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Short Report

Improving but unequal: Temporal trends in Chinese self-rated health, 1990–2012

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ABSTRACT

This study examines temporal trends in the self-rated health of Chinese adults from 1990 to 2012. Concentration on this particular period in Chinese history provides insights into the health implications of China's massive societal transformation induced by economic reform. A series of cross-classified random effects models were estimated predicting favorable health status across time periods and adjusted for age, cohort effect and individual-level covariates. Results show that more recent birth cohorts exhibit better health conditions than earlier birth cohorts. However, period effects had a more profound effect than that of birth cohort. Net of age, cohort and individual-level covariates, there is a significant and increasing trend in self-rated health since the early 1990s. The period pattern was non-monotonic, with health improvement in the early 1990s, a dip later in that decade, but more evidence of improvement by 2012. We also found that health disparities have widened over the past 20 years, particularly on the basis of income and educational attainment.

Introduction

Chinese economic reform, launched in the late 1970s, brought massive macroeconomic and institutional transformations. Accordingly, a great deal of scholarly attention has been devoted to the consequences of large-scale societal transformations for Chinese lives. Earlier studies have focused on social stratification and social mobility, spawning a large body of market transition literature (Hannum & Xie, 1994; Nee, 1991). Recently, increasing attention has been given to the quality of life, such as physical health and psychological well-being (e.g., Brockmann, Delhey, Welzel, & Yuan, 2009; Chen, Yang, & Liu, 2010; Easterlin, Morgan, Switek, & Wang, 2012; Schafer & Kwon, 2012; Steele & Lynch, 2013; Tang, 2014; Whyte & Sun, 2010). In this paper, we examine health implications of China's social changes from 1990 to 2012. How has self-rated health changed during economic reform? How have socioeconomic inequalities in health changed during this period?

Market reform and health in China

Economic reform has brought pronounced changes to Chinese public health (Zhao, 2006) Specifically, China's market economic reforms dismantled a near-universal health care system established under state-socialism and yielded a decline in the scope and quality of health care services (Yip, 2009). Nevertheless, key indicators of public health point toward improvement, including a decline in all-age mortality rates and an increase in child height (Banister & Hill, 2004; Yip, 2009). This leads to a puzzling conclusion: public health care has deteriorated at the same time as population health has appeared to improve. Whyte and Sun (2010:8) argue that reform strategies led to substantial and sustained economic growth have counteracted the negative consequences of a weakening of socialist health care institution. Such a proposal harkens back to the McKeown thesis which posits that broad economic and social conditions are the most important factor in explaining improvement in health (McKeown, 1976).

Period change in self-rated health—net of age and cohort?

Left unclear from previous research on China is the answer to two important issues. First, have there been improvements in self-rated health net of contemporaneous age and cohort effects? This question first moves us beyond aggregated health outcomes (e.g., mortality rates). Improvements in life expectancy are unmistakable; however it remains uncertain whether these added years are accompanied by good health. Self-rated health (SRH) provides an efficient, reliable, valid, and holistic view of health and well-being (Ferraro & Farmer, 1999; Idler & Benyamini, 1997), and has been

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validated as a predictor of mortality in China (Leung, Tang, & Lue, 1997).

Our primary research question also calls attention to an analytic complication. Coinciding with historical change are two additional temporal phenomena with direct relevance for SRH in reform-era China: *population aging* and *cohort turnover*. First, *age effects* can confound or obfuscate historical change (i.e., period effects). Aging refers to biological, physiological, and developmental changes over the life course (Yang & Land, 2006). Extant research shows that SRH declines with age (Schnittker, 2005; Chen et al., 2010), though the pattern may be non-linear (Zheng, Yang, & Land, 2011). Age effects are relevant because changing levels of SRH in China may owe in some degree to shifting demographic profiles, population aging in particular. Due in large part to the one-child policy enacted in 1980, Chinese population aging is occurring at an unusually rapid pace. Between 1990 and 2005, the country has seen a 35% increase in the share of their population aged 65+; the United States, by contrast, increased by $<1\%$ (the global average, including China, was at 19% (Chen & Liu, 2009). China's aging population could mask the role of period-based change.

