), emergency medicine (3.5), dermatology (0.5), ophthalmology (0.5), otolaryngology (0.5), infectious disease (0.5), psychiatry (1), rehabilitation (0.5), traditional Chinese medicine (0.5), optional department(s) (0.5) 3. Grassroots placement (6 months) Skills on 1) general practice services, 2) prevention, health promotion and public health services and 3) grassroots health care management.		

2013	TCM GP-SRT Standards (Pilot Version)	Those with a bachelor degree in TCM or the combination of western medicine and TCM; or licensed doctor with the practice category of TCM; or those in the MM programme (TCM category and general practice direction)	3 Years (Actual training time is no less than 33 months)	1. Theoretical study (1 month): TCM general practice, Basic theories of community health management 2. Rotation of clinical departments (26 months): TCM internal medicine (10 months), TCM surgery (2 months), TCM obstetrics (1 month), TCM paediatrics (1 month), acupuncture (2 months), massage (1 month), rehabilitation (1 month), TCM orthopaedics (1 month), TCM ophthalmology and otolaryngology (1 month), emergency (3 months), general surgery (1 month), supporting department (e.g. radiology department) (1 month), optional department (1 month) 3. Grassroots placement (6 months): 1) Skills on TCM general practice and community health services, 2) health management (child care, the aged care, maternal care, the disabled care and family planning), 3) national basic public health services		
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APPENDIX 3 THE PUBLISHED PAPER

Zhu J, Li W, Chen L. Doctors in China: improving quality through modernisation of residency education.
Lancet 2016



Doctors in China: improving quality through modernisation of residency education

Jiming Zhu, Wenkai Li, Lincoln Chen

Lancet 2016; 388: 1922–29

Published Online
June 20, 2016

[http://dx.doi.org/10.1016/S0140-6736\(16\)00582-1](http://dx.doi.org/10.1016/S0140-6736(16)00582-1)

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China Medical Board, Beijing Office, Beijing, China (J Zhu, W Li MD); Nuffield Department of Population Health, University of Oxford, Oxford, UK (J Zhu); and China Medical Board, Cambridge, MA, USA (L Chen MD)

Correspondence to: Jiming Zhu, China Medical Board, Beijing Office, Beijing, 100730, China
jzhu@cmbfound.org

There is growing recognition that the ultimate success of China's ambitious health reform (enacted in 2009) and higher education reform (1998) depends on well educated health professionals who have the clinical, ethical, and human competencies necessary for the provision of quality services. In this Review, we describe and analyse graduate education of doctors in China by discussing the country's health workforce and their clinical residency education. China has launched a new system called the 5+3 (5 year undergraduate and 3 year residency [standardised residency training]), which aims to set national quality standards. To improve understanding for the Chinese model, we present a comparative perspective with systems from the UK and USA. To succeed, the 5+3 model will need to overcome major challenges of accreditation and certification, alternative education pathways, and China's unique degree and credentialing system. We conclude by reviewing the challenges of clinical competencies in China, especially the complementarity of specialist training and general practitioner training, which are essential for the quality and equity of China's health-care system.

Introduction

China is the world's most populous country, and so unsurprisingly has the world's largest health workforce: one of every five doctors in the world works in China.¹ Understanding the status of this large share of the global human resources in our interdependent health world is important. Driven by its vastness, shaped by its diversity, and moulded by its unique history, China is attempting to rapidly modernise and standardise its medical education. Recently, ambitious double reforms of its higher education and health-care systems have been instituted. Starting in 1998, stand-alone medical institutions and schools following the Soviet model were merged into comprehensive universities following the system of most countries in the Organisation of Economic Co-operation

and Development (OECD).² China's major health-care reform, launched in 2009, has been characterised by great expansion of health insurance coverage.³ However, patient satisfaction (a key metric of health-system performance) has been slower to improve,⁴ as reflected by escalating doctor–patient tension, distrust of doctors, and even violence in the workplace.^{5,6} Additionally, because China's health referral system is weak, Chinese patients seeking high-quality care are increasingly skipping primary care to flood directly into tertiary hospitals.

To ensure a basic minimum of quality among doctors, in 2013 China embarked upon a nationwide reform of medical education, called 5+3, encompassing 5 years of undergraduate medical study and 3 years of residency.⁷ The 3 year postgraduate medical education is called standardised residency training (SRT). To pursue these reforms, China has studied international experiences, such as those in the USA and UK. However, these developments are more complicated in China due to its vastness, diversity, and unique history. In this Review, we try to understand the new SRT reform and the many challenges China will have to overcome to produce qualified health professionals to meet the health needs of the Chinese population.

