

## Determinants of Nutritional and Health Status of Children in Punjab

*This policy brief is written by Zara Salman and Shehryar Nabi (CDPR Researchers) and is based on the report “Nutritional and health status of Punjabi children: Tentative results and future data needs” authored by Uzma Afzal (Research Fellow Centre for Research in Economics and Business), Usman Ghaus (Teaching Fellow Lahore University of Management Sciences), Dr. Jeffrey S. Hammer (CDPR Fellow).*

Eight percent of Pakistani children die before they reach the age of five, giving Pakistan the highest child mortality rate in South Asia.<sup>1</sup> Height and weight for age are also low, as 44% of children in Pakistan have stunted growth<sup>2</sup> and about a third are underweight.<sup>3</sup> Both of these conditions slow cognitive development and increase the susceptibility to disease. Mortality, height and weight are the key measures of health status, whose main determinants are income, education, sanitation, water and access to primary care facilities. Collecting more precise evidence on these determinants is of utmost importance for policy interventions to reverse Pakistan’s poor health outcomes.

However, current surveys in Pakistan are lacking information on the leading causes of health status identified above. The data that does exist shows no discernible impact of publicly provided curative care on any measure of health status. If the intention of government is to rely on these services to serve the people of Punjab, the total absence of evidence in its support needs to be explained.

The IGC-funded study, “Nutritional and health status of Punjabi children”, examines four major surveys in Pakistan’s Punjab province: The 2006 and 2012 Pakistan Demographic and Health Surveys (PDHS) and the 2008 and 2011 Multiple Indicator Cluster Surveys (MICS). While there is useful information to be derived from these surveys, the study identifies multiple gaps between what is known and what needs to be known for each determinant, and emphasizes on prioritizing the collection of data to answer the

<sup>1</sup> The World Bank, World Bank Development Indicators (2015). *Mortality rate, under-5 (per 1,000)*. Retrieved from <http://data.worldbank.org/indicator/SH.DYN.MORT>

<sup>2</sup> UNICEF Pakistan, *Progress Report 2013-2015: Stop Stunting*. UNICEF Pakistan. 2015. Accessed April 22<sup>nd</sup>, 2016. [http://www.unicef.org/pakistan/Stop\\_Stunting.pdf](http://www.unicef.org/pakistan/Stop_Stunting.pdf)

<sup>3</sup> Nazir, Satti and Farooq, *Child Malnutrition in Pakistan: Trends and Determinants*. Pakistan Institute of Development Economics. 2012. Accessed April 22<sup>nd</sup>, 2016. <http://www.pide.org.pk/pdf/Working%20Paper/Child%20Malnutrition%20.pdf>

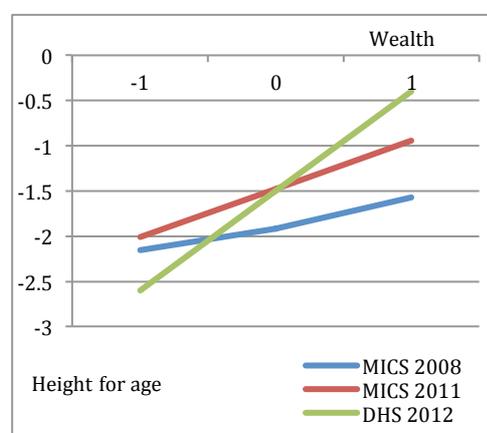
simplest questions concerning determinants of health status of Punjabi citizens.

### Wealth

Surveys measure household “wealth” by an index of ownership of various durable goods and the nature of housing (whether a house is owned or rented). All of the surveys show a large effect of wealth on health status (See Figure 1). According to data from the 2012 PDHS, the average four year old Punjabi boy is 6.3 centimeters shorter than the international norm, and a one-standard deviation change in wealth affects that deficit by two-thirds.

