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IMPACT OF PUBLIC MEDICAL INSURANCE ON HEALTH CARE EQUITY BETWEEN URBAN
AND RURAL CHILDREN IN MAINLAND CHINA

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DISSERTATION

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ABSTRACT

Equity, as a major social work principle, refers to social justice or fairness. Health care equity, therefore, has widely been defined as the absence of systematically unjust or unfair health disparities (Peter, 2001). Since the collapse of China's old public medical insurance system in mid-1970s due to an expansion of the market economy and a focus on private industry, China initiated several health reforms. Those reforms have been successful in increasing medical insurance coverage for Chinese citizens, but have not successfully reduced the inequalities in affordability and accessibility, nor decreased disparities between urban and rural populations, especially children. This dissertation provides an examination of the health inequities faced by rural and urban children in China, the policies enacted to address them, and their impact on the health equity of Chinese children.

Two articles highlight the continued need for policy change to increase health care equity for Chinese children. One article evaluates the impact of China's public medical insurance policies on urban and rural children's physical health outcomes and financial risk between 2004 and 2009, through applying Structural Equation Models. The second employs a content analysis to assess whether China's most recent public medical insurance policy, as written, would support the goals of increasing health care equity for Chinese children. Overall, results indicate that China's past and current health care policies serve to maintain the systematic health inequalities between urban and rural children. Recommendations such as performance measurement and stakeholder analysis for policy to improve China's public medical insurance systems are also provided.

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CHAPTER ONE: INTRODUCTION

CHINA'S HEALTH REFORMS AND HEALTH DISPARITIES BETWEEN URBAN AND RURAL CHILDREN FROM 1980s TO PRESENT

In 1979, the Chinese government implemented the “one-child policy” to control the country’s population growth, which resulted in a decreasing proportion of children under age 18 in China. In 2010, children under age 18 accounted for 21% of the total population in China (Ren, Pritzker, & Leung, 2014) and by 2050, China’s percentage of children under age 18 is projected to be smaller than all other segments of the population with the exception of those over age 80 (Morgan & Kunkel, 2011; Ren, et al., 2014). According to the *China Statistical Yearbook* (National Bureau of Statistics of China, 2015), China had an urban population of 749.16 million and a rural population of 618.66 million in 2014, accounting for 54.77% and 45.23% respectively of the whole country’s population. Although data on urban and rural children under age 18 was not presented in the *China Statistical Yearbook*, it is reasonable to assume that half of Chinese children were living in rural areas in 2014.

The health disparities between urban and rural children are a critical social problem in current Chinese society. As set forth in the World Health Organization (WHO) constitution and international human rights law, the right to health and health care is a basic human right (WHO, 2002). However, millions of rural children in the People’s Republic of China remain unable to affordably access essential health care services, despite ever-evolving policies in this area to increase children’s health care coverage (Alcon, 2011; Eggleston, 2012). This has directly resulted in the inequalities of physical health outcomes between urban and rural children. For example, in 2010, the mortality rate of rural Chinese children (14.9 per 1,000) was more than double that of urban Chinese children (6.5 per 1,000) (Rudan, et.al, 2010; United Nations

Children's Fund, 2010). Malnutrition rates in the rural areas were also higher than those in urban areas (Rudan et.al, 2010; United Nations Children's Fund, 2008) with over 9 percent of rural children compared to 3 percent of urban children underweight nationally (Tang, et al., 2008).

Although the Chinese government implemented several health reforms and made efforts to improve public medical insurance coverage, health care equity is continuously understated in the public medical insurance policies and health reforms. Barriers remain to affordable and comprehensive health care coverage for all of China's citizens, leaving China's most vulnerable populations, such as rural children, experiencing low levels of health care equity.

Historical Context of Public Medical Insurance in China

The communist ideology in the 1950s made equality a high priority. Under this ideological system the government played a major role in financing and providing social services, which included health care insurance and health care. The massive nationalization movement changed health care delivery by closing privately owned health and medical facilities and opening government owned, operated and funded health facilities in their place. These replaced facilities ranged from small township-based health centers in the countryside to clinics and large tertiary hospitals in urban areas. This system also made all physicians and ancillary health care providers become employees of the state (Yip & Hsiao, 2015).

Three governmentally-based programs were established by Chairman Zedong Mao's administration in the 1950s: the Cooperative Medical System (CMS), the Labor Medical System (LIS), and the Government Insurance System (GIS). Thus, prior to the 1980s, most Chinese citizens were covered under one of these three government sponsored programs. The CMS covered rural residents, the LIS covered employees working for state owned companies, and the GIS covered civil servants and other direct government employees. Each of these programs was

financed in a different way. The LIS was an employment-based self-insurance system that covered employees and often their dependents. The GIS was financed by government budgetary allocation (Liu, 2002), while the CMS was primarily supported by rural communes across the country (You & Kobayashi, 2009).

The eligibility for the three insurance programs was tightly related to residents' urban or rural "HuKou," the official household residency registration document used in China to identify residency status. The HuKou system was initiated in China's urban areas in 1951 with the officially stated purpose of maintaining social peace and order, as well as protecting residents' freedom of residence and movement. In 1955, a comprehensive HuKou system was established in both urban and rural areas to prevent unplanned urban-rural migration, as well as to introduce formal administrative control over migration within larger urban areas (Liu, 2005). A child's residency was registered based on his/her parents' residency rather than his or her actual birthplace, and could not be changed even if the child did not actually reside in that region. (Liu, 2005; Wu & Treiman, 2007). It was, and is, very difficult to change one's HuKou status from rural residency (agricultural) to urban residency (nonagricultural). Thus, people with rural HuKou may live in urban areas for many years, but still not be able to be "urban residents" and enjoy the better benefits associated with official urban residency in terms of health care and education. Rural-to-urban migrant workers are considered to be temporary employees in urban areas and not entitled to urban welfare benefits.

Prior to the 1980s, for those who had insurance coverage, the differences in coverage among the three insurance programs were small (Wagstaff & Lindelow, 2008). Most primary health care services were covered and fully paid for by those public medical insurance programs. With China's transition from a planning economy to a market economy, the Collective System

was transferred to the Household Responsibility System, which was established in 1979. This change had significant impacts on rural Chinese residents. The Household Responsibility System allowed individual households to rent land, machines, and other facilities from collective organizations. The communes which were based on the Collective System and collective production, previously common in rural areas, disappeared. Since the communes were the funding base for the CMS insurance systems, the CMS insurance program collapsed (You & Kobayashi, 2009). This shift from a planning economy to a market economy had significant impacts on China's public health insurance systems. As the Chinese government gradually decreased its role as the primary payer of public health insurance, the LIS collapsed as a result of insufficient governmental funding. By the late 1980s, more than half of China's urban residents and 90% of rural residents became uninsured as a result of these changes (Barber & Yao, 2010; Long, Xu, Bekedam, & Tang, 2013).

Emergence of Rural/Urban Health Disparities

As a result of the changes to China's major health insurance programs, an urban-rural divide in children's health emerged. With the collapse of the CMS, the number of local health clinics in rural areas decreased by 14.2% and the number of primary health care providers declined by 35.9% (Liu, Hsiao, & Eggleston, 1999). This resulted in many of China's rural areas having an insufficient supply of primary health care services. An example of this situation was seen in a study of 30 poor rural areas in 1979 that found 71% of villages with at least one health station, but by 1993, only 55% of villages had a health station (Liu, Hu, Fu, & Hsiao, 1996). In addition, the rural population living in mountainous areas had serious physical barriers to accessing essential health care services in the 1990s, due to underdeveloped infrastructure and a lack of consistently available transportation to neighboring clinics (Liu, et al., 1999). In contrast,

the number of hospitals and clinics located in urban areas grew by 55.8%, increasing from 9,478 in 1980 to 14,771 in 1995. Similarly, the number of health professionals in urban areas increased by 234.5% from 1980 to 1989, and by 142% from 1990 to 1995 (Wagstaff, Lindelow, Wang, & Zhang, 2007).

In addition, there was a differential increase in medical costs for urban and rural areas, primarily due to differences in insurance coverage. Due to the above mentioned policy revisions, approximately half of urban residents continued to be insured by the late 1980s, while 90% of rural residents became uninsured. Based on the results of the 1993 China National Health Services Survey, 58.8% of rural patients had refused to receive necessary treatments due to their inability to pay (Liu, et al., 1999), while only 39.8% of urban patients reported declining treatment for the same reason (Liu, et al., 1999). In 1990, 30-50% of rural households lived under China's poverty line, many of them becoming even more deeply impoverished due to unexpected illnesses and unaffordable medical costs (Liu, et al., 1996).

Therefore, due to the lack of accessible and affordable medical care in the rural areas, the average infant mortality rate (IMR) in China's poorest rural areas increased from about 50 per 1000 live births in the late 1970s to 72 per 1000 live births in the late 1980s, while at the same time, infant mortality rates continuously decreased in urban areas (Ren, Washburn, & Kao, 2013; World Bank, 1997), down to 29.3 per 1000 live births in urban areas in 1990. The ratio of rural-urban infant mortality rate increased from 1.67 in 1981 to 1.75 in 1990, and then increased even more significantly between 1990 and 1993 from 1.75 to 2.93 (Liu, et al., 1999). Moreover, according to the 1992 Child Survey of 26 provinces, the prevalence of severely underweight children and those with stunted growth in China was 17.9% and 34.7% respectively. Compared

to 1987, the prevalence of severe underweight and stunting decreased by 20.5% in urban areas, but somewhat increased in the rural areas (Chang, Xian, He, Chang, Ma, & Chen, 1996).

Need for Policy Changes

By the 1990s, the Chinese government acknowledged the low levels of insurance coverage in the population and tried to resolve the issue by allowing commercial insurance companies to provide private insurance packages to its citizens. However, because this was the first time private insurers sought to insure such a large and diverse population, the requisite data on which to base estimates of premiums and coverage limits was not available, as China had not recorded these types of health care related data in the past (Preker, Zweifel, & Schellekens, 2010). To reduce their financial risk, most commercial insurance companies offered health insurance by adding it as a supplement to life insurance, requiring those in need of health coverage to first purchase a life insurance policy. Additionally, once one obtained health insurance, the renewal of his or her policy could be denied if a major claim had been reimbursed during the prior year (Preker et al., 2010). As a result, many Chinese citizens remained inadequately covered and lacked necessary health benefits.

In the late 1990s, the Chinese government acknowledged that its previous efforts were not enough to address these multiple systemic concerns, including the lack of insurance coverage, along with affordable and accessible health care services (Ma, Liu, & Quan, 2008). Neither a free-market model of public health nor health insurance provided by commercial companies was able to resolve the above problems in China's public health sector. Accordingly, a series of new policies was introduced by the Chinese government in the 2000s to increase its role in providing health care coverage to the public. These policies eliminated profit based

incentives for physicians and shifted the focus of coverage from catastrophic care to primary care, community health and prevention (Ma et al., 2008).

Current Public Medical Insurance Policies in China

In an effort to increase medical insurance coverage and reduce the health outcome inequalities experienced in relation to accessibility to health care and its cost, the Chinese government expanded the government-sponsored health insurance system. This expansion was comprised of three major programs covering specific groups of Chinese citizens: the Urban Employees Basic Medical Insurance (UEBMI), the Urban Residents Basic Medical Insurance (URBMI), and the New Rural Cooperative Medical Insurance (NRCMI) (Barber & Yao, 2010; Liu, Rizzo, & Fang, 2015).

The three insurance programs are distinct in content, cost, and coverage. The Urban Employees Basic Medical Insurance (UEBMI) was established in 1998 to replace the LIS and GIS and covered all urban employees, including both public and private sector employees. Those working in public institutions, state, collective and private enterprises, and foreign-invested joint ventures are covered under this system. The program stipulated the employers' contribution was 6-8% of gross wage costs and employees' contribution was 2-3% of their gross wages (Duckett, 2001). Urban individuals, such as the self-employed, could participate in this system, but their participation was not subsidized and thus they were responsible for 100 % of the premiums. Only employees with urban HuKou are eligible to participate. Rural residents working in urban areas are not eligible to enroll in the UEBMI. This program is for individual workers only and does not cover the dependents of the employees.

The Urban Residents Basic Medical Insurance (URBMI) was established in 2007 to cover those urban residents who were not covered under UEBMI, specifically those who were

unemployed, self-employed, those with disabilities, the elderly, and children (Barber, & Yao, 2010). Qualified residents could choose to join the URBMI program, which operates at the household, rather than individual level. The government finances this program primarily through subsidies, although contributions from households are expected. The URBMI program is mainly for catastrophic care and coverage levels and premiums vary across urban regional areas (Barber & Yao, 2010; Ren, et al., 2013).

The New Rural Cooperative Medical Insurance (NRCMI) was established in 2003 to cover the entire rural population. Rural residents could choose to join the NRCMI program which covers individual participants rather than families or households. Fees paid by enrollees primarily fund the NRCMI along with supplemental subsidies from the central and local governments (Ma et al., 2008; Ren, et al., 2013). Because wages in the rural population are much less than wages of those in urban regions, the enrollees spent a greater percentage of their total income to enroll in the program (Ren, et al., 2013). Additionally, because the funding mainly depends on the contribution of enrollees, there is great variability in the coverage levels of the NRCMI based on geographic area. NRCMI beneficiaries in poorer rural areas usually have had less funding to cover their medical cost (Wagstaff, Yip, Lindelow, & Hsiao, 2009). The focus of the NRCMI is on catastrophic care through subsidizing the cost of inpatient hospital visits, rather than focusing on routine or preventative services. In general, NRCMI participants have received far fewer health care related benefits than URBMI participants.

In 2009, the central government of China committed to spending an additional 850 billion Chinese Yuan (about \$125 billion in US dollars) between 2009 and 2012 on health care related issues. At this time, they also implemented additional comprehensive health care reforms with an ultimate goal of achieving universal coverage for basic health care among all Chinese citizens

regardless of HuKou (Long, et al, 2013). Aims of this reform included expansion of health insurance coverage, establishment of an essential medicine program, funding of public health interventions and primary health care, and testing improvements to public hospitals. By the end of 2011, the three major insurance programs—Urban Employee Basic Medical Insurance, Urban Residents Basic Medical Insurance, and New Rural Cooperative Medical Insurance—were providing coverage for 95% of the total population in China (Liang, Xie, Fu & Wu, 2014).

In 2012, the central government issued *The Twelfth Five Year Plan for the Development of Health Service* to initiate another round of health care reform. One of the major goals outlined in this reform was to establish a public health insurance system that combined the Urban Residents Basic Medical Insurance and New Rural Cooperative Medical Insurance into a single system, to be instituted by 2015. Anyone living in urban or rural areas, regardless of HuKou status, excluding urban government employees, would be eligible to participate. The inequitable access to health care and inequitable financial risk was expected to decrease through the reduction of separate rural and urban public medical insurance programs. Since 2014, this health care reform has been instituted on a province-by-province basis, with Shandong as the first to do so. According to the *Economic Information Daily*, by August of 2016, around 19 provinces have established the Residents Basic Medical Insurance program (Li, 2016).

Disparities under China's Medical Insurance Policies

The rapid increase in insurance coverage for those previously uninsured was reported as a huge success of the first and second rounds of health reform between 1998 and 2012 (Yu, 2015). However, although rates of insurance coverage increased rapidly during this period of time, the issues of affordability and accessibility of health care remained significant barriers for many residents due to many plans featuring low premiums, but also high deductibles and low benefit

coverage (Liu, Gao & Rizzo, 2011; Wagstaff, et al., 2009). Such types of policies required insured individuals to pay high out-of-pocket fees for medical care, since they had to meet their annual deductible prior to the insurance programs subsidizing any of their health care expenses. As a result, many individuals were not able to afford the expensive out-of-pocket fees and opted for cheaper, alternative treatments, such as traditional herbal treatments. This was seen in the 2003 Third National Health Services Survey, with approximately half of China's rural residents and one third of China's urban residents reporting they chose to self-treat, instead of consulting a medical professional when sick because they could not afford medical costs regardless of having health insurance (Ma, et al., 2008; Ren, et al., 2013).

Because eligibility to participate in these insurance programs was initially based on participants' HuKou status, many insured individuals also experienced difficulty accessing necessary medical services, especially those living in rural areas (Ma, et al., 2008). Because most of the health care resources and facilities are concentrated in urban areas, populations living in rural areas experienced difficulties accessing necessary medical services due to their limited availability, and lack of proximity to rural areas. For example, by 2010, the number of available hospital beds and the number of health professionals per 1000 residents in urban areas was 4-5 times greater than those in the rural areas (You, et al., 2013). In addition, because of the HuKou restrictions, the rural population living in the urban areas faced difficulties accessing necessary medical services because urban health resources were usually considered out-of-network for NRCMI enrollees. Individuals with rural HuKou status living in urban areas needed to travel to rural facilities to utilize their "in network" benefits, or pay full price for services, which was usually cost prohibitive. Thus, even when living in urban areas, residents with rural HuKou still struggled to access health care resources (Treiman, 2012).

Based on the definition provided by WHO, universal health coverage means “all people can use the promotive, preventive, curative, rehabilitative, and palliative health services they need, of sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship” (WHO, 2016). Even though the insurance coverage in China rapidly increased between 1998 and 2012, evidence suggests that the fragmentation in public medical insurance system continued to lead to inequitable access to health care and financial risk protection for people covered by different health insurance programs in China (Meng, Fang, Liu, Yuan, & Xu, 2015). Prior research during the 2000s found that rural Chinese children’s nutrition levels were very low, and that malnutrition was particularly serious in the poor western rural areas (Pei, Wang, Ren, & Yan 2013; Zhang, et al., 2011; Zong & Li, 2014). According to the National Food and Nutrition Survey in 2005, the rate of stunted growth of children under five years of age in urban and rural areas was 3.1% and 16.3% respectively; the rate of children under five years of age being underweight in urban and rural areas was 1.4% and 6.1% respectively (Yang, et al., 2013). The prevalence of children who were underweight and experienced stunted growth poor rural areas ranged from between a low of 8% and a high of 20.3% (Zong, & Li, 2014). These findings indicate that the health reform and the rapid increase of insurance coverage did not significantly reduce the health care inequity, especially in relation to the health outcomes of urban and rural children in the 2000s.

By 2012, China had 236 million internal migrants (about 18% of the total Chinese population) moving from rural areas to urban areas seeking higher income and more economic opportunities. As mentioned above, rural-to-urban migrant workers were not entitled to urban welfare benefits and community services due to their rural HuKou status. These HuKou related concerns impacted both rural-to-urban migrants and migrants’ children. The children of rural-to-

urban migrants faced difficulties accessing public HuKou-linked services such as urban public schools and urban public medical insurance coverage due to having a rural HuKou. As a result, about 23 million children under the age of 14 being were left behind by their parents in the rural areas, living without parents, staying with grandparents or other relatives, with limited access to health care. Studies show that children who are left behind have lower intake of essential nutrients, worse physical and mental development, and lower health-related quality of life (Liu, et al., 2015). Thus, expanded coverage appeared to have little impact on health care equity. The problems of affordability and accessibility of health care services are still unresolved, with children and rural-to-urban migrants being at highest risk for inadequate coverage and unaffordable services.

STUDY AIMS

The long term impact of these multiple changes to public medical insurance policies between 1998 and 2015 is still unclear. Thus, the overarching goal of this dissertation is to evaluate the impact of China's public medical insurance policies on health care equity between urban and rural children from 2004 to 2015. Two independent studies are conducted. The first study focuses on the impacts to health care equity under the health care reforms between 2004 and 2009 that expanded health coverage via separate public health insurance programs for urban and rural residents. The second study focuses on issues of equity embedded in the policy changes of 2012 combining the rural and urban health public health insurance programs. The two independent but related aims of this dissertation projects are to (1) examine the impact of the URBMI and NRCMI on urban and rural children's physical health outcomes and financial risk between 2004 and 2009, and (2) to examine how the new Residents Basic Medical Insurance (RBMI) intends to promote health care equity between urban and rural children as it combines

the existing rural and urban public medical insurance programs into one insurance program for all residents, regardless of HuKou status. The guiding research questions for this dissertation project are as follows:

1. Does insurance coverage reduce the urban-rural disparities in Chinese children's physical health outcomes and financial risk?
2. Does public health insurance have a differential impact on urban and rural children in terms of their physical health outcomes and financial risk?
3. Do the policy statements of the new Residents Basic Medical Insurance program appear to promote or impede health care equity between urban and rural children?