Human resources

China's total health workforce rose dramatically from 6·7 million people in 2006, to 10·2 million in 2014, of which 2·4 million are licensed doctors and 0·5 million are licensed assistant doctors (figure 1). These 2·9 million doctors mainly work at state-owned health institutions (ie, township, county, prefectural, provincial, and national hospitals) and are mostly state employees in a way similar to civil servants, rather than independent medical professionals. The influence of the previous medical education system in which doctors are educated as mechanics of the body cannot be easily overcome through the merger of stand-alone medical schools into comprehensive universities. Repeatedly, there are complaints over the lack of professional attributes, such

Search strategy and selection criteria

The data in this Review are mainly based on original government documents in Chinese language that are mostly publicly accessible. We searched two databases, "pkulaw" and "PLOC (Policies & Laws of China)". These two databases are the most inclusive for Chinese laws, regulations, and government documents. Additionally we searched all websites of Chinese Government departments, especially the Department of Health Science, Technology and Education under the National Health and Family Planning Commission, and the Department of Higher Education under the Ministry of Health. The search terms (originally in Chinese) were "standard residency training/education", "graduate medical education", "general practitioner training", "professional medical master", "China", and the combinations of these terms. We also applied these terms to PubMed, Scopus, OpenGrey, and China Knowledge Resource Integrated. We limited papers to those published in English or Chinese. Quantitative data are from China Health and Family Planning Statistical Yearbook 2015 by the National Health and Family Planning Commission.

as compassion, ethical standards, empathy with patients, and human interactions. Additionally, our search of data sources on China's health workforce show that China suffers from problems encountered in many countries—ie, shortages, maldistribution, and imbalances. The low nurse to doctor ratio (only one nurse per doctor; figure 1) severely constrains the clinical work environment and compromises delegation and teamwork.

Doctors in China are predominantly trained in western medicine, but 14.5% of them practise traditional Chinese medicine (panel 1). The surge in the size of China's health workforce has been mainly driven by the increase of nurses and licensed doctors, but the country has approximately 1 million village doctors, many of whom today are survivors, children, family members, or apprentices of the internationally famous barefoot doctors of the 1960s and 1970s. With China's transition in the late 1970s to a market-oriented economy, the barefoot doctor system collapsed, and in the early 1980s, barefoot doctors became village doctors if they could pass an examination.¹³ Many village doctors, who are not counted officially as doctors, are private practitioners working in their own clinics practising a combination of western medicine and traditional Chinese medicine (panel 1). Their share of the total workforce is declining (figure 1). The education and quality of Chinese doctors is highly variable. Many village doctors have not studied beyond grammar school. Among officially recognised doctors, about half have not achieved a bachelor degree. The huge diversity of education is a historical legacy, which, as we discuss later, will powerfully influence the success of SRT modernisation.

China's SRT in comparative analysis

To standardise the quality of Chinese doctors, seven government ministries jointly launched the SRT as a national strategy in 2013.⁷ Following the pilot model developed in Shanghai where the SRT has become mandatory (panel 2), the SRT will become compulsory nationally for all practising doctors by 2020. China's 5+3 model mandates 5 years of undergraduate medical studies (leading to a bachelor degree) followed by 3 years of residency (SRT) in one of 36 specialties. General practice or family medicine is considered one of the SRT specialties. Actually, China's SRT started in 2011, when China launched a plan to expand general practitioner (GP) training through 5+3.¹⁵ By the end of 2014, the first cohort of SRT resident doctors (totalling 55 000) were recruited in 30 Chinese provinces, around 10% of whom (5158) were enrolled as GP residents.¹⁶ Paralleling the establishment of the SRT under the National Health and Family Planning Commission (formerly Ministry of Health [MoH]), the Ministry of Education (MoE) has reformed China's medical master degree programmes.¹⁷ By distinguishing the professional practitioner master degree from the academic science master degree for researchers, the professional master degree (master of medicine; MM) programme, which also requires 3 years

