

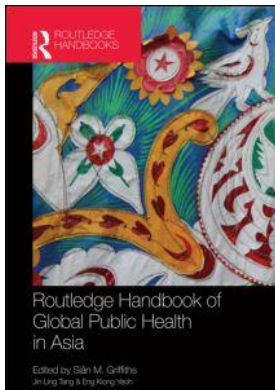
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Migration and health

Lessons from China

Hildy F. Fong and Jin Mou

Introduction: a brief history of migration in China

Pre-1978: origins of China's Household Registration System

The Household Registration System (HRS), commonly referred to as the *hukou* system, has been China's predominant mechanism for population management since its formal inception in 1958 [1]. The foundation was laid at the time of China's 'Great Leap Forward', when the goals of its economy shifted towards the production of the heavy industries, such as energy, iron and steel. The new policies of the state led by Chairman Mao Zedong had halted agricultural production of traditional private farming and instead formed agricultural collectives which favoured industrialization. The *hukou* system was created as a social institution system that would support industrialization goals for China's economy. It controlled migration and spatial hierarchies of the population, which in turn supported an artificial balance under the conditions of a dual economy by controlling flows of resources between cities and the countryside [2].

However, this also led to a stark imbalance between agricultural and industrial sectors and, eventually, created socio-economic gaps between populations in rural and urban areas which exist to this day. Peasants were inevitably tied to the land in rural areas to support heavy industry development and their movements were restricted. As an ascribed attribute, a person's *hukou*, either agricultural (rural) or non-agricultural (urban), determined the person's access to state-funded social welfare including employment, subsidized housing, food, education, medical care and pensions [3]. The HRS was successful in halting rural influxes into Chinese cities throughout the Cultural Revolution (1966–1976) until 1978, during which policies rigorously controlled formal migration from rural to urban areas. Though urban residents were allowed to move between cities and flows from the opposite direction were allowed, migration was still severely restricted and rarely sanctioned. Transferring one's agricultural *hukou* status to non-agricultural status via higher education, serving in the army and/or membership in the Chinese Communist Party represented a rise in social status and a rare form of social mobility.

From 1978 to 2000: reforms and the rise of migration

The year 1978 marked the official end of the Cultural Revolution and was a turning point for economic reform in the country. Migration policies were soon relaxed to some extent under Deng Xiaoping's new socialist market economy, as they became increasingly incompatible with China's rapid development. China's central leadership boosted agricultural production on the country's limited arable land, which created an increasing surplus of workers throughout rural areas. In response, the government adjusted to changes within the labour market by easing some *hukou* restrictions to regulate and reallocate the excess of rural workers. Additionally, development of township and village enterprises was encouraged. Population movement began to swell as people in both rural and urban areas were affected.

Migration is often analysed in terms of push and pull factors. Push factors, such as economic, social or political problems, drive people away from a place while pull factors attract migrants to a place (i.e. employment opportunities, better quality of life, etc.) [4]. Increased migration in China during the decade after the Cultural Revolution centred on factors tied to political reasons and economic growth, motivated at its core by an inherent pull of the Chinese to seek better lives. The late 1980s brought even more urbanization leading to an unprecedented wave of internal migration. As economic reform progressed, patterns emerged favouring eastern coastal development in areas such as Shanghai, Guangzhou and Shenzhen [5]. The number of peasants who left home for jobs increased sharply from less than 2 million in the early 1980s to 30 million in 1989. This swelled to 62 million in 1993 and 80 million in 1995 [6].

Migration in twenty-first-century China: continuing growth and implications for public health

According to the National Population Census of China, the number of rural–urban migrants reached 88.4 million in 2000, 73 per cent of the total number of internal migrants in China. By 2004, the Chinese National Statistical Bureau estimated that 118 million rural–urban migrants are living in urban areas, representing 23.8 per cent of China's total rural working population. Consensus between the Ministry of Agriculture and the Ministry of Labour and Social Security estimate there are now approximately 120 million rural–urban migrants in the country. Including migrants working within the same administrative regions but in different counties, there are approximately 200 million [7] migrants and migrant populations are projected to reach 350 million by 2050 [8].

Migration in China has had major repercussions for the nation's public health system and also effects on the health of migrants themselves. Some of the challenges are outlined in Figure 3.1.

In this chapter, we will present an overview of the key public health challenges facing migrants in twenty-first-century China through a review of current literature and policies.

Migrant populations in China

The International Organization for Migration (IOM) defines migration as a population movement, encompassing any kind of movement of people, whatever its length, composition or cause [4]. In China the term migrants most often refers to rural-to-urban economic migrants who move internally from rural to urban areas for work purposes. However, migrant



Figure 3.1 Challenges posed by migration on the public health system in China

communities are comprised of diverse sub-populations covering many traditional and non-traditional groups who have varying patterns of mobility and socio-demographic factors. Therefore, definitions and classifications often overlap.

Predominant classifications of migrants: local, temporary and floating populations

Permanent (or local) residents hold a local identification card and are permanent residents of a particular locality by birth, or by other application methods such as paying steep fees, marriage, parental reunion with children or government allocation. Migrants, both temporary and floating populations, are distinguished from local residents by whether they hold a local *hukou* identification or obtain a temporary residency.

China's temporary population refers to migrants without a *hukou* living in a locale for one month or more and who are required by the local public security departments to register with the Temporary Population Management System (TPMS) [9], and hold a temporary resident card. However, there are deficiencies in the TPMS systems and some migrants do not register to avoid registration fees or the complex process involved. Thus, population statistics based on registration may not truly reflect migration population sizes, especially in large cities.

The term the 'floating population' refers to migrants who live in a locale (classified duration is less than one month but in reality this is not always the case) and do not hold either a permanent local ID or a temporary residence card. They may not be required to have one or have voluntarily decided not to register. These 'invisible' floating populations are characteristically self-employed, unemployed or hired by informal sectors. Because of their status, floating migrants may be unable to access most state-funded social services such as public education or health insurance schemes entitled to registered individuals. Of the highly mobile floating population, many move bi-directionally, coming and going from cities according to the farming seasons, job markets, economy or family arrangements [10–11].