This dissertation project applied both quantitative and qualitative research methods. It includes two components: a quantitative analysis of children's health care data from 2004-2009 using structural equation modeling, and a content analysis of one province's policies under the new Residents Basic Medical Insurance (RBMI) Program. The quantitative study utilized Height-for-age Z score (HAZ), and BMI-for-age Z score (BAZ) as standardized proxy outcome measures to assess Chinese children's physical health outcomes. Children's financial risk was measured by individual's annual out-of-pocket expenditures. The qualitative study applied the ADICO syntax framework proposed by Crawford and Ostrom (1995) to assess the policy content of two local and provincial implementation plans for the RBMI program.

SIGNIFICANCE OF STUDY

This dissertation study has important public health significance. First, having healthy children is essential to maintaining the economic infrastructure and viability of the Chinese workforce in the future. As mentioned above, the implementation of the "one-child policy" has

resulted in a rapidly decreasing proportion of children under age 18 in China. Although recent changes to the one child policy in China have been forthcoming, children remain an increasingly precious human resource for China's future.

Second, there is a gap in the current literature specifically focusing on the health outcomes of urban versus rural Chinese children. The majority of prior work in this area focuses on the health outcomes of adults, rather than those of children. Studying how insurance impacts children's physical health outcomes and financial risk is especially important because children's health directly links to all aspects of children's growth and development, and will directly impact their quality of life and potential for economic productivity as adults. Numerous studies have examined the association between childhood health status, childhood economic status and quality of life in adulthood (Case & Paxson, 2010; Chen, Eastwood, & Yen, 2007). The results show that childhood health is strongly associated with adult economic productivity and health status as well as with adult intellectual ability (Case & Paxson, 2010; Chen, et al., 2007).

Third, analyzing and discussing the content of the new Residents Basic Medical Insurance program in terms of health care equity can contribute to continual improvement of the public medical insurance system in China. Currently, there is no evidentiary support for the theory of combining the NRCMI and URBMI programs into a single program as an approach to reducing rural/urban health inequalities. Since there is usually a significant period of time from enactment of a policy to its full implementation, where its outcomes may be objectively evaluated (Rossi, Lipsey, Freeman, 2003), it may be years until this information is available to the public, given its initial implementation in 2014. The specific content and strategies embedded in policies influence their performance and ability to achieve stated goals. Thus, analyzing policy

statements may help elucidate and ultimately guide the elimination of aspects of the policy that could have a negative impact on its efficacy in improving health equity of Chinese children.

INNOVATION OF STUDY

This dissertation project is innovative in three ways. First, this study provides an original perspective to understanding the impact of public medical insurance programs on urban-rural health inequalities among Chinese children. Based on our knowledge, this is the first study to examine the impact of public medical insurance in China by testing the interaction effects of urban-rural residency and medical insurance coverage on the trajectories of children's health outcomes and out-of-pocket expenditures.

Second, this study provides an innovative method of analyzing the content of national medical insurance policies. To our knowledge, this is the first study to apply Nobel Prize recipient Elinor Ostrom's Institutional Analysis and Development Framework and corresponding ADICO syntax in content analysis to examine the potential performance of a national medical insurance program. Through thoughtful application of this syntax, this method of analysis is more systematic and rigorous than prior analyses focusing on Chinese health policy.

Third, this research aims to generate evidence-based recommendations to improve the performance of current public medical insurance policies as they related to Chinese children. Because these recommendations will be empirically based, they will have more practical applicability to future policy decision-making, as they are based in research evidence, rather than just theoretical assumptions.

OVERVIEW OF THIS DISSERTATION

This dissertation consists of five chapters: introduction, literature review, article one, article two, and a conclusion. The introduction chapter focuses on the equity problem inherent in

China's public medical insurance policies over the last decades and the reforms that have resulted from changes in the social context of China. These are followed by a discussion of the significance and innovation of this project, along with the major study aims and associated research questions. Chapter 2 contains a comprehensive literature review that provides a broader review of health care equity and reviews the findings of previous studies about health care equity between urban and rural Chinese populations, as well as, the conceptual frameworks of this dissertation. Chapter 3 and Chapter 4 are two separate but related articles dealing with how the health care equity of Chinese children in rural and urban areas has been impacted by a series of changes in China's public health insurance systems related to health insurance coverage and benefits. Chapter 3 analyzes the physical health outcomes and financial risks over time of children covered by China's rural and urban health insurance programs. Chapter 4 uses an analysis of two interrelated policy documents within a single province to examine how China's newest health insurance policy, abolishing separate systems for urban and rural residents, seeks to increase health care equity between China's rural and urban children. The conclusion chapter describes how this work makes a unique contribution to the currently limited empirical literature concerning the impact of changes in social policy on Chinese children's health care equity and further offers recommendations for improving the Chinese policy implementation and decision making processes, and provides suggestions for future research in this area.

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CHAPTER TWO: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

DEFINITION OF HEALTH CARE EQUITY

As mentioned above, the overarching goal of this dissertation project was to evaluate the differential impact of China's public medical insurance policies on the health care equity of urban and rural children from 2004 to 2015. As health care equity is the focus of this dissertation, its definition is discussed and clarified here. Following this discussion, this chapter examines literature findings related to this project and discusses the conceptual frameworks that apply to this dissertation.

Equity is a major social work principle related to fairness and social justice. Health care equity has widely been defined as the absence of socially unjust policies or practices resulting in health disparities between groups (Peter, 2001). However, there are many ways to conceptualize fairness and social justice, thus, the definition of health care equity needs to be clearly delineated. Aday (1981) defined health care equity as resource allocation and access to health care based on the unique health needs of the individual, rather than provision of the same coverage and benefits for everyone. Thus, Aday's definition of health care equity is closely related to "health needs".

Mooney (1983) and Le Grand (1987) further developed two distinct aspects of health care equity which they termed "horizontal equity" and "vertical equity". Horizontal equity was defined as equal treatment for equal needs, while vertical equity was defined as different treatment for different needs whereby additional resources would be allocated for those with greater needs. Culyer & Wagstaff (1993) expanded these dimensions of health care equity proposed by Mooney and Le Grand and explored four distinct aspects of health care equity: equal utilization, distribution according to need, equal access, and equal health outcomes. They

noted inadequacy in how “need” is operationalized and identified some incompatibility among these four aspects of health care equity in terms of their implications for practice and policy.

Braveman & Gruskin (2003) further distinguished between equity and equality, and pointed out that the concept of equity is inherently normative and values based, while equality is not necessarily so. For the purpose of operationalization and measurement, Braveman and Gruskin (2003) defined health care equity as “the absence of *systematic* disparities in health between social groups who have different levels of underlying social advantage/disadvantage—that is, different positions in a social hierarchy” (Braveman & Gruskin, 2003: 254). The concept of health care equity focuses on the distribution of resources and opportunities that drive a systematic health inequality between social groups. Thus, not all health equalities are health care equities. Health care inequity refers to a health inequality that is unjust or unfair (Braveman & Gruskin, 2003). Although all of these aspects of health care equity will be incorporated into the discussion of the health care equity of Chinese children, the expanded definition of health care equity offered by Culyer & Wagstaff, focusing on equal utilization, distribution according to need, equal access, and equal health outcomes, will serve as the foundation for organizing this work.

LITERATURE REVIEW OF HEALTH CARE EQUITY IN CHINA

This dissertation project focuses on the problems with health care equity associated with China’s public medical insurance policies, and their differential impact on Chinese rural and urban children. A systematic literature review, focusing on peer reviewed empirical literature since 2000, along with a structured review of Chinese governmental policy briefs focusing on health reform, health care policy or health care equity in relation to Chinese children was

conducted. These reviews included both documents written in English as well as those written in Chinese, and considered the perspectives of both Chinese and Western scholars.

A total of 34 peer-reviewed articles were identified encompassing the existing knowledge base of current Chinese health insurance policies and their impact on the health care equity between urban and rural children. The 34 articles were systematically reviewed and grouped into four themes based on the definition of health care equity addressed by Culyer & Wagstaff (1993): 1) rural and urban disparities in health services utilization, 2) distribution of health resources in urban and rural areas, 3) accessibility of healthcare services between urban and rural Chinese children, and 4) health outcomes of urban and rural Chinese children. Central literature findings within each major theme are discussed below.

Rural and Urban Disparities in Health Services Utilization

Among the reviewed articles, only one was found relevant to health services utilization between urban and rural children. Liu and her colleagues (2012) examined the pattern of preventive services utilization between urban and rural children. They found that even though urban children were 2.5 times more likely to use preventive health care than rural children in the early 1990s, this difference reduced such that by 2011, both urban and rural children had the same low likelihood of utilizing preventive healthcare. This implied that the new healthcare reform started in 2000 did not successfully promote the utilization of preventative services among Chinese children. Liu and her colleagues (2012) further pointed out that the majority of China's health resources are allocated to the treatment of catastrophic diseases, while primary care health services, especially preventative services, receive minimal attention and funding. This finding has been supported by the work of Li & Yu (2011), as well as Wang, Gusmano, &

Gao (2011), who found that community health care centers in China routinely tried to exclude preventive services and focus on high-cost services for financial gain.

Another study conducted by Liu and his colleagues (2007), although focused on adults rather than children, provides foundational knowledge on the differences between urban and rural health care utilization. Because of its large sample, the rural-urban pattern of health care services utilization found in this study may be extended to suggest the pattern of health care services utilization for urban and rural children. This study used the 2003 Third National Health Services Survey data in China to describe patterns in physician and hospital utilization among rural and urban populations. The survey was distributed to a large representative sample of 193,689 respondents that included 16,044 rural and 6,429 urban residents. All respondents were age 18 or older and reported an illness within the last 2 weeks before the survey was distributed. The results indicated that half of all respondents did not see any health care service provider. Of the respondents who did not see health care providers, 32.2% of rural respondents and 47% of urban respondents treated themselves without physician consultations. This meant that more rural respondents than urban respondents did not receive treatment by physicians when they were ill.

Of those who used health care services, rural respondents used outpatient services more than urban respondents (52% vs. 43%). However, there were significant subpopulation differences between rural and urban outpatient services utilization. Rural respondents visited physicians significantly more often than urban respondents if they were uninsured, were of Han ethnicity or resided less than 3 km away from a medical center. On the other hand, minority respondents living in rural areas visited physicians significantly less frequently than minority respondents living in urban areas. In addition, fewer rural respondents used inpatient services

than urban respondents (7.6% vs. 11.1%). A low utilization of inpatient services was especially pronounced among rural males, rural seniors, and rural respondents with low education levels.

Liu and his colleagues (2007) discussed three possible explanations for their findings. First, the relatively lower cost of outpatient services in rural areas may promote its utilization. Second, even though medications in rural areas were generally available only at clinics in villages, most pharmacies that carried medications available without a prescription were only located in a town or city. This prompted the increased use of outpatient services in rural areas, as the cost of traveling from a village to a town was high compared with the cost of seeing a physician in the local clinic who could fill their prescription. On the contrary, urban residents could purchase medications at local pharmacies without any prescriptions, and the cost of seeing a physician within an urban center was much higher compared with that in rural areas. Finally, rural residents primarily relied on outpatient treatment because of the higher cost associated with rural inpatient treatments. It was also found that insured rural residents utilized inpatient services at roughly the same rate as uninsured rural residents, implying that having public medical insurance did not help improve the equal utilization of health care services.

Distribution of Health Resources in Urban and Rural Areas

The term “health resources” is defined by Mosby’s Medical Dictionary (2009) as “all materials, personnel, facilities, funds, and anything else that can be used for providing health care and services”. An ideal allocation of health resources should ensure equality in health care provision (WHO, 2014). Previous studies in this area indicate that China’s health resources are currently inadequate to meet the health care needs of its people. First, the urban-rural inequalities in health resources allocation has increased in recent decades. (Wang, Xu, & Xu, 2007; Li & Chang, 2008; Brix, 2013). In the 1970s, approximately 3.5 million medical professionals were

working in rural areas; however, by the 2000s this number had decreased dramatically to approximately 500,000 (Wang, et al., 2007). Although in 2005, around 800 million people lived in rural areas (around 70% of total population), 80% of China's medical institutions were concentrated in urban areas (Wang, et al., 2007). Provinces with a proportionally larger rural population also spent less per capita on health. In addition, the urban-rural inequality in relation to the number and percentage of qualified health professionals residing in rural and urban areas was also large. For example, as of 2005, health professionals with bachelor degrees and higher accounted for 42.3% of those employed in urban hospitals, but for only 1.6% in rural hospitals (Li & Chang, 2008). Compounding this problem of an inequitable distribution of health care providers and health care centers, patients in rural areas often have a difficult time accessing timely health services. Long wait times result in more serious health conditions and higher overall medical costs, as many do not access formal health care services unless very ill. Other studies found that families enrolled in urban health insurance programs had lower rates of catastrophic health expenditures than those enrolled in the rural program (Li, et al., 2012). In addition, the rates of catastrophic health expenditures as a percentage of household income were higher for households in poorer and rural regions than in wealthy or urban areas (Li, et al., 2012).

Accessibility of Health Care Services between Urban and Rural Populations

Residency status and financial burden were found to be the most prominent barriers to rural populations accessing necessary health care services. Zhang, Wang, Qian, & Ni (2014) found that many rural-to-urban migrants lacked medical insurance since the eligibility for China's public medical insurance programs was based on HuKou (permanent residency status) rather than current residence. Those from rural HuKous were not able to take part in the urban medical insurance programs even when residing in urban areas. This issue was especially acute

for rural pregnant women living in urban areas. These women were often unable to access prenatal care services in urban hospitals, and their children had difficulties accessing necessary medical care after birth since they relied on obtaining “in network” health care in rural areas in which they no longer resided. If these women wished to access health care from nearby urban medical centers, they often were required to pay almost the entire fees for these services.

Even women who stayed in rural areas had difficulties accessing necessary prenatal care services for pregnancy and childbirth. Gao, Barclay, Kildea, Hao, & Belton (2010) explained that a normal vaginal birth in hospitals cost 200-1,000 RMB (October 2016 U.S. dollar equivalent: \$29.66-\$148.31), and a caesarean section cost 3,000-5,000 RMB (October 2016 U.S. dollar equivalent: \$444.92-\$741.53). However, the New Rural Cooperative Medical Insurance (NRCMI) only reimbursed 450 RMB for first-time childbirth regardless of birth method, putting a higher burden on women who were unable to deliver the child vaginally due to small stature, had high-risk pregnancies, or had complications during delivery. Even though a second birth has been legal in rural areas since 2000, this policy did not cover any expenses related to a second birth. Thus, women in many rural areas, especially the poorest areas, bore their child at home rather than in the hospital in order to save money, often resulting in complications related to childbirth. These findings were supported by the work of Brix (2013) who found that the average out-of-pocket payment (after insurance reimbursement) for a single inpatient stay in 2008 was 50-70% of one’s annual per capita income in rural areas and approximately double the percentage of income that one would spend on a single hospital stay if insured under the urban policy and accessing care in an urban area.

The financial strain associated with accessing health care, both with and without insurance coverage remains a concern for many poor and rural Chinese citizens. Meng et al.

(2012) conducted a study to examine the trends in access to health services and financial protection in China between 2003 and 2011 by using data from the 2003, 2008, and 2011 National Health Services Survey. The study compared the differences between different sub-populations, including the difference between urban and rural populations. Based on their findings, despite impressive achievements in insurance coverage between 2003 and 2011, some key indicators of financial protection showed little change. The inpatient reimbursement rates were still less than half of the cost of an inpatient visit in 2011. The percentage of households with catastrophic health expenses was 12.9% in 2011, which changed little across time. Poor households had catastrophic health expenses twice as often as wealthier households, presumably due to lack of preventive care. One of the major goals of the reform between 2003 and 2011 was to increase protection against catastrophic events and reduce out-of-pocket expenditures related to health services. However, those goals did not appear to be achieved by 2011. The rural population remained vulnerable, with high rates of catastrophic health spending.

In addition to residency status and financial difficulty, education level, distance from one's residence to specialists, and parents' trust in medical services are also important factors that may prevent rural children from accessing necessary health services. For example, Tang, Zhang, Chen, & Lin (2014) found that the dramatic increases in medical costs following the shift from fully governmentally subsidized insurance systems to more free market based systems of recent years made parents lose their trust in formal medical service and health care providers. Except in the case of serious illness, evidence suggests that parents are more likely to believe that self-treatment with traditional medicine is an economic and efficient alternative for keeping their children healthy, especially in rural areas (He & Qian, 2013).

Health Outcomes between Urban and Rural Chinese Children

The literature identifies three major areas of urban-rural children's health inequity that are associated with systematic inequalities of health care utilization, health resources allocation, and health care accessibility between urban and rural populations in China. These include obesity, malnutrition, and maternal and child mortality rates.

Obesity. In many developed countries, obesity is strongly associated with low income, poverty and lower parental education levels (Chen, Modin, Ji, & Hjern, 2011). Thus, interventions to reduce obesity in these countries usually focus on improving levels of education and increasing overall household income. However, in China obesity is more often found in urban areas and in families who have higher income levels. Urban children, particularly urban boys, had been found to have the highest levels of obesity in 2010. Between 1985 and 2010, the increase in overall childhood obesity in urban areas was double the increase in obesity in rural areas (Zong & Li, 2014). These findings were similar to those found by Chen et al. (2011) who reported that 32.5% urban boys and 17.6% urban girls were overweight, while only 5% of rural boys and 3.9% of rural girls were overweight or obese.

Malnutrition. In contrast, rural children have much higher occurrences of being underweight, malnourished, and experiencing stunted growth than their urban counterparts. Zong & Li (2014) observed that in 2006, the proportion of overweight children in China was as high as 16.8% in wealthy urban areas, while the portion of children that were underweight was as high as 57.6% among the children in the poorest areas of China's western provinces. From 1985 to 2010, malnutrition in childhood declined dramatically in urban areas, however overall nutrition in many rural areas still remains poor.

Although acknowledging urban-rural disparities in stunted growth and being underweight, Bixi (2013) reported that since reaching their peak in 2000, these inequalities have significantly declined. Based on the statistical reports issued by China Ministry of Health, Bixi (2013) also identified a persistent disparity in deficiencies of various micronutrients important to children's health and survival including iron, zinc and Vitamin A due to higher levels of malnutrition in rural children.

In this study, Bixi broadly reviewed disparities in growth between rural and urban children. His conclusion that these disparities between urban and rural children have continually decreased since 2000 did not take into account other factors (covariates) that could affect growth trajectories of these children. In contrast, Liu et al. (2012) tested the effects of urban-rural residency on urban and rural children's growth trajectories from 1989 to 2006. Controlling for variables such as insurance coverage, children's age, gender, race, region, household income per capita, gender of household head, household size, parents' demographics, and parents' smoking and drinking behavior, he found the following: 1) the differences in Weight-for-age Z score between urban and rural children remained the same between 1989 to 2006; 2) the urban-rural gap in Height-for-age Z score declined from 1989 to 2000, but again increased from 2004-2006. Unlike the findings of Bixi (2013), these findings indicate that disparities between rural and urban children have persisted since the 2000s.

