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The Health Status of Internal Migrants in China

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Preface

At present, China is in a critical period of socio-economic developmental transformation. The rapid progression of urbanization has absorbed a large number of rural laborers into cities, which contributes to the unprecedented population migration. "China Statistical Yearbook 2019" states that the size of China's internal migrants in 2018 was 241 million people (National Bureau of Statistics, 2020). The large size of the internal migrants has made great contributions to China's social and economic development, but it is not without an owing consequence to the health of migrants. The internal migrants are mainly engaged in labor-intensive work in the inflow areas, with low occupational status, high work intensity, and long working hours. The poor working environment exposes workers to health risks such as dust, noise, and toxic substances, which may lead to occupational diseases such as silicosis, chronic poisoning, and various types of work injuries (Li et al., 2018; Niu, 2013). Weak economic foundation makes it difficult for internal migrants to access high-quality health services or obtain a decent living setting which aggravates their risks for common respiratory and gastrointestinal infectious diseases (Fan, 2019). Urbanization dynamics including work pressure and social isolation also task the mental health of internal migrants (Fan, 2019; Liu, 2018).

In the era of large population movements, population mobility deserves utter attention. For example, the COVID-19 outbreak in China might have accelerated due to the large-scale population movement during the Spring Festival. The high mobility of the internal migrants, the difficulty of tracking and management, and the poor urban living conditions coupled with the weak links in prevention and control further precipitated the endemicity of the outbreak. At present, China's large-scale migration and urbanization of the internal migrants have strained the modernization of urban governance and the modernization of migrant population management services. Solving the health problem of the internal migrants is an integral part of the government's promotion of modernization of social governance. In 2014, the Chinese government launched a pilot project with the aim of equalizing and improving the quality and efficiency of basic public health services for migrants (Yue et al., 2014). The *Outline of "Healthy China 2030" Plan* promulgated in 2019 specifically emphasized the need to address the health issues of the internal

migrants when it puts forward the strategic status of people's health as a priority. In addition, health interventions and policies such as medical treatment and reimbursements have continuously been introduced and implemented in various settings, to reduce institutional barriers between the internal migrants and health services. Solving the health problems of the internal migrants does not only help achieve the goals of "*Healthy China*" and "*Health for All*", but is also an inherent requirement for maintaining a healthy society and a stable economy.

All the papers collected in this book are original studies, and they are analyzed using data from the China Migrants Dynamic Survey (2013–2018). As the survey does not provide data on "children and family planning services" in the national database, the team fetched respective content from the 2013–2018 Hubei Provincial Health and Health Committee database. The above data is an annual large-scale national sampling survey of migrants since 2009, covering 31 provinces (autonomous regions and municipalities). The influx of migrants in the Xinjiang Production and Construction Corps is relatively concentrated, with a sample size of nearly 200,000 households per year. It covers basic information on the migrant population and family members including the scope and trend of migration, employment and social security, income and expenditure, and residence, and basic public health services, management of marital and family planning services, child mobility and education, psychological culture, etc. In addition, some years also include the special survey on social integration and mental health of the internal migrants, the special survey on health and family planning services in the outflow areas, and the special survey on medical and health services for the mobile elderly (http://www.chinaldrk.org.cn/wjw/#/home).

This book comprehensively applies cutting-edge research design and analysis methods, integrates trend analysis and causal inference analysis, and considers the potential role of social determinants of health of migrants to provide empirical evidence for scientific interventions. The unique advantage of the internal migrants in the study of the relationship between social factors and health is that it has undergone a huge change in the living environment and the social relationships that have changed with it. Based on this and a dynamic research approach, it is easier to observe significant changes in social factors and health outcomes, which helps to identify the causal relationship between the two and propose targeted interventions.

