Family Medicine and Community Health
REVIEW

Primary health care, a concept to be fully understood and implemented in current China's health care reform

Guoping Xu[1], Jiaji Wang[2]

Abstract

The English concept "primary health care" (PHC) has been misunderstood and wrongly interpreted in Chinese as "entry-level health care" (初级卫生保健) for more than a half century. On the other hand, specialty care was considered "advanced health care." This misconception of PHC permeated the government and the health care field with many negative consequences for China's vision of its health care and development strategy, in areas such as government policy-making, health care financing, infrastructure planning, and health care workforce training. This article elucidates how PHC has been misconstrued and translated into "entry-level health care" in China and why it is a wrong interpretation of the PHC concept from various angles, including the basic English meaning of "primary" and "health care," the concept of comprehensive PHC, the global PHC experience, and the harmful consequences of the misconception in China's PHC development and in society at large. China's current new health care reform toward a PHC-centered health system has made significant early achievements, but also faces huge challenges, including the widespread and ingrained misconception of PHC. It is hoped that academic scholars in the health care field, medical professionals, and officials in the government will gain clearer insight into the PHC concept and rectify its harmful effects on PHC development in various sectors, and promote advancement of meaningful health care reform applicable to the masses.

Keywords: Primary health care; 初级卫生保健; entry-level health care; mandarin misconception

1. Johns Hopkins Community Physicians at Frederick, Johns Hopkins Medicine, Baltimore, MD 21702, USA

2. School of Public Health, Guangzhou Medical University, Guangzhou 510182, China

CORRESPONDING AUTHOR:
Jiaji Wang
School of Public Health, Guangzhou Medical University, Guangzhou 510182, China
E-mail: wjiaji@163.com

Received 9 July 2015;
Accepted 19 August 2015

Introduction

Primary health care (PHC) has played a crucial role in promoting human health, improving people's well-being, and building a harmonious modern society [1–3]. PHC is the foundation of health care systems for all developed countries (including to a lesser extent in the United States), and for some developing countries. In China, considerable progress in PHC development has been made since the founding of the People's Republic of China in 1949, and further improvements have been achieved since 2009 under China's new health care reform, which came with a comprehensive reform strategy and an ultimate goal of a PHC-centered health system [4]. China's health care development has been blessed with various advantages from China's new sociopolitical system: years of continuous reform, a spectacular economic boom, and the central government's support. However, China's current health care system and services are still far from satisfactory in meeting people's health needs, and have been falling behind those of many other countries [1]. Many contributing

Family Medicine and Community Health 2015;3(3):41–51
www.fmch-journal.org DOI 10.15212/FMCH.2015.0127

factors to today's unsatisfactory status have been studied and discussed extensively [1, 4–9] The health care field and society in general, however, have not paid adequate attention to one important confounding factor: the misconception of PHC, which has been mistakenly interpreted and disseminated in China as "entry-level health care" (初级卫生保健) [10]. On the other hand, specialty care incorporating high-tech services has developed as "advanced care," especially since the collapse of the low-level PHC system from the early 1980s. This article discusses how the PHC concept was misunderstood and inaccurately translated into the Chinese language, its negative impact on China's many decades of health care evolution, and the importance of fully understanding the PHC concept for the future development of China's PHC-centered health care.

"Entry-level health care" (初级卫生保健), a misunderstood and inaccurately interpreted concept of PHC in China

The English phrase "primary health care" (PHC) has been translated into Mandarin as "entry-level health care" (初级卫生保健) in almost all Chinese health care literature for decades. This Mandarin translation has been officially adopted by the Chinese government and all international institutions such as the WHO, UNICEF, and the World Bank in the Chinese versions of their documentation [11–13]. However, this Mandarin translation is problematic, and its implication is completely contrary to the original concept of PHC as defined by the WHO: PHC is an essential health care, or the most important health care with a comprehensive context [1, 14, 15]. Although PHC may act as entry and gatekeeper as a part of its function, the Mandarin PHC translation (初级卫生保健) ("entry-level health care") emphasizes only one aspect of PHC.

Accurate understanding of the concepts of "primary" and "health care"

As defined by Google, "primary" means "of chief importance; principal" or "earliest in time or order of development" [16]. In the Merriam-Webster dictionary, "primary" means "most important," "most basic or essential," or "happening or coming first" [17]. The term "primary" has been typically translated in Chinese health care literature as 初级, meaning "early stage," "low level," "entry level," "junior," "elementary," "simple," or "rudimentary." The core meaning of "primary" as the "most important, essential or principal" is totally lost in these Chinese translations. Rather, "primary" as "early development/stage" is overemphasized and translated as 初级, which has negative connotations such as "entry level," "rudimentary level," and "low level.".

