



## Child health security in China: A survey of child health insurance coverage in diverse areas of the country



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### ABSTRACT

China embarked on an ambitious health system reform in 2009, and pledged to achieve universal health insurance coverage by 2020. However, there are gaps in access to healthcare for some children in China. We assessed health insurance status and associated variables among children under five in twelve communities in 2010: two urban community health centers and two rural township health centers in each of three municipalities located in China's distinctly different East, Central and Western regions. Information on demographic and socio-economic variables and children's insurance status was gathered from parents or caregivers of all children enrolled in local health programs, and others recruited from the local communities. Only 62% of 1131 children assessed were insured. This figure did not vary across geographic regions, but urban children were less likely to be insured than rural children. In multivariate analysis, infants were 2.44 times more likely to be uninsured than older children and children having at least one migrant parent were 1.90 times more likely to be uninsured than those living with non-migrant parents. Low maternal education was also associated with being uninsured. Gaps in China's child health insurance coverage might be bridged if newborns are automatically covered from birth, and if insurance is extended to all urban migrant children, regardless of the family's residential registration status and size.

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### Introduction

When China commenced marketization in 1978, health insurance established in the 1950s and 1960s disappeared. In the countryside, dissolution of the agricultural cooperatives led to collapse of the Cooperative Medical Schemes covering most of China's rural population, leaving both children and adults in rural areas without insurance (Blumenthal & Hsiao, 2005; Liu, 2004b). In 1998, around 90% of farmers had no health insurance and paid all medical expenses out of pocket (Liu, 2004b). Similarly, for urban residents, health insurance schemes for employees of State Owned Enterprises and others gradually disappeared, and insurance coverage in urban areas declined from 53% to 42% by 1998 (Ma, Lu, & Quan, 2008).

The situation in cities improved with introduction, in 1998, of the Urban-Employee Basic Medical Insurance scheme for formal-sector workers, but not their families (Liu, 2002), and in 2008 with establishment of Urban Resident Basic Medical Insurance (UR-BMI), covering unemployed urban residents uninsured since the 1980s, children, students, the elderly, the disabled, and others (Barber & Yao, 2010). Coverage of the eligible population reached 93% by 2010 (Yip et al., 2012). However, some younger children residing in urban areas, although eligible, remain un-enrolled, and migrant children are generally excluded from city health systems due to China's *Hukou* (registered place of residence) policy (Lu, Zhang, Ma, Li, & Quan, 2008).

In response to the growing inequality in health outcomes and access to health-care between rural and urban China, the government re-launched the Rural Cooperative Medical Scheme (RCMS) in 2003 (Liu, 2002, 2004a). As the premium and benefit of the scheme improved, RCMS coverage increased from 21% in 2003 to 97% in 2011 (Meng et al., 2012). However, again there are indications that vulnerable groups such as those in very low-income households,

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infants, and migrant workers remain uninsured (Xu, Wang, Collins, & Tang, 2007; Zhao, Rao, & Zhang, 2011).

With an investment of 850 billion renminbi (RMB, about US\$125 billion in 2009) over 2009–2012, China's health system reform sought to consolidate the impressive increases in insurance coverage already achieved by 2008 (Barber & Yao, 2010). However, the average benefit of China's various health insurance schemes varies quite widely (Brix, Mu, Targa, & Hipgrave, 2012), and official coverage figures may mask gaps in insurance of certain vulnerable groups.

Uninsured children, in particular, are less likely to receive preventive treatment, and have lower rates of check-ups, vaccination and follow-up care (Qiu, Han, Chang, & Zhou, 2011); when ill, they are less likely to seek medical care, receive fewer indicated medications and treatments and stay for a shorter time in hospital than insured children (Tang et al., 2008). It is therefore important to identify gaps in child health insurance and the types of families with children at most risk of being uninsured.

At the mid-point of China's health system reform, we surveyed families of children aged under five years in 12 communities located in three geographically and economically distinct region in 2010. We aimed to provide evidence on health insurance among children in China, and identify factors associated with lack of health insurance coverage.