The MICS surveys also show a large effect of wealth, for which a standard deviation change results in about a one-third change in height-for-age. The importance of wealth is further supported by the effect of wealth on weight, which shows a similar impact as height-for-age. Therefore, the difference in health status between the wealthy and the less wealthy families is dramatic. Increasing wealth allows families to afford more food with better nutritional value, cleaner and safer living conditions and higher quality medical care.

**Figure 1: The effect of wealth on height across three surveys\***



\* Units are standard deviations in the constructed wealth score and in the international standards for height-for-age. Thus -0.5 means: 0.5 below international standards

There are also many instances in which higher income families may be able to shield themselves better than poorer families. For example, if the environment of a village or town is conducive to the spread of infectious diseases, wealthier residents can protect themselves by purchasing higher quality healthcare and pure water. In contrast, the poor often have to share unsanitary communal water sources. As a whole, they are more at the mercy of the environment.

However, the measure misses important distinctions in purchasing power among the very poor, since most of the households in the survey have few of the goods included in the wealth index. Instead of only recording whether the household owns more expensive goods such as bicycles, automobiles and electric appliances, the measure would be stronger if it included a few extra questions concerning food sufficiency and smaller household items.

Despite the flaws, there is valuable information of ownership patterns as recorded to understand the degree to which wealth affects health status and can be mitigated by public policy. In principle, the impact of wealth should become less severe as government intervention improves general health conditions.<sup>4</sup> In the absence of effective policy, the data shows the contrary: the effect of income gets stronger over time. The persistence of this trend is a signal that factors often under the government's control are not mitigating the effect of individual incomes.

### **Education**

The mother is considered the “first line of defense” against illness in her family, particularly among children. If she is knowledgeable about health issues and if she has the means to pay for better food, better care, etc., there is much she can do to help her children. Thus, mother's education – though not as significant as wealth - is a major variable impacting a child's health status. Children whose mothers have no years of schooling experience a mortality rate 3% higher than children with mothers who have ten years of schooling.

<sup>4</sup> It should be noted that we are talking about “externalities” here as a role for government intervention – the effects on people that money can't buy.

With these results, the question arises: What type of education creates the most impact? Afzal (2013) in her analysis of the 2008 MICS data (the only one of these surveys with appropriate information) provides evidence that both general knowledge and health specific knowledge has direct effects on health.<sup>5</sup> Mothers' awareness of children's health problems and how to act on them is crucial for improving health outcomes

### **Sanitation**

The effects of sanitation in these surveys can be examined in two ways. First, the behavior of the household impacts its own health. If parents use a latrine exclusively, their own better hygiene can affect children in the family. Second, individual health can be affected by neighbors' behavior. The general cleanliness of a village or an urban area can determine the likelihood of contracting a disease there.

Unfortunately, none of these surveys can adequately capture the effect of sanitation. The main problem with the data is that no distinction is made between ownership of a latrine and consistent use of it.

Keeping this limitation in mind, both MICS surveys show a significant negative correlation between open defecation practiced by the family and the weight of a child. In the more recent survey, the correlation is significant for height as well. However, the correlation is not observed in the 2012 PDHS for either height or weight (or mortality). It is not significant for height in the 2008 MICS survey either.

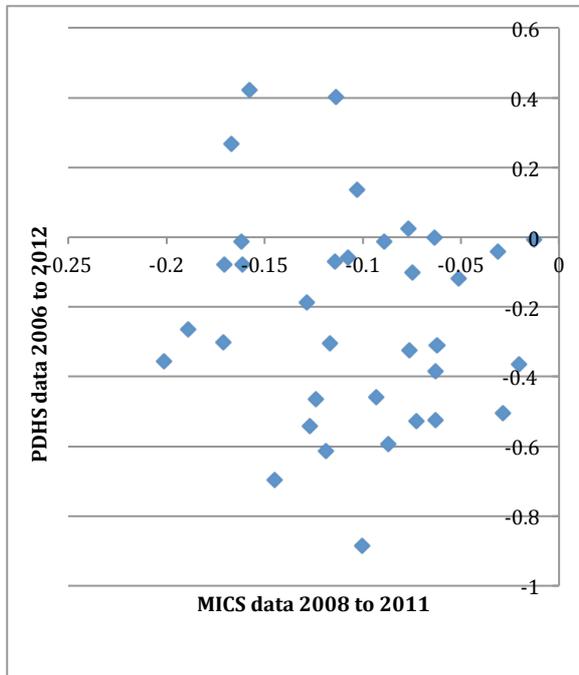
As for the possibility of measuring “externalities” of hygienic habits, the results are even more confounding. In no case was the expected correlation found and in several instances the direction of the correlation is the opposite of what is expected.