In an academic sense, this project is at the forefront. It integrates relevant theories and methods, explores the potential causal mechanism in the relationship between social factors and the health of the internal migrants based on the Chinese cultural contexts, which enriches the logical framework of causality between the two. From a practical perspective, in the context of the rapid urbanization and the large size of the internal migrants, solving the health problems of the internal migrants is of a great significance for maintaining the stable development of urban and rural areas, achieving the "*Healthy China 2030*" and the "*Health for All*" goals. General Secretary, Xi Jinping, pointed out that it is necessary to strive to provide quality and comprehensive health services for people throughout their life-course (http://www.xinhuanet.com/health/zt/2016JK20/). Moreover, the *Outline of "Healthy China 2030" Plan* has repeatedly emphasized that a solution must be

sought for the health problems of the internal migrants. The current pandemic of COVID-19 also proves that the health problem related to population mobility is a concerning public health issue. Therefore, analyzing and researching the health problems of the internal migrants is not only relevant to the realization of the "*Healthy China 2030*" Goal, but also helps to promote the modernization of the capacity of the national governance system and maintain a healthy socio-economic development of the country.

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Chapter 1
Migration, Migrants and Health in Flux

Junfeng Jiang

At the time of writing this book, there are more than 240 million internal migrants in flux in China, which is a large number in any country or region. In the setting of social transition, most migrants move from rural to urban areas and become migrant workers or businessmen in China. Migrant workers are products of urbanization and industrialization, and they have made indelible contributions to China's social and economic development. Since most migrants become workers, they need to participate in local labor markets, so health human capital is necessary for the internal migrants in China. Numerous studies observe that, as a kind of human capital, health can largely contribute to socioeconomic development (Grossman, 1972). A better health status can help workers improve their market competitiveness, increase their time available for work, income and opportunities for promotion, and reduce their probability of unemployment (Cheng, Jin, Gai, & Shi, 2014; Ecob & Smith, 1999; Zhang, 2011).

However, plenty of evidence shows that migrants are usually exposed to amounts of health risk factors, including a lower socioeconomic status (SES) (less income, less education, low occupational status), high work intensity or more pressure, social isolation and discrimination, adverse access to health related resources, low-level social integration and adaption (Li, Wang, & Sun, 2018; Niu, 2013). All these risk factors are closely related to series of structural factors, e.g. the household registration system (Wang & Fan, 2012). According to the "healthy migrant effect" theory, although the selection of migration results in a better health status for migrants at the initial stage of migration, these health risk factors will ceaselessly damage migrants' health and lead to a higher health loss rate than average (Chen, 2011; Lu & Qin, 2014; Tong & Piotrowski, 2012). With the deterioration of health condition, the social competitiveness of migrants weakens, forcing them to return to their hometown.

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This health selection effect is called the "salmon bias" (Qi, Niu, Mason, & Treiman, 2012; Ullmann, Goldman, & Massey, 2011). The above two health selections run through the whole process of migration, reflecting the complete process of health change in migrants. Just as the title of this chapter stresses, migrants are in flux, and their health status is also in flux because of their migration.

Migrants' health is a research hotspot in sociology, public health, demography, psychology, economics and many other disciplines in recent years, and over one thousand related studies will be published per year around the world. However, different subjects focus on different aspects of migrants' health. Sociology and demography emphasize the general physical and mental health of migrants and their social determinants; public health or epidemiology emphasizes the mechanism of occurrence and development of various diseases (mainly physiological and pathological mechanisms) and the utilization of health services; psychology emphasizes the relationship between mental health and other factors such as personality and environmental pressure; economics focuses more on the economic causes and forming paths of health, macro-system and health resource distribution, and economic benefits brought by health human capital. It is observed that different subjects have their own advantages in health studies. Medical science focuses more on the refinement of health outcomes and research on various diseases. Although the research on health outcomes in social sciences is not as detailed as that in medical science, the former has more advantages in research methods, emphasizing and applying causal inference methods to find out whether the so-called influencing factors are "real causes" of health. The good news is that many studies on migrants' health present an interdisciplinary characteristic (Qi et al., 2012), which is conducive to a comprehensive understanding of migrants' health. The authors of the following chapters of this book come from sociology, public health, economics and other disciplines, which helps to discuss the health problems of Chinese internal migrants from multiple perspectives.