Sub-populations impacted by migration

Migration has had significant impact on local ecologies, especially at community and family levels. Although urban–urban migration exists (often from smaller to bigger cities), rural–urban migration is mostly addressed in health literature. Literature mostly discusses those migrant workers who find non-agricultural work in urban areas in order to send financial aid to support their families back in rural areas. In 2004, 30.3 per cent of migrant

workers worked in the manufacturing industry, 22.9 per cent in the construction industry, 10.4 per cent in the service industry, 6.7 per cent in hospitality services and 4.6 per cent in wholesale or business [17]. Migrant workers tend to be younger, healthier and more likely to be male and single [11]. This has changed rapidly, however, in larger cities where there are rising and nearly equal numbers of female migrant workers. Until the mid-1980s, most global migration was male-dominated but women now account for nearly half of the global migration [12]. Migrant factory workers are a sub-group of migrant workers. From a public health perspective, they have a higher risk of exposure to certain occupational and environmental health hazards [13].

There is also rural-urban movement of young migrants who do not live in their place of birth. Migrants who are children, adolescents or young adults are often labelled by Chinese sociologists as 'the new generation' [10]. Young migrants are often unregistered residents like their parents, thus they do not hold a temporary or permanent *hukou*. There are now also many children born to migrants in urban areas who are not entitled to a *hukou* in their birth city – they must by law be registered in their parents' registered locale. For these young migrants, this means full denial of legitimate access to the public education system and, in many places, health insurance. Child migrants are forced to seek education in migrant private schools and health care in the more expensive private sector or limited-cover from services in community clinics. In recent years, some more developed areas including Shenzhen have started a pilot for children's health insurance schemes that involve some of the eligible migrant children (those whose parents have been members of the social security scheme for a year or more are eligible). Similarly, progress has been seen in providing migrant children with free education in the public system in a few big cities; however, the same set of eligibility criteria applies. Child labourers are another sub-population of young migrants facing extreme social conditions.

As working adults from rural areas leave their homes for the city, they leave behind both the old and the young. Studies show that there is an estimated 20 million left-behind children in China [14]. It has also been found that parental migration is a risk factor for unhealthy behaviours amongst left-behind adolescents in rural China [15] and children often suffer negative psychosocial health consequences [16]. The left-behind ageing population is another group resulting from split households in rural areas, an increasing concern since ageing population rates are rising. In particular, China's 'one-child policy' has left a complex situation of who will take care of the ageing population. Due to self-selection, young and healthy people are more likely to migrate, leaving the weak and sick at home [11]. Migrants who become ill or fail to find work stay at home, which places an even bigger burden on rural communities. See Box 3.1 for a case study on cross-border migration.

Migrant health challenges

Public health research on migrants in China provides a rich and complex area for topical study. Research on Chinese migrants has focused on many different perspectives, mostly highlighting the vulnerability and marginalization of migrants. However, while migrants in urban areas face some disadvantages, there is empirical evidence that studying rural-urban migrants is much more complex. Not all migrants are disadvantaged and poor – in some cases, migrants may be healthier than those left behind or are satisfied with their migration experience. The next sections address key messages from literature on migrant health using the three domains of health protection, health services and health improvement (see Figure 3.2).

Box 3.1 Hong Kong SAR: a special case of cross-border migration

The repatriation of Hong Kong (HK) to the People’s Republic of China from Great Britain in 1997 led to significant increases in migration between HK and mainland China [18]. HKSAR now follows the ‘One Country, Two Systems’ political system under the jurisprudence of The Basic Law. ‘The Law’ granted, among other things, the right of permanent residency in HK to mainland-born children with at least one parent with HK permanent residency. It also eased the right to abode in Hong Kong for adults through Certificates of Entitlements (CoE). Migrants who have entered the region for not more than seven years are called newly-arrived migrants. The Law also entitled children of mainland citizens right of abode in HKSAR if they are born in HKSAR. This catapulted the number of mainland mothers giving birth in HKSAR to secure HKSAR citizenship for their children, many of whom returned to mainland China to reside. These children, an evolving group in research, use both HKSAR and mainland health systems, and can be called cross-border migrant children [18]. Cross-border births include children born in HKSAR to two visiting mainland parents or to cross-boundary marriages of one mainland parent and one HKSAR parent.

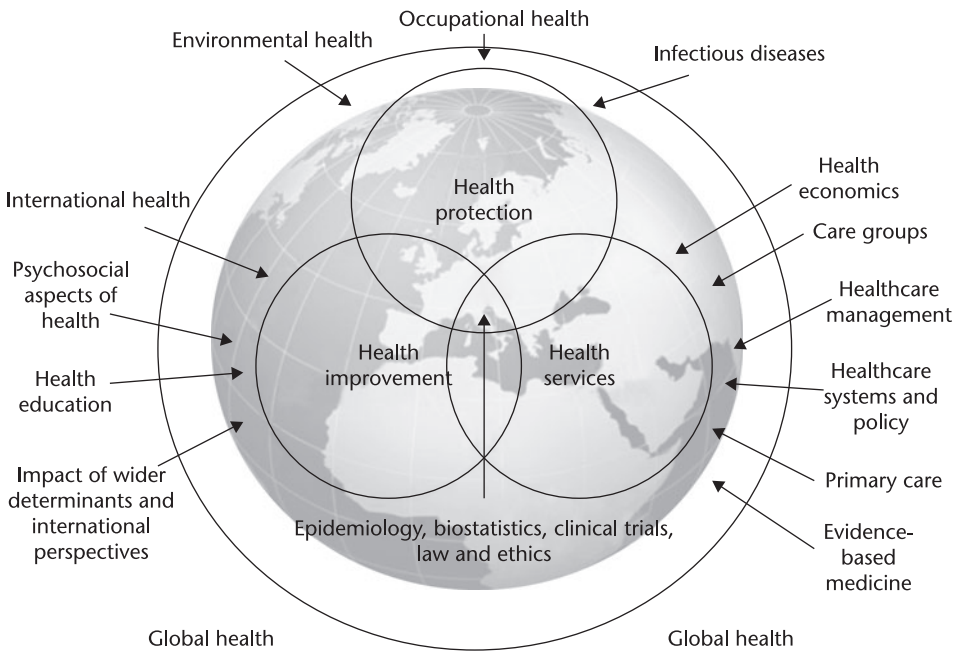


Figure 3.2 Interrelation between the domains of health protection, health services and health improvement on a global health scale [79]

Health protection: infectious diseases and occupational and environmental health risks

Infectious diseases

The 2003 severe acute respiratory syndrome (SARS) epidemic originating in China showed how migrants are a highly mobile group at risk of both being vectors and becoming victims of an infectious disease [11]. From a health protection perspective, migrants are more vulnerable to communicable diseases such as acute respiratory infections; diarrhoeal, parasitic and sexually transmitted diseases; and tuberculosis [11]. In particular, HIV/AIDS, tuberculosis (TB) and infectious diseases preventable by childhood immunization have been challenges.