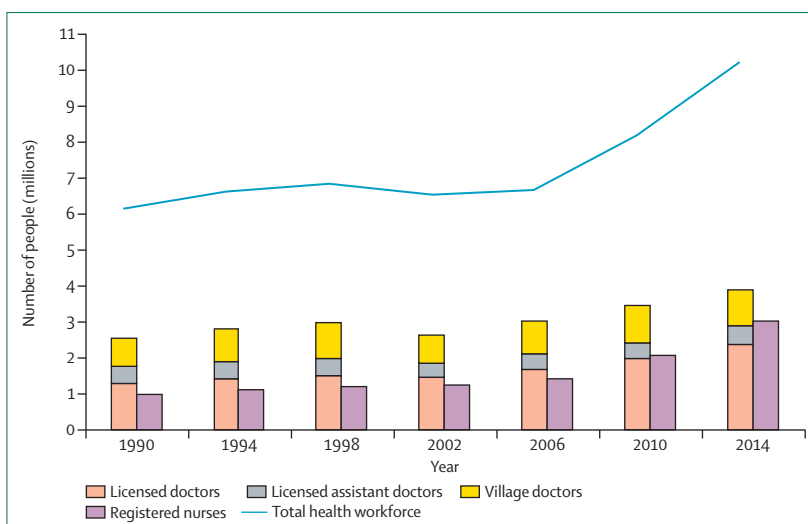


Figure 1: China's health workforce

Data are from National Health and Family Planning Commission.⁸

Panel 1: Traditional Chinese medical practitioners

Despite the large growth in western medicine, traditional Chinese medicine (TCM) plays a substantial health-care role in China. According to the official statistics,⁸ China has 43 635 TCM-specialised institutions, which were responsible for 659 million outpatient visits in 2014. Moreover, many western medicine institutions also offer TCM services (215 million visits in 2014). Altogether, TCM in 2014 accounted for 15.6% of China's total outpatient visits. In addition, nearly all village doctors practise some forms of TCM. Indeed, some have argued that the most important impact of the barefoot doctor movement was the introduction of western medicine for the first time alongside TCM throughout rural China. Chinese licensed doctors and assistant doctors are categorised into four practice categories: clinical medicine, TCM, dentistry, and public health. Clinical (ie, western medicine) doctors account for the majority (76.8%) of the 2.9 million officially recognised doctors, but TCM doctors are a significant proportion (14.5%). China's newly launched SRT tracks residents into 36 specialties: 27 for clinical medicine, seven for dentistry, and two for TCM.⁹

The efficacy of most TCM interventions has not been tested in randomised controlled trials,¹⁰ but TCM has contributed to some powerful medical interventions. For instance, Tu Youyou was awarded the Nobel Prize in Physiology or Medicine due to her participation in the discovery of artemisinin for malaria. Artemisinin was extracted from plants used in TCM.¹¹ Another example is Chen Zhu's work on a compound used in TCM to treat childhood leukaemia.¹² More importantly, there is a huge demand for TCM therapies such as acupuncture among the general public in China.

In China, TCM services are provided in all levels of health institutions, including community health-care centres, township hospitals, and tertiary hospitals. Many general hospitals, although dominated by western medicine, follow protocols that triage patients with symptoms to either TCM or western medical departments. China's TCM system is officially supported by the government under the State Administration of Traditional Chinese Medicine, a national agency affiliated to the National Health and Family Planning Commission.

of study, is a parallel channel to undertake residency education in China. In other words, there is the effort to make the MM programme equivalent to the SRT.¹⁸

Understanding China's SRT can be difficult, especially during the rapidly changing start-up phase in 2013 to 2020.

Panel 2: Shanghai pilot in residency education

China's new standardised residency training (SRT) can be viewed as the national expansion of a 2010 Shanghai pilot programme. Shanghai brought together all approximately 300 hospitals in the province under an accreditation system operated by the single Shanghai Medical Association (unlike the rest of China that has two professional associations: Chinese Medical Association and Chinese Medical Doctor Association). By bringing together faculty of the top hospitals into specialty subgroups, Shanghai was able to institute a certification system through peer testing by non-home-based hospitals to validate professional qualifications. The Shanghai government also offered to cover the salaries of approved residency positions.

The boldest aspect of the Shanghai pilot was designation of resident trainees as "Society Persons" rather than "Unit Persons". The vast majority of medical residents in China are Unit Persons, which locks a trainee into the same hospital for lifelong employment. Such a practice removes incentives to develop credentials or qualifications, since lifelong jobs are guaranteed at the start rather than end of residency. In China a unit refers to any formal organisation—eg, factory, hospital, school, bank, or government department. Before the SRT became compulsory in Shanghai, a medical graduate went job hunting and became a Unit Person of a hospital, which might or might not offer residency training. Society Persons are more like resident doctors in the UK or the USA who are in training and who will look for a full-time job only after qualification from the residency. Obviously, the mobility restriction of Unit Persons, beginning with residency, poses a barrier to achieving national standards, since high-quality and low-quality practices are perpetuated in silos of individual hospitals.