In English "health care" is defined as "the maintenance and restoration of health by the treatment and prevention of disease especially by trained and licensed professionals (as related to medicine, dentistry, clinical psychology, and public health)" [18]. Therefore, health care is generally presented in a well-organized fashion by the government, community, or organization, and practiced by well-trained professionals. An accurate interpretation of the phrase in Chinese should be医疗卫生服务. In Chinese culture and mass media, however, "health care" has been often interpreted as 保健, 养生保健, or 卫生保健, loosely meaning "self health protection," which has been practiced in China for thousands of years. It refers to various techniques and methods that people undertake in order to maintain health, reduce disease, and achieve longevity, such as keeping high spirits, watching one's diet, taking appropriate traditional Chinese medicine supplements, practicing physical exercise, and moderating sexual activities. As result, the concept of "PHC" interpreted as "entry-level health care" (初级卫生保健) is further degraded into "entry (or simple, low) level self health protection" in the minds of the Chinese masses, and has been regarded for long time as a task that could be accomplished by the people themselves with a little assistance from low-level care provided by minimally trained health workers.

At its earliest stage, China's health care was indeed rudimentary as the country arose from the ashes of a cruel civil war and the aftermath of the Japanese invasion in World War II, and was extremely poor. Its health care system was popularly exemplified by the "barefoot doctors" and the "Rural Cooperative Medical System", and the country successfully implemented universal low level PHC with equality. These achievements were acclaimed by the WHO as a PHC model for developing countries, and were a major inspiration for the Declaration of Alma-Ata in defining the modern PHC concept [14]. The Declaration of Alma-Ata jump-started a global PHC movement and opened a new chapter in health care history. However, the concept of "PHC" in the Declaration of Alma-Ata was substantially sublimated from the China's model and early

practices of other countries with a much more comprehensive and dynamic context. The comprehensive PHC emphasizes an ongoing adaptation of appropriate PHC for each development stage in a society in order to meet the needs of its people. A restrictive interpretation of PHC as "entry-level health care" might serve a practical purpose in a country with early-stage socioeconomic and PHC development. China's early achievement, however, should not be used to define the PHC concept narrowly, as the Mandarin interpretation as "entry-level health care" implies.

Defining PHC

The first appearance of the term "primary health care" (PHC) may date back to the 1920s in an official United Kingdom white paper on health care [2]. In 1978, the WHO/UNICEF for the first time adopted PHC as the foundation for effective delivery of all health care service, as defined in the Declaration of Alma-Ata:

> *Primary health care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination. It forms an integral part both of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community [14].*

PHC is both a philosophy of health care and an approach for health care reform. The main goals and values of a PHC-centered health system are to achieve the highest attainable level of health for all in a society. Such a system is guided by the PHC principles of responsiveness to people's health needs, quality orientation, government accountability, universal availability of care with equity, sustainability, full participation, and intersectoriality. The PHC-centered health system is composed of a core set of functional and structural elements that guarantee universal coverage and access to appropriate health care [19, 20].

Although a major initiator of the first international PHC conference at Alma-Ata, China unfortunately could not attend the conference because of Sino-Soviet tension. The Soviet Union offered a generous sponsor fund of US$2 million for the conference, with one condition: the conference should take place on Soviet soil. As the Sino-Soviet conflict had been worsening since the 1960s, China was absent from the conference [21]. Soon after the Declaration of Alma-Ata, the PHC concept came under heavy scrutiny. Two sponsors, the WHO and UNICEF, fiercely debated between themselves over comprehensive versus selective PHC, which caused global confusion regarding the PHC concept [21, 22]. These international organizations failed to interpret the PHC concept accurately in Mandarin as well, which used the misleading Mandarin term "entry-level health care" (初级卫生保健) in all the official Chinese versions of their documentation [11–13]. Unfortunately, this Chinese term directly contradicted the very essence of PHC in the Declaration of Alma-Ata. This mistranslation also reinforced the Chinese government's conviction in a mistaken version of the PHC concept. China's early health system collapsed unexpectedly soon after the Declaration of Alma-Ata.

Over time, significant variation of the PHC concept arose among countries and organizations, such as "comprehensive PHC," "selective PHC," "primary care," "vertical program," and "entry level health care" in China. There is a growing global convergence, however, as more organizations and countries embrace the principles and values of comprehensive PHC, especially in those countries with advanced health care systems [1, 19]. The WHO renewed the PHC concept in 2008 and reemphasized PHC values as "pursuing social justice and the right to better health for all, participation and solidarity" [1]. Almost all developed countries (except the United States) have adopted comprehensive PHC-based health systems, such as in Australia [23], Canada [24], and the United Kingdom [25], and have achieved better health outcomes [1].