HIV/AIDS

In China, HIV/AIDS is a leading cause of death compared to other infectious diseases [19]. Migration has been a significant factor in the HIV risk epidemic since the 1980s when sporadic cases of HIV/AIDS surfaced amongst intravenous drug user (IDU) communities in the Yunnan Province–Myanmar border region. In the mid-1990s, the generalized epidemic grew as large numbers of migrants, infected from blood donations in the Guangdong Province, were sent back to their home provinces by health authorities. Drug users, migrant workers, sex workers and travelling business people still remain at-risk groups. Research has explored how seasonal economic migration facilitates HIV transmission across regions (see Box 3.2). Services that address screening and prevention of sexual health issues are not only essential for migrants, but migrant women in particular. This will be discussed further in a later section.

Tuberculosis

This is another major migrant health challenge in China and is the primary cause of death from infectious disease in adults. China has the second highest TB burden behind India and its migrant population has a particularly high risk of TB infection and transmission. Annually,

Box 3.2 Migration and HIV/AIDS: major concerns highlighted in research

- Flourishing commercial sex industries catering to migrant workers is a growing concern in transmission to the general population.
- Higher proportions of floating migrants have had multiple sex partners.
- Migrants returning to hometowns periodically for holidays lead to STI/HIV acquired elsewhere to be spread to partners.
- Although HIV incidence and prevalence rates are not widely available [21], migrant workers have higher STD rates [20].
- Growing numbers of drug users, internal migration, high-risk behaviours and low condom use, are part of the challenge [21].

Box 3.3 Tuberculosis challenges for migrants

- ‘Migratory’ nature of the migrant population increases exposure to TB.
- Marginalised working and living environments promote transmission.
- Poor financial status prevents diagnosis and treatment.
- Little knowledge and awareness of TB.
- Inadequate referral to TB dispensaries.
- Potential social stigma in the workplace.

Source: [32].

there have been 1.3 million new cases reported (80 per cent of TB patients are from rural areas), while there are 150,000 deaths reported each year [31]. TB control is a major challenge to China’s public health and control has been relatively poor throughout the country (see Box 3.3 and Chapter 16). As well as that, poverty has been found to be strongly associated with TB incidence even after controlling for smoking and other risk factors, thus poverty schemes are a consideration for future TB policy [33].

Childhood immunization

Access to immunization is a critical health protection issue for migrant children in China. Immunizations of vaccine-preventable infectious diseases are essential because they are a low-cost, high-impact public health intervention. Migration affects how whole populations receive and access health care and immunization rates are a simple measure for the risk of infectious diseases in a community. There has been great improvement in the immunization of children as a whole since the 1982 inception of China’s Experts Advisory Committee on Immunization Programme (EACIP) [22]. Furthermore, in 2005, China’s Ministry of Health supported a law requiring that the expanded immunization programme (EPI) provide immunizations for eleven diseases such as hepatitis B, tuberculosis and measles free of charge. This was expanded to twelve vaccines in 2008. Because of these incentives, immunization coverage is now much improved.

However, immunization rates of routine vaccines are still low in rural areas and large cities among migrant children [25]. Some townships and villages, governed by provincial governments, face issues such as limited vaccine supplies and budgets, and encounter difficulties reaching migrant children (see Box 3.4).

Additionally, community context and socio-economic status of the family are important factors in child vaccination status. Evidence shows that children born in rural areas, whose families are more likely to travel to big cities for work, have mothers with lower levels of knowledge, attitude and practice measures of immunization [30]. A majority of children immunized at Shenzhen Community Health Centres (CHCs) in the Guangdong Province were found to be unregistered migrant children with lower socio-economic statuses than local children. Caregivers experienced significant service inadequacies in CHCs with more migrants and poorer households attending [18], therefore the consistency of health services in CHCs serving high numbers of migrant workers should be considered. Caregivers of migrant children were more likely to find the price of immunization a disincentive,

Box 3.4 Immunization of migrant children: evidence from research

- A study of child migrants in Beijing reported an ‘alarmingly’ low age-appropriate immunization coverage of migrant children in densely populated areas in the city [28], not attaining the MOH’s goal of 85 per cent coverage.
- In the Henan province, coverage for children from floating populations was found to be less than 30 per cent [29].
- Migrant children of low SES are less likely to be healthier than local children due to being ‘under-vaccinated’ [23–24].
- Annual measles incidence in China has increased with half of the cases occurring in children of migrant workers with lower immunization coverage and lower antibody concentrations than children of non-migrants [26–27].

the education of the mother was a significant factor for immunization delay and poorer self-reported health of a caregiver was found to affect the perception of the importance of immunization as well [18].

There are also other infectious diseases that pose a threat to China's migrant population for example malaria, schistosomiasis and parasitic diseases associated with rural poverty or overcrowded urban environments [14]. The increased mobility of migrants to, and from, their home cities perpetuates risks of reintroduction and transmission of disease.

Occupational and environmental health risks

Occupational health threats

Industrialization, urbanization and economic growth over the last thirty years have led to tremendous challenges for occupational health and safety (OHS) in both rural and urban China. Migrant workers in general are at a higher risk than the general population for occupational disease and injuries including silicosis (a type of pneumoconiosis), chemical poisoning and accidents caused by machinery. Over half of the migrant workers work in either manufacturing or construction industries where there is more exposure to risk and the work is mainly in the category of ‘Three-D’ jobs – a colloquial term that describes the often dirty, dangerous and degrading nature of migrant labour.