The shift from Unit Persons to Society Persons could be difficult in other Chinese provinces because China's workforce management system has been inherited from societal socialism and is beyond the control of the health sector. To make this shift successfully, Shanghai set up working committees among all of the relevant departments as well as a professional medical committee.

A second barrier Shanghai had to overcome is the diversity and credentialling of medical graduates. In 2010–12, there were about 2200 bachelor graduates, 3000 master graduates, and 800 doctorate graduates (total 6000 trainees);¹⁴ because of their different educational starting levels, they were assigned to take the SRT for 3 years, 2 years, and 1 year, respectively. Shanghai also tried to deal with Chinese affinity for degrees. In the Shanghai pilot, the 2200 bachelor graduate trainees were divided into two groups. For 1112 trainees, successful SRT completion led to not only a certificate but also a master of medicine (MM) degree, whereas the other half could not receive an MM degree. Some of them dropped out of the SRT to accept a master degree programme in other provinces. Similarly, some of the 3000 master graduate trainees dropped out of the SRT to accept a doctorate programme in other provinces. Shanghai's experience suggests that, at this time, a master or doctorate degree is more attractive than a certificate of SRT completion.

Although relatively well established, Shanghai SRT still needs improvement. Little attention has been rigorously paid to the specific content of the SRT. The training arrangement of each specialty for the Shanghai SRT is parallel rotations rather than a progressive programme, which residency education is supposed to be. The nationwide SRT has inherited this flaw.

Here we present a framework for medical education by drawing on the established models from the USA and UK. A medical education system can be divided into three stages: medical school, graduate medical education, and continuing education (figure 2). Entry to medical schooling can be directly out of secondary school (eg, the UK model) or directly from college graduation (eg, the US model). After successful completion of entry-level medical education, graduating doctors are usually

required to start the second stage, clinical training, which consists of practice under supervision to gain qualification for independent practice. This stage is mainly based in clinical settings such as hospitals and allied health facilities. The third stage is continuing education, which is career-long so that medical doctors' knowledge will be updated for continuing practice. People wishing to enter a US medical school have to obtain a bachelor degree first. Medical school takes an additional 4 years leading to the degree doctor of medicine (MD). By contrast, in medical schools in the UK an undergraduate medical education takes typically 5 years to get a bachelor of medicine, bachelor of surgery (MBBS). Most students in the UK directly go to medical schools from secondary school, but those who have already had a bachelor degree can still apply for medical schools. 16 UK medical schools offer graduate entry courses in medicine, which similar to the US, takes 4 years, but leads an MBBS degree. In fact, the MBBS and MD serve the same function. Both of them are considered to be the primary medical qualification, an essential prerequisite for joining the medical profession.

After graduating from medical school, medical doctors in the USA are required to take residency training in recognised specialties. Internship in the USA is done in the first year of the residency, whereas in China, internship (or clerkship) is not considered part of residency and can begin in the last year of medical schools. A new medical graduate in the UK must first take the 2 year foundation programme, no matter which specialty they plan to pursue; at this stage, they will not yet have started specialisation. Some misunderstand that the UK's foundation program is equivalent to GP training. However, general practice (or family medicine in the US) is classified as a specialty, requiring an additional 3 years of specialty training beyond the foundation programme. From this angle, GPs are specialists in general practice. Therefore, the UK's specialty (including general practice) training after the foundation programme is like the residency training of the USA. The length of the specialty or residency training varies according to specialisation. The shortest is general practice or family medicine—3 years in the UK and USA. People who successfully complete the specialty training in the UK are awarded a certificate that requires passing the examination of the relevant specialty Royal College. For instance, membership in the Royal College of General Practitioners (MRCGP) requires passing an exam to acquire a certificate that allows the doctor to practise independently. In the USA, a doctor at the end of residency achieves specialty certification by passing a demanding examination by one of the American boards. Of note, the main purpose of graduate medical education in the USA and the UK is to train qualified practitioners rather than academics. The certificate in the UK and board certification in the USA both serve as