Many developing countries took a narrow interpretation of PHC and have adopted selective versions of PHC called "vertical programs," concentrating on a limited number of high-impact interventions to address some of their most prevalent health challenges, such as child mortality and infectious diseases. This narrow approach has been criticized for ignoring

the wider context of social and economic development, for being unable to address the fundamental causes of ill health, and for creating more health care inequalities [1, 19].

From a clinical care perspective

PHC not only covers entry-level or low-level care, but is also a major care force for prevention and clinical care of many common, high-risk conditions such as diabetes, hypertension, dyslipidemia, cardiovascular disease, cerebrovascular diseases, and cancers. PHC functions both in delivering public health and medical care to individuals, families, and communities in a first contact, comprehensive, and longitudinal fashion, and in coordinating care among various specialties (primary, secondary, and tertiary care) and social networks in an integrated fashion. In most developed countries PHC manages at a high quality about 80% of clinical care needs. So-called entry-level health care with low-level providers and low-level service cannot assume such tasks. According to the care context, patients' illness severity, care locality, and provider specialties, modern health care activities are generally organized and structured into three layers: primary care (interpreted accurately in Mandarin as 基本/基础/一级医疗服务), secondary care (二级医疗服务), and tertiary care (三级医疗服务). They should not be interpreted in Chinese as entry-level care (初级医疗服务), mid-level care (中级医疗服务), or advanced-level care (高级医疗服务). PHC has primary care at its core, and the principles and values of PHC extend to all aspects of primary, secondary, and tertiary care, as well as public health throughout the entire health system [20]. The most efficient and successful health system is a PHC-based health system with integrated secondary and tertiary care [1–3].

From a PHC workforce perspective

In developed countries that have successfully implemented PHC, primary care providers (PCPs) generally consist of clinical physicians and mid-level providers such as nurse practitioners, physician assistants, and midwives. Most PCPs are clinical physicians, who have graduated from medical schools and completed clinical residency training programs. A small portion of PCPs are mid-level nurse practitioners and physician assistants (around 10–20%), who have the equivalent of medical master degrees and clinical internship training. They generally practice in a physician-led care team. Low-level health workers in a care team consist of registered nurses and licensed practical nurses with bachelor or associate degrees. In developing or underdeveloped countries, however, PCPs consist largely of mid-level and low-level health workers and even minimally trained personnel. During early PHC development or where resources are limited, entry-level or low-level care provided largely by mid-level or low-level health workers may meet most people's health needs, such as China's early success with the "barefoot doctor" model. However, PHC must advance in response to people's health needs, and the PHC workforce must be upgraded accordingly. PHC workforce building is the most complicated and time-consuming system engineering in the PHC reform, and involves a series of long-term central government policies on human resource management, financial investment, and health workforce training.

PHC development dynamics

PHC as a policy and strategy for health care improvement should be understood as a dynamic concept, a broad framework or a philosophy of health care for any given society, and not a fixed work plan that can be uniformly implemented across all countries or at any health care development stage [1]. The values and goals of PHC are to achieve the highest attainable level of health for all in a society; therefore, PHC should be responsive to the people's health needs, as appropriate, acceptable, affordable, and accessible depending on the stage of development [19, 20]. There are four major dynamic forces at play in the development of health care: the country's socioeconomic condition, its health care policy orientation (universal coverage with PHC, free market health care, or various mixtures of the two), the stage of its PHC development (*e.g.*, the level of access, the size and caliber of its primary care workforce, the maturity of its facility infrastructure and technologies, and the responsiveness of the system); and the level of its people's health needs.

PHC development is a process of continuous improvement with the inherent potential for setbacks and stagnation along the way. For the purpose of analysis, the spectrum of PHC development may be divided into three levels (or stages): low, middle, and high levels. Each level consists of many ongoing adaptations and optimizations. Society can expect a good

health outcome when it adopts an appropriate level of PHC that matches well with its socioeconomic development and people's health needs, and when its PHC has a responsive mechanism in line with social progress (Table 1). Low-level PHC can include any available care components and programs in unfavorable socioeconomic environments, such as primitive or entry-level care, "vertical care" programs, and "selective PHC," but not to an exclusive extent. Governments should embody PHC with values as a component of social justice and equity by attempting to achieve the best attainable health care for everyone with solidarity. From the last 37 years of global PHC experience since the Declaration of Alma-Ata, we have witnessed great progress in PHC development in almost all developed countries (although to a much lesser degree in the United States), and newly developed countries such as South Korea and Singapore. Significant success has also been achieved in some developing countries, such as Cuba and Thailand, and also in the early period of modern China with the "barefoot doctor" program (1949–1978). We have also witnessed failure or stagnation in many developing or underdeveloped countries or regions, such as in Africa and in China's last 30 years (1979–2008) [1, 26].

