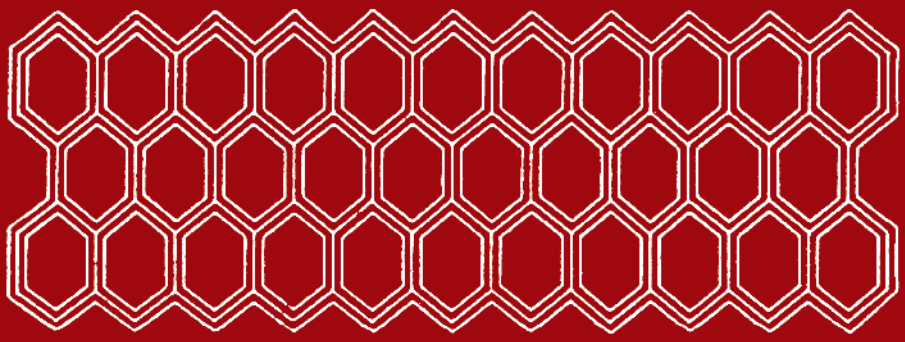

The Yale-China Health Journal

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Editors:
Hongping Tian
Bill Storandt
Henan Cheng

Cover:
Carol Waag

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Yale-China Association
Box 208223
New Haven, CT 06520-8223
Tel: (203) 432-0880
Fax: (203) 432-7246
Email: *yale-china@yale.edu*
Web: *www.yalechina.org*
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Essays

Foreword

In this issue, we focus on the health of China's internal migrants, an important topic that has received only limited attention until recently.

With more than 10 percent of its population on the move, China is facing enormous challenges as it tries to address the many social consequences brought about by internal migration, most of which has been rural-to-urban in nature. Even though China's internal migrant work force has provided the muscle behind the nation's rapid economic progress, its members have remained socially, economically, and culturally marginalized in their new urban settings. The SARS outbreak in 2003 and China's highly visible HIV/AIDS epidemic brought a new sense of urgency to the task of assessing and improving the health status of this group, who most often go without any form of health insurance and have limited access to China's existing health care system.

With rapid changes occurring in China and an intense debate on China's health system underway, knowledge regarding the current health status of this population remains limited and scattered. We hope to share with our readers some of the scholarship on this overlooked topic conducted by both Chinese and American scholars. This work is particularly timely in view of the current impetus toward health care reform in China. This issue of the journal is meant to serve both as a resource and a starting point for a discussion about the health issues of China's rural-to-urban migrants.

This issue of the journal was developed following a one-day symposium on migration and health in China on April 26, 2007, which was sponsored by the Yale-China Association and the Council on East Asian Studies at Yale University. Its publication is made possible with the generous support of the Council on East Asian Studies at Yale University, the United States Department of Education, and Sun Hung Kai Properties – Kwoks' Foundation Limited.

Hongping Tian

Migration and Health in China: An Introduction to Problems, Policy, and Research

Jennifer Holdaway

INTRODUCTION

It is increasingly recognized that labor migration has played an important role in the impressive rates of economic growth that China has sustained over the last two and a half decades, contributing to poverty reduction in the countryside through remittances, and supplying labor for urban development and for manufacturing and services industries (see, for example, Du and Bai, 1997; Li, 1999; Cai, 2000; Murphy, 2002; Ma et al., 2004; Wang and Cai, 2006; Cai and Wang, 2008; Huang and Zhan, 2008). While the short-term financial benefits of migration for many individuals, families, and communities are clear, researchers and policy makers are now beginning to examine some of the less easily measured aspects of the relationship between migration and development, including its impact on the health and well-being of migrants and their families. This shift in focus reflects a growing recognition that a healthy population is not only a crucial component of the human capital needed for development but also an important goal of any humane development policy.

To provide context for the other papers in this special issue, this essay gives an overview of the types of health risks faced by migrants, the evolution of policy responses, and the challenges that remain. While not attempting a comprehensive review, it also discusses some recent directions in social science research.

Before proceeding, it should be noted that this discussion deals only with low-skilled labor migration. Many people move in China, to attend university, join the army, take up skilled employment, or for marriage or retirement. However, because these types of mobility are less likely to expose migrants to health risks, and because skilled migrants are more likely to be able to afford adequate health care, they are not included here.

Social Science Research Council, 810 Seventh Avenue, New York, NY 10019 USA

INTERNAL MIGRATION IN CHINA

Policy toward labor migration in China has undergone considerable change over the last twenty-five years, with researchers identifying a shift from control to tolerance to the active promotion of migration as part of China's overall development strategy (Liang, 2006; Bai and Song, 2002). Before turning to a discussion of the health risks migrants face, a brief summary of these policy shifts may be helpful.

Between the late 1950s and the late 1970s migration from rural to urban areas in China was minimal. Beginning in 1958 citizens were registered either as rural or urban residents and this status was hard to change, not only because travel was restricted, but because employment, housing, food rations, and access to public services were all tied to one's place of residence or *hukou*. This separation between rural and urban labor markets made it possible for the government to extract agricultural surplus for investment in industrial development and to subsidize a higher level of services in urban areas. Most of the migration that did take place during this period was organized by the state, including the sending of technical personnel to work in industries in the hinterland, the rustication of urban youth after the Cultural Revolution, and so on (Solinger, 1999; Cheng and Selden, 1994; Christiansen, 1990).

In keeping with this institutional division, separate systems of health care were developed for rural and urban populations. After 1949 the Chinese government was successful in establishing nearly universal access to preventive and basic health care. Although urban residents received a superior level of services, if compared to other countries, China achieved much higher performance on many public health indicators than income levels would have led one to expect (Duckett, 2007; WHO/DRC, 2006). This meant that when the country embarked upon reform in the late 1970s, it did so with a large pool of relatively healthy workers who later left rural areas to work in the rapidly developing coastal regions. Although by no means the only factor, their good health has been an important component of the positive contribution of migrants to development (WHO/DRC, 2006).

Rural-urban migration began as a consequence of economic reforms starting in the late 1970s. The breakup of the People's Communes and the introduction of the Household Responsibility System stimulated agricultural productivity and released workers from agricultural employment. The creation of local Township and Village Enterprises (TVEs) initially provided opportunities for non-agricultural employment in rural areas, but as China opened to foreign investment and embarked on a development strategy of export-driven growth in the 1980s, manufacturing industries began to generate a demand for labor

and draw workers from the interior to the coastal regions. The expansion of construction and service industries in cities also attracted migrant workers, and the development of a private rental market and the emergence of free markets for many foodstuffs made it easier to survive in the city (Liang, 2006; Bai and Song, 2002; Solinger, 1999).

Official policy initially discouraged population mobility. As late as the end of 1982, the State Council called for "strict control" of rural-urban migration and, although other policies provided incentives to move, the government generally referred to migration in negative terms. To the extent that there was concern about migrants' health at this time, it came primarily from the State Family Planning Bureau, which attempted to make sure that migrants did not violate the one-child policy.

Calculating the number of rural-urban migrants in China is difficult, and available statistics reflect differing definitions and data sources. But by the end of the 1980s there were as many as 70 million migrants working outside their place of formal residence (Chan and Buckingham, 2008; Liang, 2006). Yet policy did not directly address the question of how to manage, much less integrate, the growing number of rural people who were now living in cities. In particular, housing and public services such as health care, education, and basic living subsidies remained restricted to officially registered urban residents. Migrants were not considered legitimate residents of the city, and their ambiguous status was captured in their characterization as a "floating population" (Cheng and Selden, 1994; Davin, 1999; Solinger, 1999).

Rural-urban migration continued to grow through the 1990s and, although the total number depends on the definition one uses, it is now as high as 140 million, or about 10 percent of China's population (Chan, 2008). As the number of migrants grew, the government initiated policies to steer and manage population flows. This occurred primarily through schemes to link prospective migrants with employment opportunities in urban areas and through limited relaxation of the *hukou* system. Residence in small towns became easier for migrants, especially for those with a fixed place of residence and stable source of income. But large cities still give residence only to those who can make substantial investments or who hold professional qualifications (Chan and Buckingham, 2008). Labor migrants are therefore still not generally included in urban social welfare schemes and have difficulty obtaining adequate housing, health care, and education for their children.

Although the *hukou* system is far from dead, since 2000 a gradual but important shift has taken place in attitudes and policy toward migrants. This has been due in part to the growing volume of research documenting, on the one hand, the contribution of migration to poverty alleviation and development and, on the

other, the problems faced by migrants in terms of occupational health and safety, and access to services in urban destinations. Media reporting of such issues has also raised both public and government awareness (Xiang and Tan, 2005).

Increasingly, the government has actively promoted migration as a development strategy and recognized the contribution of migrants to the economy. Steps have been taken to end discriminatory practices toward migrants and integrate them into urban social welfare schemes. In 2001 the State Council released a Number 1 document* focusing on improving the circumstances, working conditions, and rights of migrant workers. This was followed in January 2003 by a "Notice on How to Better Manage and Provide Services for Rural Migrants," which required local governments to make greater efforts, such as providing more services, better working conditions, and schools for children. Importantly, management and financing of training for migrant workers, education for their children, and social security were made part of the budget of the national and local-level governments. During this period the government repeatedly acknowledged migrants' contribution to rural poverty alleviation, and in 2004 in a key document, also indicated that "rural migrant workers have become a crucial component of the industrial work force, create wealth for cities, and generate tax revenues" (Wang and Cai, 2006).

With this change in government's approach to migrants have come a series of policies specifically targeted at improving the circumstances of migrant workers. These include efforts to reduce their exposure to health risks and to improve their access to health care. These policies will be discussed in some detail below, but first a review of some of the major health risks that migrants face.

HEALTH RISKS FACED BY LABOR MIGRANTS

Migrants are exposed to health risks as the result of their employment, living conditions, and mobile status (Zheng and Lian, 2005; Xiang, 2004; Hansen, 2001). As relatively low-skilled workers, they are concentrated in jobs that involve high risks of occupational injury and illness: according to the National Bureau of Statistics, almost 80 percent of construction workers and 68 percent of manufacturing workers are migrants. Although China has impressive occupational health and safety regulations on the books, enforcement is a serious problem and migrant workers are particularly vulnerable because they are often employed in the informal sector or in TVEs and small private businesses where worker health and safety is inadequately regulated (Li, 2008; Xiang, 2004; Hansen, 2001). Like

*These documents indicate the government's priorities for work during the given year.

undocumented migrants in developed countries, migrant workers in China are often afraid to complain for fear of losing their jobs.

Data on occupational health and injury rates in China are unreliable since many agencies are involved in data collection and reporting is patchy (Li, 2008). This is particularly true for migrant workers, who often do not seek care in hospital. But a few statistics give some indication of the extent of the problem. A study by the Ministry of Health and the Ministry of Agriculture found at least one occupational hazard in 83 percent of the TVEs surveyed, and estimated that at least one-third of workers were exposed to health risks. Of factories with hazardous conditions, fewer than half had any kind of ventilation equipment. Almost five percent of workers surveyed had identifiable occupational diseases and another 11 percent had health problems that appeared but were not proven to be related to their work (Su et al., 2000).

A more recent study by researchers at the Chinese Academy of Social Sciences estimated that 80 percent of workplace deaths in mining, construction, and dangerous chemical industries were among migrant workers (Zheng and Lian, 2005). In 2005 the State Administration of Work Safety estimated that there were 15,000 deaths from occupational injury annually, and 30,000 work-related incidents in the Pearl River Delta area alone (*Xinhuanet,* 2005; *China News Daily,* 2005). Seeking to assess the scale of the problem from another angle, research conducted in migrant-sending communities estimated that 1–2 percent of all male migrant workers had work-related injuries. Another study found that a single county in Sichuan province had 300 clinics offering surgery to reattach severed limbs and digits (cited in Xiang, 2004).

Migrants in certain industries are at especially high risk. In terms of occupational safety, the mining industry is notorious, accounting for only 4 percent of the industrial workforce but over 45 percent of fatalities. From 1994 to 2003 there were two major disasters a year on average, each resulting in more than 50 deaths (Wright, 2004). Among occupational illnesses, the lung disease pneumoconiosis accounts for as much as 70 percent of the total, with over half a million cases recorded by 2001 and an estimated 7,500 to 10,000 new cases annually (Liang et al., 2003). Benzene, toxic glues, and many other chemicals and pollutants are the cause of other illnesses to which migrant workers are disproportionately exposed. The Ministry of Health (MOH) received 12,212 reports of occupational disease in 2005, which included 200 cases of acute occupational poisoning, each affecting hundreds of people (Xinhua, April 25, 2006). Service workers face other occupation-specific risks: for example, one study has documented the health problems to which hundreds of thousands of workers in China's numerous foot-massage salons are potentially exposed (Ye et al., 2005).

Migrants are vulnerable in less obvious ways as well. First, they routinely work longer hours than urban residents—up to 50 percent longer on average, according to one study conducted by researchers at Chinese Academy of Social Sciences (CASS) (Du et al., 2006). Working long hours increases the risk of injury and repetitive-stress disorders. And, while they earn less than urban residents, migrants also save more, meaning that they often skimp on food, clothes, and other necessities. Although they are less likely to have insurance coverage, the same research found that migrants also spent less than half what urban residents did on out-of-pocket medical expenses (Du et al., 2006). Migrants' frugality benefits their families in the short term, but it takes a toll on their physical and mental health.

Migrants are also exposed to health risks because of their living conditions. Du and colleagues found that migrants on average had half (11 square meters) the living space of urban residents, and that 63 percent of migrants live in housing without a bathroom, compared to 16 percent of long-term urban residents. Migrants working in factories often live in dormitories, which are often overcrowded and do not have adequate protection against fire, while others live in overcrowded rented housing where infectious diseases easily spread. Because of crowding and inadequate sanitation, higher rates of malaria, hepatitis, and other infectious diseases have been found among migrants (Zheng and Lian, 2005).

Some scholars have argued that as a result of these stressful work and living environments, and also because they are separated from their families and usual social constraints, migrants are more likely to engage in risky behaviors that may expose them to disease, including unsafe sex (Yang, this issue). In fact, migrants' circumstances vary considerably in this respect. As Zheng and Lian (2005) point out, many migrant workers live in dormitories where the gates are locked at night and no visitors are allowed, making it hard for them to be sexually active. Other migrants live in enclaves with others from their home village, where social constraints may be quite strong. At the same time, certain categories of migrants are clearly at high risk of HIV/AIDS and other sexually transmitted diseases, including those who work in China's growing sex industry (Xiang, 2004).

In addition to being exposed to health risks at home and in the workplace, migrants also lack access to affordable health care. As Xiang (2004) points out, this is the result of the institutional separation between rural and urban health care systems, coupled with changes in both systems that have eroded coverage of low-income groups. Prior to reform, separate but fairly effective health care systems operated in urban and rural areas. Rural residents received quite extensive services through the Cooperative Medical System, which operated publicly funded clinics and financed "barefoot" doctors to provide basic care. Urban resi-

dents received free health care through one of two state-run schemes (Duckett, 2007; Bloom and Fang, 2003). This bifurcated system rested on the assumption that people did not move between rural and urban areas, and consequently left rural migrants with no access to health care in the city. At the same time, the rural health care system that they were expected to fall back on was undermined with the dismantling of the communes and the introduction of the Household Responsibility System in the 1980s. Without a system for collective financing, individual families became increasingly responsible for paying for their own care, and illness quickly became a major cause of poverty in rural areas (Liu et al., 2003). The new Rural Cooperative Medical System introduced in 2002 has improved the situation somewhat, and has been extended to over 80 percent of rural counties, but many problems remain in adjusting the program to local needs and providing adequate coverage for low income populations (Cook, forthcoming).

Meanwhile, reform of the work-unit-based system in urban areas in 1999 established a system in which employees hold individual accounts to which both they and their employer contribute monthly, but which can be transferred if the employee changes jobs. However, in addition to not covering all urban residents, the scheme made no provision for migrant workers, who are often employed in the informal sector. Migrants were therefore generally left without any insurance. One study conducted in Beijing found that only 4 percent of migrant workers had health insurance, compared with 65 percent of urban residents (Du et al., 2006). The consequences of this are evident in higher rates of mortality; the World Health Organization estimates that two-thirds of maternal deaths in urban areas are of migrant women, although they account for only 10 percent of pregnancies (WHO/DRC, 2006).

MIGRANTS AND THE RURAL POOR

While recognizing the many ways in which migrants may be more vulnerable than urban residents to health risks, it is important to note that not all of them are necessarily in a worse position than rural people who do not migrate, or than their families who are left behind. Generally, migrants are younger and healthier than non-migrants and not among the poorest families in a given area, which may not be able to support the costs of migration (Li, 1999). Furthermore, depending on their occupation, migrants are not necessarily more at risk than farmers, who are increasingly exposed to dangerous pesticides and pollution from rural industry, toxic garbage dumps, and other hazards. Official statistics, which are acknowledged to be incomplete, indicate that there were 17,791 reported cases of

acute pesticide poisoning in 2006, and cancer is now the leading cause of death in rural China, up from third place in 2005 (MOH, 2007).

Although poor relative to urban residents, migrants living in cities may well have better housing than non-migrants in rural areas, with access to piped water, cleaner fuel, more nutritious diets, and better sanitation (Hansen, 2001). The World Bank has estimated that indoor pollution from the burning of low-grade coal and biomass causes an estimated 300,000 premature deaths a year in rural areas. In 2006 only two-thirds of villages had piped water and only half had hygienic toilets (World Bank, 2007). Comparisons are difficult, however, because the living conditions of migrants are highly dependent on their occupations. As Hansen (2001) points out, for example, housekeepers who live with their employers and share their food generally have much better diet and housing conditions than construction workers. Meanwhile, rural people are exposed to very different types and levels of health risk depending on heating and cooking practices, the extent and nature of industrialization in the area, and so on.

With regard to their access to health care, migrants are clearly disadvantaged relative to urban populations, but comparison with rural residents is again more difficult. Although many of them try to avoid using hospital care for reasons of expense, migrants in cities may have more information and treatment options than their rural counterparts, and they have more money to spend on health care. Finally, while attention has tended to focus on migrants as potential carriers of disease, they can also play a positive role in transferring information and safe health practices back to rural areas – a form of "social remittances" (Hansen, 2001; Levitt, 1996).

RECENT POLICY AFFECTING MIGRANTS' HEALTH

Nonetheless, labor migrants clearly constitute a vulnerable population in many respects and as part of its overall shift towards a more positive perception of migration, the Chinese government is actively developing policies aimed at addressing the problems they face. The January 31, 2006 State Council document, "Several Opinions on Resolving the Problem of Migrant Workers," called for further efforts to ensure equal rights and access to public services for migrants and was accompanied by statements from the respective line ministries and agencies detailing programs that fell within their domain (State Council, 2006a). The State Council further established a Joint Conference of relevant agencies – which is supposed to be replicated at each level of government – to coordinate work on migrant issues (State Council, 2006b). Although many problems remain, the transition has been made from a policy that regards migrants as rural people

temporarily resident in the city, to one in which they are regarded as full members of a future expanded urban population with equal rights to services.

