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How Exposure to Urban Life Shapes Health Outcomes: A Longitudinal Analysis of Older Rural-to-urban Migrants in China

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Background

Rural-to-urban migration not simply represents changes in residential locations but also movements from agricultural settings to industrial societies. Compared with their rural counterparts, urban residents have longer sedentary time, less physical activity, and more fat and sugar in daily diet (Rosenthal, 2014). The differences in lifestyles lead to variations in health outcomes. After long-term acculturation, rural-to-urban migrants may abandon their original living habits and adopt urban lifestyles. In fact, extensive literature has documented the association between urban lifestyles and decreasing health outcomes.

In India, a populous country where rural-to-urban migration is common, lifestyle factors, such as smoking, alcohol intake, and high salt intake, were strongly associated with a rise in hypertension among migrants from rural areas (Gupta, 2003). Both men and women who had migrated from rural areas to urban areas have a significant higher prevalence of risk factors like smoking and tobacco use, obesity, hypertension, high total cholesterol, low HDL-C, metabolic syndrome and diabetes (Gupta et al, 2007). Compared with rural men and women, both migrant men and women had significantly lower levels of physical activity and their levels were similar to those of their urban counterparts (Sullivan et al., 2011). A similar pattern was observed in Guatemala, where rural-to-urban migrants had significantly higher blood pressure and lower physical activity than those who did not migrant and remain in their native villages (Ramirez-Zea et al. 2005). In Iran, rural-to-urban migrants had higher chance of getting coronary diseases compared with their rural counterparts, which was explained by westernization of traditional Iranian diet and sedentary lifestyle (Aghasadeghi, 2008). Urban lifestyles drove the increasing prevalence of NCDs, even in the least developed countries. In Kenya, rural-to-urban migrants' blood pressure increased and tended to keep rising only six months after migration, which was also attributed to changes in diet and physical activity (Poulter et al., 1985).

Gaps in Existing Literature

In the context of China, not many studies have measured the effect of migration on health outcomes. In contrast, urban-rural health disparities and lifestyle differences have been discussed in a lot of research, even though the results of these studies are mixed and inconclusive.

In terms of urban-rural health disparities, some studies showed that urbanization is beneficial to the health of older people in China. As observed in the latest four censuses, death rates at all ages were lower in urban areas than in rural areas (National Bureau of Statistics of China, 1984; 1992; 2002; 2012). This urban health advantage could be explained by more socioeconomic resources, greater access to healthcare services, and more completed infrastructure, such as clean water and convenient transportation (Cai et al, 2010; Wang & Li, 2008; Zimmer et al, 2010). However, some other studies presented negative association between

urban residence and health outcomes of Chinese older adults. The prevalence of NCDs, such as hypertension, diabetes and obesity, was higher among older people living in urban areas than their rural counterparts (Gong et al, 2012). The high prevalence could be attributed to high fat diets and physical inactivity (Popkin & Du, 2003; Zhu et al., 2016).

As for urban-rural lifestyle differences, most studies focused on two aspects: physical activity (PA) and nutrition intake. Low PA was associated with poor health-related quality of life (Dai et al., 2015) and sufficient PA was correlated with reduced depressive symptoms (Du et al., 2015) and lower prevalence of NCDs (Huang et al., 2015). Significantly higher proportion of rural residents (78.1% vs. 21.8%) reported being physically active than that of their rural counterparts. Looking at domain-specific activities, the proportion of rural dwellers who participated in work-related PAs and leisure-time activities were both higher than that of urban residents (Muntner et al., 2005). Compared with people living in urban areas, rural residents had about 20% more PA (Du et al., 2013). A similar pattern was observed among Chinese older adults: older people living in the urban areas were less physically active than those who live in the rural areas (Muntner et al., 2005). In terms of nutrition intake, urban residents were more likely to consume excessive amounts of fried foods that contained high salt and fat than rural residents (Wang et al., 2008). Proportion of energy from fat and animal source foods was positively associated with urbanization level and household income level (Zhang et al., 2017). Consequently, urban residents had higher increase in the prevalence of obesity than rural dwellers (Wang et al, 2007). Urban residents had higher chance of being overweight and hypertensive and this difference was no longer significant once after controlling for lifestyles (Hou, 2008). Among older adults, elderly people in the eastern urban areas were significantly more likely to be overweight, compared with those in western rural areas (Kun et al, 2013).