## Methods

In July–August 2010, we interviewed the caregivers of children aged under five in one urban and one rural district in each of Suzhou, Wuhan and Guiyang cities, located in China's Eastern, Central, and Western regions, respectively. The sites were chosen in order to represent China's distinctly different socio-economic regions. Based on 2010 provincial government statistics, per capita disposable income in Suzhou was RMB27,359 (US\$4007), in Wuhan RMB16,058 (US\$2352) and in Guiyang RMB14,143 (US\$2072) (National Bureau of Statistics of China, 2010). Surveyed areas were not sampled in exact proportion to their urban population, nor were the data population-weighted to represent entire provinces. However, the observed rates of urbanization were similar to 2010 national census estimates for the areas surveyed (Suzhou 55.29%, Wuhan 66.61% and Guiyang 38.63%) (National Bureau of Statistics of China, 2010).

Random sampling was used to select two urban community health centers and two rural township health centers in each of three districts. All children under five enrolled in the local immunization program were recruited, but only one child per family, selected randomly without regard for age, was surveyed. It was acknowledged in advance that some children were less likely to be enrolled for these services, due to parents' concern that the legality of their child's residency status might be checked. To minimize this effect, all health centers actively recruited caregivers of children residing in the local area during three days prior to the study. The design and purpose of the study and its confidential nature were promoted by advertising in communities and informing parents or guardians during health check-ups.

Ethical approval for the survey was obtained from the Institutional Review Board at the Tongji Medical College of Huazhong University of Science and Technology. The Ministry of Health and Health Bureau of Suzhou, Wuhan and Guiyang approved the survey. On site, interviewers trained by the principal investigator (author JX) explained the purpose and confidentiality of the survey, and then invited caregivers to participate. Acceptance to participate was given by oral consent and refusal was permitted without question.

The objectives of the research were to identify rates of insurance coverage among children and associated demographic and socio-

economic variables in the surveyed areas. A simple questionnaire covering these variables was developed by the research group and reviewed by pediatricians in Tongji Medical College, and its reliability pretested in Wuhan (Cronbach's  $\alpha = 0.71$ ). The interviewers, six trained graduate students from Tongji Medical College, completed the questionnaires during a face-to-face meeting with each child's parents or caregivers. Caregivers answered individually or after consultation with family members; "don't know" answers were allowed.

### *Dependent variable: enrollment in health insurance*

Insurance type was classified as UR-BMI, RCMS, or private/other public insurances pooled as "commercial or other". Children not enrolled in one of these schemes were considered uninsured.

### *Independent variables*

Independent variables were included in the survey questionnaire based on an informal literature review (collected from PubMed, EMBASE and Science Direct electronic literature databases) on factors influencing choices in the purchase of health insurance. Child demographic and household level socio-economic variables were recorded, including child age and sex, parents' education level, type of caregiver, area of residence, parents' migrant status and household annual income (HAI) (Blumenthal & Hsiao, 2005; Lu et al., 2008; Wang, Zhang, Yip, & Hsiao, 2006).

Children were divided into three age groups: <12 months, 12–35 months and 36–59 months, based on children's education eligibility in China and global child health statistics which focus on under-fives. For parents' migrant status, a comparison of insurance among infants aged 0–6 months and older infants/young children was undertaken to account for the fact that migrant parents often leave home for work even when their children remain very young (Liu, Li, & Ge, 2009).

'Children of migrant workers' refers to children whose parents have been granted the legal right to work temporarily in cities in China; these children either are left with other caregivers in their hometown or migrate with their parents (Wong, Chang, & He, 2009). Migrant status was based on reporting by children's caregivers (parents or other person). Since the study was done in areas where the number of migrant worker families is relatively low, for statistical analysis, the "long term migrant father only", "long term migrant mother only" and "both parents migrated" variables were grouped together as one "any migrant parent" variable. For parents' education level, the categories were: primary education (elementary school or less), intermediate education (junior and senior high school or secondary vocational school), and higher education (including college, undergraduate and postgraduate). Mothers' and fathers' education were assessed separately.

Caregivers were parents, grandparents or others, but were grouped into "parents" and "non-parents" for the statistical analysis.

HAI was measured by the average annual household disposable income per capita, based on the recall of the interviewee. We categorized HAI according to the Chinese national poverty line (NPL) in 2010 (RMB2300(US\$362) per capital) (Sun, Jackson, Carmichael, & Sleight, 2009; The World Bank, 2010). Three income groups were defined as incomes below 200% of the NPL (low), 200%–399% of the NPL (middle), and 400% of the NPL or more (high) (Holahan & Wang, 2004). Supposing the family household size was 3.0 (Yusuf & Brooks, 2009) with NPL at RMB2300, then low-income was below RMB13,800, middle-income was RMB13,800–RMB27,600, and high income was above RMB27,600 (Zhang & Wang, 2008).

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