	Stage 1: Medical school	Stage 2: Graduate medical education		Stage 3: Continuing education
USA	MD programme (entry after bachelors)	Residency training		Fellowship training
UK	MBBS programme*	Foundation programme	Specialty (including general practice) training	
China 5+3+X	Bachelor programme (5 years)	Standardised residency training (3 years)		Standardised subspecialty training (X years)
				Career-long*

Figure 2: Three stages of medical education

MD=doctor of medicine. MBBS=bachelor of medicine, bachelor of surgery. *16 medical schools in the UK also offer graduate-entry medical programmes, similar to the USA model but leading to an MBBS degree.

the credentials for independent practice, but neither of them is a degree. In the USA, there might be more demanding MD-PhD joint programmes, but most of them aim to produce physician scientists.

When it comes to China's ideal medical education system (figure 2), the 5 is very similar to the UK's MB BS programme. This Review focuses on the 3—China's new SRT. Actually, China's plan for an ideal medical education system is more ambitious. Following the 3 year compulsory SRT will be X year subspecialty training, which is being piloted in some developed regions such as Shanghai. The 3+X is China's graduate medical education, split into the compulsory SRT (3 years) and optional subspecialty training (X years). This Review mainly analyses the 3 (ie, the SRT), since the nationwide SRT in itself is new and has many challenges, nevermind the X. Without a solid 3, the X is impossible. Almost all the challenges for the 3 are applicable to the X. The SRT tracks residents into 36 specialties (including two for traditional Chinese medicine). From this angle, China's SRT is similar to the US residency training or the UK specialty training. Nonetheless, the length of the US residency training or the UK specialty training varies according to the specialties; the US residency training takes 3–7 years, whereas China's SRT takes 3 years for all the 36 specialties. China's X in the final training sequence is subspecialty residency training, similar to the US fellowship. However, the specialties and the following subspecialties can be divergent between countries. In the US model, surgery, thoracic surgery, and neurosurgery are all specialties of the residency rather than subspecialty fellowships. China followed the US model in this respect, and the 36 specialties of its SRT include these areas. As China is now moving to standardise the X, appropriate design of the subspecialties and their respective length based on the existing SRT 36 specialties will require careful consideration.

Challenges

Obstacles

By launching the nationwide SRT, which is backed by substantial public financing, the Chinese Government has adopted an ambitious plan to improve the quality of medical doctors. Although appearing straight-forward, SRT reform will be extremely challenging to implement.

Here we present three major obstacles: quality standardisation, alternative educational pathways, and degrees and credentials.

Quality standardisation

What will be China's mechanisms to ensure that residency education in the SRT will produce competent doctors? Accreditation of training institutions and certification of residency graduates are essential steps that China is now instituting following the pattern of other industrialised countries. Because of the uniqueness of the Chinese context, a 2010 pilot reform of residency training in Shanghai has identified many of the barriers that must be tackled (panel 2).

Accreditation is challenging in China because medical facilities have remained silos of professional practice with little horizontal professional mobility or quality assurance. The government has issued policies and regulations, but professional bodies have not been active in ensuring quality across different service units. Consequently, China is now systematically and rigorously accrediting its medical schools. In the USA, the Liaison Committee on Medical Education (LCME) has the authority to accredit MD programmes, while residency programmes are accredited by the Accreditation Council for Graduate Medical Education (ACGME). In the UK, the General Medical Council (GMC) is in charge of all the stages of medical education, and guarantees their quality and standards. In China, the Chinese Medical Doctor Association (CMDA) has been designated to manage the details of SRT accreditation. Within a very short period of time, it has accredited 559 training bases (ie, hospitals) geographically distributed across China. CMDA's capacity for this crucial work might need strengthening with regard to professional expertise, acceptance of its authority, and financial resources. In addition, the Chinese Medical Association (CMA), which is a much older and more influential professional body, is mainly an academic society. In order to sustainably secure the quality of the SRT programmes, the roles of the professional associations should be clarified and their capacities strengthened.