Several of the clauses in the State Council document refer specifically to health-related issues. The introduction acknowledges many of the problems mentioned above, that "migrant workers have low salaries, are often not paid on time; work long hours in unsafe conditions, lack social security guarantees and have a high rate of occupational injury and disease; and they have many problems with training and employment, the education of their children, housing conditions and the like." (State Council, 2006a). The document says that migrants should be given employment contracts, paid on time, and given equal pay and conditions to those of urban residents. It calls for implementation of occupational health and safety standards by enterprises employing migrant workers, training migrants in order to inform them of their rights, and punishment for infractions of occupational health and safety regulations. Local governments are charged with finding ways to include migrant workers in health insurance, with a priority on occupational injury insurance and coverage for major illness to be paid by the employer. Children of migrants are also to be included in urban immunization programs, and female migrants in programs offering reproductive health services.

In response to the State Council's initiative, the Ministry of Labor and Social Security (MOLSS, 2006a) issued a document indicating its plans for implementing this directive, followed up by a plan to expand migrant workers' participation in health insurance (MOLSS, 2006b). The initiative focuses on provincial capitals, large cities, and occupations in which migrant workers are concentrated, including manufacturing, construction, mining, and services. The stated goal was to have 20 million migrant laborers enrolled in insurance schemes by the end of 2006, and nearly all migrant workers working for urban employers enrolled by the end of 2008, with specific quotas for individual provinces and cities. The document urges localities to find ways to improve the management of insurance provision to migrants so that they can be covered both in the city and if they choose to return to their place of origin. The MOLSS stated that the number of migrant workers who have medical insurance would rise by 18.3 percent during 2007 to 28 million in total (Xinhua, February 2, 2007).

There is also greater attention to the occupational health problems faced by migrant workers. The MOH is conducting a survey of migrants' occupational health and has launched a program to provide basic services for them through a pilot scheme in 20 counties and 10 provinces. The MOH and the State Administration of Work Safety have both repeatedly declared their intent to improve monitoring of occupational disease control (Xinhua, April 25, 2006). As part of this, there have been efforts to improve worker safety in particular industries.

For example, the MOLSS has stepped up efforts to increase the enrollment of migrant workers employed in construction, mining, and other hazardous industries in occupational injury insurance programs and called for stricter implementation of the Law on Occupational Diseases Prevention and Control, and the Law on Safe Production. Recent government campaigns have targeted some of the most polluting and hazardous industries, including coal mining and cement. In both cases the focus has been on closing smaller operations that generally use older technology and have dangerous working conditions.

Other policies do not relate directly to health but are also relevant. These include efforts to protect migrant workers' rights by ensuring that they have employment contracts and through their inclusion in unions and other bodies that represent workers. The Trade Union Law of 2001 increased the power of the official All-China Federation of Trade Union (ACFTU) to protect workers' rights with regard to occupational health and safety. Previously, the ACFTU did not cover migrant workers, but in June 2003 it began a campaign to include them. In the first month, over 34 million migrants joined local unions in cities and townships throughout the country, and ACFTU claimed that by the end of 2005, 23 million rural migrant workers belonged to trade unions. Although this represented only 20 percent of the total rural migrant labor force, ACFTU has indicated that it plans to continue active recruitment. The union has also launched health and safety campaigns and states that it helped migrant workers claim 1.3 billion Yuan (US $162.5 million) in delayed wages in 2006. (Xinhua, October 16, 2006). Of course trade unions in China still have a limited role and reach, but more migrant workers now have the benefit of the protection and services such organizations do provide.

Meanwhile, urban governments have begun developing programs to include migrants in insurance schemes. According to a study by researchers at the MOLSS, several main patterns have emerged: giving migrants access to existing insurance schemes; setting up a separate scheme for migrants; and relying on rural insurance programs (He and Hua, 2006).

Shenzhen, for example, has sought to incorporate outside workers into the model for urban workers, with roughly the same components and conditions. Other areas have developed a second tier within the existing system for migrants, with lower contributions and levels of provision. Taking a different approach, Shanghai has introduced a policy of integrated insurance for migrant workers under the primary management of the municipal Labor and Social Security Bureau. Instead of being divided into different types of insurance (old age, health care, injury, and childbearing) as for urban workers, migrants are offered one package that includes old age, health care, and injury insurance. There is a separate system for construction workers because of their greater mobility, with

a smaller range of benefits and lower contribution rates. Other cities and provinces, including Chengdu, Dalian, and Jiangxi Province have developed similar programs (He and Hua, 2006).

In some areas where migrants are employed primarily in TVEs, they have chosen to participate in rural insurance programs (He and Hua, 2006). Relying on rural systems is a more viable option for migrants who do not travel far from home, or who migrate seasonally or for a short period. As another strategy, some officials of sending communities have arranged schemes for their workers in major destination cities, negotiating agreements with particular hospitals, especially for reproductive care and childbirth (Zhu, 2007). NGOs have also been active, especially in providing health education and worker awareness programs. Some migrant communities have also been able to establish their own clinics, and some researchers have advocated such grassroots activities as a partial solution to the problem (Xiang, 2004). But the effectiveness of such initiatives depends very much on the resources available to particular groups of migrants.

CONTINUING CHALLENGES

Despite greater awareness, many difficulties remain in addressing the health needs of migrants. Although the new insurance schemes will expand coverage, many migrants are still defined out of the eligible population. For example, "outside workers" in Shanghai are defined as "those employed or running businesses who do not have permanent Shanghai *hukou*." This does not include skilled workers brought in by the Shanghai City Personnel Bureau or people working in agriculture or as housekeepers. While high-skilled workers will generally have access to health care through their place of work, housekeepers represent a large group who are rarely covered by their employers—a problem faced by other countries, including the U.S., which do not have universal coverage.

Even where it is available, co-payments, upfront payment for services, and ceilings on coverage also deter migrants from buying insurance. Although premiums and co-payments may not seem high to urban residents, they can still be a burden to migrants who are trying to save on limited incomes. One recent study of willingness to pay found that informal sector workers in Wuhan, including migrants, would be willing to pay higher premiums for health insurance (up to about 7 percent of their income) if co-payments were eliminated or ceilings on coverage removed. Insurance enrollment also shows demographic patterns common to other countries that lack universal coverage, with younger, male workers least likely to be willing to pay for insurance (Barnighausen et al., 2007).

It is clear that there is quite a strong commitment on the part of the central government now to improve occupational health and safety in industries in

which migrants are concentrated. But even with this political will, progress will not be easy. Enforcement of occupational health and safety laws and regulations faces many of the same problems that bedevil the implementation of environmental protection measures (in many cases dealing with the same pollutants within factory walls that the environmental protection system regulates outside them). First, the monitoring and enforcement system faces serious problems of capacity. For example, according to the Provincial Administration of Worker Safety, in 2006 Jiangsu had over 230,000 industrial enterprises employing nearly twelve million people, as well as 34 coal mines and 3,000 other mines. Another 3.8 million people were working in the construction sector. But the province had only 563 professional safety inspectors and 256 occupational health inspectors (Xia, 2006). In poor areas, it is hard to recruit and retain trained personnel, who generally leave to find work elsewhere, and enforcement is further hampered by the difficulty of regularly inspecting facilities in remote locations.

Conflicts of interest also thwart efforts at stricter enforcement, as Wright (2004) has shown in the case of the coal mining industry, where rising demand for coal has made it difficult to close small mines that contribute to production capacity. As with the implementation of environmental pollution regulations, corruption and local protectionism are serious and well-documented problems, but it is also true that local governments face real dilemmas in managing these issues, especially those in poor areas with few alternative development options. As Wright points out, until there are other ways for local governments to raise revenue, officials will continue to collude with factory owners in evading regulations. Lack of alternative employment will also lessen the otherwise beneficial impact of the greater inclusion of migrant workers in unions and other representative bodies (Wright, 2004).

Policy aside, another trend deserves mention that may provide an incentive for employers to improve occupational health and safety conditions. As the result of the one child policy, China's population is aging fast, causing a rapid decline in the size of the working age population. This has led enterprises in the Pearl River and Yangtze River Delta areas to experience a shortage of migrant workers, particularly young women and technically skilled workers (Wang, 2005). As Solinger (1999) predicted, this is putting pressure on wages and providing an incentive for enterprises to improve working conditions in order to attract and retain workers. Migrant workers' wages began to rise in 2004 and increased by more than 11 percent in 2006, indicating the positive effect of the tight labor market (Cai, forthcoming). It is too early to assess the effect of this demographic shift, but it seems likely to have a positive effect on working conditions, at least in particular industries.

CURRENT RESEARCH AND EMERGING CONCERNS

Research on migrant health has been relatively slow to develop, but the range and scale of research on this issue has increased rapidly in the last two or three years, and some new data should soon enable a better assessment both of the health risks faced by migrants working in different industries, and of the advantages and disadvantages of the various policies and programs currently being implemented. In addition to the government-sponsored studies mentioned above, a study of migrant and non-migrant households in sending and receiving areas by Li Shi, Meng Xin, and Lina Song includes a battery of questions related to health status, treatment, and expenditures that will provide a better picture of the burden of health-related expenses for migrants and the frequency of occupational injuries. On the policy side, the Institute of Economics at CASS is undertaking a review of the effectiveness of different approaches to providing health insurance for migrants.

As more generally with research on health issues in China, more attention appears to be continued to be placed on infectious diseases and HIV/AIDS than on chronic or cumulative health problems faced by migrant workers, and there is more concern with issues of insurance and access to care than with preventing illness and injury. In terms of both human suffering and cost-reduction, it would seem wise to pay greater attention to the environmental drivers of health risks and the ways in which they can be addressed. Given the diversity of the migrant workforce, and the range of different health risks to which they are exposed, this would entail in-depth research on particular populations and employment sectors.

There is also a need for longitudinal research that can capture the effects of cumulative exposure of migrants to occupational and environmental health risks and the long-term costs of lost capacity to work and in treatment and care for the sick. Because the first generation of migrants are now middle-aged, these long-term impacts are only just emerging and are not yet well understood.

Nearly all work on migrant's health focuses on their physical condition, but migration also causes considerable psychological stress that can have serious consequences, exacerbating physical health problems and making it difficult for individuals to live productive and fulfilled lives. Sources of stress include discrimination, but also isolation and separation from family: studies indicate that migrants stay away from home on average for four to seven years (Murphy, 2002; Ngai, 2005). So far, little research has focused on the toll this takes on marriages and on the healthy psychological development of children, although the work of Ye Jingzhong and others on "left behind" family members reflects

the growing concern with these social effects of migration (Ye, 2008a; 2008b; 2008c).

Policy toward rural-urban migration in China has undergone a significant shift in the last decade, and improving the working and living conditions and access to health care of migrant workers in cities is now clearly on the agenda of national and local governments. Nonetheless, migrants' mobility and their concentration in hazardous industries continue to make it difficult to reduce their exposure to environmental and occupational health risks and to ensure their access to affordable care. As it grapples with these challenges, China is experimenting with a number of approaches to addressing migrant health issues that will be informative not only in the domestic context but also for other countries undergoing significant internal migration.

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*Migration and the Well-Being of Children in China**

Zai Liang†, Lin Guo, Charles Chengrong Duan‡

ABSTRACT

Using data from the 2002 China Nine-City Survey of Migrant Children, this paper examines three issues concerning the well-being of migrant children: education, health, and child labor. We provide both broad patterns of education, health, and child labor as well as statistical models which take into account individual, household level, and migration characteristics. The results show some good news and some bad news. Overall, migrant children show a profile of relatively adequate level of school enrollment and participation in vaccination programs. On the negative side, we find that child labor is quite high (as high as 15 percent of the children are working in one city). Gender discrimination is also evident in both participation in vaccination program and child labor. Third, migrant children who reside in single-parent households suffer both in education and child labor.

Key Words: migrant children, education, health, child labor

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†Department of Sociology, State University of New York, Albany, NY 12222; phone: 518-442-4676; fax: 518-442-4936; e-mail: zliang@albany.edu

‡People's University of China

INTRODUCTION

On January 27, 2007, *The Wall Street Journal* ran a front-page article about migrant children in China (Chao, 2007). The article underscores the plight of children who are left behind because their parents are working in Chinese cities. In fact, the report touches only the tip of an iceberg that concerns the education of China's migrant children. According to recent estimates, the total number of left-behind children reached 23 million by 2000 (Duan & Zhou, 2005). In addition, there are an estimated 14 million migrant children who are in migrant destinations (cities). All together an estimated 37 million migrant children are affected by China's tidal wave of migrant laborers. The two groups of migrant children are facing different difficulties. For migrant children in cities, the main issue is equal access to local public schools. In contrast, the main challenges facing left-behind children include the lack of parental supervision and emotional support, which may lead to less desirable educational outcomes and delinquent behavior. The plight of such huge numbers of children presents major challenges for policy-makers in China.

This paper examines the extent to which the wave of migration has affected the well-being of migrant children in Chinese cities. It should be noted that while scholarly literature on China's migrant population has centered on the adult migrants, it is only in recent years that scholars have begun to pay attention to the well-being of migrant children. This partly reflects the migration process. At the initial stage of the migration process, migration usually selects the young adult males. However, as migrants secure employment and settle down, they are more likely to bring other family members, including their spouses and children. For example, in the 1997 Census of the Floating Population in Shanghai, children of school age account for nearly 12 percent of the total migrant population (Zhang, 1998). The tidal wave of China's migration process, which started in the 1980s, has reached a point where some migrants who arrived in the earlier years as young workers are now bearing their own children in these cities. These city-born migrant children had already reached school age by the 1990s. Therefore, the issue of education of migrant children is likely to grow more and more important over time. In addition, recent research on migration in China shows that there is a large concentration of adult migrants in low-status occupations. Whether or not this pattern will be shifted or reproduced in the second generation of migrants and migrant children depends largely on how well migrant children are educated. Therefore, it is absolutely essential for migrant children to be enrolled in, and to complete, elementary and secondary schools, as this is a necessary step for socioeconomic advancement in urban society.

The second issue that we examine in this paper is health issues related to migrant children. Because of not having urban *hukou* (registered urban residency), migrant children are very vulnerable to health-related risks, as provision of health services in China is closely tied to one's household registration status. Specifically, we are interested in the extent to which migrant children have equal access to basic vaccination programs for children. The issue of children's health is especially important in light of recent findings about the long-term consequences of early childhood conditions for the health of those individuals when they become adults (Hayward and Gorman, 2004; Palloni, 2006). Another important health-related issue is child labor. The recent shocking report of child labor in a brick-factory in Shanxi province is only the most recent episode of this issue (Liu et al., 2007). Driven by greed, some of the employers show no respect for basic human rights. Compared to education and vaccination programs, it is more challenging to study child labor because data are difficult to get.

In this paper, we shift the research attention from migrant adults to migrant children, with a particular focus on migrant children's school enrollments and health issues. We first discuss the institutional context within which migrant parents make decisions about school choice and participation in vaccination programs. We stress the role of the Chinese household registration system (*hukou*) in constraining migrant parents' opportunities. Migration is also an adaptive process: as migrants stay longer in cities, they become better informed regarding school choices and availability of health services in those cities. Following a discussion about how various factors are related to migrant children's access to school and immunization, we will describe the data and methods used in our paper. The empirical part of the paper involves analyzing data from "The 2002 Nine-City Survey of Migrant Children." We analyze patterns and determinants of the educational experience of migrant children (enrollment and type of schools attended), vaccination programs, and child labor. In doing so, our research efforts take into account parental socio-economic characteristics, the migration experience in the destination city, children's characteristics, and family structure. Taking advantage of the rich data from the 2002 survey, we will present basic patterns and statistical models of three research areas of interest.

BACKGROUND AND SIGNIFICANCE OF THE PROBLEM

Hukou and Educational Opportunity

China's spectacular economic growth since the late 1970s has been widely noted. Equally noteworthy is the resulting tide of rural-urban migration that has been

unleashed since the early 1980s. The floating population (defined as individuals who moved to a new destination without local household registration) continues to rise to new levels. The massive and history-making migration since the early 1980s has drawn worldwide attention. Looking at inter-county migration alone, it had increased from about 20 million in 1990 to 80 million by 2000 (Liang and Ma, 2004). Recent data from the 2005 China One Percent Survey suggest the floating population has increased even further. Much of this flow of migrant population is adult migrants who are trying to make a living in a new, in most cases, urban environment. As migrants spend more time in destinations and have a stable job, some decide to bring their spouses and children. As a result, the number of migrant households with children has increased. For example, in Shanghai, from 1993 to 1997, the size of the floating population remained stable, but the number of migrant children of school age increased from 280,000 to 340,000, an increase of 28 percent (Liang, 2007). Similar changes were observed in Beijing using a different measure: household type. In 1997, 32 percent of migrants lived in migrant households, as opposed to local resident households and institutional households. By 2000 the proportion of migrants who lived in migrant households had risen to 45 percent. It would be reasonable to assume that migrant households are more likely to contain migrant children than local resident households or institutional households. Another reason for the increasing number of migrant children is that, as migrants spend more time in cities, increasingly they will have children in destination cities. According to the "1997 Beijing Survey of Floating Population," the proportions of school-age migrant children born in the city of Beijing were 16 percent for the 5–9 age group and 8 percent for the 10–14 age group. Among the 0–4 age group of migrant children, 38 percent were born in Beijing, pointing to a potential current and future demand for health care and education services (BFPCO, 1998). Consequently, this new demographic reality calls for increased attention to the well-being of migrant children in China.

To appreciate the degree of vulnerability of migrant children, one needs to understand China's *hukou* system and how it is related to outcomes for migrant children in terms of education, immunization, and labor abuse/child labor. Established in the late 1950s, *hukou* determines where one can live and what benefits one is entitled to. *Hukou* was created in large measure to control rural to urban migration. As such, for individuals who intend to move, permission should be obtained from the place of origin in addition to the place of destination. Because of the involvement of *hukou*, students of migration in China often define two types of migrants: permanent and temporary migrants (also known as the floating population). Permanent migrants are migrants who have obtained local household registration at their place of destination and temporary

migrants are migrants who do not have household registration status at their place of destination.

The type of *hukou* migrant children hold is closely correlated to the opportunities for attending schools at their place of destination. In Chinese cities, two criteria are important for schools to admit students: (1) students must reside within the school district in the city; and (2) students must be registered (as far as *hukou* is concerned) in the school district as well. The reasoning behind these regulations is that since the education budget is allocated based on the number of a city's registered children, enrollment of non-registered children (children without local *hukou*) would present a fiscal burden on local government and schools. Earlier government regulations stipulate that students who study at schools in places other than their place of household registration must pay an endorsement fee of 480 yuan per semester (Cao, 1997). The reality is that pubic schools typically charge much higher fees than that. Although this discussion applies to the period of our research (in early 2000s), it is important to point out that there was a major change in March 2006. A document issued by the State Council in March 2006 explicitly requires that local governments in migrant destinations put the education of migrant children on their education planning agenda and include this component in fiscal planning (Research Group of the State Council, 2006).

Given the importance of education for migrant children, many researchers have examined the issue. In 1995 the Horizon Survey Company (HSC) conducted a survey of migrant children in Beijing. Based on this survey, HSC reported that only 40 percent of school-age children were enrolled in schools (HSC, 1997). They also showed that the enrollment rate differed by household income and duration of residence of mothers in Beijing. A reporter cited an even lower enrollment rate of 12.7 percent in some cities of Guangdong province (Cao, 1997). In contrast, a 1997 Census of Beijing's Floating Population reported a school enrollment rate of 82.1 percent for children ages 6–15. These numbers are often not comparable if we do not know the ages of these children in different reports and duration of residence for these children in different destination cities. Using information on non-migrant children in migrant origins and migrant children in destinations, Liang and Chen (2007) show that migrant children have a lower school enrollment rate compared to non-migrant children in migrant origins, underscoring the educational disadvantage suffered by migrant children.