1 Who Belongs to Migrants?

All of the studies on migrants must define who belongs to migrants, but the concept of migrant has not reached an agreement yet. In China, migration is closely related to the household registration system, the latter stipulates which region an individual belongs to from the perspective of system or law, and accordingly enjoys the responsibilities and obligations within a particular region. Thus, migrants in China are usually internal migrants. Some researchers propose that internal migrants are those who leave their hometown (household registration location) and stay in another place to engage in various economic or other activities (He, 2009). Some researchers stress the characteristic of temporal migration in Chinese internal migrants; that is to say, although they leave their hometown for other places, their household registration usually does not change (Xiong, 2009). Other researchers propose that the characteristic of temporality also requires migrants to return to their permanent residence within a certain period of time (Wang & Hu, 1996; Zhang, 1988). For the time

interval of temporality, some researchers propose that people who leave the place of household registration more than half a year can be considered as migrants (Zhai & Duan, 2006), others think there is no need to additionally use time interval to define migrants (Wu & Wang, 2002).

In summary, "unchanged household registration", "leaving household registration location" and "living elsewhere for more than a certain amount of time" are recognized as three main characteristics of migrants by most researchers. In the following chapters of this book, the definition proposed by the National Health Commission of the People's Republic of China is used. That is to say, internal migrants are those who leave their household registration location for other places that belong to another county/district for no less than one month and do not move their household registration to the places they move in. This definition is also in line with the definition widely used in academic researches.

2 Health Status of Internal Migrants in China, also Introducing the "Healthy Migrant Effect" and "Salmon Bias"

In the study on migrants' health, the "healthy migrant effect" and "salmon bias" are two unique health phenomena (Lu & Qin, 2014; Qi et al., 2012). The "healthy migrant effect" (Li et al., 2018) indicates that, at the beginning of moving to other places, migrants are healthier than the natives in the places either they leave or they leave for, which is considered a health selection. However, with the passage of time, migrants' health will gradually deteriorate and usually become poorer than the natives, which is called the "epidemiological paradox" (Chen, 2011; Lu & Qin, 2014). Discussing the social determinants of health during this process is the hot research area in current studies, so most studies on migrants' health focus on the social determinants of health. After the outflow for a period of time, an inevitable choice for migrants is to continue the migration or return home. Evidence shows that there is also a health selection in the backflow of migrants; health status is an important influencing factor of backflow, and migrants who have a poorer health status are more likely to return home (Palloni & Arias, 2004; Qi et al., 2012; Ullmann et al., 2011). This phenomenon is called the "salmon bias". The "healthy migrant effect" and "salmon bias" link the beginning and end of migration, reflecting the whole process of migrants' health change. Studies on the health of international migrants suggest that, after the above two health selections, migrants usually have more advantages in health than the natives (Nauman, VanLandingham, Anglewicz, Patthavanit, & Punpuing, 2015; Palloni & Arias, 2004). In China, however, internal migrants are restrained by multiple institutional and structural factors in the process of migration. Thus, migration brings more health risk factors rather than health protective factors (Li et al., 2018), which leads to more health losses in the process of migration. The health loss and health selection coexist in the process of migration, and there is

still no consensus on which one is stronger (Niu, 2013; Shang, Ding, & Shi, 2019; Wang & Zhou, 2018). Therefore, numerous health risk factors are eroding the health of Chinese internal migrants, making their health condition seriously deteriorated, until they return home with a "sick body".