Workers are more at risk of harmful exposures to dust, fumes and toxic chemicals, and biological and physical hazards including noise, heat, vibration, inflammable materials and compressed air. Barriers to the healthcare system, a lack of medical insurance, weak enforcement of occupational health and safety regulations in working environments and low awareness of occupational risks contribute to the problem [34] as does the lack of occupational health services for migrant workers. Long working hours, overcrowded living conditions, inappropriate dorm facilities and poor general health are other issues. As a result, migrant workers account for approximately 80 per cent of deaths in mining, construction and chemical

factories, and form a vast majority of the 700,000 annual victims of industrial accidents [35–37]. As well as that, approximately 90 per cent of patients suffering from occupational diseases are migrant workers.

In construction work, injuries are a major cause of death. Main causes include falls, collapse of structures, being struck by falling objects, electrocution and machine-related injuries. Migrants working in coal mines and other metallurgical industries in China are at a high risk for occupational lung diseases (pneumoconiosis) and mining accidents. China's fatality rates for coal mining are significantly higher than in other countries [38]. Suicides due to overwork and migration-related stress are also commonly seen, as are non-communicable diseases, such as cancer related to exposure to chemical poisoning, toxins and dangerous materials. Socio-economic conditions, such as close living quarters and exposure to other workers who travel frequently, increase exposed risk to infectious diseases such as TB, HIV/AIDS and others.

Migration and environmental health

The correlations between environmental health and migrant health are difficult to measure. Migrants and their families are more likely to live in environments where 'Three-D' work is performed and/or live in housing conditions that escalate the magnitude of health risks. Migrants are at a higher risk of being affected by poor environmental quality including the pollution of air, water and food [14]. An example is the environmental waste recycling town in Guiyu County where millions of tons of overseas and domestic e-waste are dumped annually. In its 28 villages, nearly half of the residents are migrants and their families, and many of these migrant families are engaged in e-waste recycling operations to process e-waste [39]. This makes them at a much greater health risk of being exposed to toxic chemicals such as polychlorinated dibenzo-p-dioxins, dibenzofurans and heavy metals.

From an environmental perspective, urbanization and environmental degradation are causes of migration. Push factors of environmental degradation and displacement include administrative displacement (e.g. The Three Gorges), droughts and floods, earthquakes, resource depletion and conversion of farmland [14]. As an example, the 2002 environment-related migration and resettlement was supported by some official policies of the Chinese government. For example, a plan was implemented to displace 1.5 million people in west China over a five-year period up until 2010 [40].

Challenges for health services

Governments should ensure that national health systems take into account the health needs of migrant workers and make health services available to them.

(William Lacy Swing, director general, IOM)

Health insurance reforms

Health insurance for migrants is essential as insurance status has been found to be a significant factor in health utilization [41]. In China, health insurance systems are inequitably distributed amongst migrants with many of them being under-covered or uncovered by any kind of insurance in their urban destinations. This is a major challenge for China's health reforms to

be addressed in the country's health service strategy. Historically, when there was a deep divide between rural and urban populations prior to the 1970s, populations in villages and communes (beginning in the 1950s) were covered by the Rural Cooperative Medical Scheme (RCMS), while workers of state-owned enterprises (SOE) and other government employees were covered by the Labour Insurance Scheme (LIS) and the Government Insurance Scheme (GIS).

In the post-reform era after 1978, 'old' systems of health have struggled to meet the needs of China's rapidly changing society. Challenges are often reflected in China's review of health and social sectors presented in recent 'Five Year Strategic Plan' policies (*Wunian Jihua*). From the early 1980s to 2003, China's health system sharply transformed into a market-oriented one, which has been criticized for decreasing health access because it has increased out-of-pocket expenditures, led to catastrophic expenses, widened rural-urban inequalities and caused a slowdown in health improvements [42]. Other issues include over-prescription of pharmaceutical drugs, lack of health workers, and an overburden in hospitals and the tertiary sector. For migrants, the healthcare system has been inadequately in tune with the dual rural-urban risks of the moving populations. Most challenging has been the transfer of migrant health insurance.

New Rural Cooperative Medical Scheme: challenge for rural-urban migrants

In 2003, the voluntary New Rural Cooperative Medical Scheme (NRCMS/NCMS) was formally introduced to extend inpatient and outpatient coverage to rural residents. The funding schemes vary by county. By 2009, the NCMS had been successful in reaching 91.5 per cent of the rural population in 2,729 counties. The 2008 government contribution covered an average of 80 per cent of the costs while households contributed the other 20 per cent [43]. Since 2005, the Urban Resident Basic Medical Insurance scheme (URBMI) was reformed to benefit formal sector workers with basic medical insurance along with their children, the elderly, people with disabilities and other non-working urban residents. However, despite a theoretical coverage existing, the above two systems have little flexibility for migrants to transfer their health insurance if needed.

Although many rural-urban migrants are covered by the NCMS, there are barriers and policies that restrict health care for people with a rural *hukou*. The NCMS policies, which are guided by funding decisions made at county level, often require participants to use designated health facilities within the county. Also, though the NCMS pays for out-of-county care, reimbursements are much lower and what is covered is often inadequate. In 2006, a study of two large provinces that send out many migrants found that 55.2 per cent of migrants who used inpatient services received no reimbursement from the NCMS. The procedures for reimbursement were found to be long, cumbersome and unpleasant [44]. In 2010, national policies called for fewer barriers to medical insurance transfer for migrants [45]. Other concerns to be considered by policy makers include lower utilization rates of 'designated' health facilities in rural NCMS counties by migrants and the inequity of financial resources in different geographical locations. Some regions are wealthier than others and there are more resources for their populations.

Employment-based mechanisms for migrant health coverage

Another health coverage option is emerging in many cities for migrant workers and there often exist unanimous prerequisites for valid employment before migrants can be registered

into this type of scheme. Many have been successfully implemented to provide contributions that help insure migrants' direct medical costs. In urban areas throughout China, migrant worker health insurance schemes are designed based on each city's system so there is much variance. Some differences include the levels of premiums and co-payments, waiting periods, reimbursement levels, deductibles and ceilings, whether the coverage is linked to occupational injury or retirement insurance (as they are in Shanghai and Chengdu) and the designation of health facilities to be used.

