

CHILD HEALTH AND MORTALITY

Janet Currie

Child health and mortality are of interest to economists for three reasons: First, they are important indicators of the success or failure of government policy. Second, children's health has long-term impacts on their health and productivity as adults. Third, there is increasing recognition that children are economic actors in their own right. Hence, their well-being is worthy of study.

The most common model of child health is one in which health is "produced" by families using health inputs (Grossman, 2000). Families maximize an inter-temporal utility function subject to the production function, prices, and budget constraints. Inputs are valued only because of their effect on health. Children start with a "health endowment" that depreciates over time in the absence of health inputs. Public policy affects either the price of inputs, or the form of the production function. The model predicts that child health will be influenced by the price of health inputs. The inter-temporal nature of the model highlights the idea that health inputs are investments with long term payoffs.

Studies of children in developing countries often focus on the "production" of mortality rates, nutrient intakes, height, weight and other objective measures. In contrast, studies of children in richer countries often focus on the utilization of health care. But health care is only one input into the production of child health and it is not the most important. Improvements in standards of living, advances in knowledge about disease and hygiene, and public health measures such as improved sanitation have done more to improve child health in the past 150 years than even the most spectacular advances in personal medical care (Preston, 1977). Today, accidents and violence, rather than disease, are the major killers of young children in wealthy countries after the first year of life (Unicef, 2000).

Measures of Child Health

Health is multi-dimensional and difficult to measure. Mortality and parent-reported health fall at two ends of a spectrum. Mortality is an objective but narrow measure. In countries with high death rates, child mortality is a relatively sensitive indicator of economic and social conditions. For example in Zimbabwe, mortality among children under 5 increased from 80 to 126 per 1,000 live births between 1990 to 2003 as economic crisis deepened (U.N. Common Data base). In countries with lower child mortality rates, the relationship between economic conditions and mortality may be masked by the effects of economic cycles on fertility (c.f. Lleras-Muney and Dehejia, 2004), and by strong underlying downward trends in mortality which can be attributed to technological advances.

A typical survey question eliciting parent reports about child health asks respondents to rate child health on a scale of 1 to 5. An advantage is this measure applies to all children. A disadvantage is that parent reports may be biased. For example, sick parents are more likely to report sick children. Parents are also often asked about limitations on children's activities (e.g. did a health problem prevent school attendance?) and about the presence of chronic conditions. These questions have the advantage of being more specific, but capture only one dimension of health and also suffer from potential biases (Baker, Deri and Stabile, 2004; Strauss and Thomas, 1996).

In between are anthropometric measures such as birth weight, height, weight, height-for-age, and body mass index (Martorell and Habicht, 1986). Anthropometrics are objective measures that apply to large numbers of children. But like mortality, they may not be sensitive measures in healthy populations. For example, American children are unlikely to be stunted (low height-for-age) and are increasingly likely to survive low birth weight (birth weight less than 2500 grams)

without significant impairments. American children are increasingly likely to be obese, however, suggesting that body mass index is likely to become a more important health indicator in future.

A fourth class of measures involve “risky behaviors” such as precocious or dangerous sexual activity, involvement in crime or victimization, use of handguns, and the use of alcohol, tobacco, and illegal drugs. Given the importance of accidents and violence among children, these are important questions. But the stigma associated with these activities makes it likely that they will be under-reported. Also, risky behaviors may or may not lead to poorer health. Unfortunately, the actual health effects of many behaviors are very poorly reported. For example, there is little information available about injuries that do not lead to deaths.

Some surveys include clinical assessments of children’s health by doctors or other trained professionals in addition to some of the information about economic status that is usually collected in social surveys. Examples include the British birth cohort studies, the American National Health and Nutrition Examination Surveys, the World Bank’s Living Standards and Measurement Surveys and the Indonesia Family Life Survey. Some of the most interesting work being done in this area involves measures of children’s genetic makeup. Caspi et al. (2002) show, for example, that New Zealand men with a specific genetic marker were more likely to be violent adults, but only if they had been maltreated as children.