Maternal/children mortality. Besides obesity and malnutrition, prior studies have also examined the urban-rural inequalities in Chinese maternal and child mortality. In 2006-2008, the maternal mortality ratio (MMR) and under-five mortality rate (U5MR) in the poorest rural areas were approximately five times higher than in urban areas, while the highest rural provincial MMR was 49 times that of the lowest urban MMR, and the highest U5MR occurring in a rural

area was 8 times that of the lowest occurring in an urban area (Brix, 2013). Ma, et al. (2014) conducted a survey to assess the most frequent causes of death among infants in rural areas of Yunnan and Xinjiang provinces, high-mortality areas in western China. Results indicated that pneumonia (34.5%), preterm birth complications (16.5%), diarrhea (10.4%), birth asphyxia (10.3%), and congenital abnormalities (8.5%) were the main causes. Prematurity and birth asphyxia accounted for the largest portion of deaths during the early neonatal period, whereas infection accounted for more than 60% and 80% of deaths in the late and post neonatal period. Zhang et al. (2014) compared data for a sample of rural-urban migrant women who died during pregnancy or in childbirth to a matched sample of migrant women who survived pregnancy and childbirth. He found that women who were more likely to have their pregnancy result in maternal mortality, were poorly educated, of low income, lacked health insurance, had poor knowledge of prenatal care, were not registered in the healthcare system during pregnancy, and attended less than five prenatal exams.

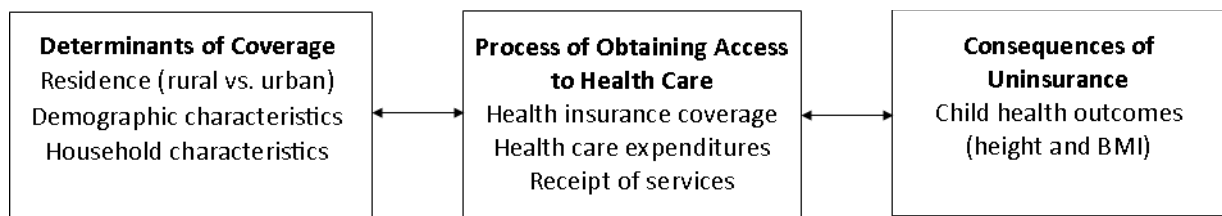
Gao et al. (2010) conducted qualitative interviews of 30 women who engaged in home birth in the rural Shanxi province. The decision to give birth at home, rather than in an institutional setting were influenced by the following factors: financial concerns, poor quality of prenatal care where they lived, problems with transportation, fear of being in a hospital, convenience of having birth at home with traditional birth attendants and the belief that a home birth was “normal”. These studies indicate that disparities in maternal and child mortality rates remain significant between urban and rural areas, and are influenced by factors such as poverty, maternal education, traditional values, and migration in addition to the financial burden associated with hospital based birth. Financial difficulty continually presents as the biggest barrier to rural women to accessing qualified health services for pregnancy and childbirth.

LINKS OF MEDICAL INSURANCE & HEALTH CARE EQUITY

Medical insurance is perceived to cover essential health needs and protect people's physical and mental health. Having medical insurance is important to help people receive timely medical care and improve their lives and health (Bovbjerg & Hadley, 2007). In the United States, the Institute of Medicine in 2002 found that compared to insured populations, uninsured people generally have less access to recommended health care services, receive poorer quality health care services, and experience worse health outcomes (IOM, 2002; McWilliams, 2009). People with medical insurance usually have better health outcomes because of having consistent health care resources. Insured people usually are considered to have better access to preventive health care that protects people from serious illnesses. In addition, having medical insurance helps people to access prescription medicines, especially the medicines to treat chronic illnesses like high blood pressure, cholesterol, diabetes, and asthma. If unchecked and untreated, these chronic illnesses can worsen and directly result in inpatient or emergency services which result in higher out-of-pocket expenditures. Moreover, insured people can usually access health care services at cheaper rates and pay less out-of-pocket expenditures. For example, in the United States, patients with insurance can take advantage of discounts negotiated with hospitals and doctors by health plans. Uninsured patients are generally charged full service fees without any discount.

In countries with voluntary medical insurance schemes, having medical insurance may be associated with people's sociodemographic characteristics, including but not limited to gender, education level, household income, clinical risk factors, health behaviors, environmental influences, culture, religion, and age (IOM, 2002). As Figure 2 shows, due to those systematic inequalities in medical insurance coverage, disparities in health outcomes occur and lead to further social marginalization of vulnerable populations (Ren, et al, 2013).

Figure 1. *The Predictors and Effects of Medical Insurance*



(Adapted from Institute of Medicine, 2001)

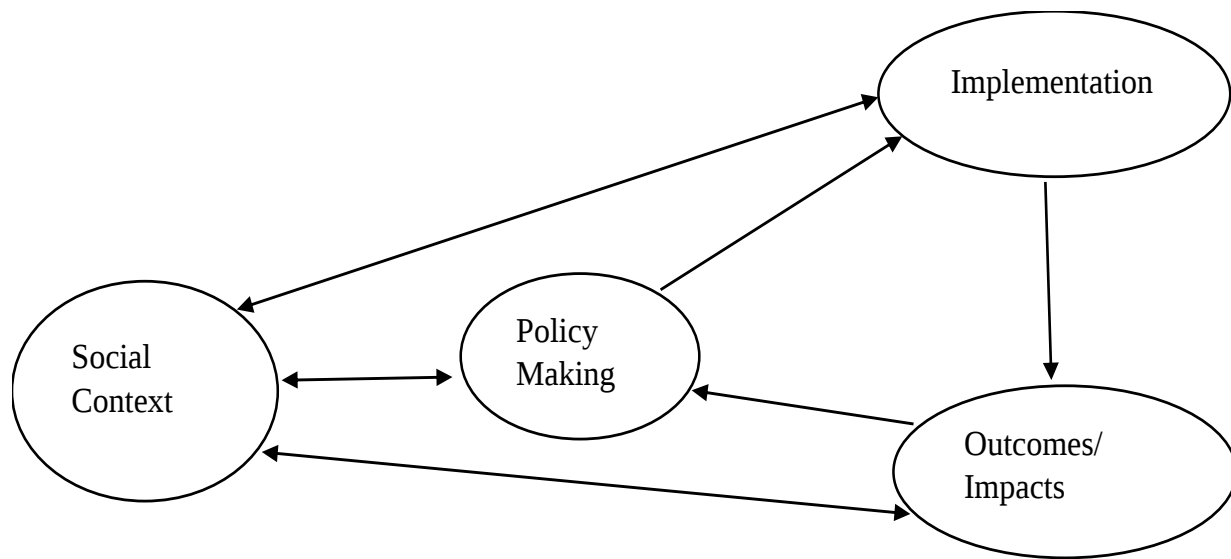
Achieving health care equity requires reducing systematic disparities between social groups. As such, in countries with voluntary medical insurance schemes, public medical insurance policies often seek to reduce the barriers of the above demographic factors and to create equal opportunity to people to access medical insurance (Schrecker et al., 2010; Weissbrodt & Kruger, 2003). Increasing medical insurance coverage has been conceptualized as a key component to achieve health care equity (Ren, et al., 2013).

However, in some developing countries, such as China, the appropriate budgeting, provision of services, and creation and maintenance of necessary infrastructure are all key obligations of government if any public medical insurance policy is to be successfully implemented (Ren, et al., 2013; Schrecker et al., 2010; Weissbrodt & Kruger, 2003). As such, the content of medical insurance also plays an important role in health care equity. Increasing a medical insurance plan that has a high deductible, does not cover preventive services, and only partially covers chronic illnesses will possibly not help to address health needs and protect people's health. The first article of this dissertation examines how public medical insurance is associated with the inequalities of health outcomes between urban and rural children across time in China. If enrolling in public medical insurance does not significantly relate to the inequalities of health outcome, the content of insurance may be critical in helping to understand why.

CONCEPTUAL FRAMEWORK OF POLICY PROCESS

As this dissertation seeks to evaluate the impact of social policies, the conceptual framework of this project proposes the following relationships among social context, policy making, implementation and outcomes. As shown in Figure 2, the social policy process is a multi-stage cycle of social context, policy making, policy implementation and policy outcomes.

Figure 2. *Cycle of Policy Process*



Social policy usually refers to interventions or guidelines created by governments to change, maintain, or create living conditions that are conducive to human welfare (Vargas-Hernandez, Noruzi, & Ali, 2011). The first step of the policy process is to consider the social context where the policy making, implementation, and outcomes occur (Smith, 1973; Spillane, Reiser, & Reimer, 2002). The specific social context first determines the social problems that the policies are intended to handle. Second, the specific social context can influence the policymaking, implementation, and even outcomes directly.

Policymaking involves a deliberate and careful decision making process that addresses selected public concerns (Dunn, 2015). Thus, the policymaking process involves formulating the principles, rules, and strategies for reaching identified goals (Spillane et al., 2002). The formulation of policy involves the identification and analysis of a range of actions that respond to the identified goals. Each policy alternative is assessed against a number of factors such as potential or observed outcomes and resource distribution, as well as on the unique cultural, economic, and political contexts in which that policy will be implemented (Dunn, 2015).

Policy implementation is defined as “what develops between the establishment of an apparent intention on the part of government to do something or stop doing something and the ultimate impact of world of actions” (Paudel, 2009: 36). More concisely, policy implementation refers to a set of actions or procedures that connect the expression of government intention (policymaking process) and actual results (policy outcomes/impacts) (O’Toole, 2000; Paudel, 2009).

Policy outcomes or impact, here, is defined as “the direct or indirect effects that a policy has on people and on social contexts” (Hoff & McNutt, 2008). The policymaking process aims to maintain or change something within social contexts. Social contexts influence policymaking process by offering available resources and limiting the array of policy choices available. The policymaking process influences the strategies of policy implementation, while the strategies of policy implementation determine policy outcomes. In turn, policy outcomes both directly and indirectly impact the future policy making process and the continued implementation of that particular policy. Thus, policymaking is a dynamic interactive process rather than a linear process based on a direct progression of one design element to another.

The interactive framework described above and shown in Figure 1 of this dissertation will guide this evaluation of whether changes in China's public health policies from 2004 to present have promoted health care equity between rural and urban Chinese children. The key concepts and approaches of policy evaluation applied to this dissertation are addressed in the following section on *Public Policy Evaluation*.

PUBLIC POLICY EVALUATION

As previously mentioned, the policy process is viewed as a cycle of relationships between various functional activities. An important phase of the policy process is policy evaluation, which not only can be conducted to “look backward” on what has happened, but also can be made to estimate or predict the likely effects, or costs and benefits, of policy alternatives prior to their adoption or full implementation of the current policy (Dunn, 2015). Policy evaluation involves the estimation, appraisal, or assessment of policy content, its implementation, the potential for goal attainment, and other effects. Evaluation, as a functional activity in the policy process, can occur at any point, not only after the policy has been implemented (formative evaluation), but also at the end when the outcomes can be observed (summative evaluation) (Dunn, 2015).

Summative evaluations typically refer to evaluating observed outcomes, commonly including both intended and unintended consequences of a certain policy for society. The consequences stem from deliberate action or inaction, and can be measured by both quantitative and qualitative approaches (Dunn, 2015). *Article one* (Chapter Three) of this dissertation will apply a quantitative approach to appraise the outcomes of China's public medical insurance policies between 2004 and 2009, by examining the impact of public insurance on reducing the inequalities in physical health outcomes and financial risks between urban and rural children.

When a policy has not been fully implemented and its outcomes not yet ready to be objectively evaluated, formative policy evaluation can be conducted to determine the likely impact of policy strategies or alternatives. Formative evaluation analyzes stages of the policy processes that primarily focus on the design and implementation of the policy (Dunn, 2015). Policy implementation develops in the space between identification of policy goals and the ultimate policy outcomes (O'Toole, 2000). Implementation research is, in important respects, heavily reliant on institutional scholarship. Institution is an abstract concept in social theory. A typical definition of "institution" is "a complex of positions, roles, norms and values lodged in particular types of social structures and organizing relatively stable patterns of human activity with respect to fundamental problems in producing life-sustaining resources, in reproducing individuals, and in sustaining viable societal structures within a given environment" (Turner, 1997:6). All policies depend on institutional action, and identifying institutional forms becomes increasingly common for policy implementation analysis (O'Toole, 2000).

Elinor Ostrom and colleagues (Ostrom, Gardner, & Walker, 1994; Ostrom, 2011; Polski & Ostrom, 1999) innovated policy research by developing the Institutional Analysis and Development (IAD) framework. IAD is a systematic method for organizing policy analysis activities to assess the implementation of a policy at multiple levels (Ostrom, 2005; Ostrom, 2011). In this framework, Ostrom (2005) simplified "institution" to specifically refer to "the prescriptions that humans use to organize all forms of repetitive and structured interactions". The IAD framework considers four key components of a specific policy: external variables, action situations, interactions, and outcomes, as illustrated in Figure 2. Based on Polski and Ostrom (1999), the *external variables* include biophysical conditions, community attributes, and rules-in-use, which describe the social context of a specific policy. The *action situation* is the conceptual

space in which actors consider alternative courses of action, make decisions, and take action.

Interactions refer to structural activities between actors in a given action situation. The *outcomes* refer to how the policy system ultimately performs in relation to objective standards. While ideally, policies include these standards, in many cases, policy analysts must specify evaluation criteria.

The goal of the IAD framework is developed on a rule-based perspective, which makes it possible to catch institutional details and understand the emergence and impact of institutional forms (O'Toole, 2000). Generally, the theory underpinning the IAD framework is that institutions generate incentives for visible social behaviors, and this exchange between incentives and social behaviors results in observable outcomes in a certain policy. Individuals always face choices regarding the actions they take that will lead to consequences (outcomes) for themselves and for others, through their interactions with others (Ostrom, 2005). Thus, an institutional analysis seeks to understand the rules, norms, or strategies that create incentives for behavior during a certain policy's implementation process (Crawford and Ostrom, 1995). Although the framework could create overwhelming complexity, this approach provides not only conceptual detail but also an analytical method to develop and extend empirical theory (Ostrom, et al., 1994). In particular, the perspective provided by Ostrom and colleagues enables comprehension and analysis of institutional forms of all sorts, including multi-actor arrays that vary in several ways from each other, and the subtle but potentially important institutional features (O'Toole, 2000). The IAD's approach has special advantage to identify and explicitly incorporate multileveled actions (Ostrom, 2005; Ostrom, 2011).

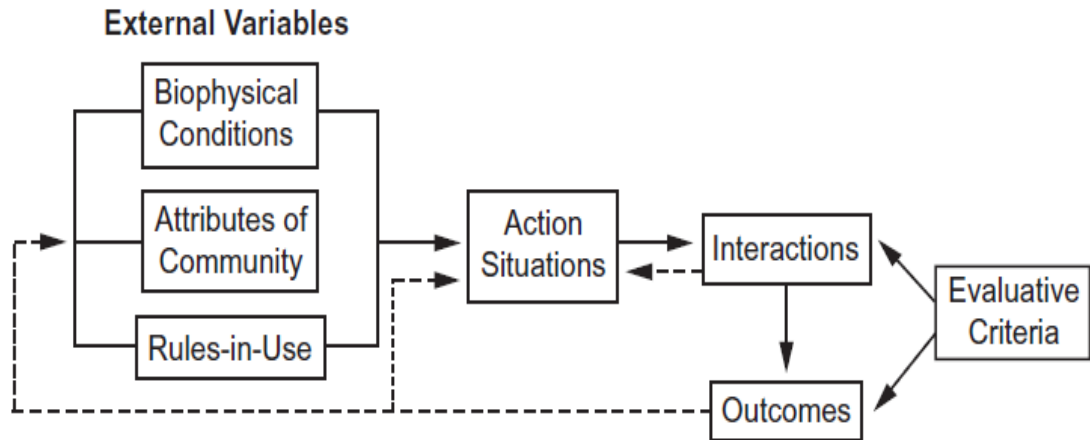


Figure 3. *Framework for Institutional Analysis*

Source: Adapted from E. Ostrom (2005, p.15)

One key element of this framework is analysis of the “action situation” where decision – making takes place based on rules, norms, and strategies. The internal structure of an “action situation” is illuminated in Figure 4.

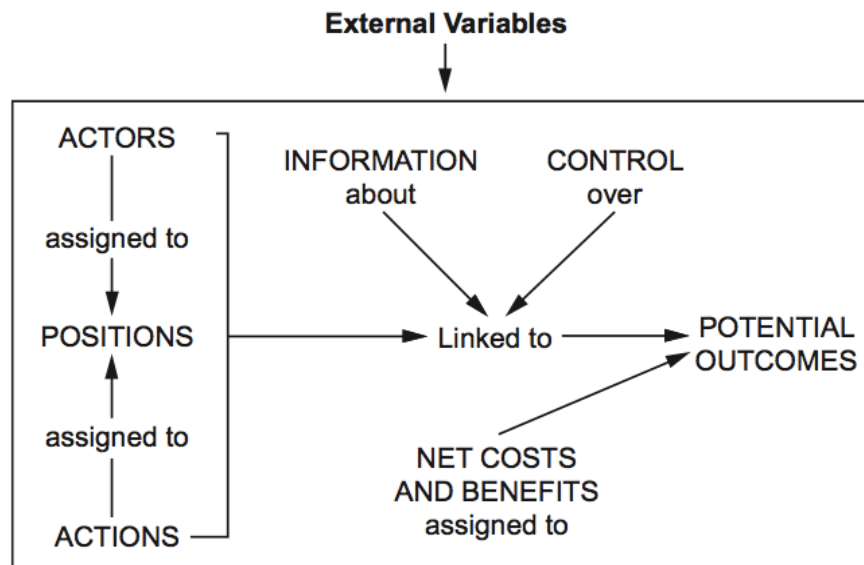


Figure 4. *The Internal Structure of an Action situation.*

Source: Adapted from E. Ostrom (2005, p.33).

In order to analyze an action situation, Crawford and Ostrom (2005) developed the “ADICO” grammatical syntax to identify norms, strategies, and rules. The ADICO syntax consists of: attribute (A), deontic (D), aim (I), condition (C), and or else (O). Based on Crawford and Ostrom (2005), the *attribute* is the individual or organization that applies the institutional statement. The *deontic* is the prescriptive operator to describe that the institutional statement is ideally permitted, obliged, or forbidden (141-49). The *aim* refers to the goal or action of the institutional statement (140). The *condition* refers to the operators when and where for which the aim is allowed, required, or forbidden in the institutional statement (149). The *or else* operator is the punitive action if the rule is not obeyed. The institutional statements are created from different combinations of the ADICO syntax: Strategies are statements containing attribute, aim, and a condition (AIC); norms are statements that contain attribute, deontic, aim, and condition (ADIC); and rules are statements containing the entire syntax, an attribute, deontic, aim, condition, and or else (ADICO) (Thomsen & Davies, 2007; Franz, Purvis, Nowostawski & Savarimuthu, 2014).

Article two (Chapter Four) of this dissertation will conduct a content analysis of the new Residents Basic Medical Insurance (RBMI) program by using the ADICO syntax, to assess, based on the content, whether this policy would support the goal of increasing health care equity. Distinguished from attribute (A), deontic (D), condition (C), and or else (O), article two of this dissertation focused on “aim (I)” that are actions suggested by policy and directly relate to the outcomes or impacts of the policy.