In response to the demand for education for migrant children and the difficulties of enrolling them in local public schools, there is an emerging phenomenon in almost all cities, big or small: schools that cater particularly to migrant children. Another line of research focuses on these migrant-sponsored

schools in Chinese cities. For instance, in 1997 researchers from East China Normal University surveyed five migrant-sponsored schools in Shanghai (Liu et al., 1998). Duan (2000) also visited many migrant schools in Beijing. Perhaps the most systematic study of migrant-sponsored schools was conducted by Lu and her colleagues at the Research and Development Center under the China State Council. Lu and her colleagues visited 114 migrant schools in Beijing in 1999. The main thrust of this line of research is to document the major characteristics of migrant schools in different cities. According to Lu and Zhang (2001), these migrant-sponsored schools usually do not have license from a local education bureau, the quality of teachers is questionable, and conditions in these school are rather poor (lack of teaching equipment and adequate buildings). Our fieldwork in migrant-sponsored schools in Beijing, Shanghai, Fuzhou, and Xiamen over the years confirms these observations. However, the contributions of migrant-sponsored schools are recognized in the report by Lu and Zhang (2001). They concluded that although migrant-sponsored schools are not a perfect choice for migrant children's education, they helped these children study at school and acquire a basic education (Lu and Zhang, 2001).

Migration and Health for Migrant Children

Similar to fiscal planning for education, health care/service planning in urban China is also projected on the basis of the potential health care needs of the registered population (Lin et al., 2003). As far as the issue of access to education and immunization programs is concerned, we hypothesize that migrant children are not only much less likely to be enrolled in schools but also less likely to receive vaccines than local registered children.

Another important issue that is related to migrant children's health and rights is the issue of child labor. In the third week of June, 2007 a piece of shocking news spread throughout China: several hundred indentured slave laborers were found in a brick-making factory in Hongdong county of Shanxi province (Liu et al., 2007; Tang, 2007). Among the 558 workers, 29 were children below age 16 (Tang, 2007). Such child labor is, at least on paper, strictly prohibited in China. In 1991 China's State Council issued a document entitled "Prohibition of Child Labor in China" (CSC, 1991), which calls for punishment of employers who hire anyone younger than 16 years old. However, the regulation does not specify fines to employers and only asks employers to pay for medical bills and other health-related costs. In 2002 the China State Council issued a revised version of the child labor document, using much tougher language and prescribing severe financial penalties for both employers who hire the under-aged and employment agencies who arrange the employment of the under-aged (defined as below 16 years old) (CSC, 2002). Putting newspapers' sensational stories aside, system-

atic study of child labor is often difficult because of lack of data. For example, for most surveys and national censuses, questions on labor force participation are only asked for people who are above 15 years old, making it impossible to study the child labor issue. To our knowledge, the 2002 China Nine-City Survey of Migrant Children is the only large scale survey that covers issues of child labor. Findings from this survey allow us to link child labor with characteristics of migrant children and their parents as well as with the cities in which they reside.

Understanding education and health for migrant children has significant policy implications. As China becomes more marketized, education will hold long-term consequences for the social and economic mobility of migrant children. A large proportion of parents of these migrant children are concentrated in low-level occupations. Education will hold important keys to whether migrant children will follow their parents' path. Similarly, the health status of children also has long-term consequences. For example, using longitudinal data from the United States, Palloni (2006) shows that early childhood health is correlated with adult social class positions. In the case of China, the current literature suggests that lack of educational opportunity and the potential health consequences of not having adequate health care could be the worst combination.

Parental Resources, Family Structure, Migration Experience, and Children's Well-Being

In the previous section, we discussed the extent to which the Chinese institution of *hukou* constrains opportunity for education and health care for migrant children in China and the potential long-term consequences for health and socio-economic advancement. In this section, we link migrant children's family background/resources, traditional gender roles, and migration experience to education and health care access for migrant children. It is important to realize that institutional barriers (lack of *hukou* status) restrict choices of schooling and access to health care. Family characteristics and parental involvement are important factors as well (see Coleman (1964) for a case study of race and education in the context of the United States). We expect parental education is important in this process. Better-educated parents are more likely to appreciate the value of good quality education and will make good efforts to enroll their children in schools and place their children in local public schools. Well-educated parents are also well informed about local educational opportunities, medical services, and the health benefits of immunization programs, all of which enhance the likelihood of enrollment in a good school and participation in immunization programs.

Another important factor is family structure which has also been shown to be a critical variable for the well-being of children (Astone & McLanahan, 1994; Buchman & Hannum, 2001). Most studies have tended to measure family structure by intact families vs. single-parent families. In our study of migrant children, a more meaningful classification is the following: children with two parents at the destination, children with one parent, children with one parent and another relative (most likely a grandparent), children with other relatives, and children with non-relatives. We argue that compared with children who live in other types of households, children with two parents would enjoy the best outcomes in our research interests: school enrollment, immunization, and child labor.

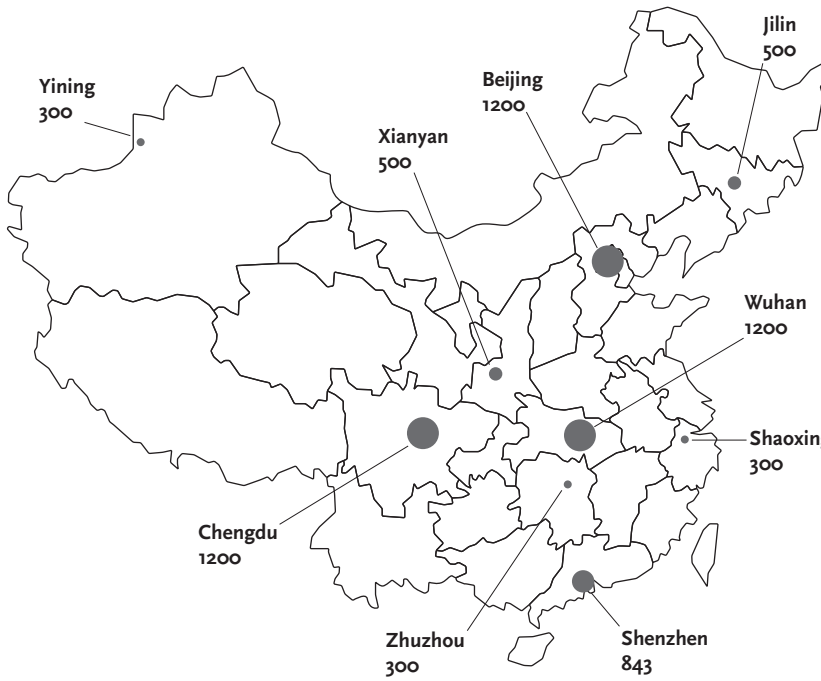
Since we are concerned with the well-being of children from migrant families, the migration experience itself should bear on children's education and health-related experience. A phenomenon commonly known in the immigration literature as the assimilation paradigm is applicable to this study. It refers to the process whereby migrants gradually adopt the behavior/practices/norms of local residents. One of the important variables in this assimilation paradigm is the duration of residence in the destinations area. This leads us to hypothesize that as migrants stay longer in cities, they are more likely to make sure their children are enrolled in schools (particularly public schools) and participate in immunization programs. In addition, as migrants spend more time in cities, they are also more likely to be aware of the rights of children and relevant laws for protection of children (including prohibition of use of child labor), and therefore their children are less likely to be involved in child labor.

DATA AND METHODS

For this paper, we mainly rely on data from the 2002 China Nine-City Migrant Children Survey. The survey was sponsored by the Office of Women and Children Affairs under the State Council, China Children's Center, and United Nations Children's Fund (OWCASC et al., 2003). The main objectives of the survey were to gain a comprehensive understanding of migrant children with respect to living environment, education, access to health care, nutrition intake, and protection of children's rights. The survey's target population is migrant children who are 18 years old or younger residing in households headed by migrants. The sampling unit is households whose members are officially registered in the countryside and have resided in the surveyed city for more than six months, and in which there is at least one migrant child who is age 18 or younger. The survey has a broad geographic range, covering nine cities that are located in eastern, central, and western parts of China. There are three cities

located in eastern China: Beijing, Shenzhen (in Guangdong province), and Shaoxing (in Zhejiang province); three cities in western China: Chengdu (Sichuan province), Xianyang (Shaanxi province), and Yining (Xinjiang Autonomous Region); and three cities in central China: Wuhan (Hubei province), Jilin (Jilin province), and Zhuzhou (Hunan province). These cities also represent different sizes: three large cities (Beijing, Wuhan, and Chengdu), three medium size cities (Shenzhen, Jilin, Xianyang), and three small cities (Shaoxing, Zhuzhou, and Yining). Figure 1 shows the survey sites and sample size for each survey site.

FIGURE 1: SURVEY SITES FOR CHINA NINE-CITY SURVEY OF MIGRANT CHILDREN, 2002



The survey provides perhaps the most comprehensive information about migrant children for any survey ever conducted in China. It contains detailed questions eliciting basic socioeconomic background information on parents (in some cases guardians if no parent is with the children) and children, migration information for both parents and children, educational experience, and health related questions (nutrition, recent illness episodes, accidents, regular medical check-ups, purchase of insurance, immunization, knowledge regarding AIDS, sexual abuse and harassment, and children's psychological feelings about being in the city). There is rich information on educational experience (enrollment,

public vs. migrant school, tuition payment in each type of school). There is also information on housing conditions (such as whether migrant children have their own private room) and neighborhoods where migrant children reside. Finally, there is information about child labor (children paid for work). Despite the richness of the data, there is one limitation: we only have information on migrant children. Thus we cannot make comparisons with non-migrants in migrant origin sites and locally-registered children at destinations.

Taking advantage of the rich information on education and health, our research focuses on four main variables: (1) whether or not migrants are enrolled in school; (2) for migrant children who are enrolled in schools, whether in a local public school or a migrant-sponsored school; (3) whether or not migrant children have received required vaccination; and (4) whether or not migrant children are engaged in paid labor (child labor). When considering these indicators related to the well-being of migrant children, we must take the children's age into account. For the issue of school enrollment, we restrict our analysis to children of 7–16, as this is the age group that by law is supposed to receive mandatory education (elementary school and middle school). According to child labor law, children under age 16 are not allowed to participate in paid labor. Since the number of children aged 12 or below who are engaged in paid labor is very small, we use age 12–15 for the study of child labor. For studying participation in immunization programs, the issue is somewhat complicated. Information is obtained from parents for their children's participation in five vaccines: BCC (vaccine for TB), measles, PDT (pertussis, diphtheria, and tetanus), poliomyelitis, and Hepatitis B. Table 1 shows the age schedule for each vaccine based on information from China Center for Disease Control.

TABLE 1: BASIC SCHEDULE OF FIVE VACCINATIONS IN CHINA

	1st	2nd
BCG (vaccine for TB)	at birth	3rd month if needed
Measles	8th month	4 years old
PDT (pertussis, diphtheria, and tetanus)	3rd, 4th & 5th month	1.5 years old
Poliomyelitis	2nd, 3rd & 4th month	1.5 and 4 years old
Hepatitis B	at birth, 1st & 6th month	

Source: http://epaper.5191.com/epaper/smsb/2007/04/24/437537.htm

Our data analysis proceeds as follows: for each variable of interest (such as school enrollment or vaccination), we begin with some description of the broad pattern of the variable. Given the importance of gender difference in access to education and health care, we always present the pattern by gender. This is followed by careful statistical analysis that takes into account a variety of characteristics.

FINDINGS

Descriptive Statistics of the Sample

We begin with a basic description of our sample from the nine-city survey of migrant children. Table 2 shows the basic characteristics of the parents and children. The overwhelming majority of the children (90 percent) live in two-parent households and the remaining types of households include one parent with another relative, one parent only, grandparent(s), and non-parent. Only 1 percent of migrant children live in non-parent households. Since the survey targets migrant households with children, the age distribution of migrant children varies from less than one year old to 18 years old. Overall, there are more boys than girls in our sample, perhaps reflecting the fact that parents tend to bring boys to cities first and girls later. Because of our research perspective, we have different research focuses for migrant children in different age groups.

Turning to the number of children per household in cities, we find that 64 percent of migrant households have only one child and 32 percent have two children (not shown in Table 2). Nearly 60 percent of migrant fathers have junior high school level education and nearly 20 percent of migrant fathers have only an elementary school education. The average duration of stay in the destination for migrant fathers is nearly seven years; for mothers above six years; and for children, about 3.6 years. In other words, a typical story is that migrant fathers migrate to cities first, then bring spouses to join them. Parents typically wait for at least three years before taking their children to the destination cities. This information also suggests that our sample tends to represent migrants who have been in these cities for a while and are very likely to stay. We should keep this in mind when interpreting our results later. If we put the two pieces of information (family structure and duration of stay) together, we get a likely picture of the migration process: parents migrate first and get stable jobs in cities and then take their children to cities.

TABLE 2: DESCRIPTIVE STATISTICS

VARIABLES		FREQUENCY	VALID %
Family structure	Two Parents	6992	89.60
	One Parent and One Other Relative	75	0.96
	One Parent Only	604	7.74
Father's Educational Attainment	Beyond Junior College	210	2.91
	Junior College	224	3.11
	High School	1415	19.62
	Junior Middle School	4106	56.93
	Elementary School	1149	15.93
	Illiterate/Semiliterate	108	1.50
Mother's Educational Attainment	Beyond Junior College	104	1.40
	Junior College	188	2.52
	High School	910	12.21
	Junior Middle School	3975	53.33
	Elementary School	1903	25.53
	Illiterate/Semiliterate	373	5.00
Gender of the Child	Male	4395	56.25
	Female	3418	43.75
Age of the Child	0–5	3275	41.91
	6–12	3219	41.20
	13–18	1320	16.89
	Mean age		7.22
Duration of Stay	Mean	S.D.	
	Father	6.86	4.83
	Mother	6.08	4.47
	Child	3.64	3.44

N=7,817
Source: The 2002 Nine-City Survey of Migrant Children, Sponsored by OWCA and UNICEF

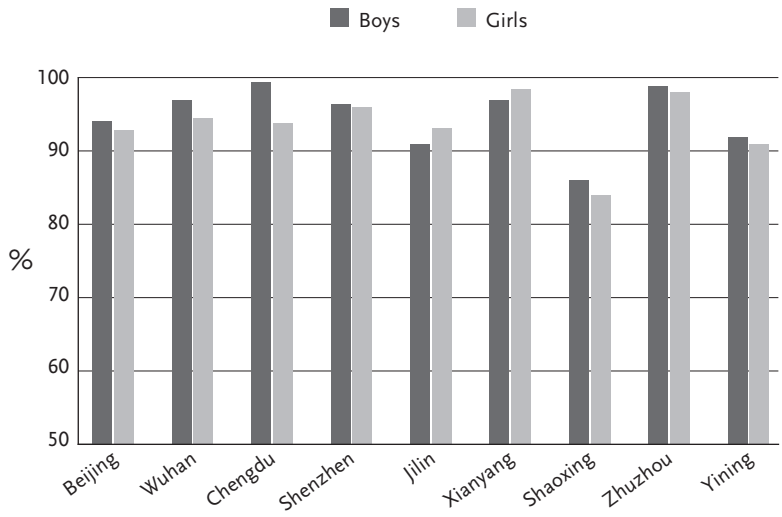
Broad Patterns of School Enrollment, Participation in Vaccination Programs, and Child Labor

SCHOOL ENROLLMENT

Next we describe the broad patterns of our research interest concerning migrant children: school enrollment, participation in immunization programs, and child labor. First, we discuss school enrollment patterns shown in Figure 2. For the study of school enrollment, we selected migrant children who are in the age group of 7–16, an age group that is required to be enrolled in education, according to China's Law of Mandatory Education. Compared to earlier studies, data

from the 2002 survey of migrant children reveal that school enrollment among migrant children aged 7–16 seems to be not particularly problematic. In six out of nine cities, school enrollment rates are either close to or above 90 percent, for both boys and girls. There is clearly a variation across regions. The lowest school enrollments are found in Shaoxing city in Zhejiang province, followed by the city of Jilin in Jilin province and Yining in Xinjiang Autonomous Region. The school enrollment rate in the city of Shaoxing is 71 percent for boys and 69 percent for girls. It turns out that Shaoxing is also a city that has high rate of child labor among migrant children. Figure 2 shows that, with the exception of Jilin and Xianyang, migrant girls have a slightly lower level of school enrollment. This is not surprising in light of the gender gap in education in China (Hannum & Park, 2007).

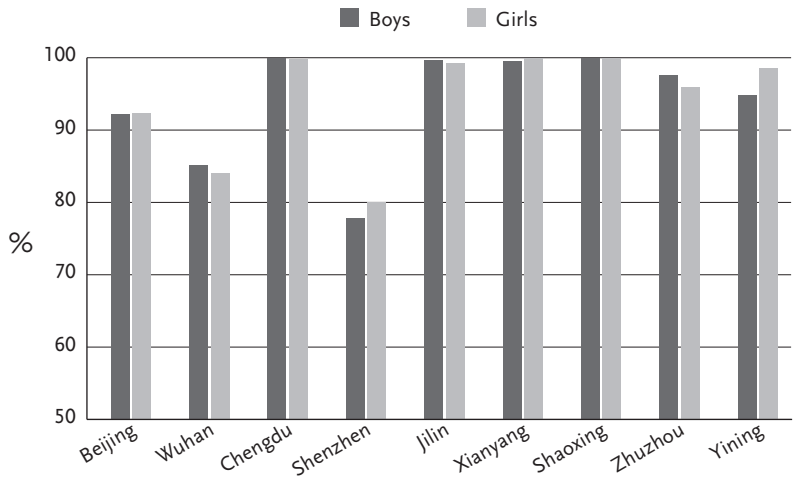
FIGURE 2: SCHOOL ENROLLMENT OF MIGRANT CHILDREN (7–16 YEARS OLD) BY CITY



We also explored how school enrollment varies by other characteristics such as gender, father's education, duration of stay of children, family structure, and age (results are not shown). The most important factors are family structure, father's education, and age of migrant child. Migrant children who live in intact families (both parents) are much more likely to be enrolled in school than migrant children who live in other types of families. The school enrollment rate by age is worth noting. From age 7 to above age 12, the school enrollment rate is very high, close to 100 percent. But the school enrollment rate begins to drop after age 12 and continues to decline as children get older. What this means is

that the migrant parents often manage to enroll their children for elementary schools. However, for middle school (or junior high school), it is a different story, even though enrollment at that level is also required by China's 9-year Mandatory Education Law. Several factors probably contribute to this. First, it usually costs a lot more money to enroll students in middle school than in elementary schools in cities. In Beijing, for example, the official annual fee for migrant children to be enrolled in local elementary schools is 1200 yuan vs. 2000 yuan for middle school (Research Team of the Study on Migrant Population Status, 2003). Second, most migrant-sponsored schools offer elementary school education, but few offer middle school level education, which makes it harder for migrant children to attend low-cost middle school.

