



The impact of community context on children's health and nutritional status in China



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ABSTRACT

The link between community environment and individual health outcomes has been widely documented in Western literature, but little is known about whether community context influences children's health over and above individual characteristics in developing countries. This study examines how community socioeconomic status (SES) influences children's self-rated health and nutritional status in urban and rural China and explores whether the effects of community SES vary by a child's gender and family background. Using data from the China Family Panel Studies in 2010, this study focuses on children aged 10–15 years old living in 261 urban neighborhoods and 293 rural villages in China. Multilevel regression models are estimated to examine the effect of community SES on the probability of reporting poor/fair health and nutritional status measured by height for age while controlling for individual and family characteristics. The results suggest that community SES has a positive and curvilinear effect on children's health and nutritional status in urban China, and it only positively influences children's nutrition in rural China. Community SES has a stronger effect for boys than for girls, and for children in poorer families and families with lower levels of parental involvement.

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1. Introduction

Community socioeconomic context is considered one of the fundamental determinants of population health, getting “under the skin” through intermediate social processes and more proximate factors. In Western countries, the link between place and health has long been recognized. Prior research consistently shows that neighborhood disadvantages have an adverse impact on a wide range of health-related outcomes, including self-rated health (Rios et al., 2012; Wen et al., 2003), mortality (Do et al., 2013), chronic disease (Ross and Mirowsky, 2001), obesity (Burdette and Hill, 2008), and health behaviors (Frank et al., 2007; Sallis et al., 2009). However, although the rapid economic development in developing countries is accompanied by increasing social-spatial differentiation, relatively few studies in developing countries have examined the relationship between community context and individual's health outcomes, especially children's health and nutritional status.

Child malnutrition remains prevalent in developing countries as

manifested by the fact that 178 million children under 5 years old were stunted in 2005 (Black et al., 2008). Child undernutrition is considered to be detrimental for children's physical and intellectual development, educational attainment, chronic disease, and future labor market outcomes (Alderman et al., 2003; Sawaya et al., 2003; Victora et al., 2008). But little is known about the link between community environment and children's health and nutritional status in developing countries like China. Using a national representative sample of children aged 10 to 15 living in 261 urban neighborhoods and 293 rural communities, this paper aims to answer two research questions: 1) Does community socioeconomic status (SES) influence children's health and nutritional status? 2) Do the effects of community SES on children's health and nutritional status vary by the child's gender, family income, or parental involvement?

Along with the market economic reform and sweeping urbanization, Chinese society has become much more unequal socially and spatially. China provides a unique social setting for researchers to test the relationship between community context and children's health and to examine the external validity of theories developed in Western countries regarding the effect of residential environment on health. This study goes beyond prior literature by exploring

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heterogeneous effects of community context on children's health across population subgroups. In response to the critique that prior research only pursues to find average effects rather heterogeneous effects across subpopulations and across different settings (Sharkey and Faber, 2014; Small and Feldman, 2012), this study finds that the influence of community SES is different for boys and girls, and for children with different family backgrounds.

2. Theories and literature

2.1. Main effect of community SES on children's health

In Western literature, community SES is argued to influence individual's health outcomes through four major mechanisms: 1) community physical environment; 2) community institutions and resources; 3) community social disorganization and stress; 4) community networks and norms (Ellen et al., 2001) (See Fig. 1). These mechanisms also apply to the Chinese context. Residents in poor communities have higher risks of exposure to pollution, noise, toxins, pests and other hazards in the built environment (Ellen et al., 2001; Rosenstreich et al., 1997). For example, lead paint in older housing could cause intellectual impairment among children (Rosenstreich et al., 1997). Poorly maintained environments, such as crumbling sidewalks, decaying stairwells, and dangerous playgrounds, tend to increase the risk of accidents for children and to discourage physical activity. Cleanness of the environment matters for children's health outcomes, as research in several developing countries finds that *Helicobacter Pylori* infection reduces children's growth speed (Fialho et al., 2013; Mera et al., 2006).

Regarding institutions and resources, socioeconomically advantaged communities usually have more access to high quality health services and easier transportation to hospitals. In high-SES communities, amenities, such as sports facilities, parks, and open space, make it easier for residents to engage in regular exercise and sports activities. The presence of super market and healthy food stores improves family's access to nutritious food.