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CHAPTER THREE: ARTICLE ONE

A SECONDARY DATA ANALYSIS OF THE IMPACT OF INSURANCE ON THE HEALTH AND HEALTH EXPENDITURES OF URBAN AND RURAL CHINESE CHILDREN

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Key Words: Chinese health policy, health care equity, children's health, insurance policies

Abstract

Background. Health disparities between rural and urban children, such as differential access to health care and health insurance and differences in out of pocket health related expenditures, have long been a social problem in China. In addition, inequities in key health indicators such as height and body mass index (BMI) have been consistently found between urban and rural Chinese children. The aim of this study was to explore the relationship between increased public medical insurance enrollment, key children's health indicators, and annual out of pocket expenditures related to medical care. **Methods.** Analyses were based on a weighted representative sample of 3,347 children participating in the China Health and Nutrition Survey at three points in time between 2004 and 2009, following significant changes to China's public health insurance systems. A series of Chi-square tests, two-way ANOVAs, and Structural Equation Models were conducted to examine: (1) whether enrolling in public medical insurance improved children's physical health indicators and reduced out-of-pocket expenditures over time; and (2) whether enrolling in public medical insurance reduced existing health inequities between urban and rural children over time. BMI-for-age Z (BAZ) scores and Height-for-age Z (HAZ) scores served as proxy indicators of physical health. **Results.** Findings indicate that: (1) children enrolling in public medical insurance had higher HAZ than uninsured children; (2) public medical insurance enrollment did not consistently increase children's BAZ or reduce their out-of-pocket expenditures; and (3) public medical insurance enrollment had limited impact on reducing health related inequalities between urban and rural children over time. **Conclusions.** Increased public medical insurance coverage did not lead to a reduction in health disparities between rural and urban children in relation to physical health outcomes or out of pocket health care expenditures. Refocusing policies to improve the distribution of health resource allocation

and healthcare services based on equity, rather than equality, may serve to reduce existing rural urban health care inequities.

Background

The concept of health care equity (Braveman & Gruskin, 2003) focuses on the distribution of resources and other processes driving systematic inequalities in health outcomes between more and less advantaged social groups. Persistent health inequity between urban and rural populations, particularly among rural and urban children, has been a long-standing social problem in China. Starting in the early 2000's, the Chinese government implemented a series of health reforms in the hopes of improving health care equity for Chinese citizens. The specific goals for each of these reforms was to expand insurance coverage to impact key health indicators while decreasing out-of-pocket health care related expenditures (Wagstaff, Yip, Lindelow, & Hsiao, 2009). To better assess whether these policy goals were achieved, this study examines the effects of enrollment in public medical insurance programs on key physical health indicators and out-of-pocket expenditures of Chinese children. This study also examines, more broadly, these policies' impacts on decreasing health disparities between urban and rural Chinese children over time.

Health Care Coverage in China

Prior to the 1980s, most Chinese citizens were covered by public medical insurance programs heavily subsidized by the Chinese government, thus requiring few out-of-pocket expenditures. However, beginning in the 1980s, the shift from a planning economy to a market economy had significant impacts on China's public health insurance systems. As the Chinese government gradually decreased its role as the primary payer of public medical insurance, the old public medical insurance system collapsed, resulting in more than half of China's urban residents and approximately 90% of China's rural residents becoming uninsured by the late 1980s (Barber & Yao, 2010; Long, Xu, Bekedam, & Tang, 2013). Due to these sweeping large

scale changes, an urban-rural divide in children's health outcomes and out of pocket health related costs emerged and has persisted. The prevalence of Chinese urban children who were severely underweight and exhibited stunted growth decreased approximately 20.5% by 1992, however these negative health outcomes persisted in rural areas (Chang, Xian, He, Chang, Ma, & Chen, 1996). Likewise, the ratio of rural to urban infant mortality rate continually increased from 1.67 in 1981 to 2.93 by 1993 (Liu, Hsiao, & Eggleston, 1999).

In order to address the problem of these urban-rural health disparities, the Chinese government implemented a series of health insurance reforms designed to decrease these health disparities. They established three new public medical insurance programs—the Urban Employee Basic Medical Insurance program (UEBMI), the Urban Residents Basic Medical Insurance program (URBMI), and the New Rural Cooperative Medical Insurance program (NRCMI) to better address the nation's health care needs. The UEBMI program covers urban employees without covering their dependents. Thus, Chinese children, as non-income-earning entities, must enroll in either the NRCMI program or the URBMI program based on their official residency, or HuKou (Shi, 2011; Natali, 2009).

Children's HuKou is determined by their parents' official place of residence, rather than by their own birthplace or current residence. HuKou is fixed for life rather than changing dependent on one's physical location. Children with urban HuKou must enroll in the URBMI program, while children with rural HuKou must enroll in the NRCMI program. The NRCMI was funded primarily by the policyholder, while the URBMI was partially self-funded and partially government subsidized. In general, the URBMI offers broader coverage than the NRCMI, including “catastrophic” care and care for major diseases, along with standard outpatient care and care to prevent poverty related medical illness (Eggleston, 2012). In addition,

the premiums, copays, and deductibles associated with participation in the NRCMI program are generally higher than those associated with the URBMI program. These three major public medical insurance programs achieved the goal of rapidly expanding insurance coverage. By the end of 2011, 95% of China's total population was covered by one of these the three insurance programs.

Health Reforms and Health Inequity

Several years after the implementation of the NRCMI and URBMI programs, preliminary evidence suggests that the inequalities between urban and rural children still widely exist across various physical health outcomes (Ren, Washburn, & Kao, 2013; Liu, Rizzo, & Fang, 2015). In 2010, the prevalence of children under 5 years old who were underweight was about 1% in urban areas and 4% in rural areas, but rose to around 8% in poorer rural areas (Zong & Li, 2014). Likewise, the percentage of children younger than 5 years of age who exhibited stunted growth was approximately 3% in urban areas, 12% in rural areas, and over 20% in poor rural areas. Approximately 57.6% of Chinese children exhibiting stunted growth reside in the poorest areas of China's western provinces (Zong & Li, 2014). In addition, the 2010 mortality rate of rural children is more than double of that of urban children (14.9 per 1,000 for rural versus 6.5 per 1,000 for urban) (Rudan, et.al, 2010; United Nations Children's Fund, 2010). Although these studies served to highlight the continuing disparities in health outcomes between rural and urban children, they did not examine how public medical insurance enrollment affected these outcomes, or whether public medical insurance enrollment had a differential effect on rural and urban children's health and out of pocket health care related expenditures.

There is a growing body of research focused on examining the differences in BMI and stunted growth between urban and rural children in China over time (Liu, Fang, & Zhao, 2013;

Liu, Rizzo, & Fang, 2015). However, no definitive conclusions have been reached about the trajectory and extent of such differences. Liu and colleagues (2013) examined the differences in urban and rural children's growth from 1989 to 2006, controlling for variables such as insurance coverage, children and parents' demographics (such as age, gender, race, region, smoking status) and household demographics (per capita income, gender of head of household, household size). The results indicated that rural children had a higher probability of exhibiting stunted growth than urban children over time. Brixi, Mu, Targa & Hipgrave (2013) offered different conclusions based on the statistical reports issued by China Ministry of Health. The ratio of rural underweight children to urban underweight children was 3.11 in 1990. This ratio reached a peak at 5.44 in 2000, and then slowly declined to 3.31 by 2010. Similarly, the ratio of rural to urban children with stunted growth was 3.54 in 1990, peaking at 6.17 in 2000, and then decreasing to 3.56 in 2010. These findings demonstrated that the gap between urban and rural children may change in non-linear ways over time, and that there still remain differences in rural and urban health outcomes. However, like with many earlier studies, the role of health insurance coverage as a potential covariate was not explored.

Between 1980 and 2006, all Chinese families paid more out of pocket for their health care, as the average percentage that residents contributed toward total health care expenses rose from 20% to 49% (You & Kobayashi, 2011). Previous studies have found that the overall household/family burden associated with health care costs is proportionally higher in rural areas than it is in urban areas. Between 2000 and 2011, the percentage of household income needed to cover medical expenses stayed relatively stable over time for urban residents, with the average proportion being reported as 6.4% in 2011. However for the rural population, the average proportion of household living expenses spent on health care was reported at 8.4% in 2011; for

those living in less developed rural regions, this percentage was as high as 8.8% (Long, et al., 2013).

Study Aims

This study seeks to examine the longitudinal effect of enrolling in the new public insurance programs on various physical health indicators and financial risk among urban and rural Chinese children. Two research questions addressed in this study are:

- (1) Does enrolling in public medical insurance significantly promote children's physical health indicators (i.e. height and BMI) and reduce children's out-of-pocket medically related expenditures over time?
- (2) Does enrolling in public medical insurance significantly reduce differences in physical health indicators and out-of-pocket expenditures between urban and rural children?

Method

Sample and Participants

This study utilized secondary data from three waves of the China Health and Nutrition Survey (CHNS) as collected in 2004, 2006 and 2009. The CHNS is an international collaborative project that collected data from nine provinces in China: Guangxi, Guizhou, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Liaoning, and Shandong. A multistage, random cluster process was used to collect data in each of the province to assist in construction of a representative sample. Counties in the nine provinces were stratified by income (low, middle, and high) and a weighted sampling scheme was used to randomly select four counties in each province (Popkin, Du, Zhai, & Zhang, 2010). Villages and townships within the counties and urban/suburban neighborhoods within the cities were selected randomly. The CHNS initially collected data from

1989, with six subsequent panels of data collected approximately two to three years apart. The overall survey contains a total of 4,400 households and approximately 19,000 individuals at each wave. By combining the datasets of 2004, 2006, and 2009, a total of 3,347 children and adolescents who were under 18 years old in 2009 were included as the sample of this study.

Details concerning participants' demographic details are presented in Table 1. Overall, 54.3% percent of the sample were males and 45.7% were female. 27.1% of participants lived in urban areas and 72.3 % lived in rural areas. This distribution roughly approximates the overall population distribution of children in China. The percentage of the sample who enrolled in public medical insurance among both rural and urban children increased over time.

[Insert Table 1]

Measurement

Dependent Variables. The dependent variables in this study included children's Height-for-age Z score (HAZ), BMI-for-age Z score (BAZ), and individual out-of-pocket expenditures. *HAZ and BAZ scores* indicate how many standard deviations a child is from the population's average height and BMI. For example, if the height-for-age Z score of a 47-month old boy is 0.78, that means this boy is 0.78 standard deviations above the average height of all 47-month old boys. For the purposes of this work, a HAZ score of -2 or lower reflected stunted growth while a BAZ score of -2 or lower indicated that the child was significantly underweight. The Z scores were calculated using the following formula:

$$Z_{ind} = \frac{\left(\frac{y}{M(t)}\right)^{L(t)} - 1}{S(t)^{L(t)}},$$

Where y = the observed data points, $L(t)$ = the power in the Box–Cox transformation for age of t months, $M(t)$ = the population median for age of t months, and $S(t)$ = the coefficient of variation for age of t months. The values for $L(t)$, $M(t)$, and $S(t)$ were based on calculations by the World

Health Organization (2006), and merged with the CHNS data by respondents' age for days (for children who were under 5 years old) and age for months (for children who were 5 years old or older). The results of Normality tests indicated that the variables of HAZ and BAZ approach normal distributions.

Children's out-of-pocket expenditures were calculated as the sum of all money spent by an individual or family accessing formal or informal health care for a child within the last year, inclusive of the cost of insurance premiums, co-pays, deductibles, out of pocket expenses for inpatient and outpatient care, immunizations, preventative care and medications. However, preliminary normality testing indicated that the out-of-pocket expenditure as a scale variable violated the assumption of normality. Thus, the out-of-pocket expenditure was converted to a dichotomous variable using the median split method as recommended by MacCallum, Zhang, Preacher, & Rucker (2002). The median out-of-pocket expenditures for the overall sample were determined to be 26 RMB in 2004, 31 RMB in 2006, and 33.5 RMB in 2009. As the primary data for this study was collected in Chinese currency, all analyses will also use RMB as the measure of currency, (1 Chinese yuan RMB = 0.152 US dollars as of June 28, 2016.

<http://themoneyconverter.com/USD/CNY.aspx>).

Independent Variables. The independent variables in this study include children's rural/urban residency and public medical insurance enrollment status. *Urban-Rural Residency:* This study used participants' urban-rural residency status in 2004, the first wave of data collection. According to China's HuKou policies, it is very difficult for Chinese residents to change their official residency status. Thus, "rural/urban residency" in this study was treated as a binary time-invariant variable that is assumed to be a fixed value across time. *Public Medical Insurance Enrollment:* Children's health insurance enrollment status was collected at each wave,

and was treated as a binary variable. Since this variable might change over time, a preliminary test was done to determine if treating this variable as time variant or time invariant was most appropriate when using this variable in model building. The equation was:

$$\text{Level 1: } Insurance = \beta_0 + \beta_1 (Time) + r_i$$

$$\text{Level 2: } \beta_0 = \gamma_{00} + u_0$$

$$\beta_1 = \gamma_{10} + u_1$$

The results indicated that insurance enrollment does change over time and that insurance enrollment status should be considered as a time-varying covariate, and thus was included at level 1 in subsequent models as recommended by Muthen (1984).

Control Variables. The control variables for this study were children's gender (male or female) and age in years at the last data collection point. Since age increased consistently across all waves of data collection, the variable of age at last data collection point was appropriate to use for subsequent analyses.

Data Analyses

As described below, analyses were executed via a series of two-way analysis of variance (ANOVAs), Chi-square tests, and two-level Structural Equation Models (SEMs) constructed to explore the impact of residency and insurance coverage on health outcomes and out of pocket health care expenditures over time. The main effects of public medical insurance enrollment status and interaction effects of public medical insurance and residency were examined. The conceptual path model was presented in Figure 1. It was hypothesized that residence would moderate the relationship between health insurance status and health outcome indicators, as well as moderate the relationship between health insurance status and financial risk as measured by out of pocket expenditures.

[Insert Figure 1]

Two-way ANOVA and Chi-square Tests. A series of two-way ANOVA analyses were first conducted in order to examine how urban and rural children, as well as insured children and uninsured children, differed on physical health outcomes at each time point without controlling for children's age and gender. Next, a series of chi-square tests were conducted to examine out-of-pocket expenditure differences between urban and rural children, as well as for insured and uninsured children. The findings were used to identify the potentiate effects of urban-rural residency and public medical insurance enrollment on children's physical health outcomes and out-of-pocket expenditures. Results of these analyses are presented in Table 2.

Structural Equation Models. As mentioned above, the analysis was proposed to examine the impact of public medical insurance enrollment on children's physical health outcomes and out-of-pocket expenditures over time. Thus, the first stage is to conduct preliminary analyses to determine whether children's physical health outcomes and out-of-pocket expenditures changed over time or not, without any control variables. If children's physical health out-of-pocket expenditures did not change over time, the conclusion that enrolling in public medical insurance did not improve children's physical health outcomes and reduce children's financial risks could be drawn, eliminating the need for subsequent analyses.

The equation for preliminary analyses was:

$$\text{Level 1: } \textit{Dependent Variable} = \beta_0 + \beta_1 (\textit{Time}) + r_i$$

$$\text{Level 2: } \beta_0 = \gamma_{00} + u_0$$

$$\beta_1 = \gamma_{10} + u_1$$

Where

γ_{00} is the average intercept across the level-2 units

γ_{01} is the average regression slope across the level-2 units

The variable “*Time*” was coded as 2004 wave=0, 2006 wave= 2, and 2009 wave= 5.

The results indicated that each dependent variable had some changes over time. The details of the results of this unconditional slope & intercept as outcomes model can be found in Table 3. Second, three conditional Intercept- & Slopes- as outcomes models were conducted to examine the effects of children’s public medical insurance enrollment status, and the interaction effects of insurance enrollment and residency on their physical health outcomes and out-of-pocket expenditures, after controlling for children’s age and gender. The equation was:

$$\text{Level 1: } \text{Dependent Variable} = \beta_0 + \beta_1 (\text{Time}) + \beta_2 (\text{Insurance}) + r_i$$

$$\text{Level 2: } \beta_0 = \gamma_{00} + \gamma_{01} (\text{Residency}) + \gamma_{02} (\text{Age}) + \gamma_{03} (\text{Gender}) + u_0$$

$$\beta_1 = \gamma_{10} + \gamma_{11} (\text{Residency}) + \gamma_{12} (\text{Age}) + \gamma_{13} (\text{Gender}) + u_1$$

$$\beta_2 = \gamma_{20} + \gamma_{21} (\text{Residency}) + \gamma_{22} (\text{Age}) + \gamma_{23} (\text{Gender}) + u_2$$

Where

β_1 is the trajectories of outcome after controlling for public medical insurance enrollment

β_2 is the relation between outcome and public medical insurance enrollment at each time point

γ_{01} , γ_{02} , γ_{03} , are the residency, age, and gender differences in outcome in 2004

γ_{11} , γ_{12} , γ_{13} , are the residency, age, and gender effects on trajectories of outcome

γ_{21} , γ_{22} , γ_{23} , are moderators of the relation between outcome and public medical insurance enrollment based by residency, age, and gender.

The hypotheses for the final model are: (1) children’s public medical insurance enrollment status would have a significantly positive relationship with their physical health outcomes and a negative relationship with their out-of-pocket expenditures over time; (2) public

medical insurance enrollment status would have differential effects on physical health outcomes and out-of-pocket expenditures among rural and urban children over time.

Weights of Data, Software, & Missing Data. All estimates were based on the weighted sample to generalize results to the national sample of the children in Mainland China, using the design effect adjusted weights that were generated by the CHNS researchers. The Structural Equation Models were conducted by *Mplus*, which used all data that was available to estimate the model using Full Information Maximum Likelihood method. Each parameter is estimated directly without filling in missing data values for each individual case (Enders & Bandalos, 2001).

Results

BMI-for-age Z score

As seen in Figure 2, the difference in BAZ for urban and rural children tends to increase across time. In addition, after controlling for children's residency, there was no significant difference between insured and uninsured children at any time point, indicating that public medical insurance enrollment generally neither improved children's BAZ nor reduced the inequalities in BAZ between urban and rural children across time.

[Insert Figure 2]

The results of two-way ANOVA, presented in Table 2, were consistent at each time point and indicated that Chinese children's mean BAZ is lower than population average, and rural children had a significant lower mean BAZ than urban children across time.

[Insert Table 2]

The results of the conditional Intercept- & Slope- as outcomes model in Table 3 showed that, in general, Chinese children's mean BAZ decreased over time after controlling for children's public medical insurance enrollment status, urban-rural residency, age, and gender. Neither urban-rural residency nor public medical insurance enrollment had a significant impact on children's BAZ change, indicating that, in general, children's public medical insurance enrollment had no significant impact on children's BAZ scores or on the differences in BAZ between urban and rural children across time. Children's age is a significant predictor in this sample. Older children tended to have a lower BAZ.

[Insert Table 3]

Height-for-age Z score

As seen in Figure 3, HAZ increased over time for all four groups of children. However, the most marked increase was seen for urban children who had health insurance, indicating that the impacts of having insurance over time promoted an increase in this key health indicator in a way that was different than the improvements found in rural insured children, urban uninsured children and rural uninsured children.

[Insert Figure 3]

The detailed results of the two-way ANOVA are presented in Table 2. On average, Chinese children's mean HAZ is a negative number, indicating that it is lower than the population average. The inequalities of HAZ between urban and rural children were reduced from 2004 to 2009. Rural children had significantly lower HAZs in 2004, but not in 2006 or 2009. However, public medical insurance enrollment did not show significant consistent effects on improving children's HAZs. Children enrolling in public medical insurance had a

significantly higher mean HAZ than children not enrolled in public medical insurance in 2004, but there was no significant difference in 2006 or 2009.

The conditional Intercept- & Slope- as outcomes model found that children's HAZ scores significantly increased between 2004 and 2009. In general, public medical insurance enrollment had a positive impact on children's HAZ over time. Children enrolled in public medical insurance generally had higher mean HAZ scores than those not enrolled in public medical insurance after controlling for children's residency, age, and gender. However, rural children generally had lower mean HAZ scores than urban children across time, and urban-rural residency did not relate to the effect of public medical insurance on HAZ. This suggests that public medical insurance enrollment did not improve rural children's HAZs or reduce the inequalities in HAZ between urban and rural children across time. The results of the conditional Intercept- & Slope- as outcomes model can be found in Table 3.