FIGURE 3: ENROLLMENT IN PUBLIC SCHOOL BY GENDER AND CITY



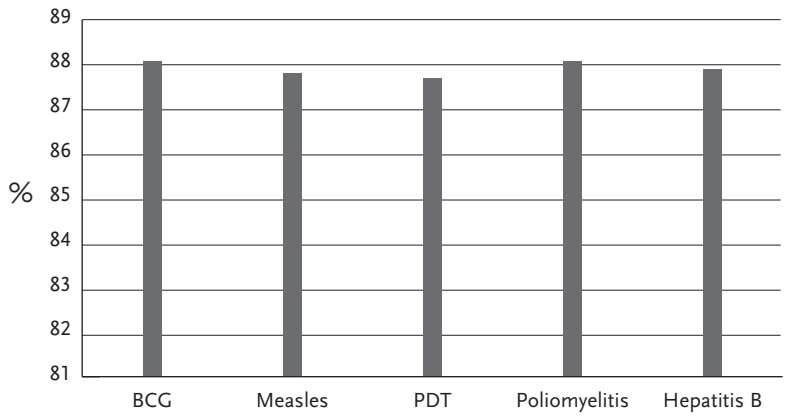
To the extent that migrant children are enrolled in schools, we examine whether they are enrolled in local public schools or migrant-sponsored schools (*dagong zidi xuexiao*). Figure 3 shows the proportion of migrant children who are enrolled in local public schools. Two patterns emerge. One is that the majority of migrant children are enrolled in local public schools. For example, in Chengdu in western China, and Jilin in northeastern China, among currently enrolled 7–16-year-old migrant children, nearly 100 percent were enrolled in public schools in 2002. Again, variation across cities is also evident. In one of China's most attractive migrant destination cities, Shenzhen, 55 percent of the migrant boys and nearly 60 percent of migrant girls were enrolled in public schools. A similar story is revealed for the cities of Beijing and Wuhan, to a lesser degree. One possibility is that, because those cities such as Shenzhen and Beijing have

extremely large numbers of migrants, migrant-sponsored schools are well developed to meet the need of education for migrant children. It is also likely that given the high cost of living in those cities, fees for enrollment in public schools are also much higher than other cities.

PARTICIPATION IN VACCINATION PROGRAMS

It is expected that migrant children are less likely to participate in vaccination programs. Simply put, the local health service budget for vaccination is only for locally registered children; by definition local health care workers are not responsible for vaccination of migrant children. The 2002 Survey asked if migrant children have received vaccination for five kinds of vaccines: BCG, Measles, PDT, Poliomyelitis, and Hepatitis B. Following the protocol practiced in China for reporting vaccination rates, we restrict our sample to children who are in the age group of 0–6 years old. Figure 4 shows the vaccination rate by type of vaccine. The highest vaccination rates are found for BCG (88 percent) and poliomyelitis (88 percent). These rates are about 10 percent lower than reported rates of vaccination in China as a whole (Lin et al., 2003). The lowest rates are found in measles (85 percent) and PDT (83 percent). One possible reason for the higher vaccination rates for BCG (for prevention of TB) and poliomyelitis is that respondents probably have a good knowledge of these two diseases because of coverage by popular media over the years.

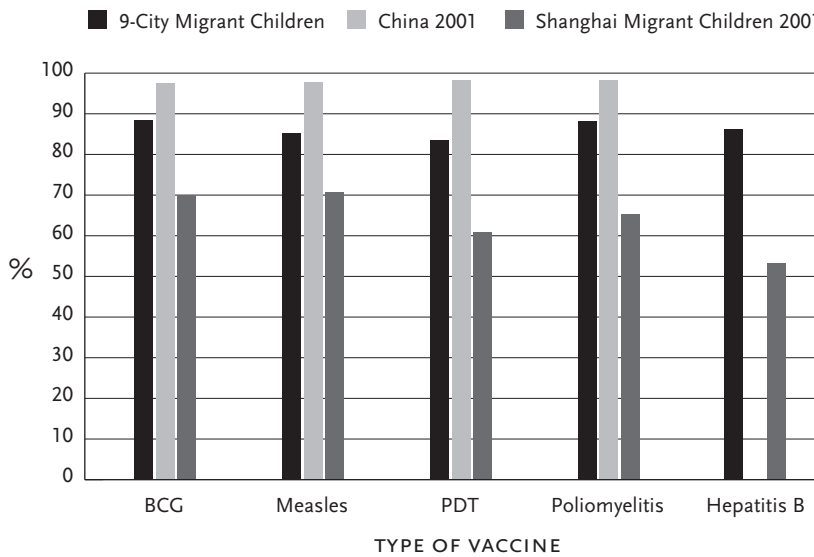
FIGURE 4: VACCINATION RATES FOR MIGRANT CHILDREN (AGE 0-6)



In Figure 5 we compare vaccination rates of respondents in the 2002 Survey with 2001 data from Shanghai and 2001 data from China as a whole. The results from the 2002 Survey of Migrant Children seem to lie between China as a whole and Shanghai. Data from Shanghai show much lower rates of vaccination

across all five vaccines. For instance, PDT vaccination rate for migrant children in Shanghai is about 60 percent as compared to 80 percent for migrant children in the 2002 survey of migrant children. We noted earlier that the 2002 sample of migrant children tends to come from families that have been living in the cities for a while (with a mean duration of nearly 7 years) and have a somewhat stable settlement location, making them easier for health care workers to locate. In contrast, results from Shanghai include all kinds of migrant children, some of them just arrived recently. It is those migrant children that are the most vulnerable and likely to be missed in any vaccination programs.

FIGURE 5 COMPARISON OF VACCINATION RATES IN NINE-CITY SURVEY, CHINA AS A WHOLE, AND SHANGHAI



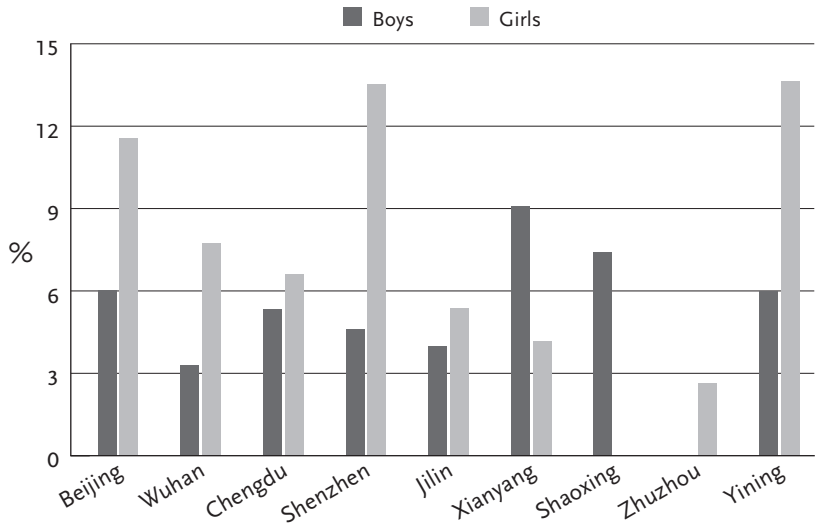
CHILD LABOR

Finally we report findings regarding child labor among migrant children in the survey. Child labor is defined as participation in paid labor by children age 15 or below. We focus on migrant children who are 12–15 years old. Figure 6 depicts patterns of child labor by gender and city. Two patterns are evident in the chart. First, the overall level of child labor is quite high and should be a concern of the government and policy makers. In Shenzhen and Yining, as high as 13–14 percent of migrant girls 12–15 years old participate in paid labor. Keep in mind that our survey is likely to capture those migrant households which have been in the cities for a while; thus our estimate of child labor is very conservative. The child labor rate would be much higher if the survey were able to capture more recently arrived migrant families and their children. Second, we find that there

is a strong association between a father's education and his children's participation in child labor: the less educated the fathers, the more likely their children participate in child labor.

Third, we can also detect a gender gap in child labor from Figure 6: girls are participating in paid labor in a higher rate than boys. In conjunction with the evidence on gender gap in school enrollment, this evidence raises further concerns regarding the well-being of migrant girls in Chinese cities. A fieldwork report by Zhou et al. (2003) described some of the typical paid jobs in which these children are typically involved: nanny in domestic service, flower shops, hair salon, and waiters/waitresses. Although theses jobs are not as dangerous as working in mining, the reality is that they should devote their time to education rather than paid labor.

FIGURE 6: CHILD LABOR BY GENDER AND CITY IN 2002, CHINA



FURTHER STATISTICAL ANALYSIS

We conducted further statistical analysis of school enrollment, vaccination (BCG), and child labor. Our analysis takes into account two kinds of characteristics: household and parent characteristics (family structure, father's education, duration in the city, and age of father), and characteristics of children (gender, age, and duration of stay in the city). We summarize some of the findings from this analysis. First, family structure is a very important determinant in school enrollment, participation in BCG vaccination, and child labor. In all cases, children who live in two-parent households have more positive outcomes

than children who live in other kinds of households. Second, we also confirm some of the long-held findings in the sociology of immigration; for example, the longer migrant children stay in the city, the more likely they are to have more positive outcomes (education, vaccination, and child labor). Third, multivariate statistical analysis confirms findings from earlier descriptive statistics: gender is another important factor in two of our outcome variables: participation in vaccination program and child labor.

SUMMARY AND CONCLUSIONS

As China's tidal wave of migrants continues to rise and settle in urban areas, an ever-accelerating number of migrant children join the wave of migration. Using perhaps the most comprehensive survey of migrant children, this paper aims to explore the issue of the well-being of migrant children. The well-being of migrant children is not only important in itself because of the large number of migrant children involved, it is also important for the future of urban China. The availability of data from the 2002 China Nine-City Survey of Migrant Children presents a unique opportunity to examine the well-being of migrant children. Our paper focuses on three issues: education, health, and child labor. There is good news and there is bad news coming out of our study.

Let us begin with the good news. Overall, we find that migrant children from this survey show a profile of high level of school enrollment and participation in vaccination programs. Both school enrollment rates and the proportion enrolling in local public schools are in line with national level trends in education statistics. Likewise, the broad pattern of participation in vaccination program for migrant children is close to the rate of vaccination for the general population. We want to caution readers that our data are characterized by migrant households that have been living in cities for a substantial number of years (about 6.8 years) and are not necessarily representative of migrant children in China as a whole.

Now let us turn to some bad news. First, one of the main innovative aspects of the survey is the information on child labor. We often hear reports of child labor in the news media, but systematic studies are lacking. To our knowledge, the 2002 Nine-City Survey of Migrant Children is the only survey that contains systematic information on child labor for a large sample of migrant children. The picture that emerges from the survey is not a rosy one. In four out of nine cities, the child labor rate is close to or above 10 percent. Child labor interrupts children's regular schooling and can have potential negative consequences for children's health.

Second, although we take comfort in somewhat optimistic patterns of schooling and participation in vaccination programs, there are major variations across

migrant children with different characteristics. There is consistent evidence for some potential gender discrimination in both vaccination and child labor. Migrant girls are much less likely to have received BCG vaccination than boys. Likewise, migrant girls aged 12–15 years are also more likely to be engaged in paid labor than boys. The gender gap in education in rural China has been widely documented, but we are among the first to document evident disadvantages experienced by migrant girls in access to health service and participation in child labor. It seems that, along with migration of adult parents, the practice of unequal treatment of girls has migrated to cities as well.

The third piece of bad news is that migrant children who reside in families with a single parent suffer both in education and in child labor. This is not a surprise to readers who study the social and economic consequences of single parenthood in the United States, but it takes a different sociological meaning in the context of China. Single parenthood in the United States results from nonmarital child-bearing or high rates of divorce. But in the case of migrant children in China, single parenthood for migrant children is created directly or indirectly by the lack of full citizenship privileges in urban China. The migration process itself is difficult for parents and children, at least initially. But not having urban household registration adds to the difficulties, because it often leads to bad jobs, undesirable neighborhoods, and lack of access to social and health benefits. What this means is that for some families, it is hard to have the whole family united in migrant destination cities. Sometime difficult decisions have to be made: one parent takes one child to a city and another parent stays behind and takes care of another child in the countryside. Our results show that this difficult decision has negative consequences for migrant children in terms of school enrollment and child labor. The fact that children who come from single-parent families show lower rates of school enrollment and higher rates of participation in paid labor is not an accident but rather could be logically linked. Single parents often struggle financially, and to the extent children can contribute to the household economy, children will get involved in paid labor rather than going to school—a very sad reality.

The study of education and health issues for migrant children is an extremely important topic, but it is also a difficult topic because of lack of systematic data and because of difficulty of locating study subjects. Our paper represents some of the necessary steps toward systematic study of this population. Of course our understanding of education and health issues is far from complete. For example, our study found that school enrollment for migrant children is not particularly low and the percentage of students who are enrolled in local public schools is quite high. However, we do not know a lot about migrant children's actual day-to-day experience in school. How do migrant children who are enrolled in public

schools compare with migrant children who are enrolled in migrant-sponsored schools? Do migrant children in public schools face any discrimination because of their distinctive accent or because of their dress? Equally important, what explains the variations in child labor across cities? The large question of what happens to children who are left behind in the countryside also needs careful study.

Our paper holds some policy implications as well. One of our findings suggests that children increasingly dropped out of school as they got to the age of middle school. Thus, from the policy perspective, we should make a lot more efforts to encourage migrant children to attend middle schools. This can be done by eradicating barriers for access to middle school (such as high endorsement fees and other fees). Another finding is that migrant children who came recently are less likely to receive vaccinations. Perhaps two things can be done here. One is to increase the efforts on the part of health care workers to locate and identify newly arrived migrant children. The current government policy regarding registration of floating migrants is that only individuals who are age 16 and above are required to register with local security office. To reach migrant children who are in the age range for vaccination, we need to require that all migrant children be registered with local security office. Another approach could be a community-based approach, which can be more effective than government-directed efforts. Community leaders could be designated to disseminate information regarding health service availability to recently arrived migrant children and encourage them to participate in vaccination programs. Occasional health service seminars offered by health care workers and supported by local community leaders could also be a sensible approach.

Finally, we would like to end the paper with a positive note. We believe that despite the difficulties facing migrant children today in terms of access to education and health service, this is the best of times since the early 1980s from the perspective of migrant children. The official policy issued in the 2006 Document by China's State Council has explicit provisions for education, health service, and the prohibition of child labor. It stipulates that local government in the migrants' destination should take responsibility of educating migrant children and it is against government policy to demand extra fees for migrant children. In addition, local governments must include migrant children in their planning and implementation of vaccination programs. Of course, official policy does not translate immediately to reality. Thus we should be cautiously optimistic.

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Public Health and Health Insurance for the Floating Population: A Case Study of Shanghai

Suyun Hu, Weina He, Teng Wen

ABSTRACT

The floating population, meaning people who live outside their official permanent residency location, is a segment of the Chinese population whose health and health care pose great challenges for the existing urban public health and health insurance systems. This article takes Shanghai as an example to illustrate the present situation of the floating population regarding the development of public health, community health, and the provision of health insurance. We further make several suggestions to promote the development of public health services and health insurance for the floating population in China.

Key Words: floating population, public health, health insurance, community health service

Shanghai Academy of Social Sciences, 622/7 Huaihai Zhong Lu, Shanghai 200020, China

BACKGROUND

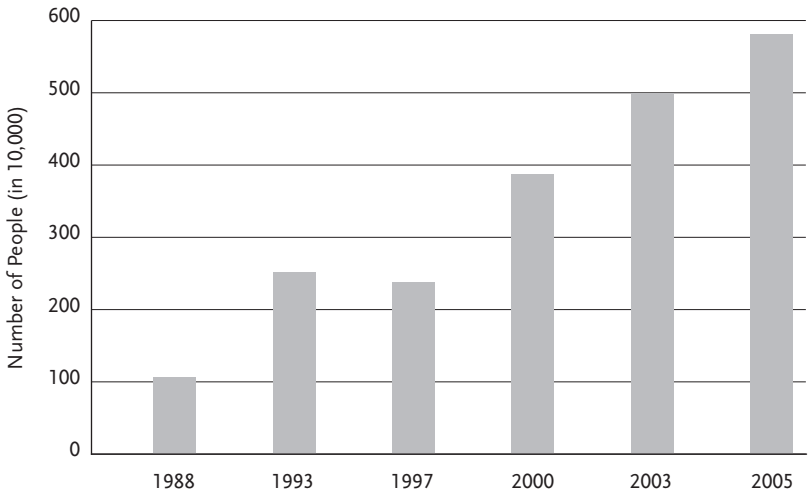
The term "floating population" in China refers to a population group with special social status and position: they have land in the countryside, but work in the city. They do not have permanent city residency status or belong to such a household. This reality leads to three characteristics that differentiate the floating population from their urban counterparts. First, due to their lack of city resident registration status, even though the floating population works in the city doing non-agricultural work, their official status is still farmer. Second, they are mostly employed informally in occupations that city residents do not wish to take, such as construction, mining, service, and so on. Third, the floating population is not under the coverage of the urban social security system and therefore lacks any form of social safety net should they experience difficulties in their work or life. All three characteristics make them a marginalized group that is isolated from the urban mainstream.

Urban residents' attitudes toward the floating population have gone through three different phases since the beginning of the 1990s. At the beginning of the 1990s, the floating population was regarded as an assault on the city and they were often rejected by city residents. In the middle of the 1990s they came to be regarded as somewhat useful and a source of convenience for city residents' daily life as they became small vendors selling daily necessities to city residents, and workers performing many tasks the city residents were not willing to do (dirty, heavy, and risky work). So the basic attitude city residents had toward them during this time changed from one of barring the floating population's entrance to the city to one of controlling their numbers. After the year 2000, urban economies and daily life became increasingly dependent on the floating population, and the floating population's occupational roles also became more integrated into urban society. They were the peddlers in the markets, salespeople in large shopping centers and supermarkets, cleaning workers in households and residential communities (employed by the hour), and service staff in restaurants and hair salons. The basic measure cities have adopted since 2000 is to include the management of the floating population into the government responsibility agenda.

These changes of attitude came about in the midst of rapid economic development during the time. With the deepening of the open door economic policy and rapid economic development in Shanghai, the size of the floating population increased at an unprecedented speed. During the fifth census, in 2000, the floating population in Shanghai increased to 3,870,000, thus making Shanghai the city with the second largest floating population in the country. Moreover,

according to a sampling of the floating population in Shanghai on August 15, 2003, the total floating population increased by another 1.1 million compared to the year 2000, and the rate of increase was 28.9 percent (Figure 1). The portion of the floating population who lived for half a year or more in the city and registered with local government was 4,126,000, accounting for 28.6 percent of the total residential population in Shanghai (17,450,000) (Shanghai Local Chronicle Office, 2004). Among the floating population, those in the 0–15-year age group accounted for most of the increase for the recent years, with the number in the 55-or-above age group remaining largely unchanged. At the same time, while the central authorities were implementing a new rural reconstruction program, the policy on internal migration also changed from one of discouragement/prohibition to one of positive encouragement. With the continued development in the city, the occupations open to the floating population also have undergone tremendous changes. They are now employees at various companies/enterprises, self-employed young entrepreneurs, small market merchants, and have entered the mainstream of the city's employment army, serving an indispensable function for the development of the entire city.

FIGURE1. INCREASE OF FLOATING POPULATION IN SHANGHAI



Sources: 1% population sample investigation data in 2005 in Shanghai, Shanghai Statistics Bureau .

