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Do slums matter? Location and early childhood preventive care choices among urban residents of Bangladesh

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ABSTRACT

Upward trends in the relative proportions of slum residents in developing countries have led to widespread concern regarding the impact of slum residency on health behaviors. Measurement of these impacts requires recognizing that unobservable household characteristics that affect the location decision may also affect health care choices and outcomes. To address the potential for bias, this paper models the location decision and the household's demand for maternal and child health services simultaneously using a flexible, semi-parametric approach. It uses a unique urban data set from Bangladesh that incorporates sophisticated geographical mapping techniques to carefully delineate between slum and non-slum areas at a particular point in time. The results suggest that accounting for the endogenous location decision of a family substantially reduces bias in estimated marginal effects of slum residence on preventive care demand. While community infrastructure variables appear correlated with preventive care demand, the causal effect of the availability of primary health care facilities is indistinguishable from zero when unobserved heterogeneity is taken into account. The findings suggest that improvements in community infrastructure in urban areas of developing countries are a more favorable health policy solution at the margin than the construction of additional health care facilities.

Introduction

By the year 2020, the urban population of developing countries will surpass rural populations for the first time in history (United Nations Department of Economic and Social Affairs, Population Division, 2008). Much of the urbanization of the developing world has occurred, not through differing rates of population growth, but through increases in rates of rural to urban migration. As developing countries are affected by globalization, rural inhabitants are abandoning agricultural work to seek higher wages in cities.

Concurrent with this trend is the growth of urban slums. These slums can vary from small groups of dilapidated housing to enormous areas with large populations within cities. Nowhere are the causes and consequences of migration and urban growth more readily observed than in Bangladesh. Rapid growth of the commercial and manufacturing sectors in the country, especially in the areas of garment production and processing, has led to an influx of both male and female migrants to urban areas in search of employment (Afsar, 1998). Infrastructure development in Bangladesh has not kept pace with this urbanization, resulting in the rapid growth of slums and informal squatter settlements. Approximately one third of the population of Dhaka currently resides in slums or squatter settlements, while similar patterns can be observed across the country (Hossain, 2007).

The upward trends in both the quantity and relative proportions of slum residents among developing country populations have brought the potential health impacts of slum life into greater focus. Child health is a particularly important issue in urban areas, as children are an extremely large component of new city growth. Estimates suggest that as many as 60 percent of all urban residents will be under the age of 18 by 2030, and that if drastic action is not taken soon, these children will likely face even greater health risks than their parents (Tulchin, Varat, & Hanley, 2003). Preventive care measures are one of the most important ways to address this issue among poor urban populations. Until recently, however, formal analysis of these impacts has not been pursued in great detail by international health and development economics researchers. In light of these issues,

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this paper attempts to answer the following two interrelated questions:

- How does a household's choice of location within the urban environment affect the subsequent health care decisions that it makes for its children?

Or, more specifically:

- How does endogenizing the location decision affect the demand for preventive care and, ultimately, health outcomes?

While there are a significant number of descriptive papers comparing the outcomes of slum and non-slum residents, few attempts have been made to specifically model the decision to locate in a particular urban environment as it relates to subsequent health care choices. If there are unobservable characteristics affecting the location decision that are also correlated with health care choices and outcomes (such as risk tolerance or an increased rate of time preference, for example), then any descriptive work that compares these populations without accounting for slum selection will suffer from bias.

To overcome this obstacle, this paper models the decision to locate in a particular area and the household's demand for maternal and child health services simultaneously. It uses a unique urban data set from Bangladesh that incorporates sophisticated geographical mapping techniques to carefully delineate between slum and non-slum areas at a particular point in time. The estimation method allows for correlation across outcomes using a flexible, semi-parametric approach to the modeling of unobserved heterogeneity. The results indicate that accounting for the endogenous location decisions of a family substantially reduces bias in estimated marginal effects of slum residence on preventive care demand.

