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Health implications of environmental and social resources for preadolescents in urban China

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ABSTRACT

Using a stratified random sample of 1307 sixth grade primary school children and their parents in Shenzhen, China, this paper examined the association between a child's self-rated health (SRH) and economic, environmental and social resources accessible from his/her home, neighborhood, and school. As parents value access to quality primary schools in making housing choices, both an aggregated (by school) and individual (by child) approaches were adopted in analysis. It was found a child's SRH was positively associated with his/her perceived neighborhood safety aggregated at a school level, perceived school safety higher than average, engagement in discussion with parents and activities with friends, and self-reported happiness, but negatively associated with perceived neighborhood environmental hazards. The analysis suggests environmental and social factors in neighborhoods and schools are forces equalizing child subjective health and thus a community health approach deserves attention from policymakers.

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1. Introduction

Good health is desirable for both individuals and society as a whole, for its intrinsic and instrumental values that impact enjoyment of life and labor productivity. Health status is a function of societal, environmental, socioeconomic, biological and lifestyle factors, most of which can be modified by healthcare and other policies (Organisation for Economic Co-operation and Development, 2011). For example, Chairman Mao aimed to build a "classless society" and the period of 1949–1976 witnessed equalized provision of health services and improved health status among Chinese people. Life expectancy at birth was increased from 41 years in 1950 to 66 years in 1980 (from five years below to five years above the world averages) (Chen, Yang, & Liu 2010: 144).

The socio-economic transformation in China has led to inequalities in income as well as accesses to public services including healthcare. According to Wang and Mason (2007), differences in living standards and accesses to healthcare between urban and rural areas yielded an average advantage of five years in life expectancy for urban residents. Even though peasants can leave their rural homes and seek employment in urban sectors, they usually do not have household registration (hukou) in the cities where they work. Consequently, those migrant workers are denied same opportunities as their urban counterparts to access public services in the cities (Peng, Chang, Zhou, Hu, & Liang, 2010).

Furthermore, children with household registration in a city are assigned places in a primary school close to owned or rental properties of their parents. Families with different means tend to be sorted spatially by educational qualities of primary schools (Chen & Feng, 2013). Capitalization of those features of urban neighborhoods in the housing market has pushed migrant workers to live in places such as urban villages where rent is relatively cheap, health risks are high but public services are poor (Chen, Chen, & Landry 2013; Liu, He, Wu, & Webster, 2010). Their children are usually denied accesses to public schools but left with the option to attend second tier schools especially opened for children from rural to urban migrant worker families. Facilities and teachers in those schools are nowhere comparable with that in public schools (Wang, 2009). Thus, inferior living conditions and schooling usually expose children of migrant worker families to environmental hazards, social stigma, and other psychological and physiological stressors that negatively impact health.

Child health is one of the Millennium Development Goals (MDGs) (The United Nations, 2012). The existing literature has found associations between adults' self-rated health (SRH) and places where they live (Meyer, Castro-Schilo, & Aguilar-Gaxiola 2014; Peek, Cutchin, Freeman, Stowe, & Goodwin, 2009) and

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social capital and support that they can access (Kawachi, Kennedy, & Glass 1999; Mohnen, Groenewegen, Völker, & Flap, 2011; Norstrand & Xu, 2012; Yip et al. 2007). However, only sparse knowledge is accumulated on children's subjective health. The stratification of public services and wealth has transformed the traditional Chinese society into one full of social, economic, and spatial cleavages. Even residing in a same city, different groups of children may live with different economic and social means and may enjoy different health outcomes. This paper aims to examine whether a child's SRH is associated with environmental, socio-economic, and human factors in the primary contexts in which he/she grows up, namely, home, neighborhood and school. More specifically, the following factors are considered: parent-child interaction at home, environmental hazards and amenities in neighborhoods, social activities with classmates/friends, perceived neighborhood and school safety, and generalized trust. The results will uncover more nuances of urban inequality in China and will inform policymakers of critical factors to consider in striving for an urbanization that enhances health and well-being for children.

1.1. Self-rated health

SRH has been widely adopted as an indicator measuring individual health status. The survey question used for soliciting SRH reads as follows, how is your health in general. Responses are categorized using either a four-point scale (very good, good, fair, poor) or a five-point scale (very good, good, fair, bad, very bad). When rating health status, one incorporates information "provided by the bodily sensations that are directly available only to the individual him- or herself" (Jylhä, 2009: 307). Human biology has discovered that those sensations may reflect important physiological abnormalities, such as inflammatory processes. Furthermore, researchers have found SRH to have a strong and consistent association with mortality. Although subject to age, gender, and cultural influence, SRH is a good measure of individual health (Idler & Benyamini, 1997; Jylhä, 2009).