For example, programmes such as the Medical Insurance System for Migrant Employees (MISM) in Shenzhen, China's first Special Economic Zone (SEZ) and the largest migrant city [46] have ambitious goals for universal coverage for all migrant workers. The insurance system developed quickly from a trial scheme in March 2005 to a programme covering more than 5.3 million migrant workers by 2011 through 700 designated health facilities. This was an 8.9 per cent increase in annual coverage [47]. Following a State Council Guideline document addressing critical migrant worker issues in 2006, health insurance reforms were also initiated in some other pioneer cities including Shanghai, Beijing and Chengdu [48]. Coverage rates ranged from 21.5 per cent in Beijing to 75 per cent in Shenzhen. Migrant health insurance schemes are supplemented with Coordinative Severe Disease Reimbursement Networks, which aim at avoiding catastrophic costs caused by severe diseases among insured migrants.

Although pioneer health insurance schemes in China's big cities are decentralized and financed through local government input, deficiencies such as a lack of a national transfer mechanism, high deductibles, low reimbursement rates, undesirable coverage, and exclusion of the unemployed and those who are employed in informal sectors are major challenges to be targeted for further policy improvement. While the dispute regarding the significance of personal medical savings accounts is pending and insurance transfer is currently rare for rural–urban migrants, the challenges of providing insurance for migrants – high physical mobility and complex patterns of migration, existence of less addressed 'invisible' populations (i.e. unemployed women, the elderly and children), fluctuating uptake rates and instability – are grey zones and may lead to catastrophic results for certain sub-populations.

Migrant children are particularly vulnerable to not being covered or being covered insufficiently by health insurance. This is due to their lower socio-economic status and because parents are often constrained by limited income and low awareness of insurance programmes [18]. Generally, there is a paucity of research on health access of migrant children in China.

Health service challenges

The increasing demand and reforms to provide much broader and deeper insurance coverage have translated into more demand on healthcare resources and services. How to meet migrants' health needs on the provider side is entangled with China's complex and tough health reforms. In response, some major national strategies have been able to achieve better migrant health, improve the quality of care at lower-level facilities, and encourage quality, efficiency and equality of services through primary-care system reforms [49]. One such system is the National Essential Medicine System (NEMS), which was set up to reduce spending on drugs and out-of-pocket expenditures. In a few Chinese pioneer cities such as Shenzhen, implementation of national health reform initiatives have been successfully integrated with local health plans. Of all reforms, moving from a hospital-based towards a community-based care model has been one of the most effective.

Role of Community Health Centres (CHCs)

CHCs have been an integral part of China's healthcare reform over the last decade. In Shenzhen, 634 CHCs employ more than 50,000 health workers – a rapid growth from less than 300 CHCs operational in 2005 [46]. The emergence and expanded existence of CHCs in many Chinese cities has had a significant impact on migrant health because of the affordability and accessibility of essential medical care at community level that CHCs provide. Zero mark-up policies and zero dispensing fee policies have broken collusion between providers and the pharmaceutical sector, thus reducing drug prices and overall healthcare costs. This growing trend has been especially helpful for migrants who are uninsured or unemployed, and the urban poor overall. For the most part, large cities in China have adopted strategies that bind migrant workers' insurance with CHCs and, as a result, CHCs are the first point of contact for migrants who are seeking health services.

Other supposed benefits of the CHC network expansion (which are likewise challenges in many places) include strengthened training for general practitioners; enhanced CHC infrastructures in migrant communities; flexible office hours aimed at migrant workers' schedules; resource allocation for Traditional Chinese Medicine integration, mental health, children and maternal health; supply of basic preventive medicine/public health packages; and vertically integrated delivery systems via new referral mechanisms regulated by insurance guidelines.

Further challenges to healthcare services

Recent changes to the healthcare system have aimed to reduce health inequity and improve health outcomes of migrants, but the reforms have yet to be fully tested for long-term effectiveness. Based on limited evidence that evaluates the impact of recent reforms, such as medical insurance plans and primary-care centred initiatives for better migrant health outcomes and utilization, inequities still remain. There are gaps in insurance coverage, problems in monitoring and evaluating systems to ensure general health quality and barriers to sufficient health access [41]. Thus, close monitoring of the implementation throughout the healthcare system and scientific evaluations of effectiveness/performance are warranted.

Other challenges of migrant health are also issues for the whole system. These include a lack of qualified general practitioners, insufficient funding for central and western small cities and poorly incorporated medical records at different care levels [50]. Additional factors such as migrant-specific health-seeking tendencies – self-medication, and disease neglect and delay – compound the challenge of providing effective and quality healthcare services. These need to be addressed by healthcare policy makers and providers throughout the system.

Tracking migrant populations is also a challenge in China's healthcare reform. To implement national health insurance transferability, some policy makers have suggested the implementation of a unique identifier link to people's personal insurance cards that permits a separation between the registration and care utilization locations of migratory individuals. It is suggested that the current schemes, administrative institutions and networks should be integrated and interconnected, and that a citizen-based, universal, nationwide health insurance scheme is needed [51]. There are overwhelming technical barriers to establishing a nationwide electronic medical records (EMR) system [52] of linking insurance systems in different cities. Administrative and institutional barriers also exist, including unbalanced economic development, social situations (including whether it is a migrant-sending or migrant-receiving society), enforcement on employers' sponsorship, financial prosperity of each region and financial pressure to increase subsidies/benefits.

Health improvement: focus on prevention of non-communicable diseases (NCDs)

Despite China's success over the last twenty years, changes in the urban lifestyle associated with dietary patterns, unhealthy behaviours and pollution have led to the rapid increase of NCD-related risk factors, particularly among low-income groups and migrants (of whom women, children and the left-behind are of most concern). Since migrants form the majority of China's population growth due to urbanization and because escalating health inequities persist, there are major health improvement issues facing migrant communities. Among issues to address is the promotion of healthy lifestyles to prevent rapidly rising rates of NCDs. This includes health promotion in response to risk factors for migrants at a community level and takes into account such factors as smoking, mental health illness (including depression, addiction and suicide), injury, inadequate women's health (breast cancer, maternal health, sex education, etc.) and occupational disease risks. Greater risks, compounded by reduced health access and lower awareness, highlight health improvement needs for Chinese migrants.