The development of PHC in China demonstrates how socioeconomic progress does not necessarily lead to better health care, and how other elements, especially government health policy, can have a crucial influence, for better or worse (Table 2). During modern China's earliest period, the government's favorable universal primary care policy created a low-level PHC system appropriate to the country's socioeconomic conditions with the well-known "barefoot doctor" system. China achieved significant success and inspired the global PHC movement with its acclaimed health outcome. However, the government failed to recognize the need for PHC to evolve and grow. It mistook "entry-level health care" (初级卫生保健) as a fixed model of the PHC concept, seeing only one aspect of PHC as discussed earlier, and failed to implement transition mechanisms to advance PHC from a low level to a higher level. As China's economy progressed and the people's health care demands rose, China's PHC system stagnated at the "entry-level health care" stage. China did not train its low-level health workforce in the PHC system to higher levels, and did not upgrade its infrastructures. Even worse, as market reform started to cripple the PHC system, low-level care of both universal coverage and delivery of services was essentially abandoned altogether with the "barefoot doctor" system [27]. Most people were left out on their own with "self health protection" and out-of-pocket commercial care from specialists, resulting in tremendous social and health problems [1, 7].

China's remarkable booming economy from market-oriented reform has brought about an unprecedented vast urbanization and huge seasonal migration of rural farmers into large cites and east coast regions. From the beginning

Table 1. Primary health care (PHC) development and improvement process

Dynamic elements	PHC development levels		
	Low	Middle	High
Socioeconomic level	Low	Middle	High
People's health needs	Low	Moderate	High
Government PHC policy and universal coverage	Yes	Yes	Yes
PHC development and health care delivery			
Universal access	Yes	Yes	Yes
PCP training level and workforce	Low to middle	Middle to high	High
Facilities and technologies	Simple	Improved	High
Appropriate	Yes	Yes	Yes
Responsive	Yes	Yes	Yes
Health outcome	**Better**	**Better**	**Better**

PCP, primary care provider.

Table 2. China's socioeconomic progress and primary health care (PHC) development

Dynamic elements	PHC development levels			
	Low (1949–1978)	Low (1979–2008)	Low, improving (2009 to present)	Middle to high (future)
Socioeconomic level	Low, underdeveloped	Low to middle, developing	Higher, developed early	High, developed
People's health needs	Low	Moderate to high	High	High
Government PHC policy and universal coverage	Yes	Abandoned	Resumed	Yes
PHC development and health care delivery				
Universal access	Low level	Abandoned	Resumed	Yes?
PCP training level and workforce	Low, barefoot doctors	Low and disbanded	Low to middle	Improving?
Facilities and technologies	Simple	Simple	Improved	Standardizing?
Appropriate	Yes	No	Low level	Yes?
Responsive	Not adequate	No	Low level	Yes?
Health outcome	**Better**	**Poor**	**Poor or fair**	**Better?**

PCP, primary care provider.

of reform in 1978 to 2013, China's population increased from 962.59 million to 1.36 billion and its urbanization rate increased from 16.9% to 53.5%. The rural population dropped from 790.09 million in 1978 (82.1% of the total population) to 629.60 million in 2013 (46.3%), and the urban population increased from 172.50 million (17.9%) in 1978 to 731.12 million (53.7%) in 2013. The migration population was estimated at 245 million in 2013. The country is rapidly turning into an aging society as well, with 202.43 million people (14.9%) older than 60 years and 131.61 million people (9.7%) older than 65 years in 2013 [28]. Those dramatic sociodemographic changes have presented a tremendous challenge to the failing health care system and the new health care reform [29], and this calls for a universal coverage and service delivery of a robust PHC system for all people in the new economy era.

Detrimental impact of PHC misconception on China's health care

The problems facing China's health care are well known [29–32]. Primary among them are the lack of quality PHC, escalating costs, and large inequality. All of those problems are much more prominent for the rural population of 630 million. The causes are multifactorial. Among them, the misunderstanding and misinterpretation of the PHC concept in China has had a unique detrimental impact on China's health care development – including everything from policy formulation and financial allocation to health care provider training. Because of the lack of primary care coverage and a PHC-centered integrated delivery system, a hospital-centered, fragmented specialty care system has been vigorously promoted as "advanced" health care. Many undesirable consequences have developed in the health care field and in society at large, including the following:

- Minimal or zero health insurance coverage for primary care, which has led many families in rural areas with seriously ill members into poverty [7, 29]. A hot social issue "too hard to see a doctor and too expensive to seek a treatment" has persisted for decades.
- Serious investment shortages in the PHC delivery system due to an assumption that there is no need to invest more in a low-cost care system or a low-level health care system [1].
- Lack of highly trained PCPs. Most are mid- or low-level-trained health workers, and many do not even have a degree in health education. They are still called "doctors," such as "barefoot doctors," "community doctors," or "village doctors" [29].