1.2. Correlates of child self-rated health

Beyond biological factors, both material and social resources at one's disposal were found to be important for SRH. In a market economy where health/medical and housing services are not totally free, socio-economic status (SES) largely determine the quantity and quality of those services one has access to. For example, using a sample of 2478 migrant workers in Beijing, Peng et al. found only 36.4% of the migrant workers who reported to be ill visited doctors in the past two weeks. Reasons for choosing self-medication (33.3%) or no medical measures (30.3%) included costs of health services were too high, no medical insurance, and/or working hours inconvenient (Peng et al. 2010). Thus, SES such as income is relevant for individual health (Chen et al., 2010). Furthermore, Chen and Li (2009) found the health status of a child, regardless being adopted or being raised by biological parents, to be associated with maternal education. Family structure such as number of children and/or a single parent impact how much resources and parental attention that a child can have (Coleman, 1988), that have implications for parent-child interactions as well as child health.

Not only individual/family backgrounds, but also features at a neighborhood/community level are associated with SRH. Living in neighborhoods with greater land use diversity (Gidlow, Cochrane, Davey, Smith, & Fairburn, 2010), green space (Richardson & Mitchell, 2010; Verheij, Maas, & Groenewegen 2008), and walkability/sportability (Parra et al. 2010) were associated with better physical health. Both objective and perceived environmental problems were associated with health risks and poor SRH (Cakmak, Mahmud, Grgicak-Mannion, & Dales, 2012; Chen et al., 2013; Peek et al. 2009). The World Health Organization considered the following three issues core environmental risks: (1) water, sanitation and hygiene; (2) indoor air; and (3) outdoor air (World Health Organisation, 2009). Children are especially vulnerable to environmental problems. For the world as a whole, 24% of the 13 million premature deaths, could be prevented through environmental improvements (Organisation for Economic Co-operation and Development, 2011: 230).

Furthermore, it was found different forms of social capital such as interpersonal relations, trust, and support among community residents are associated with positive health outcomes (Kawachi et al., 1999; Mohnen et al. 2011; Poortinga, 2012; Yip et al. 2007). Perceived neighborhood safety enhances both adults' health (Baum, Ziersch, Zhang, & Osborne, 2009) and basic security and well-being of children (Betancourt et al. 2012). Similarly, school safety is important for children where they spend about 1/3 of their time, from Monday to Friday, if not more. Having reviewed the existing literature, the next section describes the data and methods for empirically testing the association between a child's SRH and environmental, socio-economic, and human factors in his/her primary contexts, namely, home, neighborhood and school in urban China.

2. Data and methods

Since 1980, Shenzhen, the first special economic zone in the country, has been at the forefront of China's rapid economic growth and has become one of the most popular destinations for migrant workers (Liu, Heilig, Chen, & Heino, 2007). The bureau of education classified all the 57 primary schools in Nanshan district, Shenzhen into four bands by their educational quality from A (8), the best to B (34), C (10) and D (5), the worst (number of schools in parenthesis). Oversampling schools in band A, C and D would help examine whether children's subjective health is intertwined with socio-economic and spatial inequality in urban China. Thus, 3, 7, 3, and 3 schools were randomly selected from each category from A to D, respectively. Two classes of the sixth grade were randomly selected from each school and all the students and their parents were invited to participate in the survey in 2009. The stratified random sample was comprised of 1307 children (response rate 99.62%) and 1058 parents (response rate 80.86%) (Carlsson, Lampi, Li, & Martinsson, 2014; Li & Lau, 2012).

Participant child and one of his/her parents were requested to evaluate their own health status (1 = Bad; 2 = Fair; 3 = Good; 4 = Very good). The self-rated health is further recoded as 0 for bad or fair and 1 for good or very good health (Chen et al., 2013; Yip et al. 2007).

2.1. Environmental hazards and amenities in neighborhoods

Environmental hazards, sports facilities, and green space were evaluated at a neighborhood level. A five-point Likert scale (1 = Negligible; 2 = Not serious; 3 = Fair; 4 = Serious; 5 = Very serious) was adopted for evaluating the seriousness of noise, air pollution, water pollution, and problems with garbage collection in one's neighborhood. Because the Cronbach's alpha of the four items was 0.775, demonstrating good internal consistency, thus, an aggregated indicator was used for measuring perceived environmental hazards in a neighborhood.

Furthermore, whether a neighborhood had the following sports facilities was evaluated: outdoor fitness facilities, indoor table tennis tables, indoor badminton court, basketball court, tennis court, and swimming pool. Because the Cronbach's alpha of the six items was 0.758, demonstrating good internal consistency, thus,

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