Tobacco

Some studies on rural–urban migrants in China have shown that increased smoking prevalence and nicotine dependence are positively associated with migration. Studies have found that solitude, urban 'maladaptation' and the migratory process are significant reasons for migrants to smoke [53]. Migrant workers have been found to be more likely to smoke if they are male, earn higher incomes, and have greater mobility and whose durations of migration are longer. Few studies have been done on women, as they are generally much less likely to smoke, but exposure to female cigarette brands and marketing may increase the susceptibility to smoking among rural-to-urban migrant women [54].

However, not all studies showed increased smoking prevalence in migrants. One study found lower rates of smoking among migrant factory workers in Shenzhen compared to the general Chinese population [55]. This study, however, identified a high-risk group of male migrant factory workers who smoked heavily and consumed alcohol more frequently than others, showing that longer working hours and a lack of rest were associated with higher rates of smoking. It also found that frequent Internet use and lack of insurance were associated with lifetime smoking and with poorer mental health. Increased accumulated working time in the city increased female workers' likelihood of smoking as well. These findings point towards risk amongst migrant worker populations, supporting other studies attributing the migratory lifestyle (i.e. solitude, stress and increasing but still low-level income) with smoking initiation and heavy smoking.

Although there are no data currently available specifically on smoking-attributable mortality in China's migrant populations, China is the world leader in tobacco consumption and smoking-related deaths (lung cancer). Therefore, understanding smoking patterns of China's migrants and related factors may help to effectively provide health promotion interventions for this population. Challenges in providing effective health education to migrants may include how to address these migratory factors and focus on high-risk sub-groups. For example, it is suggested that future tobacco control programmes focus on the psychological issues facing migrants. Other solutions involve multi-level intervention through schools, workplaces and households in the migrant aggregated communities. Internet cafés, which are venues for male migrants to smoke and drink while using the Internet, may be appropriate locations for more intensive interventions.

Mental health

Evidence has shown that China's rural–urban migrants suffer from lower mental health status than both local urban residents and their rural counterparts in communities from which they emigrate. There is a possible deteriorative effect of the migratory experience on mental health status among migrants, and an urgent need for etiological studies, mental health promotion and prevention efforts among this growing population. In 2010, several migrants working in one of the major contract manufacturers of China, Foxconn, committed suicide, drawing immense media and public attention. This is an extreme example of the severe mental health issues that exist among young workers, especially young second-generation factory migrant workers. However, facing an emerging public health problem as such, there is low awareness, deeply rooted stigma, professional shortage of mental health staff and poorly integrated care [56]. Provision of mental healthcare services and screening is not well developed in China and, until recently, suicide was not even included in Chinese psychiatric texts.

Development of mental health services that improve screening, diagnosis and treatment for migrant populations and other high-risk groups is urgently needed. Suicide is a leading cause of death in young people in China [57]. Some universal risk factors of suicidal ideation/attempts have been found, which point to younger females, smokers, heavy drinkers, those with family history of suicide, those with a lack of social support and those who have migrated [58]. Migration, together with poverty and deprivation, income inequality, occupational stress and social discrimination, has been found to be causally linked with mental health of Chinese youth. Depression and addressing developmental disorders are under-researched in China, but the harm of low self-esteem and unmet migrant child social and health support have proven effects on future health behaviours and risk factors.

The mental health status of left-behind children and the elderly, of which depressive symptoms and anxiety are the most frequently cited problems, also warrants further attention and intervention. In addition to policy and system change to address service provision, revision of health policy frameworks and promotion of social equity, scholars articulate that mental health literacy is an essential life skill that must be taught before the need arises.

Women's health

Although there are dramatic sex ratio disparities occurring in China with many more males being born than females – 118.08 males for every 100 females in 2010, according to the China National Population and Family Planning Commission – there is still an ever-increasing number of young female migrant workers. The World Bank has reported that many women in migrant populations have low incomes and poor living conditions, such as lack of winter heating in the northern parts of the country and small living areas. Current studies amongst this sub-population have highlighted low immunity to rubella [59], higher rates of STDs (for example, chlamydia infection) [60], poor provision of maternal health (antenatal care, abortion, reproductive health) and other higher behavioural risk factors.

Analysis on maternal mortality rates in Beijing, Shanghai and Guangzhou from 2000 to 2002 showed that maternal mortality of migrant women from rural areas in big cities was significantly higher than that of city women, with many of the deaths being caused by direct obstetric reasons that would have been avoidable with proper education and/or services [61]. Other studies have substantiated that reproductive health needs of young unmarried female migrants, workers especially, are not being adequately met and they are often unable

to access information and services [62, 63]. Although young female migrants are sexually active, many lack basic knowledge of contraception and reproductive health and do not use reproductive health services [63]. Unmet needs for contraception are issues and there is a need to enhance open communication on sexual health by government sources, and to increase the availability of education materials, condoms and other services.

The health issues pertaining to many migrant women can be attributed to poor sexual health education, especially amongst women from rural China moving to urban areas, as well as a lack of policies supporting migrant women's health in their urban areas. For example, the prevalence of chlamydia for Chinese migrant women was found to be triple that of rural non-migrant women [60]. Attitudes and low knowledge rates are also partially due to reasons such as the stigma that pre-marital sex is a taboo, discrimination of pregnant migrant women (which denies female migrants' legitimate leave for doctor visits) and higher biological vulnerability of certain diseases in females. Under such circumstances, maternal health services, as well as other risk prevention programmes specifically designed for migrant women and covered by insurance schemes, are urgently needed in China. Employment-based health education might be initiated to add efficiency and cultural responsiveness.

Culture, social stigma and the healthy migrant effects

The study of culture and social stigma effects on migrant health in China is incredibly complex. Generally, how migrants perceive and experience health, disease and the healthcare system, has not been sufficiently studied in literature even though culture and stigma play a role in public health in practice. Migrants face different social stigmas than the rest of the general population. Stereotyping, separation, status loss, discrimination, unfair treatment and exclusion are some challenges they may encounter which may affect their mental and physical wellbeing. There are some key factors to be considered in this domain which can be seen in Figure 3.3.