Although the floating population is a very diverse group made up of people coming from many different places and backgrounds, most of them remain relatively homogeneous in some aspects, such as their educational levels. Half of the floating population received junior and middle school education, higher than

the average level for the whole rural population, but lower than for local city residents (Peng & Yao, 2004). The low educational levels of the floating population often lead to their lack of medical care awareness and basic knowledge about disease prevention. Many don't pay enough attention to their own health and safety. Moreover, members of the floating population as a whole have low income levels, and hold dirty, dangerous, and difficult jobs in manufacturing, processing, commercial services, and construction, which often pose great threats to their health and lead to high rates of occupational diseases/injuries. What makes the situation even worse is that the floating population lacks a basic medical safety net. The overwhelming majority of them pay medical expenses entirely out of pocket. All the above factors contribute to them being unable or unwilling to pay attention to their own health, which not only threatens their own health but also presents challenges for the public health at large and threatens the continued economic development and social stability of the City of Shanghai.

PUBLIC HEALTH AND THE FLOATING POPULATION IN SHANGHAI

There are various definitions for public health, with the simplest referring to it as the three P's: Promotion, Prevention, and Protection. The most widely accepted definition was first presented by Charles-Edward A. Winslow, an American public health scholar. According to him, public health is "the science and the art of preventing disease and prolonging life, and promoting physical and mental health and efficiency, through organized community efforts for the sanitation of the environment, the control of community infection, the education of the individual in principles of personal hygiene, the organization of medical and nursing service for the early diagnosis and preventive treatment of disease, and the development of the social machinery which will ensure to every individual in the community a standard of living adequate for the maintenance of health" (Winslow, C.A., cited in Tian & Peng, 2004).

Low Public Health Awareness

It has been widely recognized that one's educational level has a strong positive relationship with the level of one's public health awareness. A result of the floating population's low educational level is their low level of understanding regarding health and public health. As demonstrated in Table 1, with an increase in educational levels, the floating populations' understanding about health and disease prevention increased steadily.

TABLE 1

Degree of Understanding of Health and Public Health among the Floating Population by Educational Level (percentage of the surveyed health or disease control and prevention knowledge that was understood by the respondents)

	CONCEPTS	
EDUCATIONAL LEVEL	**Health**	**Disease controls and prevention**
Illiterate	29.17	8.33
Elementary	25.35	14.08
Junior School	31.44	22.51
High School	40.48	27.98
College	52.63	49.76
University	57.81	57.29
Graduate	75.76	69.70

Source: Institute of Population and Development Studies (2006). Survey on Non-Registered Residents' Basic Situation.

Relative Shortage of Public Health Financing

The financial support of public health has increased gradually in Shanghai. In recent years, the growth rate of preventive health care funding has exceeded that of medical services. Population-based government funding for community preventive health care in 2005 reached 200,000 Yuan per ten thousand people, an increase from 80,000 Yuan per ten thousand people in 2000. However, current health funding appropriations are based on the number of registered households. Therefore, although the amount of funding that is available for health has been increasing every year, such increases pale in comparison to the large increases in the floating population, especially in areas where the floating population makes up a large percentage of the total population. For example, there were 520,000 local residents and a floating population of 700,000 in the Songjiang area of Shanghai at the end of 2006. Although the local Center for Disease Control and Prevention (CDC) put a large amount of effort into public health issues related to the floating population, lack of funds has restricted public health work for this segment of the population.

In some suburbs of Shanghai, the floating population has accounted for nearly half of the population. Though local government has allocated some public health funding for them, the per capita amount is less than that allocated for the registered local residents. In some districts, the amount allocated for the floating population is half of that allocated for the local residents (local

residents: 4 Yuan/person, floating population: 2 Yuan/person). Nevertheless, the funding input for the floating population has been encouraging local CDC and community health services (CHS) to provide public services for the floating population, compared with previous zero input. Yet, medical care professionals are still distributed based on the number of permanent registered residents, and this has caused a shortage of medical care professionals in many areas in Shanghai.

Public Health Program Delivered by Center for Disease Prevention and Control (CDC)

With the floating population increasing day by day, the Shanghai government has formulated a series of health management and service policies targeted at this population segment. Our investigation in two of Shanghai's district CDCs indicated that members of the floating population who have lived more than three months in Shanghai are required to get physical examinations, hepatitis B vaccinations, and BCG vaccinations. The district CDCs also provide immunization services for migrants' children. For pregnant women within the floating population, the following services are currently provided: three prenatal examinations, low cost inpatient services, newborn physical examinations. In Shanghai, community health centers are regarded as important health service facilities for the provision of such services.

In Shanghai, the child immunization rate among the floating population has reached 65 percent. For the immunization programs, some districts have established service centers for the floating population in the newly urbanized villages where many of them now live. These service centers provide free vaccinations for children five days a week. For women's health, family planning information cards are made available, as well as low-cost child delivery services (800 Yuan for each delivery). For occupational disease prevention, the focus is mostly placed on the factories in Shanghai, and regular visits to these factories, which include on-site testing of the air quality. As a result of these efforts by local government, in 2006, infectious disease incidence in Songjiang area, where there is high concentration of the floating population, dropped 20.83 percent from the figure in 2000.

HEALTH SERVICE SYSTEM PROBLEMS: THE MISSING COMMUNITY HEALTH CENTER AND WHAT THIS MEANS FOR THE FLOATING POPULATION

The Chinese health care system is highly fragmented, and has a complex administrative structure. Vertically, it is divided into five levels, with each level associated with the corresponding government level, including central, provincial, prefecture, county, and township. Horizontally, the structure consists of multiple ministries at the central level, and various matching departments at lower levels. At the central level, under the leadership of the State Council, in addition to the Ministry of Health, which is the health sector-specific administrative body, many other ministries are also involved in the financing and delivery of health services.* At each of the next three lower levels of the government (provincial, prefecture, and county), there are departments or bureaus matching the various central-level ministries. Township governments (the lowest level of government) do not have a department responsible for health. Usually, at this level of the government, a deputy director is assigned to be responsible for health, and this person plays a leadership role for the management of a village committee in the area of health.

In China, 80 percent of urban dwellers seek treatment at large and modern hospitals, even for minor illnesses. By contrast, primary health care provided by health facilities at the community levels are underutilized. Since 1999, the government has been formally promoting the development of Community Health Centers (CHC) as major providers of primary health care in urban areas. Many district and community hospitals have been converted into community health centers and the specialists who used to work in these hospitals have been retrained to become general practitioners (GPs).

The old urban health care network in China was organized into three tiers, with tertiary/municipal hospitals at the very top, secondary/district hospitals in the middle, and neighborhood/street health stations at the very bottom. This three-tiered system has been transformed into two tiers, which consist of the CHCs as primary health care providers and large general hospitals as urban medical centers. The CHCs usually consist of GPs, multi-skilled nurses, and

*They are: Ministry of Labor and Social Security (MoLSS); State Food and Drug Administration (SFDA); General Administration of Quality Supervision, Inspection and Quarantine (GAQSIQ); Ministry of Civil Affairs (MoCA); National Population and Family Planning Committee (NPFPC); Ministry of Finance (MoF); National Development and Reform Commission (NDRC); Other Ministries (Ministry of Defense, Ministry of Public Security, Ministry of Education, Ministry of transportation, Ministry of Railway, State Office of Posts and Telecommunication, etc.).

public health personnel. Health care workers at the CHCs are also involved in a range of related activities including disease prevention, rehabilitation, health promotion, medical education, and family planning.

The role of the CHCs as defined by the central government is threefold: to provide affordable and efficient health care services to the masses, prevent the spread of communicable diseases, and reduce the burden of pharmaceutical costs on the society. However, the development of CHCs has been slow for a number of reasons. First, the communities' failure to recognize the importance of reform of the health system coupled with their slowness in embracing the concept of general practice have delayed their adjustment to the concept of community health services. Second, people with minor illnesses still prefer prestigious tertiary hospitals even though they are more expensive (three times the price of the CHCs) and more time consuming. Third, current health insurance lacks a fair remuneration system for the CHCs. A result is that those who go to the CHCs are mainly the elderly and the unemployed. Fourth, structural factors, such as shortage of medical equipment, low "quality" of health care staff, and lack of connection with the urban employee basic health insurance network also affect the supply capacity in many areas. And last, government measures are needed to spur the development of CHCs, including increasing government input to improve quality, setting lower prices for services provided at CHCs, requiring the social insurance program to integrate CHCs as designated health care providers, and reimbursing more for primary health care providers at CHCs.

The floating population is a vulnerable community in the city. On the one hand, they have a great demand for health services, disease controls and prevention, birth control, and so on. On the other hand, health service coverage for the floating population is in dire shortage compared to what is available for the local residents. We also found through our 2006 survey that, among all the community health organizations, 87.18 percent are located near areas inhabited by the floating population. This indicates that Shanghai's health service infrastructure has already shifted its focus, establishing community health service centers as the important health service providers.

Interestingly, we also found that the floating population, like their urban counterparts, also prefer large hospitals when they need health services. According to our 2006 survey, when seeking health services, more than 40 percent of the floating population chose health care facilities other than CHCs, only 25.3 percent chose CHCs as their first health facility choices, and the other 19.30 percent would not go to any health facility but rather purchased medicine for themselves. Our finding revealed that, although the health service centers are close to the floating population' residences, offering not only convenience but also competitive prices, people in general have no confidence in the technology avail-

able at the CHCs, and therefore would rather go to the more expensive second- or third-tier hospitals to see a doctor. Generally, only after getting a diagnosis at these higher-level facilities might they go to the CHCs to get the treatments (injections or medicines). For those who don't go to the hospitals, the high cost of seeing a doctor is one of the main inhibitors. Among one hundred people we interviewed in 2005, we found similar results. When we asked why they did not go to the hospital, 32 percent gave the reason that it was too expensive, 17 percent said they were healthy but had also heard that the price was expensive; 11 percent thought they had a minor sickness and they could be cured by buying medicine and treating themselves.

HEALTH INSURANCE SYSTEM FOR THE FLOATING POPULATION

Insu×cient Government Investment in Health

According to the data from the Shanghai statistics yearbook, between 1995 and 2005, the total GDP of Shanghai increased by 139 percent and the expenditure for culture, education, and health increased by 138 percent. If broken down, the expenditure in health increased by 148 percent and the expenditure in education increased by 167 percent, respectively. Within the total expenditure for culture, education, and health, the proportion invested for education grew from 55 percent in 1995 to 73 percent in 2005; by contrast, the proportion invested for health fluctuated between 10 and 14 percent during 1995–2005.

Disintegrated System and Low Benefit Level

Since the urban health system reform in 1998 a nationwide effort was announced by the State Council to reform the existing government health insurance system (GIS) and labor health insurance system (LIS) in the remaining cities following the Zhenjiang and Jiujiang pilots. The reform of health insurance in Shanghai has been carried out along two paths: before 1994 the reform was mainly focused on controlling medical expenses; after 1994 the focus was shifted to "controlling the total quantity, adjusting the structure" while continuing to adjust the charges, and providing a catastrophic disease inpatient insurance system for all the workers in the city. In 1996 Shanghai implemented inpatient health insurance for the labor insurance enterprise. In the same year, the Shanghai Health Insurance Bureau implemented outpatient health insurance for retired persons, which partly solved the problem of medical reimbursement for retired workers in enterprises that were undergoing difficult transitions (financial situations). Beginning December 1, 2002 Shanghai implemented a plan of social and individual health insurance. In 2003 the Shanghai Health Insurance Bureau coordinated

with the Bureau of Labor and Social Security to formulate a "Tentative method of Social security for small towns in Shanghai."

TABLE 2

Health Insurance Systems by Different Target Population Groups in Shanghai 2003

HEALTH INSURANCE CATEGORY	TARGET POPULATION	POPULATION (10,000)
Urban health insurance	City employees including retired person	687
Rural health insurance	Rural farmers and their family members	224
Dependent health insurance	Direct relatives of the state-owned enterprises employees	210
Individual insurance	Self-employed laborer	23
Township/People who lost farm land	New enterprises in town and farmers who lost their farmland	40
Unemployment insurance	Laid-o≠ workers	30
Poverty relief	People under poverty line (as defined by the Civil A≠airs Bureau)	7
Floating population Comprehensive Insurance	Floating population in formal enterprises	200
Total		1450

A major flaw in the current social health insurance programs in Shanghai is that they are too numerous and complicated. Depending on a person's occupation and place of residence, he/she may be covered under different types of health insurances. Under the urban health insurance scheme, the basic health insurance includes individual health accounts, a social pooling fund managed by the Health Insurance Bureau, and supplemental health insurance managed by the General Labor Union. There are also individual health insurance plans purchased by people working in small to medium private enterprises and the self-employed. Under the township insurance scheme, also referred to as catastrophic illness health insurance, the insurance plan is set up for the people who have lost their land (due to the urbanization of formerly rural areas). Under the rural health insurance scheme, which is also called rural cooperative health, rural farmers can be insured. There is also dependent health insurance (mainly for children of the direct beneficiary), which provides partial medical benefits for people under the LIS. Under this scheme, the dependents only get a 50 percent medical expense reimbursement. The Shanghai Charitable Foundation has also set up an inpatient health insurance for Shanghai school children, which collects 60 Yuan per child every year. Under the unemployment insurance plan,

an unemployed worker can be reimbursed for 70 percent of medical costs. The civil affairs administration offers a number of forms of medical poverty relief to impoverished families that qualify. For university students who study in Shanghai, a special health insurance scheme is available. In addition, there is also a birth insurance program in place for women who wish to participate.

TABLE 3

Benefit Level by Different System

Health Insurance Category	Benefit Level % coverage by the plan	% out-of-pocket payment by patients	Source/Note
GIS for university student	100%	0%	Free medical service after the stipulation of policy
Urban insurance	80%	20%	The statistical analysis of the health insurance
Un-employment insurance	70%	30%	Reimburses 70% of hospitalization costs according to the policy
Individual health insurance	65%	35%	The statistical analysis of the health insurance
Township insurance	55%	45%	The statistical analysis
Dependent insurance	50%	50%	Reimburses 50% of hospitalization costs according to the policy
Rural Health Insurance	40–70%	60–30%	Analysis

Sources: Shanghai health insurance Bureau

Catastrophic Inpatient Health Insurance as Part of the Comprehensive Insurance for the Floating Population

Comprehensive Health Insurance for the Floating Population includes pension, accident (work sites injury insurance), and catastrophic inpatient health insurance. Its contribution rate is calculated based on an income level of 60 percent of average annual wages of Shanghai workers, and works out to roughly 12.5 percent of the floating population's annual income (more than 1000 Yuan per person per year). This cost is split between the employer (7.5 percent) and the employee (5 percent).

For health insurance benefit, the deductible is set at 10 percent of the average annual wages (approximately 1600 yuan at present). After the deductible has been paid, the reimbursement rate for further expenses is set at 80 percent and the beneficiary is left to pay 20 percent. Under this insurance plan, for an average hospital stay, the total cost ranges from 1 to 4 times of the annual average wages

of a migrant worker. Though it is social health insurance, mandated by government and managed by Ping'An Insurance Company, the fees are even higher than for a similar insurance program offered by a commercial insurance plan.

Health insurance for the floating population in Shanghai can best be described by the following characteristics: limited population coverage, only employees of enterprises can qualify; limited benefits, only catastrophic inpatient illnesses are covered; ambiguous insurance scheme, though mandated by government; and lack of any policy or tax subsidy, thus leading to high insurance premium. As a result, this insurance officially only covers a little over two million of the floating population (about half of the total). Our own sampling indicated that the floating population covered by the comprehensive insurance program may be much lower than what is officially reported. In the interviews of 100 of the floating population in 2005, we found that 22 percent participated in comprehensive insurance. In our 2006 survey, we found that 23.28 percent of our sampled floating population had participated in this insurance, 4.16 percent hadn't participated, and 9.65 percent simply didn't know what this kind of insurance was.

There are several reasons for such low participation rates. First, migrant workers have low income and lack social security awareness. They may be unwilling to join the health insurance program since part of the contribution will come from their wage. Second, employers are not willing to pay additional money for the floating population they hire. Even when they have to comply, they often only provide it for a small portion of those who qualify, which they accomplish by not informing the employees of the policy (even the individual employees for whom they have bought the insurance). Third, during the planning of the comprehensive insurance program, employers were not involved in the discussion. As a result, the plan is not welcomed by employers (for its coverage, its benefit items, and management).

HEALTH SERVICE FOR FLOATING POPULATION: BARRIERS AND POSSIBLE CHANGES

Value Barrier

The Chinese central government has recently proposed universal primary health care. Although it has been stipulated that the destination area has the responsibility for providing education and family planning for the floating Population, it is not clear who will bear the cost for health services. Some members of the floating population may already be covered by the New Rural Cooperative Medical System and, if they are also covered under the urban health insurance program, because the insurance plans are not transferable between two regions, they now

have two insurances, although only benefiting from one plan in any single place they are living.

The existing health system is based on a person's situation of employment in urban cities. Shanghai's Comprehensive Insurance System for the floating population is based on outdated ideology and thus has many features that are not suitable to the actual situation, as mentioned above. Government now faces the questions about how it regards the collected insurance fund: Whose money is it? To whom is the government responsible? How will it fulfill its responsibility? The current system lacks transparency and the challenge is how to change from regarding such information as secret to viewing it as information that is open to all.

Organizational Barrier

Existing government administrative branches and health organizations currently do not have enough capacity to handle/manage the various problems we have discussed. However, the NGOs' and enterprises' roles in facilitating this process have been limited by the government. Furthermore, all levels of government must cooperate in this work, including the Public Security, the Civil Affairs Administration, Workers Union, Women's Federation, and so on. To facilitate this collaboration, a health care information network for the floating population needs to be developed and health education among people involved in the network is also sorely needed.

Although many areas of Shanghai have already brought public health services for the floating population into their routine work, the content of such work and the projects that serve the floating population are limited, mainly focusing on serious infectious disease prevention and control. For treatment of these infectious diseases, except for tuberculosis, which has its own vertical disease-specific system, patients are required to pay out of pocket. Even for patients who have medical insurance, only a certain proportion of their hospital services is reimbursed, thus affecting the treatment and control of the diseases. Once a patient moves out of the geographic area covered by a particular health care entity, it becomes difficult to track them further since the information is not transferable among different areas. Also, in different areas of Shanghai, disease prevention and control work varies widely. The situation gets even more difficult when a patient leaves Shanghai.

Suggestions

In Shanghai, each district and county has established a floating population administration office. Public health work is led by the public health division in

Community Health Centers. The floating population's administration office, the community resident's committee, the village committee, and the local police station jointly provide information about the floating population for the Community Health Centers. Our own research has found that health system and health problems among the floating population are not separable from each other. China is in the midst of system reform, including reforms of financing, organizational structure, and governance, as well as social restructuring and balancing the roles of the public and the private sectors. We have the following suggestions for addressing health services for the floating population:

Establish a system that integrates the inputs and utilizes the resources from different governmental departments.

The health problems of the floating population cannot be solved only by relying on health departments. Various related departments such as Public Security, Civil Affairs Bureau, Labor and Social Security Bureau, Workers' Union, and Women's Union all need to be engaged.