The health problems of Chinese internal migrants are highly related to their low SES and many other social factors. Previous studies indicate that Chinese internal migrants are mainly engaged in labor-intensive work, such as manufacturing, textile and food processing industries, these jobs have the characteristic of low occupational status, high working intensity, long working hours and poor working conditions, and workers in these occupations are more likely to expose to dust, noise, toxic substance and many other health risks. Thus, occupational diseases such as silicosis and chronic intoxication, as well as various occupational injuries, are more common in Chinese internal migrants (Jiang, 2006; Niu, 2013; Zheng & Lian, 2006), and fewer high-quality health resources are available because of their low SES. Also, the low SES of Chinese internal migrants cannot provide them a good living condition, so millions of internal migrants are living in crowded, unfurnished and unsanitary temporal dwellings, and are under the threat of enteritis, tuberculosis and other infectious diseases (Fan, 2019; Zheng & Lian, 2006). Furthermore, as internal migrants are mostly in the stage of frequent reproductive activities, their reproductive health problems are also very serious, and AIDs, abortion, reproductive tract infection and others seriously threaten their health (Zheng & Lian, 2006). Apart from physical health, migrants' psychological health problems are also increasingly severe. For Chinese internal migrants, the incidence of common psychological diseases such as depression is higher than the average level in the entire population, which is closely related to the stress, discrimination and social isolation that they face in the strange land (Fan, 2019). Migrants need to start their new life in an unfamiliar environment, so it is easy for them to have psychological health problems due to social maladjustment, institutional and cultural isolations (Liu, 2018). In the next section, multiple health influencing factors mentioned in other related studies will be systematically summarized and reviewed.

Since many internal migrants are suffering from series of health risks, the Chinese central government takes their health seriously. Since 2009, the Chinese central government has taken up the equalization of basic public health services program, which aims to provide basic public health services for free for all Chinese residents including migrants (Yin et al., 2015). In 2014, the Chinese central government began to carry out the basic public health services program specifically for migrants, which aims to promote the quality and efficiency of the utilization of basic public health services in this special group (Yue & Li, 2014). In addition, medical and health policies such as long-distance medical treatment and reimbursement have also been published and implemented continuously, which has reduced the health system barriers in access to health resources for internal migrants (Ministry of Human Resources and Social Security of China, 2016). Furthermore, the household registration system reform is also gradually reducing the household registration distinction between urban and rural residents, replacing agricultural and non-agricultural household registration

with resident household registration, so as to reduce the household registration discrimination of natives on migrants and improve migrants' health. Nevertheless, the health of Chinese internal migrants still faces numerous challenges, and there is still a long way to go for the health for all.

3 Influencing Factors of Migrants' Health

This book mainly focuses on the social determinants of health in Chinese internal migrants, so some socio-demographic factors such as sex and age that may influence migrants' health are not reviewed in this chapter. In this chapter, the health effects of migration factors, SES, social capital, social cohesion and utilization of health services in migrants are reviewed. It should be noted that when examining and discussing the health effect of these factors, readers should not disentangle the internal associations among them and separately analyze them. Instead, readers should understand the health effects of these social determinants from a comprehensive and connected perspective.

3.1 Migration Factors

Migration is a unique characteristic of migrants, and migration factors that may be related to health include range/distance of migration, duration of migration and size of migration. Previous studies observe that a longer distance of migration may have a negative effect on migrants' health; interprovincial migration leads to a decrease in health, while migration within province is not related to health (Qin, Wang, & Jiang, 2014). A longer distance of migration usually yields more cultural and institutional barriers, which may lead to more social maladjustment and less access to health resources and make migrants' health deteriorate. The health effect of duration of migration follows the "healthy migrant effect" and "epidemiological paradox". That is to say, migrants who have a shorter time of migration have a better health status; as time goes by, the health status of migrants will become poorer and even become poorer than the natives. This is closely related to the health risk factors faced by internal migrants in the process of migration, including low-level SES, cultural barriers, social isolation and inconvenient access to health resources (Li et al., 2018; Lu & Qin, 2014). The size of migration mainly refers to family migration, which is also one of the most important trends for Chinese internal migrants. Theoretically speaking, family migration can increase companionship among family members, reduce family tension and increase residential and occupational stability (Taylor & Foster, 2015; Tian, 2014), so as to benefit health. However, although family migration has been observed to be closely related to the social cohesion of migrants (Tian, 2014; Wang & Zhang, 2017), empirical evidence on the causal association between family migration and health is limited.

Based on the review above, it is observed that, in most cases, migration factors are just related to (not causally related to) migrants' health. The association between migration factors and migrants' health exists mainly because these migration factors are associated with series of health risk exposures. Migration factors mentioned above are usually associated with SES, social capital, social cohesion and health services utilization, which are considered to have more important effects on health.