Residents, upon successful completion of the SRT, must achieve individual certification. Again, China will need to establish a new mechanism for professional

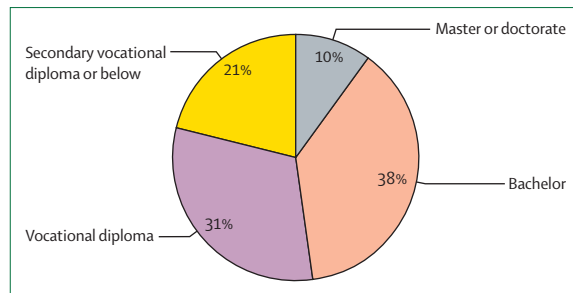


Figure 3: China's doctors and assistant doctors by education level in 2014
Data are from National Health and Family Planning Commission.⁸

certification. What are the quality standards for the certification and who will set the standards? As described earlier, this certification is done by the specialty boards in the US and the relevant Royal Colleges in the UK. In China, there are respective specialty committees of the CMDA and CMA, but these have not conducted certification functions. Shanghai's model, by bringing hospital faculty leaders together, has successfully piloted new accreditation and certification mechanisms, but many attributes in Shanghai are not replicable in other Chinese provinces.

There are other Chinese barriers to quality standardisation. Because the SRT is new, the capability of clinical teaching faculty is mixed. Enhancing faculty capacity and leadership in accreditation and certification through the training of trainers has been suggested. Also, a mechanism is needed to match medical graduates with the available SRT positions. China does not have a national system, thereby forcing medical graduates to scramble for few positions. Lastly, most residency trainees in China are permanent employees who will work in the same hospital virtually from their entry into an SRT position until they retire. Quality standardisation is not possible unless there is the risk of failure to achieve qualifications. Job permanence and poor mobility jeopardise incentives for practitioners to seek quality standardisation. The biggest achievement of the Shanghai SRT reform is probably to overcome this restriction by changing the classification of residents as trainees, and therefore not yet permanent lifelong employees of the hospital.

Alternative educational pathways

Chinese policies, following the US and UK models, currently focus on the main pathway to train doctors. It should be noted, however, that nearly half of China's physicians (2.4 million licensed doctors plus 0.5 million assistant doctors) have educational achievement lower than a bachelor degree (figure 3). When China was a low-income country and adopted the Soviet education and health models, abbreviated training programmes were launched leading to alternative pathways for becoming a doctor.

Beyond higher medical universities, China also has lower medical schools, so-called junior medical colleges.

In these junior medical colleges, 3 years of study after high school can lead to a vocational diploma (*Zhuan Ke*). These junior medical colleges are part of China's institutions of higher education. Furthermore, China has educational institutions even lower than junior medical colleges. When the People's Republic of China was established in 1949, it launched more than 320 secondary vocational schools in order to meet the urgent demand for health workforce. Since then, 3 years of study or less after middle school at these secondary vocational schools can lead to a secondary vocational diploma (*Zhong Zhuan*). According to Chinese law from 1999, people with these two diplomas can become assistant doctors.¹⁹ Then with several years of work experience and after passing an examination, they can ultimately obtain full doctor licensure. In other words, this alternative pathway offers a legitimate entry into medical professional practice without completing a bachelor degree.

As China's overall education system advances, these two vocational tracks appear to be receding. Figure 1 shows that the proportion of diploma-graduate doctors (licensed assistant doctors) is decreasing over time, albeit in 2012 there were about 63 000 diploma graduates out of 164 000 graduates in clinical medicine.² These vocational schools now mainly train nurses and allied health professionals. Although still theoretically possible, it is rare today for someone with only a secondary vocational diploma to finally become a licensed doctor, but the 3 year programmes at junior medical colleges remain common, especially in the middle and western provinces of China.

The new SRT will enrol all 5 year medical graduates through the main pathway. But how will China deal with the alternative pathway of vocational graduates? The government seems to be aiming these junior medical school graduates to take 2 year instead of 3 year residency training. Doctors trained through this 3+2 track would not be expected to be comparable to the 5+3 track trained doctors. Because they are less well educated than are those with a 5+3 track, they are more likely to be assigned to work in rural and remote areas.

Degrees and credentials

Due to the lack of well established residency education and professional certification, Chinese medical doctors' clinical competency is often judged through their educational degrees. Doctors with a higher degree are more likely to find a job in a higher-level hospital where they can receive better and more organised training. Also, medical degrees are associated with the doctor's future medical career progression and their income. Across time this degree-centred system has led to much higher quality variance of medical doctors, as well as obscure demarcation of scientific research competency versus clinical practice competency.