Out-of-pocket Expenditure

The results of Chi-squares tests seen in Table 2 show that rural children paid significantly lower out-of-pocket expenditures than urban children in 2004, but not in 2006, nor 2009, indicating that this trend was not stable over time. Similarly, children enrolled in public medical insurance paid significantly less out-of-pocket expenditures than those not enrolled in public medical insurance in 2006, but not in 2004, or 2009.

The conditional Intercept- & Slope- as outcomes model in Table 3 showed that, in general, children's out-of-pocket expenses did not change over time, after controlling for children's public medical insurance enrollment status, urban-rural residency, age, and gender. Urban-rural residency significantly related to the overall level of out-of-pocket expenditures, indicating rural children generally paid less out-of-pocket than urban children over time.

However, in general, insured children did not pay significantly less out-of-pocket than uninsured children across time, indicating that public medical insurance enrollment did not significantly reduce children's out-of-pocket expenditures.

Discussion

The results of these analysis show an increase in the percentage of insured children over time, which is consistent with prior literature indicating that the NRCMI and URBMI programs dramatically increased the insurance coverage of Chinese citizens nationwide. Under the Ministry of Health, the NRCMI had expanded rapidly from 333 participating counties in 2003 to 2,176 counties by 2009. The insurance coverage among rural residents increased from 13 to 90% between 2003 and 2009 (Barber & Yao, 2010). The URBMI, initially piloted in 79 cities in 2007, has been expanded to cover almost all Chinese cities by 2009 (Liu, Fang, & Zhao, 2013). This also supports the time-variant nature of insurance status variable in this study.

The Institute of Medicine (2002) found that having medical insurance was associated with positive health outcomes due to increased, consistent access to health care resources such as better preventive health care services and prescription medicines, and also has been associated with lower out-of-pocket expenditures (IOM, 2002; McWilliams, 2009). Based on this finding, one might assume that increased insurance coverage promotes better physical health outcomes in children, reduces financial risk, and enhances urban-rural health care equity. However, even with increased insurance coverage between 2004 to 2009, the results of this study indicate that: (1) Chinese rural children's mean HAZ and BAZ are still lower than the population average; (2) Uninsured rural Chinese children's mean BAZ continued to decrease over time; and (3) public medical insurance enrollment was not associated with improvements in children's BAZ, the

reduction out-of-pocket health care costs, or decreasing inequalities in HAZ and BAZ between urban and rural children.

The lack of significant findings in regard to reducing urban-rural disparities, contrary to our hypotheses, may be attributable, at least in part, to policy design. In order to resolve the problem of inadequate health care access, policies were focused on increasing the coverage rate, but not necessarily the quality of coverage. The strategy used to rapidly increase coverage in a relatively short time period without significant additional expenditures was to lower the benefits associated with each of these programs. Based on the findings of Long, Xu, Bededam, and Tang (2013), total health expenditures per capita in China rose from 319 RMB (47.21 US dollars) in 2003 to 1888 RMB (279.41 US dollars) in 2011, while the average per capita income rose much less quickly, particularly in rural areas. Likewise, the National Reimbursement Ratio was only 26.39% in 2011. Compared with ever increasing medical costs, this reimbursement level has been criticized as being too low, and thus, having a limited effect on improving the level of security of insured people (Zhang, Wang, Qian, & Ni, 2014), and limited influence on the promotion of health care equity.

The continuation of separate and inequitable public health insurance programs for urban and rural residents may be another critical barrier to narrowing health disparities (Liu, Rizzo, & Fang, 2015). As mentioned above, the RNCMI generally has less funding and fewer resources than URBMI, thus the RNCMI provides its enrollees with fewer benefits than URBMI. Moreover, there are large differences in access to qualified health professionals between urban and rural areas. For example, health professionals with bachelor degrees and higher accounted for 42.3% of the total professionals in urban hospitals, but accounted for only 1.6% of professionals in rural hospitals in 2005 (Li & Chang, 2008). Approximately 3.5 million medical

professionals were working in rural areas in the 1970s, however by the 2000's this number had decreased dramatically to only approximately 500,000 (Wang, Xu, & Xu, 2007). Patients in rural areas also have a difficult time receiving timely and quality health services due to differences in transportation and infrastructure, leading to less utilization of health care services. Liu, Zhang, Lu, Kwon, & Quan (2007) concluded that about half of rural respondents did not see a physician when they were ill, and utilized fewer health services than their urban counterparts.

Accordingly, the following policy recommendations are provided: 1) allocating more health resources targeting rural populations and linking defined out-of-pocket expenditures indexed by ability to pay; and 2) promoting preventive healthcare services utilization in both urban and rural areas to decrease overall healthcare costs.

Since 2014, the Chinese government has attempted to combine the RNCMI and the URBMI into one single insurance program called the Resident Basic Medical Insurance program (RBMI) which provides uniform public health insurance to both urban non-salary residents and rural residents, including children. If the policies can be better grounded in principles of equity, rather than in equality, significant improvement in health equity between rural and urban Chinese children may be forthcoming. Policies must be designed to improve the distribution of health resources and healthcare service accessibility, based in equity – meeting the larger need with larger resources – rather than in equal resource allocation for all. If these types of policies are implemented in the future, the inequalities between urban and rural children in both physical health outcomes and financial risks could be greatly reduced. Implementing a single insurance program for both rural and urban populations, including children, providing all residents with similar coverage, is a critical starting point, but attention to equity, through expansion of easily accessible, high quality medical services in rural areas is also indicated. Thus, it is also important

to incentivize highly trained medical providers to engage in service provision in rural areas. If health professionals continue to be reimbursed at higher levels for working in urban centers, the gap in quality of care in rural and urban areas will continue to grow, and the resulting inequities will be maintained.

Limitations

There are some important limitations to this work that should be acknowledged. First, this study is based on secondary data that were originally collected for different purposes. Although it is considered the best available source of data for children's access to health insurance in China, this dataset lacks some critical demographic variables that may impact health related outcomes including, but not limited to, parents' education, household income, and household size, potentially limiting the internal validity of the results. Second, the implementation of China's public medical insurance policies varied across provinces and cities. This study was not sensitive to the geographical variations across regions. Future studies in this area should take geographic variation into account to get the most accurate picture of health disparities both between rural and urban areas and within these areas as well. Third, the measurement of financial risk via the dichotomous variable of out-of-pocket expenditure may be problematic. Even though the median is one of the indicators of central tendency, the dichotomous nature of this variable reduces its sensitivity in reflecting a linear relationship.

Conclusion

The implementation of China's health reforms between 2004 and 2009 was successful in raising overall levels of health insurance coverage. However, the reform did little to reduce the inequalities between rural and urban children in terms of physical health indicators and financial risk. Recommendations provided by this study suggest that through the thoughtful application of

equity principles, public medical insurance policies have the potential to reduce urban/rural health disparities. Further research should be conducted to explore health care equity between urban and rural children in China; such research might consider including a larger sample size and more control variables.

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Figure 1. *Conceptual Model*

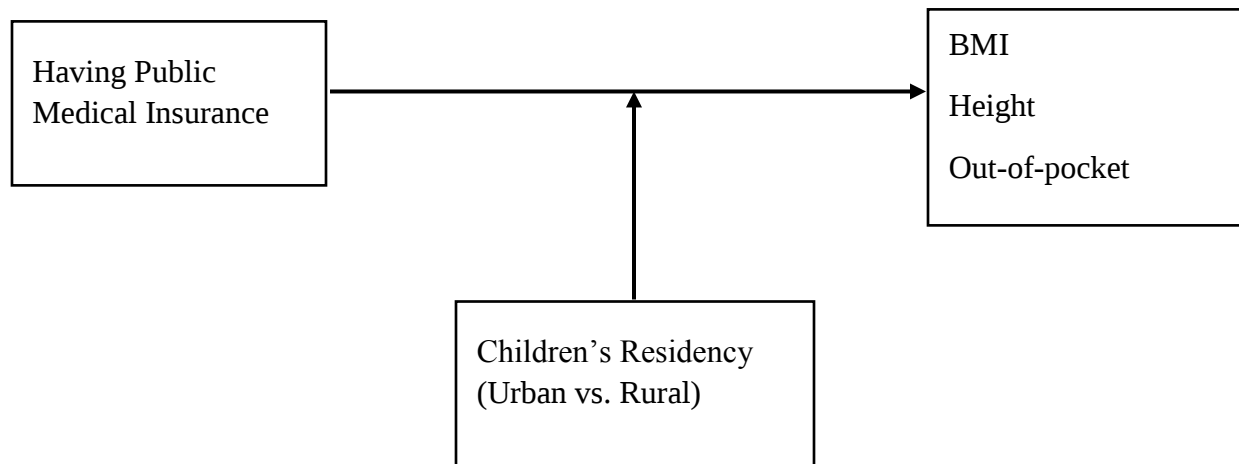


Figure 2. *BAZ by urban-rural residency and public medical insurance enrollment status*

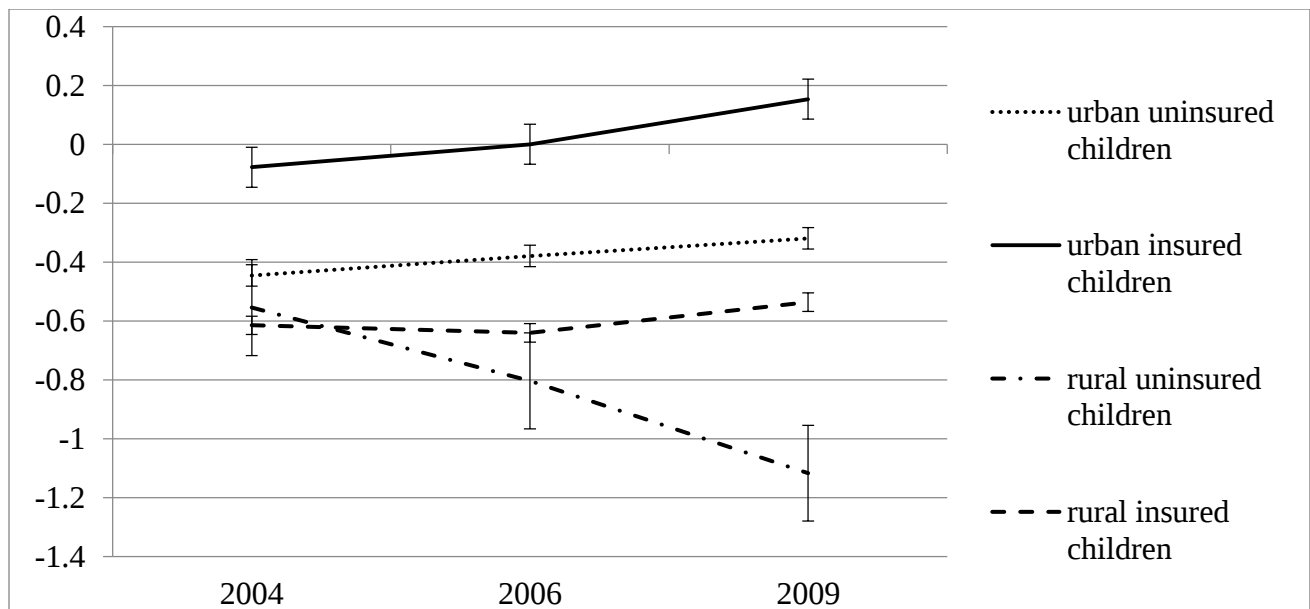


Figure 3. *HAZ by urban-rural residency and public medical insurance enrollment status*

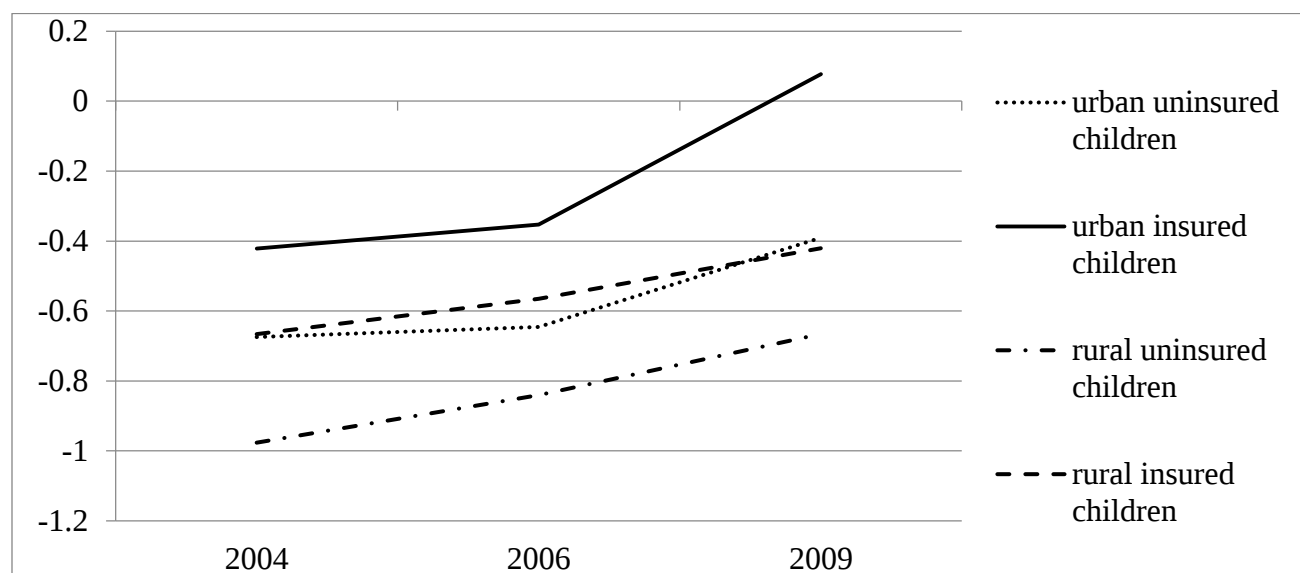


Table 1. *Table of Descriptive Analysis (N=3,347)*

Characteristic	2004	2006	2009
Total N	(N=2,085)	(N=1,751)	(N=1,652)
Residency (% of total)			
Urban	27.7	27.6	25.8
Rural	71.8	71.9	73.7
Gender (% of total)			
Male	53.2	53.5	55.6
Female	46.8	46.5	44.4
Public Medical Insurance Enrollment (% of total)			
Yes	23.5	38.3	82.38
No	75.2	61.2	17.1
Mean Age (SD)	10.1 (5.0)	9.5 (4.9)	9.0 (4.7)
Valid Respondent Rate for <i>BMI-for-age Z Score</i> variable (% of total)	96.4	94.9	96.9
Valid Respondent Rate for <i>Height-for-age Z score</i> variable (% of total)	97.4	96.7	97.8
Valid Respondent Rate for <i>Out-of-pocket Expenditures</i> variable (% of total)	37.9	37.3	13.1

Table 2. ANOVA Results for BAZ, HAZ, and Chi-square Results for Out-of-pocket Expenditures in 2004, 2006, and 2009

		2004		2006		2009			
		$\bar{X}$ (SD)	F	$\bar{X}$ (SD)	F	$\bar{X}$ (SD)	F		
BMI-for-age Z score (ANOVA)									
Insurance Status	Uninsured	-0.52 (2.17)	1.35	-0.38 (2.22)	1.41	-0.07 (1.87)	3.86		
	Insured	-0.47 (2.40)		-0.70 (2.55)		-0.52 (2.69)			
Residency	Urban	-0.37 (2.28)	5.96*	-0.29 (2.42)	5.46*	-0.08 (2.45)	4.38*		
	Rural	-0.57 (2.19)		-0.59 (2.33)		-0.57 (2.61)			
Insurance *	Urban/Uninsured	-0.45 (2.28)	2.62	-0.30 (2.34)	2.26	0.09 (2.17)	0.48		
	Urban/Insured	-0.08 (2.34)		-0.25 (2.66)		-0.14 (2.53)			
Residency	Rural/Uninsured	-0.55 (2.12)		-0.42 (2.17)		-0.16 (1.69)			
	Rural/Insured	-0.61 (2.41)		-0.80 (2.51)		-0.65 (2.73)			
Height-for-age Z score (ANOVA)									
Insurance Status	Uninsured	-0.89 (1.31)	13.87**	-0.77 (1.37)	0.05	-0.58 (1.91)	2.54		
	Insured	-0.60 (1.17)	*	-0.71 (1.25)		-0.50 (1.24)			
Residency	Urban	-0.61 (1.36)	13.07**	-0.62 (1.32)	3.29	-0.32 (1.42)	3.54		
	Rural	-0.90 (1.25)	*	-0.80 (1.32)		-0.58 (1.36)			
Insurance *	Urban/Uninsured	-0.67 (1.39)	0.15	-0.59 (1.26)	2.88	-0.55 (2.02)	2.37		
	Urban/Insured	-0.42 (1.21)		-0.71 (1.48)		-0.25 (1.18)			
Residency	Rural/Uninsured	-0.98 (1.27)		-0.87 (1.41)		-0.59 (1.86)			
	Rural/Insured	-0.67 (1.15)		-0.71 (1.20)		-0.58 (1.25)			
Out-of-pocket Expenditures (Chi-square)									
Out-of-pocket Expenditures Median									
N (% within Urban-Rural Residency, and Public Medical Insurance Enrollment Status)									
	Below	Above	X²	Below	Above	X²	Below	Above	X²
Urban	78 (41.7)	109 (58.3)	6.940**	80 (50.6)	78 (49.4)	0.011	32 (45.1)	39 (54.9)	1.028
Rural	318 (52.7)	285 (47.3)		253 (51.1)	242 (48.9)		76 (52.4)	69 (47.6)	
Uninsured	291 (48.7)	306 (51.3)	1.917	180 (47.1)	202 (52.9)	5.531*	18 (42.9)	24 (57.1)	1.064
Insured	102 (54.5)	85 (45.5)		153 (56.5)	118 (43.5)		90 (51.7)	84 (48.3)	

Note: *p<0.05, **p<0.001, ***p<0.0001

Table 3. Results of Intercept- & Slope- Outcome Model for BAZ, HAZ, and Out-of-pocket Expenditure

	BMI-for-age Z Score			Height-for-age Z Score			Out-of-pocket Expenditure		
	(Intercept- & Slope- model)			(Intercept- & Slope- model)			(Intercept- & Slope- model)		
Fixed Parameter Estimates	Estimate	S.E.	Est./S.E.	Estimate	S.E.	Est./S.E.	Estimate	S.E.	Est./S.E.
Intercept									
Intercept (Thresholds)	0.927	0.129	7.163***	-0.879	0.124	-7.066***	-3.448	1.048	-3.290***
Urban-Rural Residency	-0.206	0.107	-1.924	-0.236	0.066	-3.556***	-1.557	0.561	-2.774**
Female	-0.019	0.091	-0.212	0.021	0.056	0.374	0.154	0.330	0.467
Age 2009	-0.082	0.006	-14.042***	0.012	0.006	2.020*	-0.239	0.072	-3.301**
Slope									
Intercept	-0.097	0.04	-2.421**	0.086	0.038	2.270*	-0.215	0.359	-0.598
Urban-Rural Residency	-0.038	0.035	-1.088	-0.007	0.02	-0.344	0.522	0.281	1.860
Female	-0.033	0.03	1.103	-0.006	0.017	-0.359	-0.166	0.192	-0.864
Age 2009	0.004	0.002	1.971*	-0.003	0.002	-1.376	-0.006	0.026	-0.247
Insurance									
Intercept	0.147	0.18	0.817	0.323	0.155	2.080*	1.238	1.142	1.084
Urban-Rural Residency	-0.198	0.148	-1.338	0.025	0.087	0.283	-0.494	0.656	-0.754
Female	-0.242	0.127	-1.899	-0.099	0.071	-1.402	-0.555	0.536	-1.036
Age 2009	0.003	0.008	0.4	-0.011	0.008	-1.39	-0.071	0.072	-0.995
Random Parameter Estimates									
Co-variances of									
Intercept with Slope	-0.253	0.06	-4.230***	0.003	0.021	0.12	-3.385	2.694	-1.256
Intercept with Insurance	0.344	0.225	1.529	-0.251	0.083	-3.046**	-0.085	1.859	-0.046
Slope with insurance	0.086	0.067	1.281	-0.051	0.029	-1.749	0.654	0.994	0.657
Residual Variance									
Within Level Intercept	1.98	0.158	12.537***	0.55	0.05	11.082***	--	--	--
Between Level Intercept	2.755	0.25	11.030***	1.26	0.091	13.876***	9.089	6.837	1.329
Slope	0.091	0.025	3.653***	0.022	0.01	2.227*	2.505	1.887	1.327
Insurance	0.609	0.396	1.539	0.237	0.192	1.237	0.911	1.134	0.803

Note: *p<0.05, **p<0.001, ***p<0.0001

CHAPTER FOUR: ARTICLE TWO

A POLICY ANALYSIS OF THE RESIDENT BASIC MEDICAL INSURANCE PROGRAM ON CHILDREN'S HEALTH CARE EQUITY IN CHINA

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Key Messages: China recently combined its Urban Resident Basic Medical Insurance (URBMI) program and Rural New Cooperative Medical Insurance (RNCMI) program into a single program, the Resident Basic Medical Insurance (RBMI). Moving to a single insurance system was an attempt to reduce barriers to health care equity for children and adults resulting from fragmentation within China's public health systems. This study assessed whether the RBMI program would potentially improve children's health care equity concerning accessibility, utilization, and quality of health services. Results of an examination of policy documents from one Chinese province indicate that the RBMI program appears likely to impede such achievement due to limited content focusing on and encouraging equal accessibility, equal utilization, or equal quality of health services. Recommendations for future improvements in medical insurance policymaking are explored in hopes of promoting higher levels of health care equity for Chinese children.