3.2 SES

SES, usually including education, income and occupational status, fundamentally influences health through three ways mainly: improvement of work/living conditions, easy access to health resources, and more health consciousness and health behaviors (Adler & Newman, 2002). The internal migrants in China leave their hometown mainly to find jobs and earn more money, so they have a stronger motivation to pursue high SES, especially high-level income. Thus, SES may have a stronger health effect in Chinese internal migrants. Chinese internal migrants mainly migrate from rural to urban areas, and many disadvantages, including less education, fewer labor skills, less income, high-intensity work, more exposures to health risks and less return on labor, are encountered by them (Chen, Chen, & Landry, 2013; Xie, 2012; Yu & Sun, 2017; Zhao, 2015). Most of the internal migrants, therefore, suffer from a low SES.

For Chinese internal migrants, the health effect of SES still plays a role through the above three ways. Previous evidence shows that poor work conditions, intensive work and less return from work are more likely to be experienced by migrant workers. A continuous exposure to these toxic conditions has led to serious physical wear and more stress in their daily life, which causes a poorer health status of migrants (Chen et al., 2013; Niu, Zheng, Zhang, & Zeng, 2011; Yu, 2016). Furthermore, Chinese internal migrants are mainly rural-to-urban migrants, they usually have a lower level of education that impedes their upward mobility in terms of income and professional status (Jerrim & Macmillan, 2015). Also, their low-level education is not conducive to their social cohesion in values and behaviors and easy to yield social isolation (Hu & Chen, 2012). Furthermore, it is adverse to the access to health information, the development of health consciousness and habits, and the utilization of health resources (Lu, Qiu, Yang, & Qian, 2018). Less education and the shortage of job skills lead to a low occupational status and less income in Chinese internal migrants, and these disadvantages make them unable to obtain high-quality living conditions. This low SES brings numerous health risks, including poor living conditions, less access to health resources, social isolation and exclusion, and a long-term exposure to these risks will inevitably lead to a poor health status for the internal migrants in China (Hu & Chen, 2012; Li et al., 2018; Liang, Hou, & Li, 2017; Niu, 2013; Yu & Zhu, 2018).

3.3 Social Capital and Social Cohesion

Social capital and social cohesion are two important social determinants of health, and they have not only some distinctions but some overlaps. Social capital usually refers to social resources, norms of reciprocity and trust produced by and nested in the social connections across social members, so trust, norms of reciprocity, social interaction and participation are widely used to measure social capital (Putnam, 2001, 2002). By contrast, social cohesion usually refers to the integration in economy, culture/values, social network and identity after migrants migrate into a new place (Chen & Zhang, 2015; Yang, 2015; Zhou, 2012). It can be observed that the two concepts overlap in social participation, social network and interactions: the active participation in local social activities and interactions with the natives are common ways to improve social capital and social cohesion, and they are also frequently-used measures of these two things.

Since the concept and measure of social capital and social cohesion are complex, current empirical evidence on the relationship between social capital/social cohesion and health is mixed. Studies on social capital and health in migrants are still rare, and most of them observe a positive association between social capital and health. For example, trust and social participation are observed to be two important protective factors of health for migrants in Sweden (Lecerof, Stafström, Westerling, & Östergren, 2016); family network can improve the psychological health of migrants by increasing the social support obtained from their family members in Indonesia (Lu, 2012); and various forms of social participation, including bonding, bridging and linking, can improve the self-rated health (SRH) of migrants by reducing discriminations from others in Korea (Kim, 2016). Although social capital is observed to have a positive effect on the physical and mental health of Chinese internal migrants (Wang & Chen, 2015), more evidence suggests that different forms of social capital have distinct effects on migrants' health (Hu & Chen, 2012; Palmer & Xu, 2013). For example, Hu and Chen (2012) proposed that more trust and intensive social networks were related to better psychological health in Chinese internal migrants, but a higher level of heterogeneity in networks reduced their psychological health, as heterogeneous networks increased discrimination and social pressure. Palmer and Xu (2013) observed that individual-focused social capital (friend and family support), trust in community members and community attachment had positive health effects in Chinese rural-to-urban migrants, but neighboring and organizational social capital had negative health effects. Using the instrumental variable approach, Mi, Li, and Zhu (2016) observed that the positive health effect of social network was stronger than of trust and norms of reciprocity in Chinese internal migrants, and their social connection to the natives brought more health benefits than to the people in their hometown. Other researches indicate that social capital can improve health by reducing the exposure to series of health risks (Qiaohong Yang, Zaller, Huang, Dong, & Zhang, 2018; Yang, Li, & Attane, 2015).