High-poverty communities may suffer from social and cultural disorganization and low social cohesion (Sampson et al., 1997; Shaw and McKay, 1942). Growing up in communities that lack social control and monitoring, adolescents tend to develop delinquent behaviors such as drinking and smoking (Winstanley et al., 2008). In socially disorganized communities, fear of crime can lead to stress that alters the balance of the body's endocrine system, leaving the body more susceptible to various disease agents (Cassel, 1976). Elevated stress also induces unhealthy behaviors such as smoking (Ganz, 2000) and preference for high-fat and high-calorie diet (Chandola et al., 2008; Oliver et al., 2000). Stressed parents may not be able to prepare nutritious diet for children or effectively manage children's daily lives.

Finally, neighborhood networks serve to transmit information on doctors and health care services, to inform norms about accepted health behaviors, and to provide social support. Residents in poor communities tend to have geographically and socially limited networks that contain little useful information and few resources. For children and adolescents, the influence of community characteristics is often transmitted through parenting behaviors and home environment (Klebanov et al., 1997). The norms of and information on effective parenting communicated through community social networks shape parents' behaviors and consequently influence children's health outcomes. Lack of social support in the community may negatively influence the mental health of both parents and children, resulting in poor physical health.

2.2. Empirical evidence

Multiple studies have provided evidence for the link between community SES and adults' self-reported health. For example, Malmström et al. (1999) finds that in Sweden neighborhoods deprivation score is negatively associated with adults' self-reported health, after controlling for individual socioeconomic status, obesity, and health behaviors. Yet, these observational studies are subject to the challenge of selection bias, which implies that the relationship between neighborhood SES and health is not causal. This criticism leads researchers to experimental designs in an attempt to make causal inference. Using follow-up survey ten to fifteen years after the MTO study in the U.S., research indicates that moving from high-poverty neighborhoods to low-poverty neighborhoods brings long-term improvement in adult physical health (Ludwig et al., 2012).

Fewer studies have focused on the relationship between residential context and the health of children and adolescents. Various dimensions of neighborhood characteristics have been examined, and many of them reflect neighborhood social processes that potentially mediate the link between neighborhood SES and children's health outcomes. In different Western countries, neighborhood socioeconomic deprivation, informal social control, social cohesion, and social capital are associated with children's general health (Boyce et al., 2008; Drukker et al., 2003). Community collective efficacy, social integration, and fewer daily stressors are linked to lower likelihood of over-weight and obesity among children (Cohen et al., 2006; Franzini et al., 2009). Although most prior studies suggest that children's health is influenced by their place of residence, Sastry and Pebley (2003) conclude that neighborhood characteristics impose little influence on child health after adjustment for individual and family attributes.

In addition, the epidemic model proposed by Crane (1991) argues that the pattern of neighborhood effects on social problems should be non-linear. As neighborhood quality decreases, there

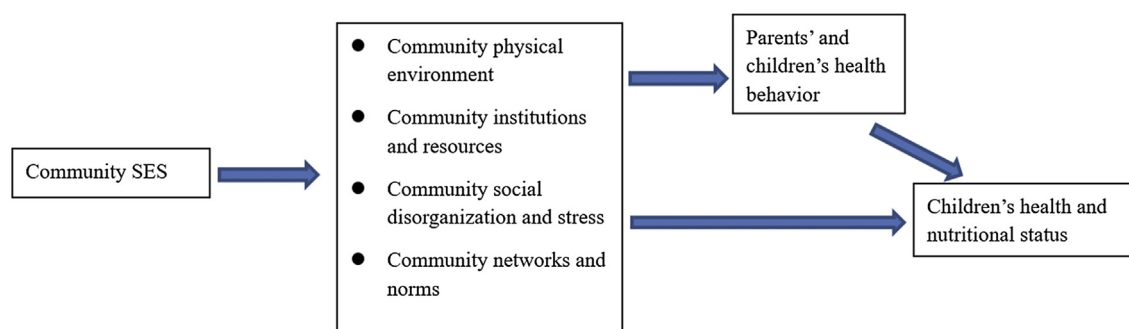


Fig. 1. Theoretical mechanisms for the effect of community SES on children's health.

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