In addition, while community infrastructure variables appear correlated with preventive care demand, the causal effect of the availability of primary health care facilities is indistinguishable from zero when unobserved heterogeneity is taken into account. In other words, the results suggest that for policymakers with limited budgets, initiatives to improve community sanitation and infrastructure in urban environments might be much more effective than the construction of additional health care facilities at the margin. These results provide new evidence of the effects of location choice on preventive care decisions and, ultimately, child health.

Background and literature review

The vast increase in rural to urban migration noted in the introduction informs the scope of this paper, which focuses on slum and non-slum areas within the five major urban centers of Bangladesh. Issues specific to urban health are often quite different from the health concerns facing rural communities and villages in developing countries. While barriers to seeking care in rural areas might be primarily geographic, the increased concentration of hospitals and other medical providers in urban areas make time constraints with respect to distance less of an issue. This "urban bias" with respect to the distribution of hospitals is common in developing countries, and has also been noted elsewhere in South Asia (See, for example, Chaudhuri & Roy, 2008). In addition to geographic advantages, the economies of scale associated with the provision of health services in dense populations would lead one to expect greater choices and access to care among city dwellers.

Unfortunately, the growth of slums in urban areas and the unique health obstacles facing slum residents often eliminates any advantages stemming from economies of scale and the "urban bias" in hospital distribution. Even though urban children are generally much closer to primary health care facilities than rural residents in poor countries, children in slum households have been observed to experience similar mortality rates to children from rural areas (Martine & United Nations Population Fund, 2007). Possible mechanisms by which to explain this effect have included poor water quality and sanitation conditions generally associated with slums, increased population densities associated with the spread of communicable diseases, and a lack of nutrition commonly associated with the poverty of slum residents. While a variety of comparative evidence has been put forth to demonstrate these effects, very little work has been done to account for the observable and unobservable characteristics relating to initial selection into slums, and the causal mechanisms by which these characteristics operate.

The mechanisms of health care delivery in Bangladesh also differ somewhat from Western nations and other countries in Asia. One of the most obvious issues relating to health care is the difference in the provision and willingness to pay for health services. While health expenditures for a citizen of the United States average well over six thousand dollars per year, a typical resident of Bangladesh spends about 772 taka, or the equivalent of 12 U.S. dollars, on health-related goods (World Health Organization, 2008). This difference is striking, even after accounting for purchasing power parity and the skewness of the distribution of health expenditures. Moreover, in contrast to the health care systems of many LDC's and much of Western Europe, non-governmental suppliers dominate the country's market for health care services. This market includes both non-profit and for-profit firms, and differs widely according to the quality of services offered and out of pocket costs (Vaughan, Karim, & Buse, 2000). Though many primary health services and medicines are pecuniarially free, many drugs in these facilities are unavailable unless purchased privately. For this and other reasons, a large portion of the population utilizes both traditional and "modern" providers of private care, which accounts for the small share of public sector payments in out of pocket medical expenditures (Van Doorslaer et al., 2007).

In addition, unlike other countries in South Asia, the prevalence of publicly provided health insurance in Bangladesh is quite low, and if present, limited to a select number of geographic areas (World Health Organization, Regional Office for Southeast Asia, 2004). The predominance of the private sector in Bangladesh highlights the importance of research into the role of individual health and location choice, because the willingness to pay for health services is not as diluted by the existence of a large health insurance market or by the excessive "crowding out" of the private sector from government intervention relative to many other industrialized nations.

Preventive care

Unlike the large quantity of articles in international health that focus on curative health care demand (See, for example, Akin, Guilkey, Hutchinson, & McIntosh, 1998; Dow, 1995; Van Der Stuyft, Delgado, & Sorensen, 1997; Yount, 2004), this research concentrates specifically on the provision of early childhood preventive health care services. A variety of cost-effectiveness analyses and studies of international health demand since the 1980s have emphasized the importance of preventive health care goods as key prerequisites to improving the health of poor countries. Despite the increasing recognition of the importance of preventive services since that time, currently much is left to be done in the study of the provision of these types of health goods. Recent work has emphasized the importance of encouraging preventive care in South Asia,