Key Words: health care equity, Chinese children, health disparities, policy analysis, medical insurance policies

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Word count of the full article: 5919 (excluding tables and references)

Abstract

In 2014, China's second most populous region, Shandong province, began implementation of the Residents Basic Medical Insurance (RBMI). The RBMI combined the New Rural Cooperative Medical Insurance (NRCMI) and the Urban Residents Basic Medical Insurance (URBMI) into one overarching public health insurance system, in the hopes of increasing health care equity. This study aims to examine the content of this combined health policy and assess whether this policy, as written, would support the goals of increasing health care equity (equal accessibility, equal utilization, and equal quality of health care services) for Chinese children. Using the ADICO syntax framework proposed by Crawford and Ostrom (1995), a content analysis of two local and provincial implementation plans for the RBMI program was conducted. The results indicated that, in general, the RBMI program appears likely not to promote children's health care equity if implemented as written. Limited content focused on, or appeared to encourage, equal accessibility, equal utilization, and equal quality of health care services. Recommendations for future improvements in medical insurance policymaking addressing gaps in the current policy are explored in the hopes of promoting increased health care equity for Chinese children.

Introduction

Equity is an important principle related to integrity and social justice. Health care equity has widely been identified as the absence of unjust policies and practices resulting in systematic health disparities between different social groups (Braveman & Gruskin, 2003). Due to multiple conceptualizations of fairness and justice, health care equity is quantified by various definitions and approaches in literature. The definition developed by the World Health Organization (WHO) operationalizes equity in health care as equal access to available care for equal need, equal utilization for equal need, and equal quality of care for all (Whitehead, 2000). This study uses the WHO definition of health care equity to assess whether China's evolving public medical insurance policies have the potential to promote health care equity for rural and urban Chinese children.

China's Health Reforms

Prior to the 1980s, China's public health system was primarily government funded and provided essential health services to both rural and urban populations (Liu, Wang, & Kong, Cheng, 2011). With the transition from a planning economy to a market economy in the mid-1970s, an intense ideological debate about the roles of government and the free market in the public health sector began (Yip & Hsiao, 2015). This ideological debate was initiated to determine which vehicle—the government or the market—was better in financing and delivering health care in the most equitable and efficient manner. By the early 1990s, a belief that China should rely on the market for both health care financing and health care services provision was a commonly held view of those making health care policy decisions (Yip & Hsiao, 2015).

As a result, the Chinese government reduced its role in subsidizing public health insurance plans (Shen, Habicht, & Chang, 1996). By the 1990s almost all governmental

subsidies for public health insurance were gone, and the Chinese government aggressively promoted the free-market model in all aspects of the public health sector (Alcon & Bao, 2011). As a result of insufficient funds, the older public health insurance systems collapsed, and prior government regulations regarding the price of insurance premiums and fee for service health care provision ceased. Public health clinics and hospitals previously subject to government imposed cost structures were now determining their own direct care costs and insurance premiums, resulting in substantial decreases in insurance coverage and significant increases in all aspects of health care related costs (Barber & Yao, 2010; Alcon & Bao, 2011; Long, Xu, Henk, & Tang, 2013).

The NRCMI and URBMI Programs and Disparities between Urban and Rural Children

Since the 1990s, a contrasting voice rose in the ideological debate about the roles of government and market in China's public health sector, advocating for reducing social inequalities and highlighting the need for a large government role in production and distribution of health services (Yip & Hsiao, 2015). In an effort to increase insurance coverage and enhance the role of government in public health sector, the Chinese government established three major insurance programs between 1998 and 2007— the Urban Employee Basic Medical Insurance (UEBMI), the New Rural Cooperative Medical Insurance (NRCMI), and the Urban Residents Basic Medical Insurance (URBMI). A participant's eligibility for the insurance programs was not determined by one's current residence, but rather by one's official household residency registration status—HuKou (Song, 2014). Children's residency status was determined based on his/her parents HuKo, rather than birthplace or current place of residence (Li et al., 2012; Liu, Fang, & Zhao, 2013).

The UEBMI was established to cover only employees with urban residency and not their dependents. The NRCMI was established to cover anyone with rural residency. Finally, the URBMI was established to cover the urban residents who were not workers such as children, elders, those who were disabled, and those who were unemployed. The three programs significantly increased the number of Chinese citizens having insurance coverage in the 2000s. However, recent studies indicate that having different public health systems for China's urban and rural populations did little to improve health care equity, especially in the case of children (Meng, Fang, Liu, Yuan, & Xu, 2015; Ren et al., 2016; Ren, Washburn & Kao., 2013). The NRCMI and the URBMI programs were distinct in content, cost, and coverage. For example, the NRCMI was primarily funded by contributions of enrollees, while the URBMI was financed primarily through government subsidies (Ma, Lu, & Quan, 2008; Fang, Cheng, & Rizzo, 2009; Ren et al., 2013). The total funding for the NRCMI was significantly lower than that of the URBMI, and required enrollees to spend a greater percentage of their total income to enroll. In addition, URBMI participants generally received higher quality health care related resources than NRCMI participants (Ren, et al., 2013). These differences led to inequitable access to health care services, distinct levels of financial risk associated with accessing health care, and disparities in health outcomes between urban and rural children (Meng, et al., 2015; Ren et al. 2016).

As results, the mortality rate of rural Chinese children (14.9 per 1,000) has been significantly higher than that of urban Chinese children (6.5 per 1,000) (Rudan et.al, 2010; United Nations Children's Fund, 2010). Malnutrition rates in the rural areas were also higher than those in urban areas (Rudan et.al, 2010; United Nations Children's Fund, 2008) with over 9 percent of rural children and 3 percent of urban children underweight nationally (Tang, et al., 2008).

Complicating this issue, by 2012, China had 236 million internal migrants moving from rural regions to urban areas seeking more economic opportunities. These migrants accounted for about 18% of the total Chinese population. Urban workers having rural HuKou were considered to be “temporary employees” in urban areas, and as such, were not entitled to participate in urban public medical insurance (Liu, Rizzo, & Fang, 2015). Their children were also unable to access urban based public medical insurance, and were required to pay additional out of pocket fees to access health care from urban medical facilities, as they are considered “out of network”. Due to these restrictions, migrant workers’ children are often left behind in the rural areas, living with grandparents or other relatives. Liu and colleagues (2015) estimated that about 23 million rural children under the age of 14 have parents who are away working in China’s urban centers, and that children who are left behind have less health care access, lower intake of essential nutrients, worse physical and mental development, as well as lower health-related quality of life.

The Residents Basic Medical Insurance (RBMI) Program

At the request of the central government, by 2014 some provinces in China combined the NRCMI and the URBMI into one overarching program, called the Residents Basic Medical Insurance (RBMI), in the hopes of increasing health care equity. This approach was first enacted in Shandong Province, the second most populous in China, home to both urban and rural residents. The RBMI program was established to serve all residents in the Shandong Province with the exception of urban employees covered by the UEBMI. Beneficiaries enroll in the RBMI program as households, rather than as individuals. Following an exhaustive literature search, no peer reviewed articles examining Shandong’s insurance system since initial implementation of the Resident Basic Medical Insurance program (RBMI) were found.

Study Aim

The idea that combining the NRCMI and URBMI programs into a single program will achieve health care equity currently lacks direct evidentiary support. As this approach was initially implemented in 2014, there has not yet been sufficient time to reach full implementation or conduct summative evaluation concerning the direct outcomes of this program (Rossi, Lipsey, Freeman, 2003). Thus, the aim of this study is to assess whether the policy content of the RBMI has the potential to increase health care equity and decrease disparities between urban and rural children. A content analysis of governmental implementation plans in Shandong Province was conducted by applying the ADICO syntax framework proposed by Crawford and Ostrom (1995). Although policy may include various ranges of information, with direct or indirect, as well as explicit and implicit, impacts on the outcomes (Kemmer, 2001), this study focuses only on content directly related to service delivery and benefits consistent with the WHO definition of health care equity. Recommendations for improving policymaking practice and increasing health care equity in China are provided.

Method

Setting and Policy Context

Shandong, situated on China's east coast, has a population of 41 million urban residents, and 55 million rural residents. The city of Jinan, provincial capital of Shandong, is home to approximately 7 million people, the majority of whom (approximately 4.69 million) are urban residents (Shandong Province Statistical Yearbook, 2014). Shandong was selected to be the focus of this study as it was the first to integrate the previously existing rural and urban health insurance systems into one overarching system for all residents.

The main governing body responsible for the implementation and administration for the RBMI program is the provincial Human Resources and Social Security Department, a three-tier

Human Resources and Social Security Department (HRSSD) within Shandong province. Provincial HRSSD is responsible for initiating and interpreting the guidelines of policymaking. Although the provincial government provides brief implementation guidelines to each county/city, each district outlines specific policies based on the unique needs of their residents. Thus, the administration and implementation of the Residents Basic Medical Insurance program is different for each jurisdiction. County/City HRSSD is responsible for (1) designing and monitoring policy administration and development plans in their regions under the guidance of province HRSSD; (2) providing documents to guide Social Insurance Agencies on implementation based on the suggestions of province HRSSD, (3) tracking the balance of local Basic Medical Insurance Fund, and consultation with Department of Finance; and (4) reporting to province HRSSD in terms of outcomes and challenges to implementation. Township/village/district Human Resources and Social Security Departments are responsible for managing insurance enrollment records and collecting insurance premium from Social Insurance Agencies. Human Resources and Social Security Departments are built and monitored by Administrative Committee of local government.

The balance of the Basic Medical Insurance Fund at the conclusion of the coverage year is a crucial feedback indicator to County/City Human Resources and Social Security Department on which policy creation or modification decisions are made. Social Insurance Agencies, as the major operator of the RBMI program, are responsible for collecting funds for Basic Medical Insurance Fund, as well as checking eligibility and issuing reimbursement. Each year, Social Insurance Agencies dedicate some of the premiums collected for the “Social Insurance Fund Adjustment Account” managed by each City Department of Finance. The amount designated for this fund is equivalent to 20% of the previous year’s actual collected premium and is used to

cover gaps between the income and expenditures of the RBMI for districts meeting their target enrollment goals the prior year. Districts not meeting target enrollment goals during the prior year must self-fund any gaps between income and health related expenditures through the local Department of Finance. Thus, reaching the target enrollment goal is an important task for each district.

Data

In January 2014, the Shandong government issued *The Implementation Plan of the Residents Basic Medical Insurance in Shandong Province* to clarify the major principles for the integration of URBMI and NRCMI into a single system. This document outlined the guidelines and expectations for integration, but allowed for customization related to the needs of each specific region within Shandong. Jinan municipality was one of the first municipalities within Shandong to develop its own unique plan for implementing the RBMI program. Thus, this analysis focused on two main documents issued in 2014, *The Implementation Plan of the Residents Basic Medical Insurance in Shandong Province* issued from the General Office of People's Government of Shandong Province, and *The Implementation Plan of the Residents Basic Medical Insurance in Jinan Municipality* issued by the General Office of People's Government of Jinan Municipality. Each implementation plan was approximately 9 pages in length. The focus of the analysis was on statements contained within these policy documents pertaining to children and youth 18 years old and younger.

Analysis

As mentioned above, the purpose of this study is to assess whether the policy content of the RBMI program has the potential to increase health care equity for Chinese children. The content of service delivery and benefits directly relating to enrollees likely to influence health

care equity were emphasized in this study. A four step process was used to determine the potential impacts of these policies on health care equity.

1. Identifying and Dissecting Institutional Statements.

One approach to assess the impact of the policies via content analysis is to deconstruct policies into institutional statements, defined as a textual unit of observation that requires, permits, and forbids potential actions (Carter, Weible, Siddiki, & Basurto, 2011). This study used the ADICO syntax to identify and dissect institutional statements. The ADICO syntax is a tool that was developed by Crawford and Ostrom (1995) to identify institutional interactions within an “action situation”. Action situations are a key component of the Institutional Analysis and Development (IAD) framework, a systematic method to assess multi-level policy implementation (Basurto, Kingsley, McQueen, Smith, & Weible, 2010; Ostrom, 2011).

Based on Crawford and Ostrom (1995, p. 140-149), each sentence based institutional statement consists of up to five components: attribute (A), deontic (D), aim (I), condition (C), and or else (O). The *attribute* is the individual or organization that applies the institutional statement. The attributes in this study were identified at the group or organizational levels. The *deontic* is the prescriptive operator to describe if an institutional statement is ideally permitted, obliged, or forbidden. The *aim* refers to the goal or action of an institutional statement. The *condition* refers to the operators when and where for which the aim is allowed, required, or forbidden in an institutional statement. The *or else* operator is the punitive action if the rule is not obeyed. This study only focus on *aims* that are actions suggested by policy and directly relate to outcomes or impacts of the policy.

The process for coding was as follows:

1. The government documents entitled *The Implementation Plan of the Residents Basic Medical Insurance in Shandong Province* and *The Implementation Plan of the Residents Basic Medical Insurance in Jinan Municipality* were fully reviewed by a team of two native Chinese speaking coders. All definitions, titles, preamble, headings, and the statements that excluded children were identified and disregarded for coding purposes.
2. Completed sentences with a period “.” were identified as initial units of observation.
3. All units were fully reviewed by both coders. Because a single Chinese language sentence may have multiple subjects, verbs, and objects, such sentences were identified and further subdivided into single subject-, verb-, or object- based units of observation.
4. All subdivided units of observation were coded independently by each coder using the ADICO syntax.
5. The aims were then identified for the next level of analysis.

To begin the coding process, a sample section from the implementation plan of Shandong province was coded independently by each of the coders. Then results were compared to ensure initial reliability of coding. Clarification in regards to the meaning of each code was given by the PI and then a different passage was coded independently by each of the coders after which reliability was again checked. This process was repeated until the inter-coder reliability standard of 80% agreement recommended by Potter and Levine-Donnerstein (1999) was met. Once this criterion was met, coders commenced with independently coding the entirety of the two documents.

The final inter-coder reliability was calculated as percentage of exact agreement among coders, which was the sum of the number of units that had exact agreement divided by the total number of overall units examined. The results indicated Shandong implementation plan had 94%

agreement, while Jinan implementation plan had 95% agreement. The disagreement codes were reviewed and recoded by two coders together until no disagreement in the coding remained. A total of 519 aims, including 302 aims from the Shandong plan and 217 units from the Jinan plan, were finally identified for the next level of analysis.

2. Assessing Content Distribution.

Describing the general content and assessing content distribution of the documents are essential to understand exactly what information the documents contained, and to identify the content of service delivery and benefits emphasized in this study. Two coders fully reviewed each governmental document independently. Each sentence was then independently labeled by each coder based on the topic. Content themes were summarized from direct and indirect labels by each of the coders. The discovered themes were next categorized by content via negotiation and agreement of the coders. This resulted in five identified content categories describing the overall content of the documents.

All identified aims were then fully reviewed and classified into one of the five content categories based on the content of each aim. A single aim could be grouped into multiple categories. Next the number of aims and percentage of aims in relation to the overall content of the document were calculated for each category to assess the distribution of content in each document.

3. Defining Health Care Equity Variables.

This study applied three variables—equal access to health care, equal utilization of health care, and equal quality of health care—to indicate health care equity based on the WHO definition (Whitehead, 2000). Table 1 shows the criteria that were used to determine how the policy content impacts health care equity.

[Insert Table 1]

4. Analysis of Health Care Equity.

Based on a review of all aims within each of the five content categories, the coders determined that only the content category (3) focusing on eligibility, premiums, costs, and benefits and the content category (4) focusing on health service quality and professional development included aims directly relevant to equity. All aims in these two categories were reviewed separately and again coded to determine whether the aims had the potential to support (positive) or to negatively impact or have no impact (negative) on health care equity.

Limitations

There are some potential limitations in this methodological approach. First, this study only focused on government documents specific to one province and one municipality within that province. Given the vast differences among municipalities and provinces, results of this study may not be transferable to all health insurance policies across China.

Second, although the application of the ADICO syntax to these policy documents was an innovative approach to content analysis, the application of this syntax is somewhat limited for use with Chinese language documents. As the syntax was originally designed for use with documents written in English, direct translation of the ADICO concepts to the Chinese language presents some unique challenges, potentially impacting the accuracy of the coding process. However as no Chinese language based coding syntax of this type currently exists, any syntax and associated coding scheme applied would face challenges related to direct translation of Chinese to English. Finally, the internal validity of the codes may be adversely impacted as only one coder classified the aims into content categories and determined which aims have direct impact on health care equity.

Results

Three categories of results related to health equity are identified: the distribution of content within the documents, analysis of aims likely to support or impede health care equity, and ambiguous policy language.

Content Distribution

Five content categories were identified by coders to describe the general content of the documents:

1. The administration of the Basic Medical Insurance Fund (BMIF) and its budget.
2. Organizational structure, restructuring and organizational administration.
3. Insurance eligibility, premiums, costs and benefits.
4. Health services quality and professional development.
5. Information systems, monitoring and evaluation.

Table 2 presents the frequencies of aims in each content category, and the percentage of these aims in relation to the overall document content. As seen in Table 2, the focus of each of these documents was different. In the Shandong document, the largest area of focus was on organizational structure and administration (28.8%) whereas in the Jinan document it was on eligibility, premiums, cost and benefits (38.7%). The percentage of content directly related to service delivery and benefits was greater in the Jinan document (47%) than in the Shandong document (34.4%). Surprisingly, both documents contain very little content pertaining to the quality of health care, comprising only 8.3% of the Jinan content and 10.9% of the Shandong content.

[Insert Table 2]

Analysis of Health Care Equity

Table 3 shows the frequency of indicators promoting and impeding health equity, within the two categories of insurance eligibility and health services quality. Overall, the majority of the aims classified in categories (3) and (4) did not address health care equity. Although the Shandong implementation plan contained some statements appearing to promote health care equity, the Jinan implementation plan contains a number of aims that suggest that health equity may remain unchanged, or worse, be negatively impacted due to the lack of statements ensuring equal access to high quality treatment.