Every child under 16 in the floating population must be registered. The registration of children by public security departments and of pregnant women by family planning departments should be duly reported to the health departments in the same area. Health departments should actively seek out and clarify situations regarding these children and pregnant women, and provide health services within their responsibility range. Those members of the floating population who do not have temporary living permits, those who migrate in and out, and those who live in temporary structures pose the greatest difficulties and also expose the weaknesses of the administration of floating people. It is hard for health departments to be solely responsible for their management. A concerted cooperation plan involving different departments is needed. In the residential areas where floating people aggregate, special managing sites and health care service stations can be established. First, a health care information network for the floating population should be established. Second, health education should be required; that is, health education should meet the education background and the ability level at which such information is best absorbed by the floating population. Education should include anticipated health problems among this population, and information about diseases and sanitation. It is also necessary to change some of the floating population's attitudes toward health and sanitation, such as by educating them about sanitation regulations, urban sanitation management requirements, women's and children's health care, prevention and inoculation information and knowledge. By doing so, we can gradually bring

about the floating population's acceptance of health care services, and familiarize them with the urban health care system.

Improve primary health care, and expedite he construction of social community health care service system.

We have discussed the subjects of the limitation and differentiation of public health products, and the inferior quality and limited items of health care services for the floating population, and how they result in the big gap in public health services for the floating population. This gap so far has not been filled by the primary health insurance program as it is not yet available to the floating population. Big cities should provide primary health care for the floating population, in addition to offering and improving existing health insurances.

First, coordination of the various government branches and organizations involved in health care for the floating population should be based within the community health centers.

Second, there are a lot of factors which may affect the establishment and effectiveness of a community health service system, such as the systematic, organizational, and cultural background, the social environment, attitudes, and beliefs, and so on. Besides various governmental resources in the community, there are some other resources to be utilized, such as enterprises, charitable organizations, social workers, volunteer groups, and so on. Although policy development will take place mainly in those governmental branches devoted to community health services, sustainable development will need the support and active involvement of all players. Some solutions should be considered, including: create a new system based on promoting floating population's individual choice; stimulate different interest groups to enter into a "contract" (instead of a "struggle"); accelerate the pace of consensus-driven policy with different affected entities or population groups getting equal amount of attention; promote society's engagement in the management of the system at all levels, with the protection of basic human rights serving as its foundation.

Solve the problem of "non-citizen" treatment of the floating population.

On August 30, 2004 the Shanghai government issued the Shanghai Residential Temporary Regulation, which was designed to ensure that the migrant population receives treatment equal to that of the registered Shanghai residents. These regulations, however, have been widely ignored. Some enterprises often underreport the number of workers or the total amount of wages, and often make

the excuses that their workers have extremely high mobility or that the workers are unwilling to buy insurance. Furthermore, the current administration lacks related legal or regulatory support, so it is difficult to manage "three *no*" people (people with no permanent resident card, no temporary resident card, and no labor certificate) within the law enforcement system. Moreover, health services for floating population have not been widely promoted to cover the entire floating population.

For this set of problems, we make the following suggestions: (1) Change the current social values, by establishing a general notion that the floating population's legitimate rights and interests should be respected and protected. Government departments working with floating population administrative matters should change from the old mentality of extensive control and management, to one of service, and should promote awareness of the need for equal treatment between floating population and residential registered citizens. (2) Further increase government support, with health sectors closely cooperating with other government branches. Government departments, especially health departments, should integrate health service and administrative work regarding the floating population into their functional range. Community health services for the floating population should be integrated into regional health planning, and community neighborhood committees or employment units should be placed in charge of the planning work. Related departments and organizations such as public security, civil, labor, workers' union, and women's union should strengthen coordination and division of labor, and make full use of existing floating population networks. The National People's Congress and government should establish well-integrated policies and regulations, develop social security regulations and systems, establish social security funds for the floating population, and provide aid and relief to the floating population and impoverished people in times of sudden epidemics and severe diseases. A legislation protecting the health-related rights of the floating population should be established, and the floating population's health care services should be included in the legal system. (3) Fully understand the health service demands of the floating population, increase the floating population's utilization of existing community health services. The diseases that the floating population suffers from are mainly common ailments and frequently occurring diseases, so most of those diseases can be treated in community health centers, where the cost is less than in hospitals and private clinics. Most of the health needs of the floating population can be met at this level. Furthermore, to meet health education needs of the floating population, community health centers should take advantage of their existing public health service functions, such as disease prevention, health education, family planning instruction, and so on. Health education and health advisory

activities should especially be promoted in areas with a high density of floating population. Family planning guidance should be conducted in factories and companies where large numbers of women work, as well as health education on injury prevention, food poisoning, unwanted pregnancy, and acute communicable diseases. (4) Rely on the market, promote diversification of community health service providers. The shortage of government financing is the main problem when developing community health services for the floating population. There is, however, a potentially large market in community health services for the floating population. Market competition must be introduced, with sector monopoly and ownership limitation reformed. Social organizations like labor units or social groups should be encouraged to be involved in the organization or management of community health service organizations. Existing medical institutions/units serving the employed floating population should be fully utilized, and the number of personnel and the level of technology at community health institutions need to be increased. In all, a fair competitive market environment should be established. (5) Further promote community health services through various means, including establishing health education associations for the floating population, developing close cooperation among lower-level government branches, and encouraging frequent mutual communications with factories or communities. In addition to getting more people to utilize community health services, new community rehabilitation centers should be gradually established in mature factory communities.

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Migration, Urbanization, and HIV-Risky Behaviors in China

Xiushi Yang

INTRODUCTION

China's phenomenal economic growth and development in the last two and a half decades have brought about unprecedented rural-urban migration and rapid urbanization in the country. Temporary migrant population, which constitutes the majority of rural-urban migrants in contemporary China, was estimated to have grown from 11 million in 1982 to 79 million in 2000 (Liang and Ma, 2004) and was estimated at 120 million by 2006 (China Ministry of Health et al., 2006). From 1978 to 2004 the number of officially designated cities increased from 193 to 661, and the percent of population living in urban areas increased from 17.9 percent to 41.8 percent (National Bureau of Statistics of China, 2005). By 2050, about 70 percent of China's population is projected to live in urban places (Shen et al., 2005).

Much has been written about the economic causes and consequences of migration and urbanization. But less studied is the impact of migration and urban living on population health and well-being in China since the economic reform which started in late 1970s. Although improved public health measures and medical innovations have largely broken the historical link between population concentration in cities and the many infectious diseases that killed millions of city dwellers in the past in China and during the early industrialization in Europe and North America (Rosen, 1993), recent rapid urbanization in developing countries has created similar poor sanitation and squalid living conditions in the cities of many poor countries, leading to the re-emergence of some old, and the emergence of new infectious diseases (Vlahov and Galea, 2002; Weiss and McMichael, 2004). The concept of urban disadvantage in health is very much alive (Freudenburg et al., 2005; Moore et al., 2003). Migration, too, has been

Department of Sociology and Criminal Justice, Old Dominion University, Norfolk, VA 23529
e-mail: xyang@odu.edu

linked to the spread of infectious diseases both in the past and at present and both at the national and international level (Hu et al., 2006; Langford, 2005; Wallace et al., 1995; Weiss and McMichael, 2004; Yang, 2006).

While migration and urban living may affect population health in a variety of ways (Freudenburg et al., 2005; Poore, 2005), in this paper we explore the impact of migration and urbanization on the behavioral risk of HIV associated with drug use and sexual behaviors. Indeed, the re-emergence and quick spread of drug use and risky sexual behavior amid economic growth and development in China have been two of the most unexpected yet manifest social problems with significant public health implications. The exact magnitude of drug abuse and risky sexual behavior in China is difficult to determine because of lack of reliable statistics. But in 2004 there were more than one million officially registered drug users in China, of whom more than 75 percent were active heroin addicts (Tang et al., 2006). In 2005 more than 300,000 new cases of gonorrhea and syphilis were officially reported nationwide (China Ministry of Health, 2006). Despite likely serious underreporting, these official statistics make it clear that drug use and casual/commercial sex are widespread, posing serious public health challenges.

The return and subsequent quick spread of drugs and commercial sex in China is arguably best understood in the context of social and economic changes associated with increasing migration and urbanization in the country (Smith and Yang, 2005; Weniger and Berkley, 1996; Yang, 2004). Recent research in China has also provided some empirical evidence for the increasing role migration plays in the spread of drug use and/or casual sexual behaviors (Anderson et al., 2003; Hu et al., 2006; Yang, 2006). But there have been few systematic efforts to consider the differing impacts on HIV-risky drug use and sexual behaviors of the process of migration, as opposed to urban residence. While rural-urban migration naturally implies post-migration urban living, these two stages of the transition may be very different in terms of impacts on health-related behaviors.

A recent study (Yang and Luo, 2006) suggests that being migrant significantly increases the odds of having casual sex with non-stable partners, but lowers the odds of drug use, and that living in an urban place is a significant risk factor for both illicit drug use and casual sex. But that study uses single dichotomous measures of current drug use and having casual sex with non-stable partners. Single measures of drug abuse and risky sex may be more prone to measurement errors than composite measures based on multiple indicators (Williams et al., 2001). This paper tries to reassess the potentially different impact of being migrant vs. urban living on the risk of HIV associated with drug use and sexual behaviors, but using composite measures of drug use and sexual risks of HIV. The results will help us better understand the link between drug use/risky sex

and the process of migration (being migrant) and urbanization (urban living). They may also provide important empirical evidence for the design of behavioral or policy intervention programs that target the right targets (migrants vs. urban environment).

MIGRATION AND HIV RISK BEHAVIORS

The link between migration and behavior at high risk for HIV has been well documented. There is general agreement that migrants are more vulnerable to casual/commercial sex than non-migrants (Anderson et al., 2003; Hu et al., 2006; Li et al., 2004; Skeldon, 2000; UNAIDS, 2001; Yang, 2006). A key to understanding migrants' elevated risk behavior may be lax social controls associated with the process of migration, which result from spousal or partner separation and detachment from the usual social and normative control (Yang, 2006). When separation from spouse or sexual partner is frequent and lengthy, it can disrupt migrants' regular sexual relationships, which may lead to casual or commercial sex and/or dependence on alcohol or drugs as a way to escape loneliness, suppress anxieties about family, and release sexual frustration (Jochelson et al., 1991). Being away from home also means a breakaway from family care and supervision, and detachment from the home community and its associated normative control. This creates a degree of social control vacuum whereby migrants feel less constrained by social norms and values, since families and friends back home are unlikely to find out what they do while away from home (Yang, 2006). The power of social sanction embedded in social control (Gibbs, 1982) is thus lost in the process. The transient nature of migrant life and the more anonymous life and easier access to drugs and commercial sex in urban places together may render rural-to-urban migrants vulnerable to drugs and HIV-risky sexual behavior. In fact, the tight social control over individual behavior associated with residential stability is argued to be the most important factor that explains the general absence of drugs and commercial sex in pre-reform China (Troyer et al., 1989; Whyte and Parish, 1984).

In addition to the lax social control migrants may experience, migrants' peculiar post-migration socioeconomic milieus may also be conducive to high-risk behaviors (Soskolne and Shtarkshall, 2002; Yang, 2006). Although not all migrants are alike, many migrants in urban China are socially and residentially isolated from the "mainstream" society in the place where they live and work. Once arrived in the city, most rural-urban migrants are concentrated in the margins of the urban economy (Knight et al., 1999; Roberts, 1997; Solinger, 1999; Wang et al., 2002) and live with fellow villagers at the place of work or are concentrated in rural-urban transitional neighborhoods characterized by

overcrowding, social disintegration, and lack of social and health services (Ma and Xiang, 1998; Zhang, 2001). Migrants' social interaction in the city often does not go beyond that with fellow villagers or migrants. Many rural-urban migrants, particularly temporary labor migrants, experience little social or cultural assimilation in the city, feel helpless, insecure, discontented, and resentful, and are prone to substance abuse and risky sexual behaviors (Anderson et al., 2003).

Rural-urban migrants' social and residential isolation in cities may further decrease effective normative and formal social controls over their behaviors. On the one hand, the neighborhoods (i.e., the fringe areas of the city) where most migrants live are often characterized by lax law enforcement and poor social integration. Such a living environment is not only conducive to drugs and commercial sex, but is also where such socially proscribed and HIV-risky behaviors are more acceptable or tolerated. On the other hand, social and economic marginalization and isolation may make migrants indifferent to social sanctions in cities because their very marginal status makes them feel they have nothing to lose if their behaviors are detected. Despite achieving limited economic success as compared to conditions in their rural origins, many rural-urban migrants are economically marginalized and socially and residentially isolated in the city. The combination of lax social control and post-migration economic and social isolation may lead to increase in drug use and risky sex among migrants.

URBAN LIVING AND HIV-RISKY BEHAVIORS

Despite considerable literature on the impact of urban living on health outcomes (Galea and Vlahov, 2005), the link between urban living and health-related behaviors has been relatively less studied. There is little research in China that seeks to identify rural-urban differences in HIV-risky behaviors and to understand the mechanisms through which urban living may lead to increases in drug use and risky sex. The upsurge in drug use in China since the 1980s was portrayed earlier in the HIV epidemic mainly as a problem in rural and ethnic minority populations. But anecdotal evidence suggests that the drug epidemic, particularly the use of new types of drugs (commonly referred to as club drugs), has now become much of an urban problem. Empirical evidence from outside China, although not always consistent, tends to suggest that both drug use and risky sex are more prevalent in urban than in rural populations (Furr-Holden and Anthony, 2003; Johnson et al., 2001; Khan et al., 2006; Levine and Coupey, 2003; Sundquist and Frank, 2004).

Conceptual work that links urban living to health and health-related risk behaviors has generally focused on the characteristics of the urban environment

(Frye et al., 2006; Galea et al., 2003; Galea, Freudenberg, and Vlahov, 2005; Galea, Rudenstine, and Vlahov, 2005; Vlahov and Galea, 2002). The physical characteristics of the urban environment important to understanding risk behaviors include, on one hand, the built environment and neighborhood disadvantages/disorders, and on the other, exposure and access to drugs and casual/commercial sex. The physical environment of urban living is assumed to be more stressful, which increases mental health problems (Galea et al., 2005; Marsella, 1998; Paykel et al., 2000) and, in turn, drug use and risky sexual behaviors in urban areas. Socioeconomic inequalities, which are more pronounced in urban than in rural areas, often manifest themselves in spatial/neighborhood inequalities and residential segregation. Neighborhood disadvantages/disorders are associated with increased psychosocial stresses, which may lead to greater interpersonal tension and violence and increases in drug use and risky sexual behaviors as coping and stress reduction mechanisms (Frye et al., 2006; Galea et al., 2005).

Physical characteristics of the urban environment may also be associated with an opportunity structure that increases drug use and risky sexual behavior (Brewster et al., 1993; James et al., 2002; Rhodes et al., 1999; Yang, 2005). Directly, the existence of more drug and commercial sex outlets in the urban environment leads to easier access to and lower costs of substance abuse and risky sex (Baseman et al., 1999; Crum et al., 1996; Galea et al., 2005; Weitzman et al., 2003). Indirectly, the quality of the neighborhood built environment can determine the extent to which its residents are economically marginalized and socially isolated, which in turn influences behavior and affects the opportunity costs of socially proscribed behaviors (Brewster et al., 1993; Wilson, 1987). Because sexual promiscuity and drug use are both socially proscribed and incompatible with socially respectable statuses, indulging in those behaviors will likely reduce one's chance of achieving those desirable statuses or one may lose them if one has already achieved them. However, if opportunities to achieve desirable statuses are few or nonexistent, which may particularly be the case in disadvantaged urban neighborhoods, the opportunity cost of socially proscribed behaviors will be low, which may be conducive to the spread of drug use and risky sex among its residents.

In addition to physical characteristics, social characteristics of the urban environment may be conducive to the spread of drugs and risky sexual behaviors (Frye et al., 2006). Like any other human behavior, drug use and risky sexual behaviors are not inborn but learned through socialization (Bandura, 1986; Clark, 1987). Individuals learn to behave socially by interpreting images or messages they receive in social interactions or in public domains about what is socially acceptable and by observing and imitating the behavior of others with whom they come into direct or indirect contact. In particular, social norms and

networks play an important role in influencing drug use and sexual behaviors (Frye et al., 2006; Galea et al., 2003; Latkin et al., 2003; Richard et al., 2000).

Urban living is typically associated with greater anonymity and residential mobility; erosion of traditional values, which leads to more liberal behavioral norms; and increased diversity in population and social networks (Frye et al., 2006; Galea et al., 2005; Weiss and McMichael, 2004). These features, along with greater exposure to drug and sex-related cultural, social, and physical scenes in cities, may lead to more tolerant perceptions regarding drugs and different sexual behavior. The more tolerant normative environment, reinforced by the presence of more drug users and people with different sexual behaviors who set real-life examples for others to follow, may facilitate the spread of drug use and risky sexual behavior in urban environments. The breakdown in traditional norms regarding sexual behavior amid development and urbanization in China in the last two decades is arguably one of the main factors contributing to the spread of commercial sex and other risky sexual behaviors, particularly in cities throughout the country (Gil et al., 1996; Hyde, 2000). A recent community-level study in China has confirmed the link between more tolerant social and behavioral norms, the prevalence of illicit drugs and commercial sex, and the prevalence of HIV and STDs as well as the impact of migration and urbanization on the diffusion of drugs and commercial sex (Yang, 2005).

DATA AND METHODS

Data used in the analysis are from a study of the link between migration and the spread of HIV-risky drug use and sexual behaviors in China. The study was conducted in a province in southwestern China and included both a community and an individual sample survey. The community survey took place in 2001 and covered the entire province. Local administrative offices or related agencies were sent the special questionnaire and asked to supply the requested information for the years between 1996 and 2000. The survey compiled annual aggregate information at the township level in rural and neighborhood level in urban places on a wide range of socioeconomic indicators, including numbers of registered drug users, crimes reported, and entertainment establishments. All rural townships and urban neighborhoods were included in the survey.

The individual sample survey took place in 2003. Sample selection followed a three-stage sampling procedure. First, tabulations of known HIV/AIDS cases, drug users, and migrants by counties/cities were prepared with data from the provincial public health and public security agencies and the 1995 mini-census. These tabulations were used to rank all counties/cities, and from the ranked list of counties/cities, eight (four counties and four cities) were selected, giv-

ing priority to counties/cities with higher concentration of HIV, drug use, and migrant population that were geographically representative of the province. Second, all rural townships and urban neighbourhoods in each of the eight selected counties/cities were ranked according to estimates of HIV cases, drug users, and temporary migrants, based on existing data from the same government agencies and the 1995 mini-census. From the ranked lists by county/city, five townships and/or neighbourhoods were selected from each county/city list, giving priority to places with a combination of high prevalence of HIV, drug users, and temporary migrants, and geographically representing the varied parts of the county/city. This resulted in a total of 40 townships and neighbourhoods as the primary sampling units (PSUs).

Finally, in each PSU, all individuals 18 to 55 years of age were listed in one of four categories: HIV positive persons, drug users, temporary migrants, and non-migrants. They were crosschecked for multiple listings. If an individual appeared in more than one category, the individual was reassigned to only one category according to the following priority order: HIV, drug user, migrant, and non-migrant. For example, a migrant who was also a drug user and HIV positive would be retained in the list of HIV positive persons and removed from the lists of migrants and drug users. Therefore, all individuals would appear in one and only one of the four lists, which were mutually exclusive.

In selecting individuals, disproportionate probability sampling (Bilsborrow et al., 1997) was used to make sure that the resulting sample would contain sufficient numbers of the rarer populations, e.g., HIV positive and drug users, but not be overwhelmed by non-migrants. A target random sample of about 150 individuals from each PSU was planned and distributed as follows: 20 HIV positive, 30 drug users, 40 temporary migrants, and 60 non-migrants. In each category, sample selection started with randomly picking a person from the list and continued selecting at fixed intervals determined by the ratio between the total on the list and the target number for the category (i.e., probability of sampling). If a list contained fewer than the target number, everyone on the list was selected. Because not every PSU had the target number of subjects in all categories, the actual sample size in a category varied across PSUs.