More studies on social cohesion and health are published. Studies in different cultural settings suggest that social cohesion usually has a positive effect on the physical

and psychological health of migrants (Hong, Zhang, & Walton, 2014; Ruijsbroek, Droomers, Hardyns, Groenewegen, & Stronks, 2016; Vries, Dillen, Groenewegen, & Spreeuwenberg, 2013; Wang & Chen, 2015). Furthermore, social cohesion is considered a multidimensional concept, and each dimension is closely related to health. Evidence from European countries suggests that elevated country-level social cohesion is related to better SRH in migrants (Chuang, Chuang, & Yang, 2013; Deindl, Brandt, & Hank, 2016). And micro-level evidence suggests that migrants' health is closely related to their employment status, level of income and working conditions (Berkman, Kawachi, & Glymour, 2014), which implies the importance of economic cohesion for migrant workers' health. Migrants' integration in local social networks and participation in local social activities can also improve their physical health. A higher level of social participation, including participating in religious activities and neighborhood/community activities, contributes to better physical health (Ikeda & Kawachi, 2010; Muennig, Cohen, Palmer, & Zhu, 2013); and a higher level of peer social networks usually provides more social support and connections, and reduces pressure and hostility, which helps individuals obtain more health resources and improve their health (Link & Phelan, 1995). For psychological health, evidence from developed countries shows that, for migrants, a higher level of cohesion in social network and participation is related to better psychological health (Ikeda & Kawachi, 2010; Muennig et al., 2013), and elevated neighborhood cohesion is associated with reduced depression (Perez et al., 2015) and elevated psychological health (Erdem, Lenthe, Prins, Voorham, & Burdorf, 2016; Erdem, Prins, Voorham, Lenthe, & Burdorf, 2015).

Studies on the mechanism of social cohesion affecting health mainly focus on the role of social cohesion in promoting the health behaviors of migrants (Holmes & Marcelli, 2014; Kim & Kawachi, 2017). Previous evidence shows that a higher level of perceived social cohesion is closely related to a lower probability of excessive drinking (Ma & Smith, 2017). Neighborhood cohesion can help reduce the smoking behaviors of migrants (Holmes & Marcelli, 2014; Lozano et al., 2016) and the probability of smoking among migrants who have children (Alcalá, Sharif, & Albert, 2016). A higher level of perceived neighborhood cohesion also benefits the access to high-quality healthcare resources and services (Kim & Kawachi, 2017; Maleku, Kim, & Lee, 2019). Thus, elevated social cohesion produces better health by increasing health behaviors in most situations in migrant population.

3.4 Health Resources and Services

Some studies consider that a higher SES and elevated social capital and cohesion can improve migrants' health by increasing their convenience of access to health resources (Hou, Lin, & Zhang, 2017; Lu et al., 2018; Maleku et al., 2019). It is recognized that the access and utilization of health resources and services are downstream influencing factors of health, which have a direct protective effect on migrants' health, particularly physical health. Previous evidence suggests that an equal access

to basic public health services, such as medical insurance intake (Song & Zhang, 2018) and health education engagement (Liu, Gao, & Zhang, 2018), contributes to the promotion of migrants' health, where the most direct way is to increase the access to health resources and the efficiency of health resources utilization (Cai, Yang, & Bian, 2019; Han & Meng, 2019). Although some evidence from developed countries suggests that the utilization of healthcare services in migrants is not less than in local residents (Rodriguez-Alvarez, Lanborena, & Borrell, 2019), a huge disadvantage in the utilization of healthcare services in Chinese internal migrants can be observed because of numerous structural or institutional factors (Shao et al., 2018; Zheng, Hu, Dong, & Hao, 2018). In this unique setting, the central government of China has carried out the plot project of equal access to basic public health services to improve the quality and efficiency of the utilization of basic public health services among migrants (Yue & Li, 2014).