- Low income for these "doctors," with many of them having to have a second job or farm to support their families. Consequently these "community doctors" and "village doctors" tend to have low social status or prestige [8].
- Refusal of patients to seek care from community health centers or township hospitals as they do not trust the knowledge or skills of such "doctors" [7, 29].
- Domination of China's health care over decades by so-called advanced care – that is, hospital-based specialty care and high-tech services with a commercialized fee-for-service charging system, leading to escalating costs (most are paid out of pocket) and poor health outcome, despite the fact that almost all hospitals in China are public institutions [7, 31, 32].
- High concentration of health care funding, medical facilities, and medical-school–trained physicians in large cities and in tertiary hospitals that provide fragmented specialty care, but much of which is directed toward primary care issues and is driven by profit [7, 32].
- Unwillingness of medical-school–trained physicians to serve in urban communities or in the countryside because of the fear of becoming a "community doctor" or a "village doctor." Many medical students either switched from general practitioner (GP) training to other specialties, or switched jobs from being a GP to other specialties after graduation [6, 33].
- Resistance even today from medical schools and tertiary hospitals to set up a GP/family medicine (FM) department to train GPs/family physicians (FPs), as they regarded this specialty as meritless and harmful to their prestige [34].
- Overflow of patients into tertiary hospitals for "advanced care," with burned-out specialty providers who see hundreds of patients every day in 3–5-min sessions each, although community health centers and township hospitals are often empty [35].
- Scarcity in primary care research, with no available funding mechanism [1].
- Rising health care inequity, with China ranked 184 out of 191 countries by the WHO in the 1990s [36].

The Chinese government has gradually recognized these problems and challenges, and has been responding to them since the 1990s in small-scale experiments without significant success until an overhaul reform program was launched in 2009 [4].

Current challenges and strategies in China's PHC development

PHC has been adopted as the core of health care systems in most modern countries today. After studying the valuable experiences and lessons of health care abroad, and of the history of the past half century, the Chinese government in 2009 unveiled ambitious health care reforms to build a PHC-centered health care system [4], and a strategy for the development of China's primary care specialty – GP system [37]. Since then, China has achieved significant short-term progress in universal care coverage, primary care infrastructure, and the development of a GP/FM specialty. Noticeable in these government policies are accurate concepts of "basic health care service" (基本医疗卫生服务), and "basic health care system" (基本医疗卫生制度) that replace the outdated concept of "entry-level health care" (初级卫生保健). At the same time, the official English version of the policy documents did not use "primary health care" (PHC) at all, presumably trying to avoid confusion again of PHC as "entry-level health care." As the values, principles, and elements of China's "basic health care services (systems)" fully align with the comprehensive PHC concept, the term "primary health care" (PHC) should be reintroduced with a new accurate Chinese translation as 基本医疗卫生服务(制度) or 基础医疗卫生服务(制度), meaning "basic and essential health care," which would conform with use by the international health community. This potential concept change, however, has been very subtle, and so far there has been no academic or public discussion to dispel previous misunderstandings. The outdated concept of "entry-level health care" (初级卫生保健) for PHC is still widely used in the health care field and in academic publications. Chinese health officials and health care professionals in the field have to proactively overcome the ingrained misunderstanding. It will take much longer for the general population to understand the PHC concept, to value the PHC service, and to respect GPs/FPs. The WHO, UNICEF, and other international organizations are also obligated to correct their Chinese

translation of the PHC concept to its true meaning – for example, 基本 (基础)医疗卫生服务, 基本(基础)医疗卫生服务制度. The mistranslation of "primary health care" (PHC) as "entry-level health care" (初级卫生保健) should be officially abandoned.