China has adopted two strategies to address this degree and credentialing problem. One is the medical master degree led by the MoE to clarify professional degrees

(eg, MM and MD) versus academic science degrees (eg, MSc and PhD). The other is the nationwide SRT (plus X) led by the National Health and Family Planning Commission, which issues its own certificate of SRT (plus X) completion. China, thus, has two channels to receive residency education—the SRT and the equivalent professional master programme. However, whether the professional qualification (ie, SRT or X certificate) can achieve public and professional recognition remains uncertain. Many people, including medical students and doctors, still prefer a higher medical degree as the more established credential, as demonstrated in the Shanghai pilot (panel 2). As a pragmatic solution to overcome the historical mismatch of degrees and professional practice, China is trying to integrate the SRT with the MM programmes, and the X with the doctorate programmes. However, this arrangement risks further blurring the boundary between professional practice and academic science. Without clear understanding of the clinical and academic research competency, it will be very difficult to set up well recognised national quality standards for residency education. Further exacerbating the situation is how to integrate graduates of China's elite 8 year MD programme offered by the very top medical schools smoothly into this nationally-mandated 5 + 3 + X pattern (panel 3).

Discussion

The term doctor has been used variably in China throughout its history. It can mean village doctors, the remnant of the barefoot doctor movement of 1960s and 1970s. It can also mean a secondary vocational school graduate, similar to the former Soviet assistant doctors. Nowadays, new Chinese doctors entering the medical profession are mainly licensed doctors, with a smaller proportion of licensed assistant doctors. However, the process of replacing old village doctors with these new officially recognised doctors is extremely slow—the absolute number of village doctors has been steadily around 1 million for decades. This implies that several rounds of health reforms in China have not found a sustainable mechanism to motivate more qualified doctors to work at the grassroots level. In other words, village doctors have to be there to fill in the vacuum, and a range of doctors will still coexist in China for a long time.

This diversity of Chinese doctors reflects the country's complicated historical legacy. Although China's first formal clinical residency programme following the Johns Hopkins model started in 1921 at the Peking Union Medical College Hospital and then several other leading national university hospitals; for most general medical graduates in China, the importance of residency education to become a quality doctor did not get the attention it deserved nationally. To establish the SRT, China will have to develop accreditation and certification mechanisms applicable to the entire country. The

Panel 3: The 8 year run-through programme in the era of SRT

Most of China's medical school education is the 5 year programme leading to a bachelor degree. However, some leading medical schools in China were privileged to offer a 7 year and an 8 year run-through programme, leading directly to a master degree and a doctorate, respectively. The uniform 5 + 3 + X reform that China is promoting puts these two traditionally privileged programmes into an awkward position. In fact, due to the establishment of the SRT, the 7 year run-through programmes have been completely phased out, leaving only the 8 year ones struggling.

Should the 8 year programme be phased out too? The 8 year programme students generally represent China's best medical students, and its graduates are the top quality resident doctors. One ultimate goal of China's residency education is to improve the quality of medical doctors. Accordingly, lowering the top elite programme (which usually contributes to the highest quality residents) to adapt to the national standards might not be wise. The 8+ pattern might potentially become complementary to the national 5 + 3 + X model, in a strengthened way.

How to make this happen? The first step is probably to reach a consensus among these 8 year programmes. Currently, the curriculums of China's 8 year programmes are hugely different. Peking Union Medical College (PUMC) runs the most time-honoured 8 year programme in China by generally following the US model used since its establishment by the China Medical Board, an American foundation. For another distinguished medical school Peking University Health Science Centre (PUHSC), almost the last 3 years of its 8 year programme are internships in an affiliated teaching hospital. In terms of the different nature of the 8 year programmes at PUMC and PUHSC, it makes more sense for the PUMC graduates to take the 3 year SRT, whereas it might be a waste of resources and time for the PUHSC graduates to take the full 3 year SRT. However, this diversity of 8 year programmes, which leads to various arrangements for the SRT, is confusing among medical students and faculty.

influence of the Soviet system has entrenched the vocational graduate pathways that still remain open. The degree-centred system has led to a preoccupation for degrees rather than professional practice quality. Sorting through these unique Chinese challenges will take time, perhaps decades or even a generation, to achieve uniform quality standard across all of China.

Ultimately what is desired for practising doctors is relevant and effective professional competencies. Although the clinical practice competency is inherently associated with skills in the academic sciences, it does not align perfectly with academic competency. One big difference between China's residency education and the UK or US models is that the SRT is entangled with a medical degree. These practice and professional-degree channels will likely coexist for some time, but the specific requirements for the clinical practice competency and the academic science competency need to be made explicit.