The studies above documented the health inequality between urban residents and rural dwellers, and two main causes of this disparity. However, most of them took residential locations as static status and ignored the dynamic process of internal migration, which enabled people from rural backgrounds to have exposure to urban life. In fact, internal migration has been a rising trend during the past few decades, as the process of urbanization kept expanding in China. Among 670 million Chinese living in urban areas, more than one third of them (225 million) are rural-to-urban migrants (National Bureau of Statistics, 2016). Recently, a still limited but growing body of literature started to focus on the health outcomes of this group of people. Compared with native rural/urban residents, rural-to-urban migrants have better self-rated health and lower prevalence of mental and physical diseases (Lu & Qin, 2014; Xu et al., 2015; Xu et al., 2017) and these findings are consistent with the healthy migration theory, which indicates the selection effect in the health of migrants (Abraido-Lanza et al, 1999). However, most of these studies used younger rural-to-urban migrants as research subjects and few of them analyzed whether the observed health advantage would last in older ages. For studies that used older people as research subjects, many of them only focused on mental health and did not analyze physical health (Xu et al. 2018; Xu et al., 2017). Meanwhile, none of the aforementioned studies consider whether the association between rural-to-urban migration and health outcomes varies with length of time living in cities. It is reasonable to argue that different length of time living in cities will lead to different extents of exposure to urban life, and thus present different results in health outcomes.

A recent study (Gu et al., 2017) looked at the association between exposure to urban life and mortality risks among older people in China. Using a life course perspective, Gu and co-workers further categorized rural-to-urban migrants into eight groups based on their birth places,

current residential locations and lifetime occupation. Lifetime occupation is used to measure the exposure to urban life. For example, an older person who were born in the rural area but now live in the city and had a non-agricultural job before age 60 was defined as having mid-late life exposure to urban life; another older person who was also born in the rural area and now live in the city but had an agricultural job before age 60 was defined as having late life exposure to urban life. Despite the innovative experiment design, this study only examined mortality risks and no specific mental or physical diseases were studied.

Data

The data will come from China Health and Retirement Longitudinal Study (CHARLS), a nationally representative longitudinal survey of persons in China 45 years of age or older and their spouses, including assessments of social, economic, and health circumstances of community-residents (Zhao et al., 2013). The national baseline survey for the study was conducted between June 2011 and March 2012 and involved 17708 respondents. CHARLS respondents are followed every 2 years, using a face-to-face computer-assisted personal interview (Zhao et at., 2012). There are three saves of national survey so far.

In the survey, all respondents were asked about their birth place, past residential locations, current address, and the time when they moved to their current place, which provided rich information about their internal migration history. In terms of health outcome measures, blood pressure, height, weight and waist circumference were measured in baseline and follow-up surveys by professional medical staff. Compared with self-reported data, measured biomarkers would provide more accurate information.

In order to be included in the analytic sample, the observations need to meet the following requirements. First, they need to be aged 60 or above, which is the definition of older adults in China. Second, they need to have rural-to-urban migration history and are now still living in cities. Third, they participated in all three waves of national survey.

Method and Research Plan

I will use blood pressure, BMI (body mass index) and waist circumference, as dependent variables. All of them are important indicators of many diseases, such as heart diseases, hypertension, diabetes and obesity. My key independent variable will be the number of years that rural-to-urban migrants have lived in cities, which is a measure of their exposure to urban life. Meanwhile, socioeconomic and demographic factors, including race, gender, income, education, marital status, will be controlled.

I will use logistic regressions to analyze the association between exposure to urban life and health outcomes. I will divide blood pressure levels into three groups: normal blood pressure, pre-high blood pressure and high blood pressure. For BMI, I will have four categories: underweight, normal weight, overweight and obesity. For waist circumference, I will have three groups: low health risk, moderate health risk, and high health risk. The criteria used for the categorizing of three health indicators are all based on the standards of National Heart, Lung, and Blood Institute.

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