Rectifying the misconception of PHC and developing a robust PHC system in China involves addressing many aspects of the system. China's health care reform faces multiple daunting challenges. With the strategic reform plans [4, 37] in place, the greatest challenge at this stage is how to establish a robust GP/FM training system to produce the largest high-quality PHC workforce in the world. To build a reputable PHC workforce, high-quality training and appropriate compensation are necessities. The current GP/FM postgraduate residency training curriculum is flawed and requires major revisions for better results [6, 38]. It should be recognized that a major portion of PHC spending is consumed by PHC workforce compensation. Much more energy should be spent on building prestige for the PHC workforce, and on promoting their social status and income, as professional workforce building is much harder to accomplish than the physical infrastructure in PHC reform. The current "Special Post Stipend" pilot program with a modest increase in compensation has been experimenting in four provinces (Anhui, Hunan, Sichuan, and Yunnan), in which the GP awardees (qualified through recommendation and formal examination) will work in designated rural township hospitals for 4 years and receive an annual stipend of about RMB 60,000 per year (cost shared by central and province governments) [39]. This is a very promising start and should be expanded nationwide and formalized into standard compensation packages. When China's PHC system can offer job prospects with high prestige and comparable compensation for the GP/FP in line with that of specialties, then China will have true momentum for PHC development.

For various reasons medical professionalism has not been well developed in China. Doctor of medicine is a defined and prestigious professional title in any other country. However, it is not so clearly defined or respected in China. Today 87.1% of the PCP workforce in rural China and 57.2% in urban China consists of mid-level/low-level personnel [40], and all of them are called "doctors." They work in urban community health centers, and rural township hospitals and villages. The Ministry of Personnel introduced a licensing examination system in 1999, but the title of "doctor" is still misused today. This is one of the major reasons why many patients in the countryside travel long distances to see specialty doctors in the large tertiary hospitals, despite the great pressure such travel imposes on their finances and time [29, 31]. China's rapid and profound health care policy changes as well as rapid social and economic dynamics also contributed to the underdevelopment of medical professionalism [41]. The norms and standards of medical professionalism must be cultivated and established for robust health care workforce development in China. However, the development of medical professionalism is a long process and involves many aspects of the whole society. First, a series of government policy reforms should be in place. Physician/doctor titles should be restricted to those who have bachelor/master/doctor of medicine degrees (under current China's circumstance, for the future perhaps only for doctor of medicine) through medical school and residency training. Mid-level providers are indispensible health care team members. However, they should be accurately addressed by their titles as physician assistant (医生助理), nurse practitioner (执业护士), and midwife (助产士), and should not be called a doctor or an assistant doctor (助理医生). The use of the term "doctor" should be reserved strictly for physicians with a doctor of medicine degree. The policy of promotion of lower-level/middle-level providers to physician-level providers through clinic practice experience and examination should be reconsidered as well. The physician title should be obtained solely through a formal medical school and residency training with achievement of bachelor/master/doctor of medicine degrees. Reform of the compensation mechanism for health care providers, in general, and for PCPs, in particular, up to local specialty levels should be in place as part of the effort to promote prestige and respect for health providers, especially for PHC providers. Second, professionalism education and nurturing should be set as the primary goal throughout medical training courses in medical schools and residency programs, with a balance of social service value and personal economic gain. Finally, social professionalism nurturing and civil society building is not limited to the health care field but applies to all other sectors of society in general, and it takes generations to achieve.

Another urgent priority is to improve the primary care delivery system by reforming and strengthening primary care

centers, and by reforming profit-driven public hospitals into true public interest – oriented institutions, aligned with the PHC concept. China's primary care infrastructure (urban community centers, rural township hospitals) has been revamped and modernized in recent years through unprecedented efforts by the central government. The government has also committed, through a long-term financial program, to support the daily operations of all primary care centers. However, most of these centers have fair or poor performance, and cannot provide high-quality care, as they still operate under an old model with outdated policies, lack of high-quality physicians, and lack of modern management mechanisms. New policies and management models in line with PHC goals are urgently needed in areas including human resources, people-centered care models, health IT, medical technologies, and financing. Reformed primary care centers in China should put people first and provide care that is guided by the core elements of PHC: universal access, comprehensive and integrated care, first contact and continuity care, family- and community-based service, and prevention promotion. With these principles and elements in mind, a primary care model specific for China has been proposed, called the "people-centered health home" (PCHH) [42]. The PCHH model promotes physician-led team care with full coordination and integration of primary care with secondary care and tertiary care. The PCHH expands the concept of the "patient-centered medical home" or "primary care medical home," which focuses on care for ill patients [43]. The PCHH model promotes preventive intervention, integrates traditional Chinese medicine, and empowers all people – ill or healthy – with education and personal responsibility. There are many successful models in developed countries available for China to study, and some current pilot programs in China also appear promising.