Understanding historical dynamics is also complicated by cohort turnover. *Cohort effects* refer to variations across groups of people exposed to an initial event, such as birth in the same year (s), and who therefore experience identical events at the same stage of life course (Yang & Land, 2006). Cohort variation can be attributed to the long-lasting effects of differentials in early life conditions which extend into adult health trajectories (Chen et al., 2010). In the context of China, rapid economic development and industrialization may have different health consequences depending on the life stage in which it was experienced. Various birth cohorts considered in the present study came of age during momentous periods of Chinese political history: the Communist Revolution (late 1940s), The Great Leap Forward (1958–1961), the Cultural Revolution (1966–1976), and the Economic Reform (1978 to present). Likewise, those who experienced the 1955–1966 famine as young children demonstrate serious health consequences on into adulthood (Fan & Qian, 2015; Huang, Li, Wang, & Martorell, 2010). On the other hand, Chinese adults that died off during the period of economic reform would be disproportionately those who came of age prior to massive public health reforms of the 1950s and whose adult health trajectories were shaped by early exposure to infectious disease (Banister & Hill, 2004; Chang, Fleisher, Kim, & Liu, 2014; Chen et al., 2010). Taken together, these considerations reinforce the importance of accounting for both cohort turnover and population aging in the estimation of period effects on health.

Growth in health inequality during the reform era?

The second key question taken up by this article is whether health improvements associated with the reform period have been experienced equally by various sub-groups of the Chinese population. As presented above, the McKeown argument can be summarized by the phrase "wealthier is healthier" (Pritchett & Summers, 1994). Yet the *fundamental cause perspective* draws attention to how the health benefits of economic improvement are most effectively seized by those with the highest levels of knowledge, power, material resources and social capital—by those highest in the status hierarchy (Link & Phelan, 1995). In other words, while the McKeown thesis focuses on explaining absolute level of population health over time, a fundamental cause approach expects to observe class-based health disparities *within* the population (Link & Phelan, 2002). Link and Phelan (2002) proposed that *both* dynamics can operate over historical time, especially during times of massive social change like that of reform-era China.

There are several reasons to expect that class-based health disparities would be preserved—perhaps even magnified—even as mean levels of Chinese population health have recently risen. Underinvestment in public programs has left the planned health system increasingly commercialized and decentralized, meaning that the more advantaged strata of the Chinese populations can access better health care, while the less advantaged have decreased access to quality care (Yip, 2009; Zhao, 2006). Heightened levels of income inequality during market reform may produce a sense of relative deprivation and associated stress for those in the lower social strata, while more advantaged persons obtain the psychosocial boost of comparative success (Marmot & Wilkinson, 2001). Finally, market reform has increased exposure "lifestyle" health risks, including junk food, motorized transport, and sedentary work and leisure; accordingly, the prevalence of obesity and associated disease has increased most markedly in recent cohorts among those with the lowest levels of education (Schafer & Kwon, 2012; Shang et al., 2013; Zhao, 2006). With these mechanisms in mind, we expect that period gains in self-rated health (net of age and cohort) have been disproportionately accrued by Chinese adults with the highest levels of income and education.

Methods

Sample

Data for this study come from five waves of World Value Survey (WVS)-China (1990, 1995, 2001, 2007 and 2012). Each wave of survey was designed to be representative of the Chinese adult population (e.g., 18 years old or older) at the time of survey, with a multistage stratified sampling strategy and face-to-face interviews. The overall response rate exceeds 70% in the China sample of the WVS. Twenty-three cases (0.3%) are missing on self-rated health variable. Among key variables, 724 (9.3%) cases and 4 cases (0.05%) cases are missing on income and education, respectively. Because of small percent of missing data and some methodological concerns associated with multiple imputation in time-series cross-section data structure (Honaker & King, 2010), we deleted cases with missing data, yielding a final sample of 6856.

Measures

Self-rated health is our dependent variable. During each wave, respondents were asked, "All in all, how would you describe your state of health these days?" Response options changed slightly in 2001 onward (1995–1995: 'very good', 'good', 'fair', 'poor', 'very poor'; 2001–2012 removed 'very poor'). For this reason, and because of the variable's positively skewed distribution (more than 60% of respondents report 'very good' and 'good'), responses were dichotomized into very good/good health versus fair/poor/very poor health (reference). We shorten these distinctions by simply referring to "good" vs. "poor" health in the results section.

In analytic models, survey year and birth cohort serve as contextual variables, which will be further discussed below. Each survey year represents the period. Age (survey year minus birth year) and period are measured by single year values, while birth cohorts were grouped into five-year intervals, helping to alleviate the identification problem associated with the *period=age+cohort* equation (Yang & Land, 2006, 2008). Age was centered at the median to enhance interpretability, and also include an age-squared term in the analysis.