Given the broad range of health outcomes, researchers should look at a range of outcomes and carefully consider whether the chosen ones are likely to be affected by the phenomena of interest.

Health Care Utilization

The human capital model makes a clear distinction between health and health inputs. In the model, parents care about health rather than health inputs. Yet this distinction is often blurred. Williams and Miller (1992, pg. 991) state that “One of the most impressive aspects of health policy implementation [in Europe is] ...that the programs were put in place not because of extensive documentation on cost effectiveness, but out of a value system that cherishes equity in health care.” The underlying assumption is that all health care produces health. Yet, the market for health care is plagued with imperfections. Some care is likely to be superfluous, for consumption rather than investment purposes, or even injurious.

Models of physician-induced demand show that asymmetric information can lead to excessive consumption of medical services if physicians take advantage of their superior information to “sell” services that patients do not need (Pauly, 1980; Dranove, 1988). There may be considerable scope for inducement in the market for children’s health care. Many child treatments are inexpensive but have a high clinical value when they are warranted, so parents perceive a low cost set against a potentially high benefit. The availability of insurance compounds the problem by further reducing costs to parents.

Researchers should focus on measures of utilization that have a clear benefit. Whether or not a child went to a doctor in a year and whether a child is immunized are good examples. Measures such as the number of hospitalizations are problematic since many hospitalizations could be prevented with appropriate outpatient care. Some recent work focuses on “preventable hospitalizations” as a measure of inadequate utilization of care (Casanova and Starfield, 1995).

Health as an Investment

Child health affects adult health. Poor health in childhood also lowers future utility through its effects on future wages and labor force participation (Currie and Madrian, 1998), and through its effects on schooling. Currie (2005) provides a survey of literature linking several specific health

conditions to cognitive outcomes and schooling achievement.

Using data from the 1999 Panel Study of Income Dynamics, James Smith (2005) shows that a retrospective self-reported question about health during childhood is remarkably predictive of future outcomes. Comparing siblings, he finds that those who were in excellent or very good health earn 25 percent more as adults. Currie (2000) surveys some of the many studies that find positive associations between cognitive test scores and anthropometric measures of health such as birth weight, weight, height, head circumference, and the absence of abnormalities in children of various ages. More recently Currie and Moretti (2005) show that differences in birth weight between sisters are predictive of differences in education and median income in the zip code of residence at the time the sisters deliver their own children many years later.

But low birth weight is only one of a number of health shocks that low income children are more likely to experience (Newacheck et al, 1996). Case, Lubotsky, and Paxson (2002) show that the gap in health status between rich and poor U.S. children widens as children age. Currie and Stabile (2004) replicate this finding using Canadian data, and argue that the widening gap reflects the greater frequency of negative health shocks among poor children. The comparison of the U.S. and Canada suggests that public health insurance is not sufficient to shield children from the negative health consequences of poverty (since Canada has universal insurance). However, in Britain, the gap between rich and poor children is smaller than in North America and does not widen as children age (Currie, Shields, and Price, 2004). This suggests that some other aspect of the social safety net may be responsible for protecting child health in Britain.

Poor children are more likely than rich children to suffer from mental health problems (Currie, 2005). Mental health problems account for the largest share of days lost due to health problems in the U.S. Many mental health conditions have their roots in childhood, but the relationship between mental health and child outcomes has been largely ignored in economics. Currie and Stabile (2005) investigate the relationship between symptoms of Attention Deficit Hyper Activity (ADHD) disorder and educational attainment using U.S. and Canadian panel data. We find large negative effects even in rich sibling-fixed effects models. Other research has shown that childhood behavior problems predict negative future outcomes (c.f. Gregg and Machin, 1998). The prevalence and potential economic importance of child mental health problems suggest that more work is warranted.