Finally, China must contain the resurgence of a trend toward privatization in the current health care reform and minimize the profit motive in health care delivery systems. There are always two major counterforces within the health care field: private commercialization based on a profit-making motive, and public social justice based on national interests. The global health experience and China's historical health evolution have unequivocally proven that health care delivery should not be a profit-driven business, but should be a PHC-centered social good [1, 32]. This conviction was the essence of the Chinese government's 2009 landmark health reform program [4]. After a few years, however, a rising trend today has emerged that calls for private not-for-profit and for-profit capital investment in the health care sector. Many of these private companies, however, are simply masking their for-profit motives [9, 32]. If China is not able to regulate and contain this privatization trend, it will likely make the similar mistake as it did 35 years ago, and will create another major impediment to its PHC-centered health care reform.

China has a unique opportunity today to develop an effective and efficient PHC-centered health system. At this stage, the full implementation of comprehensive PHC is key for the success of China's new health care system. Health care workforce building is critical to PHC reform. In a favorable environment, more medical students will naturally be attracted to PHC and choose to be a GP/FP as their career path, and medical schools and hospitals will be more proactive in developing GP/FM residency programs to meet the large demand for GPs/FPs. Patients will respect GPs/FPs and actively seek care from local health centers. It is only then that China's health system will meet the health needs of China's people.

The preliminary stage reports of this research were published in 2014 [10, 44].

Acknowledgments

We acknowledge the valuable review of the manuscript by William Convey and Kimberly Zeren at Johns Hopkins Medicine, and Wenning Xu for her assistance in the preparation of the manuscript.

Conflict of interest

The authors declare no conflict of interest.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

References

1. Word Health Organization. The world health report 2008: primary health care, now more than ever. 2008 [cited 2012 May 2]. www.who.int/whr/2008/whr08_en.pdf.

2. Starfield B, Shi LY, Macinko J. Contribution of primary care to health systems and health. Milbank Q 2005;83:457–502.
3. Shi LY. The impact of primary care: a focused review. Scientifica. 2012 [accessed 2013 Feb 30]. www.hindawi.com/journals/scientifica/2012/432892/.
4. The CPC Central Committee and State Council. Opinions on deepening the health care system reform. 2009 [cited 2010 May 2]. www.gov.cn/gongbao/content/2009/content_1284372.htm.
5. Brown RE, Piriz DG, Liu YY. Reforming Health care in China. Ford School of Public Policy, University of Michigan. 2012 [cited 2013 May 20]. http://sites.fordschool.umich.edu/china-policy/files/2012/07/PP_716_Final_ Policy_Paper_Health-Final.pdf.
6. Hou JL, Michaud C, Li ZH, Dong Z, Sun BZ, Zhang JH, et al. Transformation of the education of health professionals in China: progress and challenges. Lancet 2014;384:819–27.
7. Blumenthal D, Hsiao W. Privatization and its discontents – the evolving Chinese health care system. N Engl J Med 2005;353:1165–70.
8. Zhao XP, Huang H, Li L, Wang Y, Chen SJ. The reasons and countermeasures of lack of general practitioners in the township health hospitals in China. Chin Gen Pract 2014;17:2926–9.
9. Jiang Y. Prevention of subversive blunder in China's health care reform. People's Daily Net. 2015 Feb 7 [cited 2015 Feb 14]. http://bbs1.people.com.cn/post/2/1/2/145194663.html.
10. Xu GP. Rectifying misconception and emancipating for development of robust primary health care in China – a showcase in correction of misunderstanding of primary health care in Chinese translation "初级卫生保健". Chin Gen Pract 2014;17:2911–4.
11. World Health Organization. Declaration of Alma-Ata (in Chinese). 1978 [cited 2014 Jul 1]. www.who.int/topics/primary_health_care/alma_ata_declaration/zh/.
12. World Health Organization. Primary health care (in Chinese). 2014 [cited 2014 Jul 1]. www.who.int/topics/primary_health_care/zh/.
13. World Health Organization. The world health report 2008: primary health care: the past is important, now more important (in Chinese). 2008 [cited 2014 Jul 1]. http://www.who.int/whr/2008/whr08_ch.pdf.
14. World Health Organization. Declaration of Alma-Ata. 1978 Sep 12 [cited 2014 Jul 1]. www.who.int/publications/almaata_declaration_en.pdf?ua=1.
15. World Health Organization. Primary health care. 2014 [cited 2014 Jul 1]. www.who.int/topics/primary_health_care/en/.
16. Google Search. Primary. 2014 [cited 2014 Jul 1]. www.google.com/?gws_rd=ssl#q=def+primary.
17. Merriam-Webster. Primary. 2014 [cited 2014 Jul 1]. www.merriam-webster.com/dictionary/primary.
18. Merriam-Webster. Health care. 2014 [cited 2014 Jul 1]. www.merriam-webster.com/medical/health%20care.
19. Pan American Health Organization. Renewing primary health care in the Americas: a position paper of the Pan American Health Organization. Washington, DC: Pan American Health Organization; 2007 [cited 2014 Jul 1]. http://apps.who.int/medicinedocs/documents/s19055en/s19055en.pdf.
20. World Health Organization. Western pacific regional strategy for health systems based on the values of primary health care. 2010 [cited 2014 Jul 01]. www.wpro.who.int/topics/health_systems/wpro_strategy_health_systems_primary_health_care.pdf.
21. Cueto M. The origins of primary health care and selective primary health care. Am J Public Health 2004;94(11):1864–74.
22. Chan M. Return to Alma-Ata. Lancet 2008;372:863–1008.
23. Australian Primary Health Care Research Institute. Introduction to primary health care. 2014 [cited 2014 Apr 2]. www.phcris.org.au/guides/about_phc.php.
24. Canada Ministry of Health: Health Canada. What is the primary health care ? 2014 [cited 2014 Apr 2]. www.hc-sc.gc.ca/hcs-sss/prim/about-apropos-eng.php.
25. Center for Academic Primary Care. What is the primary health care. University of Bristol. 2014 [2014 Apr 2]. www.bristol.ac.uk/primaryhealthcare/whatisphc.html.
26. Rohde J, Cousens S, Chopra M, Tangcharoensathien V, Black R, Bhutta ZA, et al. 30 years after Alma-Ata: has primary health care worked in countries? Lancet 2008;372:950–61.
27. Zhang DQ, Unschuld PU. China's barefoot doctor: past, present, and future. Lancet 2008;372:1865–7.
28. National Bureau of statics of China. China statistical yearbook 2014. 2014 [cited 2014 Feb 10]. www.stats.gov.cn/tjsj/ndsj/2014/indexch.htm.
29. Tang SL, Meng QY, Chen L, Bekedam H, Evans T, Whitehead M. Tackling the challenges to health equity in China. Lancet 2008;272:1493–501.
30. Margaret Chan. Keynote address at the International Seminar on Primary Health Care in rural China. World Health Organization. 2007 [2014 Apr 2]. www.who.int/dg/speeches/2007/20071101_beijing/en/.
31. Xu GP, Li DH, Niu LJ, Wang JJ. Family medicine in USA today and its perspective in China. Chin Gen Pract 2014;17:1811–6.
32. Yip W, Hsiao W. Harnessing the privatization of China's fragmented health-care delivery. Lancet 2014;384:805–18.