Education: Research shows that a lack of secondary education among migrants makes them more likely to become migrant labourers. The majority of rural-urban migrants only have a junior middle school education which is a consideration for health promotion.

Other social determinants: Language skills and integration in new communities (including housing, employment, environment, etc.) are also factors that affect health outcomes to varying degrees. Social characteristics are major influencers on health.

Traditional healing: Impacts of health seeking behaviours in rural areas of origination are important. Self-medication, informal healers, traditional medicine and misconceptions of private clinic versus hospital treatment are considerations. Traditional models of medicine and healing play a tremendous role in health-related behaviours in migrants. Understanding them is crucial in developing culturally appropriate initiatives.

Geography and duration of stay: Geographical mobility and transitions are challenging life changes for migrants. When expected duration of stay in a given location is limited, there are disincentives for migrants to invest time and money in insurance programmes, personal health and safety measures. Conscious and unconscious trading of poor future health for present economic opportunity has been discussed.

Figure 3.3 Ideas to consider when discussing social stigma faced by migrants

Healthy migrant effect

Although there are numerous public health issues that stem from migration, one of the most important phenomena relates to the ‘healthy migrant effect’ (or the ‘healthy immigrant effect’ (HIE)), which has been proved by many studies. The ‘healthy migrant effect’ refers to lower mortality rates of first-generation permanent migrants, which is attributable to self-selection of healthy migrants, but may also be attributable to the fact that unhealthy migrants who have gone back home for health care or have become unemployed are not captured in migrant studies [64]. For example, in the Zhejiang Province of eastern China, migrant self-reported health was better and migrants were less likely to report acute illness, chronic disease and disability than permanent rural or urban residents [64].

Migration is an important factor in economic growth that may improve health, both directly and indirectly. In 2005, not only did urban migrants send home the equivalent of US\$65.4 billion, but they also acted as information ‘bridges’ between advanced cities and less-developed rural areas.

However, studies on healthcare access and utilization indicators have mostly reported on the inequities among Chinese rural-to-urban migrants. In addition to inequities between local residents and migrants in health utilization rates, health-seeking patterns of the most vulnerable migrant groups, such as females, the unemployed, the elderly and children, are concerns in academic and policy sectors. Issues have been gradually addressed and reconstructed in the background of the current national health reforms, which focus on evolving health policies to encourage insurance schemes as well as primary-care centred services to allow better healthcare accessibility for the Chinese internal migrants.

Response to migrant health challenges: lessons

By addressing migrants, and those most vulnerable and at-risk for disease, China is able to address public health from a stance of health equity and from a perspective of the social determinants of health. Throughout this chapter we have discussed the key public health challenges facing migrants in the domains of health protection, health services and health improvement. It is clear from the literature that some migrant groups are at risk of socio-economic disadvantage and poorer health, though further research and policy will need to be done to improve our understanding. Addressing the issue of migrants in public health in China is strategic and helpful to predict future population health issues as migrants are a reflection of current society and a group much too large to be ignored. Lessons learned from policy making for migrants are compatible with public health improvement throughout China.

Lessons from the health protection perspective

From a health protection perspective, China has made great strides in addressing migrant issues, mostly in large cities where stimulating economic growth is a priority. Factors for success have included:

- Government acknowledgement of the role of migration in infectious diseases;
- Creation of policies supporting universal coverage followed by strict implementation;
- Allocation of financial resources towards migrant issues; and
- Expansion of information and surveillance systems.

Since the national health sector reform in 2000, China has developed its CDCs' network in the country to incorporate anti-epidemic stations and public health programmes [65]. The SARS epidemic in 2003 challenged China's public health infrastructure and the government significantly prioritized funding for public health. A national Internet-based communicable disease reporting system was implemented in 2004 [66].

TB policies and integration of services supported by the government have improved TB control significantly. With TB budgets increasing nearly seven-fold by 2005, China has been able to achieve the global targets for TB control [67]. However, differences in quality and access due to stakeholder motivations and resource allocation still exist between more affluent east China and poorer west China, and for migrants without health insurance [66]. HIV/AIDS policies have also improved through initiatives such as the 'Four Frees and One Care' policy, China's Comprehensive AIDS Response Programme (China CARES), improved laboratory facilities, a free national antiretroviral (ART) programme and strong international collaboration; all supported by the State Council AIDS working committee chaired by a vice premier with 29 ministers and 7 local provincial governors [67]. By the end of 2006, there were 393 national HIV sentinel surveillance sites in all 31 provinces and 370 provincial sentinel sites following national HIV surveillance protocol. Diagnosis and treatment of TB and HIV/AIDS is free for migrants in some areas, but the literature has highlighted an uneven distribution of sentinel surveillance sites, insufficient coverage and poor targeted surveillance for migrants. There is definitely still a need to further address migrants in infectious disease policies.

Since 2005, migrant children could receive free EPI immunizations throughout the country, regardless of their *hukou*. This policy has been effective in covering children nationwide and overall there has been immense improvement (e.g. eradication of wild-type poliomyelitis). The next steps will be to raise the immunization rates for some migrant children and to address cost challenges for non-EPI covered immunizations. Inequalities of coverage rates for migrant children and outbreaks of rabies and measles should be addressed by policies that focus more on behaviours, barriers to access and health service quality of CHCs. Supplementary immunization activities administer up to 2 million doses of measles vaccines each year [68]; however, catch-up campaigns may miss migrant children, especially if they are unplanned or unregistered births. Vaccination campaigns for controlling measles in migrant populations have proven successful in the Guangdong Province using comprehensive mobilization, communication with the mass media and support from government departments [69].

China has also improved its policies and laws on employer responsibilities to migrant workers in the workplace, including their safety and health protection. Such policies include the Labour Contract Law which holds employers accountable if working conditions and environment negatively impacts on the physical and mental health of the employee. The Law of the PRC on Work Safety iterates employers' obligations to reduce the risk of industrial accidents and mandates local governments to monitor workplaces [70]. At an international level, the Chinese government has ratified the International Covenant on Economic, Social and Cultural Rights and ILO Conventions, which in principle commits China's support of labour rights and worker protection. However, questions have been raised about the implementation of the laws, as well as capacity for reinforcement. Thus, monitoring and evaluation of policies from an occupational and environmental health perspective need to be of utmost importance. There is a need for complete, accurate and up-to-date data and research to facilitate policies and interventions.

