



# Urbanization, socioeconomic status and health disparity in China<sup>☆</sup>



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## ABSTRACT

While urbanization is associated with a wide range of human welfare outcomes, its impacts on population health are much less obvious. This article aims to investigate how rapid urbanization in contemporary China affects health, and how it shapes health disparities between groups of different socioeconomic status (SES). Using data from eight waves of the China Health and Nutrition Survey (CHNS) spanning a period of 20 years from 1991 to 2011, we examine the confounding effects of urbanization on health and the income–health relationship and explore the underlying mechanism. Results from multilevel analysis show that living in more urbanized areas increases the risk of acquiring chronic diseases, and the health penalty of urbanization is more severe among those with a higher income. Lifestyle is the pathway through which urbanization affects health, and a high-fat diet and decreased physical activity diminish the health benefit brought by high income and accelerate health decline in more urbanized areas. These results suggest an urgent need to design and implement health promotion programs to encourage healthy lifestyles in China under rapid urbanization.

## 1. Introduction

China is experiencing urbanization on a scale unprecedented in human history. The percentage of the country's population living in cities increased from 18% in 1978 to 56% in 2015 (National Bureau of Statistics, 2016). It is anticipated that its urban population will grow by another 350 million by 2025 and that 1 billion people will live in cities by 2030 (Development Research Center of the State Council, 2014). Aside from its many profound consequences, urbanization plays an increasingly important role in shaping population health and socioeconomic status (SES)-related health disparity in China.

The health consequence of urbanization is mixed. On the one hand, urban residents may benefit from improved sanitation, infrastructure and access to health services; on the other hand, they may come across other problems including income inequality, unhealthy lifestyles, and environmental pollution in cities. In China, urbanization has been accompanied by improved living standards and longer life expectancy, yet the prevalence of chronic diseases and growing number of unhealthy population may suggest a health penalty (see Fig. 1).

The impact of urbanization on people's health may vary by their SES. However, whether urbanization widens or narrows the health disparity between groups of different SES is still debatable. Urban life may increase the health inequality by putting the disadvantaged group in “double jeopardy”. Since the prices of health products and services

are somewhat determined by the average income level, a higher income inequality in the city would render these resources more unaffordable for the poor (Du et al., 2004; Fang and Rizzo, 2012; Robert, 1999). Yet, urbanization may also flatten the SES gradient in health, because improved sanitation and built environment as well as better access to health information in cities would benefit the poor on the other hand. Higher-income earners, especially those in developing countries, may be at higher risks of stress, decreased physical activities, over-nutrition and unsafe sex (Maruapula et al., 2011; Zhu, 2011).

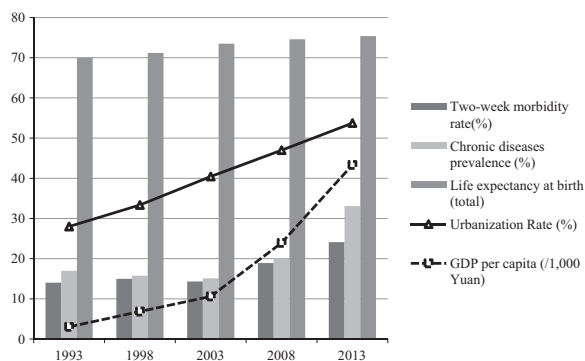
The existing literature on this issue focuses on either large cities in developed countries or ghettos in developing countries. It is unknown whether, and if so, to what extent, the observed effects are specific to these urban settings. Empirical research on China rarely examines the impact of urbanization on health inequality and its underlying mechanisms. It is unclear how the dramatic changes in the social, demographic, and living environments influence the health profile of the Chinese population. Our study attempts to fill these gaps by investigating two questions: 1) How does urbanization affect health and the SES–health relationship in communities with various levels of urbanization in China? 2) Through what channels does urbanization exert these impacts?

This study contributes to the literature in several respects. First, the article adds new knowledge to the study on health and urbanization by providing evidence from a booming economy and communities of

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**Fig. 1.** Rapid urbanization, GDP growth, life expectancy and morbidity rate in China during 1993–2013. Sources: China Statistical Yearbooks; China Health and Family Planning Statistical Yearbooks; the World Bank.

various sizes. Second, it enhances our understanding of health inequality in China by revealing how social changes are intertwined with individual attributes to generate health gaps among various SES groups. Finally, it sheds light on the mixed results from previous studies by analyzing the mechanisms of urbanization's effect on health. The findings of this study have implications for Chinese government policies aiming to further promote urbanization to fuel its economic growth.