4 Focuses in Empirical Studies: Contextual Factors and Causal Effects

The study design and statistical method have also become more and more detailed, accurate and advanced in recently published studies on migrants' health, specific contexts and unique health problems have also be taken seriously. Thus, two issues have been paid attention to in studies on migrants' health. One is the contextual social determinant of health in migrants, another is the causal health effect of social determinants.

The generalized multilevel model is widely used when it comes to the contextual effect on health. The environment that migrants live in, including the level of infrastructure, working place environment and neighborhood conditions, will have a profound effect on their health behaviors and outcomes (Levecque & Rossem, 2015; Lu & Wang, 2019; Niu et al., 2011), and they are a kind of macro factors that are independent of specific migrants. Actually, individuals sharing the same living environment usually have stronger connections, while individuals sharing distinct living environments usually have some systematic differences. However, the generalized linear model requires the assumption of sample independence, and there should be no systematic difference across different groups. Thus, a biased estimation will be yielded in most situations. By contrast, the generalized multilevel model does not require such assumption and can estimate the contextual effects of macro influencing factors more accurately (Wang, Xie, & Jiang, 2008). In common two-level nested models, the contextual effects of environmental factors in local areas on migrants' health can be examined. Furthermore, in cross-classified random effects models (CCREM), the contextual effects of both local environmental factors and hometown environmental factors on migrants' health can be simultaneously examined. In three—or more-level nested models, researchers can examine the health effects of factors from multi-levels. The multilevel model is used to estimate the contextual

effects of group factors on migrants' health in this book. For example, Chap. 10 uses community as the group level and discusses the influence of community factors on female migrants' contraceptive behaviors. Chap. 11 uses province as the group level and examines the health effect of province-level economic development in Chinese internal elderly migrants.

Another important issue is that specific causal inference approaches should be used in empirical studies on migrants' health, as the migration itself is a selection. The health of migrants has a characteristic of selection, and it is obviously reflected in the phenomena of "healthy migrant effect" and "salmon bias". The former indicates a health selection at the beginning of migration, while the latter indicates a health selection at the end of migration. Related studies using a causal inference design can be classified into two categories. One uses longitudinal data, design and methods to observe the health trajectories with time to yield the causal health effect of other factors (Lu & Qin, 2014; Nauman et al., 2015); another uses specific causal inference approaches, such as the instrumental variables (IV), propensity scores matching (PSM) and difference-in-difference (DID) approaches, to yield the causal effect on health (Shang et al., 2019; Wang & Zhou, 2018). This book also focuses on the application of some causal inference designs and approaches when it comes to migrants' health, which is interspersed in some chapters. For example, Chap. 4 discusses and addresses potential endogeneity problems from multiple perspectives to yield a more accurate causal association between minimum wage standard and migrants' social medical insurance take-up. PSM was used to do a robust check in Chaps. 7 and 11 to provide more strong evidence for the association between migration experience and migrants' health, as well as the positive association between the education of migrant children and the health of their older parents.

5 Framework, Contents and Innovations of this Book

There are 11 chapters in this book. This Chapter is an introduction that briefly reviews the concept of migrants, as well as some hot issues and empirical methods widely used in migrants' health studies. The core contents and data used in the following chapters are also introduced in this Chapter. General internal migrants in China are analyzed in Chaps. 2–7, while Chaps. 8–11 discuss some special groups such as female and older migrants.

The status quo and influencing factors of basic public health services among Chinese internal migrants are discussed in Chap. 2. Nationally representative data and data from Hubei Province were used, and the establishment of health record (HR) and receiving of health education (HE) were analyzed. It is reported that the utilization level of HR and HE in migrant population was moderate, migrants with low SES and without medical insurance should be paid more attention to. The equalization of basic public health services is an important policy vigorously promoted by Chinese central government in recent years to improve migrants' health (Yue & Li, 2014).