During the fieldwork, interviewers visited the sampled individuals, explained to them the purpose of the study, their right to refuse, and compensation for their time, and invited them to participate. If the respondent was absent, a second visit was scheduled. If a respondent could not be reached the second time or refused to participate, a replacement was selected randomly from the original sampling list containing the absent or refused respondent unless there was no one left on the list. Participant refusal was low (3.3 per cent). Of the original sample of 5,687, including 117 from the pilot testing town, 5,499 individuals

consented to participate and completed a face-to-face interview, which took place in private at the respondents' home or, if they preferred, a place away from home. All interviews were conducted in Mandarin or the respondent's dialect if the respondent could not communicate in Mandarin.

In the analysis, data from the community and the individual sample surveys are combined to examine both individual and community level correlates of drug using and sexual risk of HIV. Version 9 of the STATA software is used to conduct statistical analyses. Given the multilevel nature of the data and our desire to model simultaneously individual and community-level factors, the "xtmixed" multilevel modeling for continuous dependent variables in STATA is used for all regression analyses, which takes into consideration correlations among study participants from the same PSU.

Data analysis focuses on the impact of being a temporary migrant and/or urban living on drug use and sexual risk of HIV. The dependent variables are two composite measures of drug use and sexual risk of HIV in the 30 days prior to the survey. The composite measure of drug-use risk is based on five dichotomous variables, indicating whether the respondent ever used illicit drugs, ever shared injection needles, started using drugs under 18 years of age, were using drugs, and were injecting drugs. The five dichotomous (0 and 1) variables are summed to create the drug-use risk index. The composite measure of sexual risk of HIV is based on eight dichotomous variables indicating whether the respondent had casual sex, unprotected casual sex, commercial sex, more than one casual sexual partner, more than one casual sexual act, any episode of drinking while having sex, any episode of taking drugs while having sex, and sex with any known injecting drug users (IDU) in the 30 days prior to the survey. The eight dichotomous variables are summed to create the sexual risk index. For both drug use and sexual risk indexes, the higher the index the higher the risk of HIV.

The main independent variables are temporary migrant status and urban residence. Temporary migrant status is defined as someone who did not possess the official local household registration in the PSU at the time of interview. Urban residence includes all cities and officially established urban towns.

In addition, a number of individual and community-level variables are included in the multiple regressions to control for differences between migrants and non-migrants and between urban and rural residents, which may confound the impact of migration and urban living on drug use and sexual risk of HIV. All individual characteristics are self-explanatory; so are the five community (PSU) characteristics, which are all defined as the mean of the respective five official annual statistics (1996–2000) from the community survey. All individual psychosocial well-being and behavior-specific social influence measures are composite scales and indexes. The scales/indexes are constructed from multiple

questions/statements in the survey questionnaire by first obtaining the mean item score using the "alpha" method in STATA, and then multiplying the mean by the number of items included in the scale. For items/questions that appear negatively correlated with the scale, their original scores will be reversed before they are used in the construction of scales. A summary of each scale and its statistical qualities is provided next.

For psychosocial wellbeing, we focus on the extent of social isolation and lax social control, both of which are believed to be conducive to drug abuse and risky sexual behavior. For the former, a modified version of the UCLA Loneliness Scale (Russell, 1996) was used. Respondents reported on a four-point scale how lonely they felt on each of 20 statements (e.g., How often do you feel that you lack companionship? How often do you feel left out? How often do you feel that there are people you can talk to?); answers to the 20 statements were summed to form the "loneliness" scale. Lax social control was measured by a modified version of the Attitudes toward Authority Scale (Emler, 1999). Respondents reported yes (1) or no (0) on their personal experience with nine events indicating disrespect for laws or use of "deviant" ways to achieve personal ends (e.g., I have carried some kind of weapon in case it was needed in a fight; I have deliberately travelled on a train or a bus without a ticket; I have stolen bicycle(s) from streets). Answers were then summed to create the lax social control scale. For both scales, the higher the score, the more likely the respondent was socially isolated and had behaved in disrespect of laws or in deviant ways, indicating lax social control. Cronbach's alphas with the survey data were 0.80 and 0.71 for the loneliness and the lax social control scales, respectively.

Behavior-specific social influences were measured by respondents' self-reports of having family members, friends, or peers with similar behaviors. For drug use, respondents answered separately whether they had parents, siblings, relatives, and friends known to be drug users. The four dichotomous answers were then summed to form a "drug use influence index." For sexual influence, respondents reported separately on whether they knew if parents, siblings, relatives, and friends had multiple sexual partners, homosexual behavior, and exchanged sex for money or drugs. The 12 member-behavior pair-wise answers were then summed to form a "sexual behavior influence index."

RESULTS

Overall, males were slightly overrepresented in migrant and in rural populations of the sample. But the difference was statistically not significant between migrants and nonmigrants or between rural and urban residents (Table 1). On average, migrants were significantly younger than nonmigrants (28.7 vs. 32.9

years of age), while rural and urban residents had almost the same mean age. Migrants were significantly less likely to be married (58.6 percent married) as compared to nonmigrants (83.9 percent). Rural residents did not differ significantly from urban residents in the proportion of married. For educational attainment, data in Table 1 suggest that migrants were on average significantly less educated than nonmigrants and rural residents were significantly less educated than their urban counterparts. Lastly, migrants were on average significantly more likely to live alone than nonmigrants. But there was no significant difference in living arrangement between rural and urban residents.

TABLE 1

Individual Demographic Characteristics, Psychosocial Wellbeing, and HIV Risk of Drug Using and Sexual Behavior by Migrant Status and by Residence[a]

		MIGRANT STATUS		RESIDENCE	
	Total Sample	Migrants	Nonmigrants	Urban	Rural
Demographic characteristics:					
Male (%)	51.39	53.20	51.01	50.58	54.20
Age	32.54	28.74**	32.94	32.61	32.30
Education[b]	2.92	2.66*	2.95	3.07**	2.43
Currently married (%)	81.60	58.59**	83.90	80.79	84.40
Live alone (%)	0.04	0.19**	0.02	0.04	0.03
Psychosocial characteristics:					
Loneliness scale	37.12	40.29**	36.81	36.90	37.83
Lax social control scale	0.40	0.53**	0.39	0.38	0.48
Social influences:					
Drug influence index	0.27	0.17*	0.28	0.28	0.22
Sexual influence index	0.23	0.47**	0.20	0.24	0.17
Drug using and sexual risk of HIV:					
Drug using risk index	0.04	0.04	0.04	0.04	0.03
Sexual risk index	0.22	0.59**	0.18	0.23	0.17

[a] Results are based on "svy" methods in STATA and adjusted for sampling probability and survey design. Statistical significance is based on comparison between migrants and nonmigrants and between urban and rural residence, respectively.

[b] Educational attainment is an ordinal variable: 1 illiterate or semi-illiterate; 2 elementary school; 3 junior high school; 4 senior high school; 5 vocational school; 6 two/three years college; and 7 four years college or more.

*p <0.05; **p <0.01

For both measures of psychosocial wellbeing, migrants differed significantly from nonmigrants. On average, migrants were more likely than nonmigrants to feel socially isolated (40.3 vs. 36.8 on the loneliness scale) and to have behaved in

disrespect for laws or in deviant ways (0.5 and 0.4 on the lax social control scale). By contrast, no statistically significant difference in either the loneliness or the lax social control scale was found between rural and urban residents. Migrants also differed significantly from nonmigrants in experiences of social influences in drug use and risky sex. While migrants were exposed to more people with risky sexual behaviors in their social network of peers and family than nonmigrants (0.5 vs. 0.2 on the sexual influence index), they appeared to be subject to less negative social influences of drug users in their social network than nonmigrants (0.2 vs. 0.3 on the drug influence index). Again, living in an urban area seemed to make no statistically significant difference in social influences regarding drug use and sexual behaviors, although urban residents on average did score higher on both measures than rural residents.

In terms of actual drug use and sexual risk of HIV in the 30 days prior to the survey, data in Table 1 show no statistically significant difference in drug use risk index between migrants and non-migrants or between rural and urban residents. But HIV-risky sexual behaviors varied significantly between migrants and non-migrants. In fact, migrants' mean sexual risk scores were more than three times those of non-migrants. Although urban residents on average appeared to have higher sexual risk of HIV than rural residents, the difference (0.23 vs. 0.17) was statistically not significant.

Results of the random intercept models in Table 2 confirmed the differing impacts of being migrant on HIV-risky drug use and sexual behaviors. For drug-related risk behaviors, being migrant was associated with a significantly lower risk score at both the bivariate (Model 1) and the multivariate (Model 2) levels. The opposite was true for HIV-risky sexual behaviors, for which being migrant was correlated with a significantly higher risk score at both the bivariate and the multivariate levels.

For drug-related risk behaviors, the control of other individual variables in Model 2 almost halved the observed difference in the risk score between migrants and non-migrants (from −0.76 to −0.42). Given the negative sign of the coefficient, the reduction in migrant and non-migrant difference suggests that, compared to those of non-migrants, migrants' individual characteristics, as controlled in the model, were on average actually less conducive to HIV-risky drug use behaviors. In other words, if migrants had the same individual characteristics as non-migrants, they would have scored higher on the risk index. Combining results in Table 2 with the migrant and non-migrant comparisons in Table 1, it appears that living alone and having less exposure to social influence of drug use are the two main factors that helped migrants to stay away from HIV-risky drug use behaviors.

TABLE 2

Random Intercept Regression Analysis of Individual Risk Factors of Drug Using and Sexual Risk of HIV in the Prior 30 Days[a]

	DRUG USING RISK INDEX		SEXUAL RISK INDEX	
INDEPENDENT VARIABLES[b]	Model 1	Model 2	Model 1	Model 2
Demographic characteristics:				
Temporary migrant	-0.764**	-0.423**	0.165**	0.105**
Male		0.341**		-0.147**
Age		0.002		-0.007**
Education[c]		-0.078**		-0.021
Currently married		-0.526**		-0.214**
Live alone		-0.162**		0.468**
Psychosocial characteristics:				
Loneliness scale		0.026**		0.013**
Lax social control scale		0.249**		0.183**
Social influences:				
Drug influence index		0.447**		—
Sex influence index		—		0.348**
Sample size	5,327	4,938	5,327	4,938
Random intercept variances	0.054**	0.033**	0.033**	0.021**
Intra-PSU correlation	0.035	0.043	0.021	0.017

[a]Results are based on the "xtmixed" model in STATA and expressed as the change in the risk index associated with corresponding change in the independent variables.

[b]The reference categories for variables of temporary migrant, male, currently married, and live alone are nonmigrant, female, single, and live with family or others, respectively.

[c]See note b in Table 1. *p <0.05; **p <0.01

Among the other control variables, age was not associated with drug use risk. Being male was significantly associated with a higher drug use risk, while better education and marriage were significantly correlated with lower risks. As expected, both social isolation and lax social control were associated with significantly higher HIV risks from drug use; so was social influence of drug users in respondent's social network of peers and family. The significant and negative coefficient for living alone was somewhat unexpected. Living alone would usually be associated with less social control and consequently more risky behaviors. But living alone could also mean less exposure to social influences of drug using family, friends, and peers, which in this case appeared to dominate, thereby leading to less HIV-risky drug use behaviors among those who live alone than among those who live with family, friends, and others.

For sexually risky behaviors in the 30 days prior to the survey, the observed migrant and non-migrant difference was also reduced when other related individual characteristics were controlled for in Model 2. This suggests that migrants' observed higher sexual risk was partly attributable to their risk-prone demographic and psychosocial characteristics as well as to social influences. Among the other control variables, age and education were both negatively associated with sexual risk of HIV, as was being male and married. In sharp contrast to its negative influence on drug using behavior, living alone was a significant and powerful contributing factor of HIV-risky sexual behaviors, increasing the composite risk index by almost a half point. Also contributing to HIV-risky sexual behaviors were social isolation, lax social control, and sexual influence of social network.

For both drug use and sexual behaviors and in both the bivariate and the multivariate models, the random intercept variances were all statistically highly significant. This suggests that, other things being equal, where one lives makes a significant difference in drug use and sex-related risk of HIV, and confirms the importance of residential environment in influencing individual drug use and sexual behaviors. Further, as indicated by the higher intra-PSU correlation coefficients, behavioral influences of residential environment seemed to play a more important role in drug use than in sexual behaviors.

Could urban residence be an environmental risk factor for drug use and sexually risky behaviors? Results in Table 3 clearly suggest it is. Compared to rural residence, living in an urban area was positively associated with more HIV-risky drug use and sexual behaviors at the bivariate level. The control of related community characteristics in Model 2 considerably reduced (from 0.22 to 0.09) the rural-urban difference in drug use risk, which was actually no longer statistically significant. This suggests that the observed higher drug use risk in an urban setting is almost entirely attributable to the social and physical characteristics, as measured and controlled for in the analysis, associated with urban living. But the control of community characteristics made little difference in the rural-urban comparison of HIV-risky sexual behavior.

Among the other community characteristics, level of poverty, as measured by proportion of households that were below the government-designated poverty line, was negatively associated with respondents' drug use risk, while the number of crimes reported was positively correlated with the drug use risk index. Somewhat surprisingly, the prevalence of drug use in the PSU, as measured by the number of known drug users, did not seem to be a significant risk factor of respondents' own drug use risk. Also unexpectedly, none of the three community-level characteristics used in the analysis was statistically significantly correlated with respondents' HIV-risky sexual behaviors.

TABLE 3

Random Intercept Regression Analysis of Community (PSU) Risk Factors of Drug Using and Sexual Risk of HIV in the Prior 30 Days[a]

	DRUG USING RISK INDEX		SEXUAL RISK INDEX	
INDEPENDENT VARIABLES[b]	Model 1	Model 2	Model 1	Model 2
Urban	0.222**	0.087	0.228**	0.220**
Proportion of households under poverty		-0.007**		-0.002
Number of registered drug user (100)		0.011		—
Number of crimes reported (100)		0.077*		—
Divorce ratio[c]		—		-0.013
Number of entertainment establishment		—		<0.001
Sample size	5,382	4,018	5,382	5,382
Random intercept variances	0.054**	0.024**	0.021**	0.020**
Intra-PSU correlation	0.033	0.014	0.014	0.013

[a]Results are based on the "xtmixed" model in STATA and expressed as the change in the risk index associated with corresponding change in the independent variables.

[b]The reference category for the dummy variable of urban is rural residence.

[c]Due to data availability, the ratio is defined as the ratio between the number of divorce and the number of currently married.

*p <0.05; **p <0.01

For both drug use and sexually risky behaviors, the models' random intercept variances suggest significant variations across PSUs. This once again suggests that, through whatever mechanisms and in addition to urban living, residential environment in general exerts significant influence over individual drug use and sexual behaviors. As indicated by the intra-PSU correlation coefficients, such environmental influences appeared to be stronger over individual drug use than sexually risky behaviors.

Finally, in Table 4, migrant status and urban residence were examined, along with other individual and community-level control variables. For both risk indexes, the coefficients for individual characteristics in Table 4 were almost the same as those in Table 2, suggesting that these individual characteristics influenced the two behavioral risks largely independent of community characteristics. However, for community characteristics, number of crimes reported was no longer statistically significant in affecting the drug use risk index. The influence of community-level poverty on individual drug use risk was reduced. Similarly, the influence of urban living on sexual risk was also reduced. It appeared that the influences of these community characteristics were to some extent mediated through individual-level characteristics.

Altogether and net of all control variables, being migrant was significantly and independently associated with a lower drug use risk, but a higher sexual risk. Living in an urban area was significantly correlated with a higher sexual risk, but had no independent influence over drug use risk. For both drug use and sexually risky behaviors, the random intercept variances remained statistically significant, suggesting that, after controlling for all the individual and community characteristics, where one lived remained a significant factor in understanding HIV-risky drug use and sexual behaviors.

TABLE 4

Random Intercept Regression Analysis of Individual and Community (PSU) Risk Factors of Drug Using and Sexual Risk of HIV in the Prior 30 Days[a]

INDEPENDENT VARIABLES[b]	DRUG USING RISK INDEX	SEXUAL RISK INDEX
Demographic characteristics		
Temporary migrant	-0.440**	0.106**
Male	0.297**	-0.145**
Age	0.001	-0.007**
Education[c]	-0.079**	-0.024
Currently married	-0.516**	-0.212**
Live alone	-0.176**	0.469**
Psychosocial characteristics		
Loneliness scale	0.025**	0.012**
Lax social control scale	0.261**	0.183**
Social influences		
Drug influence index	0.480**	—
Sex influence index	—	0.344**
Community (PSU) characteristics		
Urban	0.069	0.184**
Proportion of households under poverty	-0.004*	-0.002
Number of registered drug user (100)	-0.004	—
Number of crimes reported (100)	0.026	—
Divorce ratio[d]	—	-0.013
Number of entertainment establishment	—	-0.001
Sample size	3,639	4,938
Random intercept variances	0.024**	0.013**
Intra-PSU correlation	0.033	0.010

[a]Results are based on the "xtmixed" model in STATA and expressed as the change in the risk index associated with corresponding change in the independent variables.

[b]The reference categories for variables of temporary migrant, male, currently married, live alone, and urban are nonmigrant, female, single, live with family or others, and rural residence, respectively.

[c]See note b in Table 1. [d]See note c in Table 3. *p <0.05; **p <0.01

DISCUSSION AND CONCLUSIONS

As more and more rural Chinese migrate to cities in the course of China's rapid development and urbanization, the health consequences of migration and urban living have attracted much attention and concerns from both scholars and policy makers. There is growing consensus that rural-urban migrants are more vulnerable to HIV-risky drug use and sexual behaviors. Less understood is whether migrants' increased vulnerability results from the process of migration (being migrant), post-migration urban living, or both. Literature on urban health in general, which is still very limited in China, has not been particularly concerned with migrants or potential behavioral impacts of urban living. In this paper, we explore the impact of migration and urbanization on HIV-risky behaviors. The goal is to assess the different and/or joint impact of being migrant and urban living on drug use and sexual behaviors. Applying multilevel modeling technique, the analysis pays particular attention to the fact that risk factors of drug use and sexually risky behaviors may be at both individual and contextual levels and that the overall drug use and sexual risk of HIV may vary across communities.

The results suggest that, other things being equal, being migrant is associated with significantly lower drug use risk. Although migrants' most individual characteristics, such as education, marital status, and psychosocial wellbeing, seem to have predisposed or made them more vulnerable to drug abuse, migrants' living arrangement (i.e., living alone) and the reduced exposure to social influence of drug-using peers, friends, or relatives in their social network may have helped migrants to stay away from HIV-risky drug use behaviors. However, being migrant itself is a significant and powerful risk factor for HIV-risky sexual behaviors. Differences in individual characteristics between migrants and nonmigrants contribute at least partially to migrants' significantly higher sexual risk. For both drug use and sexually risky behaviors, psychosocial wellbeing and behavior-specific social influences, as measured in the study, are all significant risk factors, and their influences are all consistent with the literature and what would be expected.