[Insert Table 3]

Equal access. Three aims were identified in the Shandong implementation plan to promote health care access, including “cancel the restrictions of HuKou”, “(residents) have rights to select insurance plan”, and “provide financial assistance to rural five-guarantee families, low income individuals...” However, three other aims were determined to likely have minimal or negative impact on accessibility, including “[may] relate the insurance benefits to individual’s premium”, “encourage residents consistently enroll the insurance”, and “may reasonably increase reimbursement limits for individuals who consistently enroll in the insurance”.

Jinan appears to tie levels of care to the level of coverage purchased by an individual or family. For example, the Jinan implementation plan extended the aim “[may] relate the insurance benefits to individual’s premium” to ten additional aims. This included two insurance plans with different premiums and different reimbursement limits for services provided to designated medical institutes in each insurance plan, regardless of medical need. The insurance plan with a higher premium has a higher percentage of reimbursement and covered more services, while the low premium plan covers fewer services and provides lower reimbursement percentages. Moreover, there are higher deductibles associated with accessing higher levels of care for both

plan, thus enrollees pay more if they need more intensive or longer term care. Table 4 presents the coverage details of both plans.

[Insert Table 4]

Equal quality care. For the variable of equal quality care contained in Table 3, no “negative” aims were identified in either the implementation plan of Shandong province or in the implementation plan of the Jinan municipality. Ten aims were identified as “positive” in the Shandong province document and Jinan municipality document, respectively. However, the two implementation plans focused on very different aspects of “equal quality care”, namely promoting quality of service delivery versus oversight and quality control. For example, the aims of “establish professional credit tracking system”, “promote professional development system”, “enhance monitoring system for medical service delivery”, and “establish online tool to upload and manage prescriptions” were all addressed in Shandong province document, but were not addressed in the Jinan document. Similarly, the Jinan document extended the aim “investigate violations of medical services delivery standards” to four specific aims, such as “cannot overuse medical examination, drugs, and other treatments”, “cannot intently extend the period of inpatient service”, “cannot divide the period of inpatient services” and “(must) inform patients when it is necessary to use drugs or services that are not covered by the insurance”.

Equal utilization. None of the aims outlined in these policies contained statements supporting “equal utilization for equal needs”. As equal utilization is a key indicator of health care equity as defined by the WHO (Whitehead, 2000), the lack of statements concerning utilization thus limits the impact of health insurance program.

Ambiguous Language

Ambiguous language was found throughout this analysis, as many aims were broad concepts that are difficult to operationalize and thus, difficult to measure. An example of these ambiguous statements is in relation to cost control. The statement “(strictly) control unreasonable increase of medical service cost” in Shandong plan lacks a valid definition of “unreasonable”. In addition, there is no guidance in the Shandong implementation plan concerning how to control or how to measure medical service costs. Furthermore, in the Jinan implementation plan, most statements concerning medical service cost were related specifically to how to maintain the balance of the Basic Medical Insurance Fund, indicating that Jinan municipality interpreted “control medical services cost” as how to maintain the balance of the Basic Medical Insurance Fund, but not necessarily to limit the cost of the services themselves. Thus the concept of cost control was interpreted differently within each of these documents, leading to potential differences in focus and implementation.

Another example is in relation to the concept of supervision. The Shandong plan included the statement “enhance the supervision toward designated medical institutes and health care services providers”. However there are no statements in the plan defining the duties and purposes of “supervision”, or how to “enhance” the supervision. Thus, Jinan municipality interpreted “supervision toward designated medical institutes and health care services providers” as monitoring unacceptable behaviors leading to the losses of the Basic Medical Insurance Fund (BMIF), rather than clinical supervision which is implied in the Shandong plan. Thus health care equity may be differentially impacted by the varying interpretation of the aims outlined in these two plans.

Discussion

These results indicate that the Resident Basic Medical Insurance program has limited ability to improve health care equity in China's public medical insurance system. The minority of the content of the plans reviewed here were related to service delivery and benefits. Very few aims contained in the reviewed policy documents addressed issues related to improving health care equity. Although the RBMI appears to be most attuned to addressing the *quality of health care services* for both urban and rural residents, the content does not appear to encourage the *accessibility of high quality health care services or equal utilization*. The lack of focus on these areas may serve to maintain the existing rural/urban disparities. In addition, the problem of ambiguous language in the implementation plans may further limit the impact of the Resident Basic Medical Insurance program on Chinese children's health care equity.

The RBMI and Health Care Equity

Content Distribution and Health Care Equity. Although the original intent of the combined health insurance plans was to improve health care equity through the consolidation of the existing rural and urban plans, it appears that these policies, as written, are likely to fall short of this goal. Results indicate that that focus of the Jinan policy was on elaborating on the specific content of the fund and explaining the eligibility, premiums, and services covered under the plan, rather than on improving health care equity and operationalizing how quality improvement will be conducted and evaluated. Thus, it appears that improving health care quality may not be a true priority of the RBMI program.

Equal access. Based on the results presented in Table 4, the written aims of the RBMI program do not appear to encourage equal access to available care. Although the RBMI program improves upon prior systems by eliminating the restriction of eligibility based on HuKou, the

strategy of linking benefit levels directly to the premiums are more consistent with a commercial model seeking to maximize profit, rather than one seeking to maximize health care access.

Families with lower incomes who cannot afford high premium insurance plans are subject to higher out of pocket costs for receiving medical services. In addition the RBMI does not include free or low cost preventive health care services, thus limiting enrollees' accessibility to essential services. Thus, families with lower incomes are more likely to skip routine health screenings and checkups as they must pay for them out of pocket.

Equal Quality Care. As seen in Table 2, the contents that are directly related to health care quality accounted for a very low percentage of the overall content. Conversely, content directly related to explanation of eligibility, premiums, and benefits were important areas of focus of these new policies. As mentioned above, health care quality does not appear to be a priority in the implementation plans. Aims that relate to equal quality care in Jinan's implementation plan appear to be associated with how to discipline the malpractice of professionals rather than how to improve the quality of health care services. Based on *Shandong Statistical Yearbook* (2014), the primary level institutes accounted for 94.5% of total health facilities in Shandong province, while professionals working in these facilities only accounted for 37.2% and 23% of total licensed doctors and registered nurses in Shandong province. Thus, these institutes provided care from less qualified providers. Similarly policies maintain existing disparities when they reimburse at higher levels for lower tier health care institutions. Further limit poor enrollees' access to the higher levels of care that they may actually need, and if enrollees do access care at a higher tier health institution, require them to pay more for it.

The problem of ambiguous language and contradictory content, has the potential to influence the implementation process and to negatively impact health care equity both directly

and indirectly. The aims stated in the provincial implementation plan are broad and difficult to measure, limiting one's ability to critically evaluate the outcomes of this program following full implementation. Since the Shandong plan was the basis upon which the Jinan plan was based, a lack of clarity concerning initial aims facilitates the creation of additional implementation plans with no clearly identified outcomes to be objectively measured and tracked over time. It appears that municipal governments tend to make policy decisions that best benefit the people in their immediate areas, rather than those in the surrounding areas of the province. Conversely, provincial governments attempt to create policies that they hope to serve the province as a whole, not just a specific municipality. Thus, when the language of the policies are ambiguous, different groups of stakeholders with competing interests may differentially shape the implementation of policies and their expected impacts on the health care equity of enrollees, including children.

The success of the Shandong policy, as written, is determined not by evaluating whether the residents' health needs are adequately met, but rather by evaluating whether services are provided in a profitable and self-sustaining way. Although sustainability of an effective program is desirable, sustainability of a program that does not improve health care equity will maintain China's existing health care disparities. Reducing benefits due to a low profit margin disproportionately impacts consumers who have high levels of medical needs, thus tending to consume more medically-related services. This results in a feedback loop that continually lowers the benefits for high service utilizers and serves as a disincentive for accessing the appropriate level of care necessary to address one's needs. However, maintaining the balance of the Basic Medical Insurance Fund is not necessary to control medical costs. As such, additional measures could be introduced to ensure that costs are contained without sacrificing quality of care.

Recommendations for Future Policy Decision Making

Based on the prior analysis, the following recommendations are offered to guide the future of China's public health insurance policy-making to support increases in health care equity for all Chinese children. First, China should expand its focus on achieving health care equity of residents. The demands to integrate market principles and to strengthen economic viability must be balanced with attention to the accessibility and quality of health care services. A continued primary focus on economic viability alone, rather than a shared focus on economic viability along with improvements in meeting consumers' needs will serve to continually reinforce and perhaps increase health care inequities that currently exist in China. If this value shift fails to occur, new policies are simply iterations of older policies grounded in the principles of the market economy, rather than in principles of health care equity (Whitehead, 2000).

Second, China's provinces and municipalities should take care to clearly outline the conceptual framework on which policy statements are based. Stated goals of the policy should be specific and measureable. Performance indicators must be operationalized and clearly outlined prior to installation and initial implementation, so that appropriate formative evaluation of implementation goals and target outcomes can be measured over time. This method of evidence-informed, policy making has become an important feature of policy construction and implementation (Hood, 1991; Smith, 2009). Performance cannot be accurately evaluated unless a policy clearly operationalizes the intended outcomes of the policy, and accurately explains the conceptual framework and theory of change on which the policy is based.

Third, it is recommended that each province and municipality engages in thorough stakeholder analyses to identify any potential conflicts of interest, and to minimize any foreseeable obstacles to implementation. This type of analysis should be conducted prior to the issuing of any policy statements or associated documentation guiding policy implementation. A

thorough evaluation of key implementation drivers and baseline implementation capacity should also be conducted prior to the enactment of any policy changes to ensure feasibility, appropriateness and sustainability of any proposed policies. The researchers attempted to locate such analysis done in relation to the RBMI, but could not find any documentation indicating that these types of evaluation were conducted prior to implementation.

Conclusion

Despite these potential limitations, the results of this study extend our existing knowledge concerning the potential impact of the Resident Basic Medical Insurance program on health care equity. It also provides a vehicle through which additional discussions about health equity within China's public medical insurance systems may be conducted. In addition, this work highlights the challenges of the policy development and implementation within a vast and extremely diverse country such as China. Rural and urban areas have distinct needs and unique service barriers that must be thoughtfully and systematically addressed in order to ensure health care equity for all. Future research that includes multiple analytic strategies to quantify outcomes and to examine the impacts of the RBMI on the health care equity of Chinese children is still needed.

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Table 1. *Criteria to Determine the Impact of Policy Content on Health Care Equity*

	Positive Impact	No/Negative Impact
Equal Access	Intends to reduce the barriers of sex, income, race, age, religion, or other factors not directly related to the need for care.	Does not intend to reduce the barriers of sex, income, race, age, religion, or other factors not directly related to the need for care.
Equal Utilization	Intends to make contributions to break the restrictions of service utilization that are caused by social or economic disadvantage.	Does not intend to make contribution to break the restrictions of service utilization that are caused by social or economic disadvantage.
Equal Quality	Intends to make contributions to improve health care quality or standardize health care delivery based on high standards rather than residency.	Does not intend to make contributions to improve health care quality or standardize health care delivery based on high standards rather than residency.

Table 2. *Implementation Plan Aims Categories*

Aims	Shandong Plan N (%)	Jinan Plan N (%)
Administration of the BMIF and its budget	57 (18.9 %)	54 (24.9%)
Organizational structure and necessary restructuring	87 (28.8%)	47 (21.7%)
Insurance eligibility, premiums, costs and benefits	71 (23.5%)	84 (38.7%)
Health services quality and professional development	33 (10.9%)	18 (8.3%)
Information systems, monitoring and evaluation	54 (17.9%)	14 (6.5%)

Table 3. *Equity Categories and the Potential for Positive or Negative Impacts*

Equity Categories	Shandong Plan	Jinan Plan
Number of Impacts		
Equal Access		
Positive	3	4
Negative	3	13
Equal Utilization		
Positive	--	--
Negative	--	--
Equal Quality of Care		
Positive	10	10
Negative	0	0

Table 4. *Details of Benefits and Coverages in Jinan's Implementation Plan*

Service Coverage Provided By:	High Premium Plan	Low Premium Plan
Province third level units	40%	30%
city third level units	55%	45%
second level units	65%	60%
primary level units	80%	80%
village/township units	90%	90%
Deductibles:	Participants pay 1200 Chinese Yuan deductible if receiving services at the third level institutes; pay 1000 Chinese Yuan deductible if receiving services at the second level institutes; and pay 400 Chinese Yuan deductible if receiving services at the primary level institutes	

Note. The lowest level institutes are village/township institutions, while the highest level institutions are province third level institutes. Higher level institutes have more advanced equipment and qualified professional providers, and usually charge more services fees.

CHAPTER FIVE: CONCLUSION

THE IDEOLOGICAL DEBATE IN CHINA'S PUBLIC HEALTH SECTOR

The ideological debate about the fundamental functions and performance of the government and the free market under China's modified socialist political structure started as early as the mid-1970s. A shift from a fully governmental based economy to a free market economy was effective in producing rapid economic growth and significantly reducing poverty within China (Yip & Hsiao, 2015). During this period of time, the Chinese government tried to apply the same principles that spurred economic growth and reduced poverty to address the need for increased health care equity.

First, the Chinese central government dramatically changed the way it financed health care. From 1978 to 1999, the central government's share of financing public health care services decreased from 32 percent to 15 percent (Blumenthal & Hsiao, 2005). Thus, the public health system had to heavily depend on provincial and local taxation. As the results, the central government's ability to redistribute health care resources from wealthy areas to poor areas was largely reduced, and the public health system in China was decentralized (Blumenthal & Hsiao, 2005). One of the immediate effects of this approach was the growth in health care disparities between different regions and social groups. Second, the Chinese government modified the salary system of public health facilities and permitted physicians to receive compensation according to the revenue they generated for their hospitals/institutes (Blumenthal & Hsiao, 2005). In addition, in order to balance the two major problems the public health system encountered-- receiving insufficient financing resources and ensuring access to basic health care, the Chinese government continued tight controls over the amount that public health facilities could charge for routine visits and services, but permitted the facilities to sell services and

medicines in the private market to cover their expenses (Blumenthal & Hsiao, 2005). Such an approach actually resulted in an explosion in sales of expensive medicines and high-tech services, and dramatically increased medical costs and out-of-pocket expenditures. Poor populations became even more vulnerable through the lack of affordability of health care services.

Applying that approach appears to have been an ineffective way of addressing China's existing health disparities. There continues to remain significant discussion as to the roles of the government and the free market in relation to the regulation and provision of health insurance and health care services for the Chinese people (Yip & Hsiao, 2015). The performances of China's public health insurance programs, no matter who (the government or free-market) played the major role, were considered unsuccessful. On the one hand, social theories related to governmentally controlled service provision indicate that the government often failed to achieve their desired goals for the public interest of health equity for two major reasons: 1) the government can be easily influenced by special interest groups to pursue their interests; and 2) the bureaucratic structure of the government usually operated under rigid rules and procedures which inhibit efficiency and the innovation needed to address the diverse health and health equity needs of the Chinese population (Yip & Hsiao, 2015). On the other hand, although reliance on the mechanisms of the free market helped achieve efficiency, innovation, growth and even health insurance equality, these mechanisms do not adequately address issues of fairness and equity. The main problem in China's past health reforms is that health care equity, which should have been at the core of the public health sector, was understated in policymaking.

SCOPE OF DISSERTATION

The two articles included in this dissertation focus on health care equity in China's public medical insurance system. These articles make an important contribution supporting the equity perspective in the ideological debate happening in China's public health sector. One of the ultimate goals of China's health insurance reforms was to achieve universal health coverage by 2020. Based on the definition of WHO (2000) universal health coverage was defined as "all people can use the promotive, preventive, curative, rehabilitative, and palliative health services they need, of sufficient quality to be effective, while also ensuring the use of these services does not expose the user to financial hardship". Equity is paramount in the definition of universal health coverage. In order to achieve health care equity, China needs to ensure that different subpopulations, such as different income levels, gender, age, geographic residency, migrant status, and ethnic origin, can access health care services equally. Although the goal of expanding coverage to all Chinese residents (equality) may be attainable in this time frame, achieving equity in health care for all Chinese citizens within the next few years seems unattainable based on the data presented in this dissertation.

Based on the four components of health equity—equal utilization, distribution according to need, equal access, and equal health outcomes—explored by Culyer & Wagstaff (1993), article one of this dissertation entitled *The Relationship of Public Medical Insurance to Physical Health Outcomes and Financial Risks for Urban and Rural Children in Mainland China* focused on the relationship of public medical insurance to equal health care access and equal health outcomes between urban and rural children from 2004-2009 when a significant reform model was implemented in China. This article used children's physical health outcomes, including children's Height for Age Z score (HAZ), Weight for Age Z score (WAZ), and BMI for Age Z

score (BAZ) to measure “health outcomes”, and used children’s out-of-pocket expenditures to measure “financial risks” which directly related to children’s accessibility to necessary health care services. A series of Structural Equation Models were conducted to examine the impact of medical insurance on children’s physical health outcomes and financial risks across time. Despite indication that the insurance coverage continuously increased among both urban and rural children during 2004-2009, it appears inequalities still existed in health outcomes for rural and urban children, regardless of whether they had medical insurance coverage or not. Similarly, medical insurance enrollment was not significantly related to out-of-pocket expenditures. Based on the findings, sufficient evidence does not exist to indicate that having public medical insurance is related to improvements in health care equity between urban and rural children.

Since having medical insurance was not seen as a critical factor affecting children’s physical health outcomes and financial risks, the content of insurance was discussed according to the framework described in chapter two of this dissertation. By reviewing the content of the China’s different public medical insurance policies between 2004 and 2009, this analysis explored how different insurance policies for rural and urban children may be a critical barrier to narrowing health disparities between urban and rural children. The RNCMI generally has less funding and fewer resources than the URBMI and demonstrates fewer benefits than the URBMI. Moreover, the unequal distributions of health resources, professionals, and facilities between urban and rural areas were potential contributors to such results.

Article two of this dissertation entitled *An Analysis of the Impact of the Resident Basic Medical Insurance Program on Children’s Health Care Equity in China* focused on how the Resident Basic Medical Insurance program impacts equal utilization, equal access, and equal quality of health care services between urban and rural Chinese children. The Resident Basic

Medical Insurance program was initiated by China's central government in 2012. It was established to integrate the Urban Resident Basic Medical Insurance (URBMI) program and the New Rural Cooperative Medical Insurance (NRCMI) program to cover both urban and rural residents in order to achieve health equity and resolve the problem of health inequalities between urban and rural populations (Meng, Fang, Liu, Yuan, & Xu, 2015) Thus, the aim of this study was to examine the content of this combined health policy to predict, based on the content, if the new combined health insurance system is likely to increase health equity and decrease disparities that persist between urban and rural residents. Using a content analysis of newly implemented policies that, as of yet, have no observable or quantifiable outcomes, is an innovative approach to determining potential policy impacts.

Using the ADICO framework proposed by Crawford and Ostrom (1995), an analysis of two local and governmental policies specific to Shandong Province was conducted. The results of this study indicated that the RBMI program has limited potential to improve the health care equity or reduce the inequalities between urban and rural Chinese children. Two main areas in which Chinese policy making related to public health insurance could be improved were identified and include the need for a stakeholder analysis prior to installation and the use of a clear conceptual framework to guide policy conceptualization and subsequent implementation. Future research in this area is necessary to measure the eventual outcomes of this policy change, and should include examine a broader array of provinces and municipalities. As implementation continues, quantitative analytic strategies may allow for quantification of outcomes and their impacts on the health equity of Chinese children.

STRENGTHS AND LIMITATIONS

This investigation was the first study to date that examines the interaction effects of residency and insurance on the inequalities of physical health outcomes and financial risks between urban and rural children across time. It was also the first study to date to analyze the potential impact of the Resident Basic Medical Insurance program on health care equity in China's public medical insurance system. This is significant in light of the potential outcomes of the new Residents Basic Medical Insurance program.