33. Wang J, Kushner K, Frey JJ, Du XP, Qian N. Primary care reform in the Peoples' Republic of China: implications for training family physicians for the world's largest country. Fam Med 2007;39(9):639–43.
34. Chen Z. Challenges and strategies in development of general practice in China. China Medical Forum. 2014 Nov 6 [cited 2014 Nov 8]. http://gp.cmt.com.cn/detail/624539.html.
35. Sussmuth-Dyckerhoff C, Wang J. China's health care reforms. Health Int 2010;10:54–67.
36. World Health Organization. The world health report 2000: health systems: improving performance. 2000 [cited 2013 Mar 2]. www.who.int/whr/2000/en/whr00_en.pdf.
37. State Council. Guidance on the establishment of a general practitioner system. 2011. [2013 Aug 8]. www.gov.cn/zwgk/2011-07/07/content_1901099.htm.
38. Xu GP, Niu LJ, Wang JJ. Perspectives on China's development in general practice (family medicine) residency programs and curriculum. Chin Gen Pract 2014;17:2171–8.
39. National Health and Family Planning Commission of the People's Republic of China. Interim policy on implementation of special post program pilot for general practitioners. 2013 Dec 5 [cited 2014 May 12]. www.moh.gov.cn/renshi/s3573/201506/95ab1b809af34adeb15ced0bf2ce93a1.shtml.
40. Anand S, Fan VY, Zhang JH, Zhang LL, Ke Y, Dong Z, et al. China's human resources for health: quantity, quality, and distribution. Lancet 2008;372:1774–81.
41. Blumenthal D, Hsiao W. Lessons from the East – China's rapid evolving health care system. N Engl J Med 2015;372:1281–5.
42. Xu GP. The concept, principles and methods for setup of China's primary care offices people centered health home (PCHH). 2014 West Lake International Conference on General Practice, October 23, 2014, Hangzhou, China.
43. National Committee for Quality Assurance. The patient centered medical home (PCMH). 2013 [cited 2013 Mar 2]. www.ncqa.org/Programs/Recognition/PatientCenteredMedicalHomePCMH/BeforeLearnItPCMH /PCMHEligibility.aspx.
44. Xu GP. Great efforts are needed to develop primary medical service in China: correcting the mistranslation of "primary Health Care" as the first step. Fam Med Community Health 2014;2(2):6–9.