One interesting finding about sexual risk is particularly worth noting. Different from the literature and what would be expected given the gendered role and sexual behavior expectations in China, men were found to be associated with fewer HIV-risky sexual behaviors than comparable women. It appears that times may have changed as recent socio-economic development in China has been accompanied by dramatic changes in social norms about love, marriage, family, and sexuality. Premarital and extramarital sex is increasingly tolerated. Women may have particularly benefited from the changes, which grant them greater freedom now than ever before in sexual expression and relationships. It

is unlikely that gendered norms about extra-marital and casual sex have disappeared all together, but gender difference in sexual behavior may have dissipated, at least in the province studied. More research focusing on gender differences in HIV-risky sexual behavior is needed.

With the exception of educational level, rural and urban residents on average do not differ significantly in individual demographic and psychosocial characteristics or in the extent of social influences of drug use and casual sex. Nor do urban residents differ from their rural counterparts in drug use or sexual risk of HIV. While features of the residential environment as measured in the study do not seem to reduce the observed difference in HIV-risky sexual behaviors between urban and rural residents, they have no doubt contributed to reducing the observed difference in HIV-risky drug use behaviors, accounting for more than 60 percent (0.222 without and 0.087 with the control) of the observed rural-urban difference in the drug use risk index. However, the fact that most of the observed rural-urban difference in the sexual risk index remains after features of the residential community are controlled for suggests that other unobserved (unmeasured) features that are associated with urban living in China may be significant contextual risk factors of HIV-risky sexual behaviors. More research seeking to identify these contextual risk factors is needed for both theoretical understanding of the links between urban living and sexual risk of HIV and for effective policy prescriptions to moderate the negative impact of urban living on HIV-risky sexual behaviors.

Altogether, the results make it clear that both migration and urban living exert significant influence over individual drug use and sexually risky behaviors, although their influences may not always be in the same direction or of the same importance. Different from what has been portrayed in the literature and by the media, migrants are found to be significantly less likely to have HIV-risky drug use behaviors than non-migrants after selected individual and community characteristics are controlled for. Also different from the common belief in China that drugs are mainly a problem in poor rural areas, drug use risk of HIV is found in this study to be very much an urban problem in contemporary China and is not likely the result of poverty. In fact, community-level poverty was found to be negatively associated with the drug use risk index. Interventions targeting drug use should pay particular attention to the urban environment. For HIV-risky sexual behaviors, both migration and urban living are equally important risk factors.

For both drug use and sexually risky behaviors, the study confirms the important influence of community context. The consistently slightly higher intra-PSU correlation for drug use risk suggests that the contextual influence may be stronger for drug use than for sexually risky behaviors. In addition to individual risk

factors, future studies of individual health-related behaviors, including HIV-risky drug use and sexual behaviors, must pay attention to contextual influences and try to understand mechanisms through which community context influences individual behavior. To be effective, policy and program interventions to reduce unhealthy or risky behaviors must address contextual risk factors, including social influences of people's broader social networks of peers, friends, and family.

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A Study of Chinese Migration in a Border Area and Its Potential Risk of HIV Infection: A Gender Perspective, Yunnan

Li Xiaoliang, Chen Jiang, Song Xiaoxiao, Zhang Jianping, Ping Nina, Liu Ping

ABSTRACT

Yunnan Province is located in southwest China and shares a 4,060 km border with Vietnam, Laos, and Myanmar. Since the late nineteenth century, trade on the border between China and those neighboring countries has been growing. More and more Chinese from all regions of the country now come to the border area, and there is speculation and fear that such an increase in human movement may increase the risk of HIV infection. In 2006 we interviewed 1,025 Chinese migrants in a small town bordering Myanmar, in order to find out the composition of this population and the factors influencing their risks for HIV infection. We found they were from 19 provinces and cities and had relatively low knowledge of HIV/AIDS. Men engaged in more risky behaviors than women; the possible influencing factors for such risky behaviors include education level, social support, job opportunity, living pattern, and information access. Currently, there are limited effective interventions focusing on these groups. Reaching them and providing relevant knowledge and service to them is a challenge.

School of Public Health, Kunming Medical University, 191 West Renmin Road, Kunming, Yunnan, 650031, China

INTRODUCTION

According to estimates from UNAIDS, up to the end of 2005 (UNAIDS, 2006), there were 38.6 million people living with HIV/AIDS around the world; among them, almost half were women. In China, at the end of 2005, there were an estimated 0.65 million people living with HIV/AIDS (Chinese Ministry of Health, 2006). The proportion of female HIV-positive people has grown from 15.3 percent in 1998 to 39.0 percent in 2004 (Chinese ministry of health, 2005). In Yunnan province, recent epidemic data showed that the ratio of males to females infected with HIV has decreased to 2.7 to 1 (Yunnan CDC, 2006). These figures show that infection among women is increasing at a faster rate than among men.

Since the late 1980s internal migration in China has been increasing. This increase has brought a number of new challenges for China. For example, since most migrants have migrated from rural areas where people lack education, information, and social security, when they have tried to settle down in a new place, they may have faced many problems and risks that they have not known or experienced before. HIV infection is one of them.

Yunnan province has a 4,060 km border with Myanmar, Laos, and Vietnam. Around newly built border control stations, the cross-border trade is booming and becoming a new resource to the Yunnan economy. Because of this, a huge number of people are swarming to the border area from inland China.

The town in our study (N town) is a small one with a population of around 1,400, but since the early 1990s it has become not only a trade destination and a place for distribution of merchandise, but also, as a result, a destination for Chinese migration. Each year, N town receives 10,000 to 20,000 temporary migrants during the dry season (between October and April). The entertainment and sex industries have blossomed with the number of migrants migrating to the town, but few HIV/AIDS prevention programs have been implemented for the migrants due to the difficulty of reaching them. We conducted this study in 2006 in order to assess the reality of the situation and to find which sub-groups are most vulnerable to HIV so that a realistic suggestion can be developed for future intervention.

METHODOLOGY

Sampling: Based on our interviews with key informants, we estimate that there are at least 10,000 Chinese migrants who gather in N town in the dry season. Based on this estimate, we decided to sample 10 percent (1,000 persons) of the total estimated migrants.

Interviewee recruitment: First we mapped the town and figured out the location where the migrants live. Then, we recruited our sample in these locations with the help of local people. As the majority of migrants to the town are Chinese, with only very few people from Myanmar coming to China for business, this research focused on Chinese migrants.

Questionnaire development: A draft questionnaire was formed based on the questionnaire we used before in our study. A questionnaire for behavior surveillance developed by FHI (Family Health International) was also referenced; then, pre-tests of the questionnaire were done in Kunming and the town separately. Based on this testing, a final questionnaire was formed.

Interview methods: After informed consent, each interviewee was interviewed face-to-face by trained interviewers. All data were double inputted and analyzed.

RESULT AND DISCUSSION

Demographic

In total, 1,049 persons were interviewed. Among these, 1,025 completed questionnaires and they were included in the data analysis. Among these 1,025, 689 (67.2 percent) are men, 336 (32.8 percent) are women. With regard to ethnic make up, 89.4 percent of the 1,025 are Han, with Dai and Jingpo constituting 2.3 percent and 1.9 percent of the total, respectively. 69.5 percent of the 1,025 are married and 29.5 percent are unmarried.

TABLE 1

Age Distribution of the Migrants by Gender (n, %)

	MEN		WOMEN		TOTAL	
<15	1	0.10	2	0.60	3	0.30
15~	59	8.60	41	12.20	100	9.80
20~	91	13.20	62	18.50	153	14.90
25~	123	17.90	66	19.60	189	18.50
30~	141	20.50	64	19.00	205	20.00
35~	124	18.00	53	15.80	177	17.30
40~	78	11.30	24	7.10	102	10.00
≥45	71	10.30	24	7.10	95	9.30

x^2=16.447, P<0.05

The average age of the sample is 31.68 ± 9.46, with men averaging 32.48 years of age and women averaging 30.03 years of age, thus, no significant difference between the average age of the men and women. However, the age distributions

among the two gender groups are different: among people aged younger than 20, women account for 31.3 percent, but men only account for 21.9 percent. This significant difference between the distribution of men and women shows that young women are more likely come to look for work in the town than their male counterparts.

TABLE 2

Distribution of Education Level of the Migrants by Gender (n, %)

	MEN		WOMEN		TOTAL	
Illiteracy	15	2.18	22	6.57	37	3.62
≤6 year	146	21.19	91	27.16	237	23.14
6–8 year	390	56.60	181	54.03	571	55.76
9–11 year	109	15.82	36	10.75	145	14.16
≥12 year	29	4.21	5	1.49	34	3.32
Total	689	100.00	335	100.00	1024	—

x^2=24.87, P<0.01

In total, around 23.14 percent received only 6 years or less education. For men, around 20 percent received over 9 years education, but only around 12 percent of women received that amount, although the ratio of the 9–11 years group is very similar between men and women. Comparing the education level of men and women, men have a higher level than women. The lower education level of women may influence their ability to get jobs or obtain information.

Occupations

The migrants to the town are from 19 provinces and prefectures (63.07 percent are from neighboring prefectures within Yunnan Province and 36.93 percent from other provinces of China). The majority of them come for temporary jobs when they can't find work during the off seasons in their hometowns.

Table 3 shows 23.5 percent of men and 32.7 percent of women were farmers before they moved to the town. When women have to look for a job different from their background experience, they may face more challenges and have fewer opportunities. This can be seen in disproportional occupation change after migration, as is partly demonstrated by an increase in self-employment after migration and more unemployment among the women. This phenomenon may be more obvious in this situation than in migration to a big city inland, as N town is very small and job vacancies are very limited. Xia Guomei from Shanghai Academy of Social Sciences had a similar finding about men's and women's occupation shift. (Xia & Yang, 2006)

TABLE 3

Previous and current occupation distribution by gender (%)

	PREVIOUS		CURRENT	
	Men	Women	Men	Women
Farmer	23.5	32.7	0.0	0.0
Worker	20.5	6.3	35.2	2.4
Driver	18.6	1.5	26.1	1.2
Self-employment	10.7	25.9	17.4	37.5
Student	7.4	5.4	0.0	0.0
Businessmen	6.4	2.1	10.2	2.4
Jobless	3.5	13.7	1.9	29.2
Sex workers	0.0	0.0	0.0	16.1
Others	9.4	12.5	9.1	11.3

x^2=510.79, P<0.01

From the table above, it can be seen that the proportion of unemployed women is much higher than that of unemployed men; 16.1 percent of women migrants became sex workers after they moved into the town, one probable reason being that they couldn't find the sort of jobs they expected.

Social network

Questions about the pattern of migration and living were asked in order to assess the differences in social networks among men and women.

TABLE 4

The pattern of migration from original hometown by gender (n, %)

MIGRATED WITH	MEN		WOMEN		TOTAL	
Acquaintance	254	37.62	30	9.32	284	28.49
Alone	177	26.22	65	20.19	242	24.27
Wife/husband	117	17.33	180	55.90	297	29.79
Colleague	77	11.40	2	0.62	79	7.92
Parents	20	2.96	14	4.35	34	3.41
Girl/boy friend	6	0.89	7	2.17	13	1.30
Others	24	3.56	24	7.45	48	4.81

x^2=217.12, P<0.01

Table 4 shows that more men than women came to the town with somebody they knew in their hometown, such as an old friend or colleague. This suggests they can still get some social support even though they've left home. The situation for the women is different: nearly 60 percent of them come to the town

with their husbands or boyfriends. After they've left home, women may lose part of their previous social network, and may have to rely on their husbands more than they did in their hometowns. Moving to a new place may influence their independence in decision-making.

TABLE 5

The current living arrangement by gender (n, %)

LIVING WITH	MEN		WOMEN		TOTAL	
Acquaintances	204	26.3	17	4.5	221	19.1
Partner	176	22.6	214	56.0	390	33.6
Colleagues	157	20.2	40	10.5	197	17.0
Alone	117	15.1	28	7.3	145	12.5
Family member	91	11.7	56	14.7	147	12.7
Parents	16	2.1	15	3.9	31	2.7
Others	15	1.9	12	3.1	27	2.3

x^2=181.82, P<0.01

Like the pattern of migration, men and women have different patterns of living arrangements in the town. The majority of men live with their acquaintances or colleagues, but the majority of women live with their husband, boyfriend, or family member. The number of men living alone is twice that of the women. It suggests that men likely owned more free space after moving to a new place than women. This may result in different behavior between men and women.

Knowledge of HIV/AIDS

Getting adequate and correct information is the basis for good HIV/AIDS prevention. This research found that after many years of the epidemic, the number of people who've heard of HIV/AIDS has increased greatly. This study found that a total of 96 percent of men and women had heard of AIDS, but 79.4 percent of them don't think they will be infected with HIV. That suggests they may still lack sufficient knowledge about the epidemic (see table 6) and are not aware of the risks of HIV infection.

In total, 13 questions about HIV/AIDS, including transmission (see table 6) were asked. A person was given a score between 0 and 13 based on the number of correct answers given. The results show that the average knowledge score was 8.38 ± 3.46 (8.17, 8.60), the men's score was 8.37 ± 3.41 (8.11, 8.63) and the women's average score was 8.41 ± 3.56 (8.03, 8.80), so there is no difference based on gender. The average scores showed that a question was answered correctly by our subjects only 64.46 percent of the time.

TABLE 6

The rate of correct answer about transmission of HIV by gender (%)

	MEN	WOMEN	TOTAL
Receiving blood/blood products	83.6	78.5	81.8
Sharing syringe and needles	82.2	81.1	81.8
Having unprotected sex	80.0	74.4	78.1
Pregnant women to baby	72.3	74.7	73.1
Hand-shaking	69.0	72.4	70.2
Having meal together	71.0	65.4	69.1
Mosquito biting	31.7	35.2	32.9
Breast milk feeding	28.7	39.2	32.3

In total, only around 80 percent of people recognize the fact that "receiving blood/blood products," "sharing syringe and needles," and "unprotected sex" can transmit the HIV virus. The number of people who think pregnant women can spread the virus to their babies is very low, and only around 30 percent realize that breast feeding can spread the virus. Similar incorrect perceptions exist regarding routes of infection such as beliefs that HIV is transmittable through mosquito bites, hand-shaking, and having meals together.

TABLE 7

The route of acquiring HIV/AIDS information by gender (%)

	MEN	WOMEN	TOTAL
Television/broadcast	46.59	47.02	46.73
Street advertisement	28.59	19.05	25.46
Distributed free pamphlets	27.72	25.89	27.12
Friends	26.85	17.86	23.90
Other people in chatting	18.72	21.43	19.61
Newspaper/magazine	13.79	7.4	11.71
Health workers	11.61	12.20	11.80
Government o×cial	10.59	6.55	9.27
Boss	2.32	1.79	2.15
Family member	1.89	2.08	2.15

Table 7 shows where men and women reported getting their information regarding HIV/AIDS. It seems that men may have more opportunities to get information about HIV/AIDS, as they are better educated and have more friends. Culturally, men may also be more willing to talk with their friends about issues

relating to HIV/AIDS, such as sex. For both men and women, television is a very important source for getting information, and around one-quarter of individuals mentioned that they get information from free pamphlets. In fact, while the research was being conducted, the local government was holding a public education campaign about HIV/AIDS prevention; the posters with the information were displayed and free pamphlets were handed out in the main public places for almost one week. It seems likely that the knowledge level would have been lower without this campaign.

Sex behavior

All interviewees were asked about their sex lives. They answered questions alone without the presence of other people in the room (except for the researcher) about whether they had sex with fixed partners, temporary partners, or commercial sex partners during the previous year. A fixed partner in this context refers to a spouse or a boy/girl friend; temporary partner refers to a sexual relationship outside the marriage, but without money involved. In order to reveal the difference between men and women on this question, female sex workers were excluded when this data was analyzed.

TABLE 8

Sex with different partners during last year by gender (%)

Had sex with	MEN	WOMEN	TOTAL
Fixed partner	89.70	90.60	90.00
Temporary partner	8.34	0.37	6.00
Commercial sex partner	7.30	0.00	5.50

Table 8 suggests that the number of men having sex with a temporary partner or a sex worker is overwhelmingly greater than the number of women doing so. As men are more likely to risk having casual sex than women, they may be in greater danger of being infected by HIV.

The individuals who admitted having had sex in the previous year were asked to self-report the rate of condom usage during sex; results are shown in Table 9.

TABLE 9

The rate of condom usage with different partners during last year, by gender (%)

	MEN			WOMEN		
Sex with	**Never**	**Sometime**	**Everytime**	**Never**	**Sometime**	**Everytime**
Fixed partner	74.7	19.0	6.3	74.6	18.3	7.0
Temporary partner	41.2	25.5	33.3	—	—	—
Commercial sex worker	20.2	18.0	62.0	—	—	—

From the table above, men's rates of using condoms changed with different sex partners. It appears that men were more likely to use condoms with commercial sex workers, and less likely to with their wives and girlfriends. A notably dangerous situation is that only 62.0 percent of men used condoms every time they had sexual intercourse with sex workers. This heightens the likelihood of them being infected by HIV, and further spreading the virus to their fixed partners, as they did not use condoms often when having sex with their fixed sex partners.

In order to understand the difference between men and women in terms of condom use, the data from 40 female sex workers was analyzed regarding their condom using with their fixed partners and with their clients. We found that 18 out of 40 were having sex with a husband or a boyfriend during the last year, but of these only 8 said that they used a condom every time. Three admitted using condoms sometimes and 7 said they never used condoms. Meanwhile, 35 people self-reported that they used a condom every time they had sex with their clients, and 5 said they used only sometimes.

From the result, we can see that as long as the individuals do not use a condom every time they engage in commercial sex, their spouses or long-term sex partners will be in a situation of possibly being infected by HIV.

The men in this study were asked why they did not want to use condoms. Men gave different reasons when they had sex with different partners. "Not necessary" and "using other contraceptive" are the main reasons given in the case of the fixed partner, while "I don't want to use" is the most common reason in the case of temporary and commercial partners. It seems men had more power to control condom using.

TABLE 10

The reason of not using condom with different kind of partner given by men (%)

	FIXED	TEMPORARY	COMMERCIAL
Not necessary	41.5	38.7	27.2
Using other contraceptive	30.7	3.2	0.0
I don't want to use	12.9	29.0	36.0
Partner doesn't want to use	0.3	0.0	9.0
No condom in the hand	0.6	6.5	0.0
Others	11.1	22.6	27.2
No reasons	1.3	0.0	0.0

CONCLUSIONS

Our study reveals that the characteristics of the migration in the border area of Yunnan are similar to those identified in other research. Such characteristics include that female migrants are younger than the males, there are more male migrants than female, and the education level of the female migrants' is lower than that of male migrants (Anderson, Qingsi, Hua & Jianfeng, 2003).

Moving to a small town in the border area may be different from moving to a big city. The small town is more a gathering place for most migrants rather than a destination, which may increase the instability in the lives of migrants, and thus increase their risk of HIV infection. We also suspect that this instability may also affect the women more severely. This is based on a number of factors, including the lack of economic independence and information access, smaller living space, and exposure to risk behaviors.

More research is needed for us to learn more about the life of Chinese migrants in their destinations. Also, information and education about HIV prevention should be provided for the general population in the community where the migrants are from, and special programs should be designed for those groups who are more vulnerable or at higher risk.

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Yale-China Association

442 Temple Street Box 208223 New Haven Connecticut 06520-8223 USA

Tel (203) 432-0880 Fax (203) 432-7246 email: *yale-china@yale.edu* Web site: *www.yalechina.org*

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