Another strength of the investigation was the application of advanced methods in data analysis, including structural equation models for quantitative data analysis and the ADICO syntax for qualitative data analysis. The advanced methods can provide more scientific and rigorous results to contribute to the body of knowledge in the field of China's public health reform. In addition, using a content analysis of newly implemented policies that, as of yet, have no observable or quantifiable outcomes, is an innovative approach to determining potential policy impacts.

As with any investigation this project had some major limitations that should be addressed to inform future research in this area. Article one is based on a secondary data set that was originally intended to capture data for a different purpose. Although it was used as the best available source of data for children's access to health insurance in China, this dataset lacks some critical demographic variables including but not limited to parents' education, household income, siblings, and living conditions. This may limit the internal validity of the results. Second, the data suggest that having public medical insurance is a time varying variable and not static. That children come in and off of public medical insurance could impact the findings about the role of health insurance. Third, the implementation of China's public medical insurance

policies was varied across provinces and cities. This study was not sensitive to the geographical variations. In addition, this study contains around 3,347 respondents. Comparing to millions of children in China, this sample might not represent enough of the entire population. The external validity of the results may be limited.

Article two is one of the first to assess the potential impact of the Resident Basic Medical Insurance program on health care equity between urban and rural children. This work also has some limitations. First, this study only focused on two government documents, and therefore policy specifically impacting only one municipality, Jinan, in Shandong province. Therefore, the results of this study do not represent the general implementation of the Residents Basic Medical Insurance program across Shandong province. The governments at the county/city level have the authority to make specific policies based on the realities in their areas. Thus, the implementation plan for the Resident Basic Medical Insurance program could vary across different regions and municipalities even within one province.

Second, because China's political environment determined that the central government only provides brief and broad guidelines to initiate health reform or policy making, each province has the authority to develop the guidelines based on its social and economic conditions. Therefore, the focus here on Shandong province does not provide insight into the variety of ways in which the RBMI program is implemented across provinces in the whole country.

Third, because the ADICO syntax was developed for the English language, the accuracy of coding is challenged when applying the ADICO syntax to the Chinese language.

Finally, the dependability of these analyses could be low because only one coder classified the aims into content categories and determined which aims have directly impact on health care equity.

INTEGRATIVE SUMMARY AND CONCLUSION

This dissertation begins to extend the existing social work literature concerning the problems of health care equity between urban and rural Chinese children, and explore the previous health reforms and efforts made by Chinese government. Based on the literature, two studies were conducted to evaluate how China's public medical insurance policies may impact health care equity between urban and rural children. Overall, the results of the two articles indicated that health care equity was not a focal point in China's policy making, and retention of the current health care related policies may perpetuate the existing health inequities between urban and rural Chinese children. Increasing insurance coverage or integrating the urban-rural policies may help improve health care equity by reducing the barriers to accessing and using health care services encountered by rural populations, but these policy changes alone are not sufficient to adequately reduce the inequities between urban and rural children.

Recommendations to address issues of health care equity within a Chinese context that have emerged in prior literature include: (1) the central government should allocate more health resources targeting the rural poor to improve the accessibility and affordability of essential health services for the rural population (Wang, Xu, & Xu, 2007); (2) the government should sufficiently support community health care centers to develop primary health services and preventive services, including increasing the funding to community centers and continuously supporting community-based primary care and provision of preventive services (Li, et al., 2012); and (3) the government should consolidate health insurance system that are not HuKou dependent to resolve the problems of affordability, accessibility, and quality of health services (Meng, et al., 2015).

Based on the results of these two studies, the author offers three additional recommendations concerning policymaking. First, the goals of public medical insurance policymaking, implementation, and evaluations in China should be directly tied to the health needs of historically disadvantaged groups, including rural children, and should be structured in such a way as to promote health equity among all groups. The Chinese government should make more of an effort to understand the health needs of different social groups and identify the gaps in the current health insurance policies in order to adequately address these needs and support health equity.

Second, the conceptual framework on which health policies are based should be clearly outlined within the policy statement. Stated goals of the policy should be specific and measureable. Performance indicators must be operationalized and clearly outlined prior to initial implementation so that appropriate data can be gathered from the beginning of policy implementation and targeted outcomes of the policy can be measured over time. This method of evidence based (also called evidence informed) policy making has become an important feature of policy construction and implementation in Western countries (Smith, 2009). However, for policies related to Chinese children's health equity, performance cannot be quantified or evaluated unless health care policies clearly indicate the intent of the policy in terms of measurable goals and supporting conceptual frameworks.

Third, as a part of the above process, a reliable stakeholder analysis and a thorough evaluation of key implementation drivers and baseline implementation capacity should be conducted prior to the enactment of any large scale policy changes related to health insurance systems to ensure feasibility, appropriateness and sustainability of any proposed policies. These recommendations based on the two articles included in this dissertation represent a unique

contribution to the social work literature by addressing a gap concerning health equity and insurance's impact on the health equity of rural and Chinese children, and also by adding to our current knowledge base in this area through the generation of two articles submitted for publication in peer reviewed journal. This dissertation provides the following specific contributions to social work research, policy and practice:

1. This work expands our current understanding of the impact of public medical insurance policies on the health of Chinese children.
2. This work applies methodologies developed in western countries to China's social context to better understand the values guiding the creation and implementation of Chinese health insurance policy, and its associated goals.

The process of building policies based on a rigorous conceptual framework, and the inclusion of specific goals and indicators for each stage of the implementation process have, thus far, been largely absent in Chinese policy decision-making. Thus, incorporating what we currently know from the field of implementation science into policy decision making will increase a policy's potential to affect change in a given area (Damaschroder, et al., 2009). Ultimately implementing these performance indicators would assist the Chinese government, accurately assessing costs associated with policy implementation and ultimately lend empirical support to the efficacy or inefficacy of any given policy.

Implications for Social Work Research

Future research concerning the health care equity in China's public medical insurance system will be needed to improve the efficiency and effectiveness of health care equity for achieving universal health coverage in China by 2020. Based on the work started in this dissertation there remain a number of lines of inquiry which could increase our knowledge

concerning the outcomes or performances of China's public medical insurance system in the field of health care equity.

First, measuring and analyzing differential health needs between urban and rural children is needed, as "health needs" are at the core of universal health coverage and health care equity. As mentioned above, health care equity is defined as resource allocation and access to health care determined by health needs (Aday, 1981). Thus, health care equity is closely related to "health needs". Moreover, based on the recommendations of the World Health Organization (2002), for a community or country to achieve universal health coverage, several factors directly related to health care equity must be in place. One of the factors is to "establish a strong, efficient, well-run health system that meets priority health needs through people-centered integrated care (including services for HIV, tuberculosis, malaria, non-communicable diseases, maternal and child health)" (WHO, 2016). Measuring and analyzing health needs between urban and rural Chinese children will provide new metrics to explore the knowledge in this area.

Second, determining the definition and measurements of affordability and accessibility in China's social context is crucial to understanding health care equity in China's public medical insurance system. Affordability and accessibility are major indicators of health care equity. However, these two concepts are generally interpreted in relation to specific social contexts. Different societies and populations may define and measure the two concepts differently. Since health care equity is understated in China, no literature was found to specifically define and measure the two concepts based on China's social context. Defining and measuring the two concepts in terms of implications for practice is a special task needing attention in future research.

Finally, it is recommended that future research include inquiry of developing practical approaches and methodologies that are applicable within the Chinese cultural and governmental context. Future research in this area is necessary to quantify the eventual outcomes of this policy change, and should include a larger sample size that is more representative of the country as a whole as well as use multiple analytic strategies to quantify outcomes and their impacts on the health equity of Chinese children.

Implications for Social Work Policy

This dissertation has significant implication for introducing social work values and perspectives that initiate from Western countries to China, and further promote the development of Social Work as an academic major in China. For social workers, two paramount ethical principles are respect for the dignity and worth of the person and the quest for social justice in relation to vulnerable populations. The fact that these two tenets of social work are found throughout social work's codes of ethics internationally supports the claim that social justice is directly related to equity, which addressing systematic inequality. Banks (1998) refers to this relationship when defining social justice as including distributive justice, which is perhaps one of the most fundamental principles for social workers who have responsibility for distributing public resources in the public sector.

However, by reviewing the policy contents of the Residents Basic Medical Insurance program, it is obvious that China's policy makers are still focused on the concept of equality rather than the concept of equity. For instance, in the past decades, China's health reforms were consistently driven by the value of "treating everyone as equal as possible" without matching the resource distribution to the needs (Ren, et al., 2014).

Implications for Social Work Practice

This dissertation has significant implications for the policy practice of social workers. Social policies are the means governments use to deal with social problems and achieve social justice, which can have an enormous impact on communities, families, and individuals. The social work profession has a long tradition of involvement in social policy making, and reflecting the values and assumptions at the foundation of this profession (Gal & Weiss-Gal, 2014). Obviously, some policies can help alleviate distress by facilitating better access to resources and services, while others may actually aggravate existing problems or create new ones. Thus, social workers seeking to improve clients' wellbeing will engage in the policy process, either in prompting new policies, changing (or at times defending) existing policies, and fighting new policies that are perceived as detrimental to clients (Jansson, 2007).

Social workers have an ethical duty to engage in the social policy-making process, often because they are expected to implement social policies or, at the very least, to coordinate the implementation of those policies. More importantly, social workers usually have first-hand knowledge of clients' needs and know how policies impact them because of the focus of their social work activities (Koeske, Lichtenwalter, & Koeske, 2005). Given the prevalence of these assumptions and values, it comes as no surprise that influencing social policy is considered as an important task of social workers because of its inclusion in social work's code of ethics across various countries and in the definition of practice for macro social work (CSWE, 2008). Therefore, this dissertation makes contributions to the policy practice of social work by exploring innovative methods and extending existing knowledge concerning health care equity, especially in China. It provides perspectives and evidence for Chinese social workers to advocate for more equitable allocations of health resources for rural population, especially rural children,

and encourages Chinese social workers to become more actively involved in the public health policymaking process in China.

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APPENDIX: CPHS APPLICATION & APPROVAL

UNIVERSITY of HOUSTON

DIVISION OF RESEARCH

September 9, 2015

Miss Yi Ren
c/o Dr. Suzanne Pritzker
Child & Family for Innovative Research

Dear Miss Yi Ren,

Based upon your request for exempt status, an administrative review of your research proposal entitled "Impact of Public Medical Insurance on Health Disparities between Urban and Rural children in China" was conducted on May 13, 2015.

At that time, your request for exemption under Category 4 was approved pending modification of your proposed procedures/documents.

The changes you have made adequately respond to the identified contingencies. As long as you continue using procedures described in this project, you do not have to reapply for review. * Any modification of this approved protocol will require review and further approval. Please contact me to ascertain the appropriate mechanism.

If you have any questions, please contact Alicia Vargas at (713) 743-9215.

Sincerely yours,



Kirstin Rochford, MPH, CIP, CPIA
Director, Research Compliance

*Approvals for exempt protocols will be valid for 5 years beyond the approval date. Approval for this project will expire **September 7, 2020**. If the project is completed prior to this date, a final report should be filed to close the protocol. If the project will continue after this date, you will need to reapply for approval if you wish to avoid an interruption of your data collection.

Protocol Number: 15431-EX

316 E. Cullen Building Houston, TX 77204-2015 (713) 743-9204 Fax: (713) 743-9577

COMMITTEES FOR THE PROTECTION OF HUMAN SUBJECTS.



UNIVERSITY OF HOUSTON
Division of Research
Institutional Review Board Application

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Institutional Review Board
Application ID : 15431-EX - (6443)
Title : Impact of Public Medical Insurance on Health Disparities between
Urban and Rural children in China

Approval details for the Application Id: 6443

	Decision	Approver Name	Date	Comment
PI signature	Approved	Ren, Yi Miss	09/03/2015	
DOR signature	Approved	Admin, IRB	09/14/2015	

University of Houston

Division of Research

Application Data for Application ID: 6443

Title	Impact of Public Medical Insurance on Health Disparities between Urban and Rural children in China
Application Type	New
Review Type	Exempt
Expedite Code	Not Applicable
Exemption Code	4: Research involving the collection/study of data
Research Reason	Doctoral Dissertation

Investigator Data for Application ID: 6443

PI Name	Is Principal?	Is Co-Investigator?	Is External?	Other Personnel Type?	Is Student?	Faculty Sponsor Name
Colby, Ira Dr.			No	Thesis Committee Member	No	Not Applicable
Ren, Yi Miss	Yes		No		Yes	Pritzker, Suzanne Dr.
Pritzker, Suzanne Dr.			No	Thesis Committee Member	No	Not Applicable
Kao, Dennis Dr.			Yes	Thesis Committee Member	No	Not Applicable

Project Review Summary Data for Application ID: 6443

Question	Answer
4) State the specific research hypotheses or questions to be addressed in this study	1. The first aim is to reveal whether urban insured children, urban uninsured children, rural insured children, and rural uninsured children have different trajectories in physical health outcomes and out-of-pocket medical expenditures from 2004 to 2009. 2. The second aim is to reveal whether the implementation of new public medical insurance policies in China affected the health disparities between urban and rural children.
5) What is the importance/significance of the knowledge that may result?	Findings of this dissertation study will fill up the existing knowledge gaps and have high significance to: (1) public health by involving millions of children in China, (2) the policy making process in China by focusing on the systematic health disparities generated by policies, and (3) social work research and practice by promoting equity and social justice perspective as well as providing scientific and advanced research methods.
6) Type of Subject Population (check all that are appropriate)	Children or minors (<18 in Texas and most states)
6.01) Expected maximum number of participants	3347
6.02) Age of proposed subject(s) (check all that apply)	Infants (2yrs and under) ,Children (3yrs-10yrs),Adolescents (11yrs-14yrs),Adolescents (15yrs-17yrs)
6.03) Inclusion Criteria:	All children and adolescents at 18 years old and below in the datasets of 2004-2009 China Nutrition and Health Survey
6.04) Exclusion Criteria:	All participants over 18 years old in 2004-2009 China Nutrition and Health Survey datasets
6.05) Justification:	Because this dissertation study is focusing on children and adolescents at or below 18 years old, all participants in data analysis were selected only by their age. During the data analysis, all of participants will be treated as equal.

6.06) Determination:	Determinations will be made only based on statistics data analysis outputs.
7) If this study proposes to include children, this inclusion must meet one of the following criterion for risk/benefits assessment according to the federal regulations (45 CFR 46, subpart D). Check the appropriate box:	(404) Minimal Risk
8) If the research involves any of the following, check all that are appropriate:	Study of Existing Data, Data Analyses Only
9) Location(s) of Research Activities:	UH campus, Other (Explain) : At home
10) Informed Consent of Subjects: Your study protocol must clearly address one of the following areas:	No Informed Consent. You may request a waiver of informed consent with Appendix B - Request for Waiver/Modification of Informed Consent. If applicable, a copy of the modified consent document is required. ATTACH APPENDIX B.

Research Protocol Data for Application ID: 6443

Question	Answer
11) Describe the research study design. (Describe the research methods to be employed and the variables to be studied. Include a description of the data collection techniques and/or the statistical methods to be employed.)	This study will use the data sets from the 2004-2009 China Health and Nutrition Survey (Popkin, Du, Zhai, Zhang, 1989-2011) which is an international collaborative project between the Carolina Population Center at the University of North Carolina and the National Institute of Nutrition and Food Safety at the Chinese Center for Disease Control and Prevention. The datasets of CHNS has received the IRB approval to publish the data to the public on their website. No any paper work is needed to access the data. Everyone can access the data for free. This dissertation study will download the datasets from the website of China Health and Nutrition Survey, and run secondary data analysis. No any data will be collected by the principle investigator. The results will be used to publish articles in peer-reviewed journal with acknowledging China Health and Nutrition Survey. Acknowledgement is the only requirement from China Health and Nutrition Survey.
12) Describe each task subjects will be asked to perform.	None
13) Describe how potential subjects will be identified and recruited? (Attach a script or outline of all information that will be provided to potential subjects. Include a copy of all written solicitation, recruitment ad, and/or outline for oral presentation.)	All identified information have been deleted by China Health and Nutrition Survey datasets. Since this dissertation study is a secondary data analysis, the principle investigator cannot access any potential identified information.
14) Describe the process for obtaining informed consent and/or assent. How will investigators ensure that each subjects participation will be voluntary (i.e., free of direct or implied coercion)?	Because this is a secondary data analysis, no consent form is needed.
15) Briefly describe each measurement instrument to be used in this study (e.g., questionnaires, surveys, tests, interview questions, observational procedures, or other instruments) AND attach to the application a copy of each (appropriately labeled and collated). If any are omitted, please	Because this is a secondary data analysis, no instrument is needed.

explain.	
16) Describe the setting and mode for administering any materials listed in question 15 (e.g., telephone, one-on-one, group). Include the duration, intervals of administration, and amount of time required for each survey/procedure. Also describe how you plan to maintain privacy and confidentiality during the administration.	Because this is a secondary data analysis by using public datasets, no any administration mode is needed.
17) Approximately how much time will be required of each subject? Provide both a total time commitment as well as a time commitment for each visit/session.	none
18) Will Subjects experience any possible risks involved with participation in this project?	
18.01) Risk of Physical Discomfort or Harm	No:
18.02) Risk of Psychological Harm (including stress/discomfort)	No:
18.03) Risk of Legal Actions (such as criminal prosecution or civil sanctions)	No:
18.04) Risk of Harm to Social Status (such as loss of friendship)	No:
18.05) Risk of Harm to Employment Status	No:
18.06) Other Risks	No:
19) Does the research involve any of these possible risks or harms to subjects? Check all that apply.	
20) What benefits, if any, can the subject expect from their participation?	None
21) What inducements or rewards (e.g., financial compensation, extra credit, and other incentives), if any, will be offered to potential subjects for their participation?	None

Research Data for Application ID: 6443

Question	Answer
22) Will you record any direct identifiers, names, social security numbers, addresses, telephone numbers, patient or student ID numbers, etc.?	No:
23) Will you retain a link between study code numbers and direct identifiers after the data collection is complete?	No:
24) Will anyone outside the research team have access to the links or identifiers?	No:
25) Where, how long, and in what format (such as paper, digital or electronic media, video, audio or photographic) will data be kept? In addition, describe what security provisions will be taken to	

protect these data (password protection, encryption, etc.). [Note: University of Houston policy on data retention requires that research data be maintained for a minimum of 3 years after completion of the project. All research data collected during this project is subject to the University of Houston data retention policy found at http://www.research.uh.edu/Home/Division-of-Research/Research-Services/Research-Policies/Access-to-and-Retention-of-Research-Data.aspx]	The datasets will be stored in flash drive, office computer, and personal laptop. A copy of the data will remain on UH Graduate College of Social Work, Social Work Building Room 337 for a minimum of 3 years following completion of the study. Responsible person for the data in Social Work Building Room 337 is Yi Ren. The study is complete when all data analysis is finished.
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Appendix B Data for Application ID: 6443

Question	Answer
27) Does the proposed research, in its entirety, involve greater than minimal risk? (Minimal risk is defined as the probability and magnitude of harm or discomfort anticipated in the research which are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.) (If yes, your study is ineligible for waiver of informed consent under 45 CFR 46.116(d).)	No:
28) Could the proposed research be practically carried out without the waiver? (If yes, your study is ineligible for waiver of informed consent. OR If no, please explain)	No: :Not applicable
29) Will the requested waiver of informed consent affect the rights and welfare of the subjects? (If yes, your study is ineligible for waiver of informed consent. OR If no, please explain)	No: :Not applicable
30) If applicable, will pertinent information be provided to subjects later? (If yes, please explain OR If no, your study is ineligible for waiver of informed consent)	Yes: :Not applicable

Division of Research