Environmental health policies do not address migrants for the most part, but strides towards acknowledging environmental health have been positive. The 2008 Beijing Olympics

Air Pollution policies were successful and since then the Beijing municipal government launched 14 phases of air pollution control, which resulted in a gradual increase in the number of blue sky days each year. China recently released its first National Environment and Health Action Plan which emphasizes the need to coordinate activities across many sectors and ministries. It identifies coordinated and shared data collection and environmental monitoring as a crucial feature of future environmental health policies. Environmental sustainability was addressed in China's eleventh five-year plan, which reiterated the intention to reduce greenhouse-gas emissions per unit gross domestic [71]. However, migrants and the increased risks from environmental hazards are largely ignored in policy.

Lessons from the health services perspective

From a health services perspective, migrants have benefited most from reforms when they are:

- Clear and targeted policies that address well-defined populations;
- Supported by primary care at community level; and
- Implemented innovatively to reach hard-to-track migrants.

Reforms that are clearly targeted for well-defined migrant populations, such as the expansion of migrant worker insurance schemes and building more CHCs in urban areas with many rural-urban migrants, are the most effective and are more likely to be well implemented. For example, between August 2010 and December 2011, Chongqing, one of the five national central cities in China, awarded full urban-welfare rights to 3 million migrants in its rural areas [72]. Nearby in Chengdu, the capital of the Sichuan Province, there are plans to eliminate welfare-related barriers to migration through an integration of health insurance for rural and urban residents [72, 73]. Reforms impose a big financial burden on local governments, but this region is relatively wealthy and migrants are acknowledged and well defined in regional policy. This shows that health reform policies must also be community-centred.

Besides acknowledging the needs of migrants in health service sectors, other challenges include how to ensure universal access for migrants if they move from place to place and how to provide universal implementation of quality services between different levels of government. Shenzhen made bold moves towards insuring migrant children for inpatient care and outpatient care for severe diseases. Though the city was first to implement a compulsory health insurance scheme that covers all children and juveniles despite child registration status [74], enforcement of policy may be affected due to the lack of information amongst migrants especially if their children do not go to public schools where such information is distributed. In the city, most migrant children attend private institutions because they are not registered to use local schools. The policies must target migrant populations the right way and reach them in the right places. Additionally, goals for the universal health coverage of unregistered migrant children regardless of their *hukou* should be prioritized as a national policy agenda.

Improved health innovation and technology in a highly mobile population is key in tracking migrants and providing good services. To reduce the mismatch between the migrant management system data and the real number of information about migrants, some pioneer cities like Shenzhen started to implement a new Resident Card System (RCS). Initiated in August 2008, the free-of-charge RCS is linked to migrant health insurance, occupational

safety insurance and the retirement pension system, and it is anticipated it will be linked with low-rent/low-cost housing. According to statistics from the Shenzhen Public Security Bureau, the RCS covered 10.71 million migrants in the city up to December 2009. However, the RCS may face the difficulty of excluding those who move out of Shenzhen since no measure has been taken to record migrants' departure, whether their stay was long or short term [75].

Lessons from the health improvement perspective

From a health improvement perspective, lessons from China suggest public health programmes can be effective if they are:

- Implemented at community level for migrants using an integrated approach;
- Culturally sensitive to migrant needs and health beliefs; and
- Supported by national policies supporting specific health priorities.

Although central government policies may allow migrants to receive care, service programmes that are not implemented at community level specifically for migrants may not reach them. Instead, migrants may turn to other informal sources of health information such as uninformed mass media or word of mouth. For example, studies have discussed the need for new strategies by the government to provide appropriate, specific, friendly and accessible services about reproductive health for unmarried young migrant women [76] because although there are services available, migrant women are not using them.

Integrated programmes and policies are also important in addressing health improvement issues. Tobacco has been discussed as a risk factor for the future health of young female migrants, and while it is necessary to have community cessation programmes, studies have stressed the importance of integrated programmes for tobacco control, which include government involvement and corporate responsibility. For example, tobacco control advocates have explored regulations to restrict packaging on, and advertisement for, female-targeted cigarette brands as these female cigarette brands have been shown to have strong associations with current smoking rates amongst female migrants (OR 5.69, 95 per cent CI 3.44 to 9.41) [54]. In 2008, joint government bodies released the Regulations on Cigarette Packaging and Labelling in the Territories of the People's Republic of China (the Labelling Regulations) [77]. However, new cigarette package design did not eventually comply with the requirements due to poor regulation. This is an example of how better implementation and monitoring of tobacco restrictions and requirements is necessary to promote healthy lifestyles. Similarly, to improve mental health among migrants, scholars have also highlighted that for programmes to be successful, they need to bridge the gaps between academic, governmental and community sectors, and migrants themselves [78].

Health improvement efforts must also be culturally sensitive to migrants' needs and health beliefs. For example, to improve the mental health of rural–urban migrants, it is vital to provide public education programmes to help them understand their mental health and provide mental health services to support this. However, how to do this effectively requires understanding of impacts of stigmatization and discrimination of these groups. It has been hypothesized that stigmatization affects social isolation and social adjustment, and that this is exacerbated by numerous demographic and psychosocial factors [78]. Therefore, to address public mental health for migrants, who represent many different narratives, interventions and services should be evidence-based and carried out cautiously. To improve women's health,

understanding patterns of how health risks are distributed among sub-groups of female migrants tagged by their region of origin, migratory history and occupation is fundamental in order to build successful health promotion initiatives.

Conclusion: moving public health forward for migrants in Asia

The geographical breadth of China and the mobility of migrants present challenges for public health. Given the complexities and wide breadth of health issues discussed in this chapter, promotion of public health in an age of migration will need to focus on the shifting patterns of migration and their effects, support populations of migrants with a focus on health equity and require efforts at all levels of society.

China's migration challenges are seen elsewhere in Asia and throughout the world. Although groups of migrants and the narratives will differ, lessons can be shared between countries to develop strategies, coordinate global health systems and adapt successful policies.

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