Policy and Child Health

It is easy to justify government intervention in the market for health care. In addition to asymmetric information between patients and providers, there are other informational problems. For example, imperfect information in the market for insurance can lead to market failure. And although parents make most decisions about child health inputs, these decisions have consequences for society. Parents who do not take account of externalities may not provide the optimal level of care for their children (c.f. Kremer and Miguel, 2004). Finally, the health sector accounts for a large and growing share of the economy and the government is already the major player in the health care markets in most countries including the U.S.

Policies can be divided into those that intervene in the market for health care, and those that affect health through other means. Public health insurance is the most prominent example in the first category. It is difficult to study the impact of universal health insurance because there is only a single “before/after” comparison. But over the late 1980s and early 1990s, the U.S. greatly expanded its public health insurance coverage of pregnant women and children. Forty percent of U.S. births are now covered by public insurance. The expansion took place at an uneven rate across states, yielding a potential source of identification.

The effects of this expansion of insurance coverage are surveyed in Gruber (2003). It reduced

infant and child mortality, increased utilization of preventive care, and reduced preventable hospitalizations among children. But, increases in coverage also increased the inappropriate use of care (e.g. increased rates of Cesarean sections). And some who took up public health insurance would have had private health insurance in the absence of the expansions. Hence, public health insurance improves child health, but does not necessarily result in efficient service delivery.

Health care utilization is only one input into health production. Other inputs such as a healthy lifestyle and the avoidance of injury are arguably much more important. Government policy has a large role to play in affecting many health inputs beyond health care. A few examples follow.

Pollution is likely to be more harmful to children than to adults both because they are still developing and because of their small size. Hence, any policy that impacts the environment may affect on child health. For example, Chay and Greenstone (2003) show that the recession of the early 1980s reduced infant mortality. Currie and Neidell (2005) show that reductions in carbon monoxide pollution in California over the 1990s (largely due to cleaner vehicles) saved at least 1,000 infant lives.

Child obesity is a growing problem that threatens future health. The potential role for government ranges from the provision of information (e.g. by revising the healthy food pyramid) to regulation (eliminating Coke machines in schools). The government plays a similar role with respect to discouraging children from using alcohol and tobacco, though in these examples government also directly controls the price of the products through taxation. A good deal of research documents the relationships between prices, advertising, and youth consumption of tobacco and alcohol. But we know much less about the effectiveness of newer policies aimed at curbing obesity (see Gruber, 2001).

Although injuries remain a major cause of death, the incidence of accidental death has declined dramatically since the 1970s, especially in the United States (UNICEF). Glied (2001) argues that the decline is due to improvements in education resulting in increased use of, for example, bicycle helmets and seat belts. But many products, including cars, cribs, and medicine bottles, are much safer than they used to be. Is this a result of random technical innovation, government mandates, or fear of lawsuits? Similarly, trauma care has improved greatly, so there are many possible explanations for the reduction in mortality.

While health affects education, maternal education affects child health. Currie and Moretti (2003) find that increases in the availability of colleges increased women's education, leading to better infant health outcomes. Hence, there is an intergenerational payoff to government investments in education that leads to "increasing returns" to investments in education (Rosensweig and Wolpin, 1994).

Finally, as discussed above, poor children are more likely than rich children to suffer virtually all forms of health insult. Hence, improving health is a goal of general poverty alleviation programs such as public housing and income maintenance.

Summary

Child health is an important indicator of the direction and well-being of society. Health in childhood is one of the more important factors predicting health and productivity in adult life, and the health of adults will in turn affect the well-being of the next generation of children.

Many policies have impacts on child health. Some simple improvements in data collection efforts could have a large research payoff in terms of identifying these impacts. These include: Allowing the release of geographical identifiers so that health data can be merged to other data;

the inclusion of family income and demographics in health data sets; and the collection of more objective measures of child health.

What are the most interesting outstanding questions? First, what are the most cost-effective investments in child health? Second, what explains the relationship between health and socioeconomic status over the life course? And third, what interventions are most effective in breaking the inter-generational cycle of ill health and poverty?

See also: Family, fertility, health economics, household production, human capital, infant mortality, public health, state provision of medical services.

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