Even more important at this time are the domains of competencies beyond the biological science. There are deep concerns about the humanistic competencies required for a service profession—ie, communication and empathy with patients, working with families in teams, cultural and human interactions, ethical standards, and dedication to patients. Some have labelled these competencies professionalism, which has been weak in China's education system.²⁰ Beyond learning about

professionalism through classroom courses in medical school, professional values and conduct are mostly shaped during the residency through mentorship, supervision, and hands-on practice in real-world situations.²¹ Given the high doctor–patient tensions in China, the inculcation of humanistic practice is especially important in the SRT to nurture humanistic professional competencies.

China's SRT is complementary to the country's push for improved training for GPs; the former attempts to upgrade the quality of clinical practice, whereas the latter addresses the challenge of health equity and universal primary care coverage. Rather than competition, the key is to search for synergy and complementarity between advanced specialty and general practitioner training. Well trained SRT graduates could constitute the teaching faculty of GPs. Many GPs trained through the 5+3 model might not be willing to work in rural and remote areas. The 3+2 model for assistant GPs could represent the best alternative for equity in health. Many of China's challenges are due to the dominance or lack of medical elitism. Medical elitism can promote technical quality, but also restrict universal access. In the USA, the 1910 Flexner revolution closed the second-level schools and, consequently, poor patients were deprived of access. But recognising this gap, the USA is today training nurse practitioners and physician assistants for the rural poor. There is a delicate balance between the quality of care (medical elitism) and access (equity of providers). But practitioners serving both purposes can be made complementary and need not conflict with each other.

China has a strong government, and the coordination among the National Health and Family Planning Commission and the MoE is especially important. But much of the SRT reform will also have to achieve coordination with other ministries (eg, finance, human resources, civil affairs, and state commission office for public sector reform [SCOPSR]). The jurisdiction of these government sectors relates to many other social reforms (such as China's household registration system and the general workforce, employment, and salary management), which govern key aspects of the SRT. The power retained by many of these strong government sectors affects the professional autonomy. In many countries such as the UK and US, professional matters like the SRT are not considered government functions, but rather the responsibility of professional associations. It is well recognised that government alone does not perform well in professional education and oversight.

In China, government leadership is essential. Neither the CMDA nor the CMA has sufficient experience in the residency education. Does the future depend upon capacity building of China's professional associations? At present, high-quality professional expertise is only present in a few top hospitals. That is why among the 559 training bases designated by the CMDA, 24 hospitals have been chosen as demonstration bases, presumably because of their exemplar faculty and residency

programmes. Moreover, with the support of the China Medical Board (CMB), seven leading teaching hospitals of these 24 demonstration bases have just formed the China Consortium of Elite Teaching Hospitals for Residency Education. This cascade of expertise could be a useful step towards advancing quality standards, developing accreditation and certification, and overcoming institutional rigidities. China in the 21st century must produce world-class clinicians to a standard that is competitive with both domestic and international standards, based on an effective SRT educational system that is accepted and desired by the Chinese people themselves.

Conclusion

Following international practices, China has launched the key steps toward a national SRT system to produce doctors with the professional, clinical, ethical, and human competencies essential for the quality of clinical services wanted by an increasingly wealthy Chinese public. The imbalance between people's expectation due to the rapid economic improvement and the lagging behind of medical education is one of the key obstacles in China's health reform. The current SRT modernisation might be viewed as a fundamental reform to restore public trust in the medical profession and achieve greater patient satisfaction.

By no means will reform of SRT be easy or fast. Even though the SRT has become a national strategy backed by substantial public financing, without the necessary professional leadership and quality control (guaranteed by rigorous accreditation, certification, and faculty development) the SRT risks going through the motions. Whether China's residency education will be successful can only be judged by the test of time. Monitoring, evaluation, and adjustment of the SRT will need to be done systematically and repeatedly. In addition, the SRT reform is part of China's broad social changes, and many contributing factors are far beyond the health sector (as well as the scope of this Review). The eventual success of China's double reforms, including the SRT, will depend on how effectively they improve a set of imbedded historical legacies now undergoing dramatic and rapid change.

Contributors

All the authors participated in the study design and in producing the paper's framework. JZ researched the literature, undertook data collection and analysis, and produced the first draft. LC and WL joined JZ in restructuring, rewriting, and editing the final paper.

Declaration of interests

We declare no competing interests.

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