## 2. Literature review and background

### 2.1. Urbanization, SES, and health

Previous studies generally supported the idea that the relationship between urbanization and health is complex, because each dimension of urban life affects health in its own way and the effects vary with the specific social and cultural contexts (Gelea and Vlahov, 2005; Rydin et al., 2012; Zhu et al., 2011). For instance, urbanization may lead to lower rates of infant mortality and infectious diseases due to improved infrastructure, sanitation and access to health services and knowledge. But in developing countries where the population density is too high, sanitation remains unsatisfactory and health services leave much to be desired, urbanization is linked to poorer health (Eckert and Kohler, 2014).

People of higher SES generally enjoy better health outcomes (Phelan et al., 2010), and this SES gradient in health may be affected by urbanization. Double jeopardy theory claims that urban life raises the importance of SES in health protection, because living costs are higher and physical and psychological stressors are more concentrated in cities than in rural areas (Robert, 1999). A comparative study of 47 countries found that health disparities between the rich and the poor within the city were even more distinctive than those between urban and rural residents (Van de Poel et al., 2007). Other scholars observed a flattened SES gradient in health in cities. They revealed that the health benefits that come with a better income may be outweighed by the unhealthy lifestyle and environmental deterioration associated with urbanization in some countries, while the urban poor may experience improved health through access to health facilities such as hospitals and primary health care services, as well as various health information through educated members in their network (Allender et al., 2008; Maruapula et al., 2011; Sodjinou et al., 2008).

Considerable studies have reported the health penalty of urbanization in China. Empirical evidences showed that urbanization was related to a higher prevalence of mortality, hypertension, overweight and obesity, and decreased self-reported physical and mental health (Attard et al., 2012; Chen et al., 2014; Fu and Land, 2015; Li et al., 2012; Gong et al., 2012; Van de Poel et al., 2009, 2012). The effects of SES on health may be different for the urban and rural populations. Yang and Kanavos (2012) found that income and educational attain-

ment had more prominent influences on health inequality in cities than in rural areas. For the urban population, 76–79% of inequalities were driven by socioeconomic-related factors, compared with only 48% for the rural population. Hence, there is evidence suggesting that urbanization steepens the SES gradients in health.

### 2.2. Lifestyle as a mechanism

How does urbanization affect health and health differentials between the rich and the poor? A significant body of research has pointed to the importance of lifestyle. Health lifestyle theory claims that lifestyle is a bridge between structure and human agency and affects health outcomes through a two-step process (Cockerham, 2005). In the first step, structural conditions shape people's life chances (lifestyle options). In this case, people living in urban areas would be exposed to more diverse choices of lifestyles—including unhealthy lifestyles—than their rural counterparts. In the second step, people choose their preferred lifestyles from the limited options, according to their SES background (life choice). People of higher SES generally have healthier lifestyles, as they are more likely to commit to regular exercise, adopt healthy diets and receive physical checkups (Elo, 2009). However, considerable studies conducted in developing countries also found that higher-income groups are more likely to smoke, drink and adopt high-calorie diets (Danaei et al., 2013). One possible explanation is that certain unhealthy lifestyles are actually considered privileges in these countries.

China's rapid urbanization is accompanied by widespread unhealthy lifestyles. The Chinese diet has shifted from ones consisting primarily of complex carbohydrates and fiber toward ones loaded with fats, saturate fats and sugars (Gong and Fuller, 2010). Unlike people in the U.S., Chinese people adopt a more unhealthy diet as their incomes increase (Kim et al., 2004). Meanwhile, there has been a tremendous decline in the intensity of occupational activity in China since the 1990s (Ng et al., 2009). Since leisure activities and exercise have not grown as popular as they have in western countries (Bell, Ge and Popkin, 2001), the decreased occupational activity indicates various health risks including obesity and hypertension. The findings led many scholars to the conjecture that lifestyle is the mechanism of the urbanization effect. Nevertheless, limited empirical studies have directly tested this conjecture. Van de Poel et al. (2012) examined whether the effects of urbanization on health operated through lifestyle. They found that urbanization marginally significantly raises fat intake and smoking, which had no significant impact on health. This may be due to their relatively short study period (i.e. 1991–2004), and the lags involved for changed lifestyle to impact on health outcomes.

### 2.3. The present study

Previous studies have provided informative evidence on the relationships between urbanization, SES and health. However, two important questions deserve further exploration. First, few studies have evaluated whether urbanization affects the SES-related health inequality in developing countries and in the context of medium-/small-sized communities, so our picture of the health consequences of urbanization remains sketchy. Second, studies on China have rarely tested whether or not lifestyle is the mechanism through which urbanization influences health and health disparities. The answer is important to understand the health inequality in China and to design effective health promotion programs. In this study, we aim to answer these two questions by exploring how urbanization influences the SES gradient in health in China and examine its mechanisms using a nationally representative, longitudinal dataset spanning 20 years.

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