In both surveys, the question about open defecation was asked. When the changes in estimated proportions of people who defecate in the open are plotted one against the other (allowing for changes in methodology), Figure 2 shows that the two sources of data are completely uncorrelated with each other, even though they are

<sup>5</sup> Afzal, Uzma, “What Matters in Child Health: An Instrumental Variable Analysis”, *Child Indicators Research* 4, no. 6 (2013): 673-693.

supposed to be measuring the same thing. This is indicative of extremely low quality of data collection for either one of the surveys or both.<sup>6</sup>

**Figure 2. Changes in "open defecation" by district in two data sources**



**Water**

The purity of water has a great impact on health status. While generally discussed in conjunction with sanitation, the purity of the water supply can be discussed independently. Unfortunately, available data sources indicate no effect of the source of water supply on the determinants of health in Punjab. And once the wealth of the family is taken into account, the relationship becomes negligible. This may be because wealthier people tend to have piped water either because they can afford it or because their wealthy status has granted them political influence and connections to public water systems. This does not mean that clean water is not important, it only means that the hardware by which people get their water does not correlate with its cleanliness. Safe water can come from wells and pumps. Dirty water can come from a tap.

<sup>6</sup> A fair criticism of this particular graph is that by looking at differences alone, measurement error could dominate the results. However, even when levels of district average open defecation rates are compared for PDHS 2012 and MICS 2011, we find very low correlations.

**Public health care facilities**

The expensive proposal by the government to expand curative care facilities and upgrade basic health units to provide a wider variety of services around the clock requires some clear indication that it would work. But the survey data provides no such backing. The presence of a public curative health facility is never correlated with better health in any of these surveys. While correlation is not causation, certainly the *lack* of correlation provides no evidence in favor of causation either. 88% of people who seek care go to the private sector. About 16% do not seek any care for such problems. Furthermore, within the public sector, about 7% of people go to a public hospital, while only 2% go to primary facilities. Over 3 times as many people go to an expensive (to taxpayers) public hospital than to any smaller facility for such relatively minor problems.

This may imply that perhaps the number of facilities is not enough. By examining usage patterns over time, it is determined that there have been few if any actual closures of facilities. Therefore the usage patterns would not be affected by a system-wide deficiency. When the two PDHS surveys are compared, it appears that fewer people have been visiting private facilities in 2012 than in 2006. This is true even in places where public facilities are known to exist.

Such evidence clearly indicates that the government should have a high priority to find out why very few people use free and presumably convenient primary care facilities. Instead, people prefer to pay a private doctor, or to undertake a longer trip to a hospital. Before committing to expansion of primary facilities, the reasons for this universal shunning of such facilities should be established.

The possibility that many of these private practitioners are of low quality makes it more curious as to why they are used. If there are free public facilities staffed with purportedly certified doctors, why do people prefer to pay unqualified practitioners? In Pakistan, the research has not been conducted so it remains unanswered. One common answer, at least elsewhere in South Asian countries is that “people don’t understand the difference”. However, when examined more carefully, it turns out that people pay more for qualified doctors. A price differential such as this

can only appear when the purchasers of the service know and value the quality differential.<sup>7</sup>

Moreover, when examining the data on health care facility usage, sources are sparse on the information needed to understand why people use one type of facility versus another. The information that is available is based on family characteristics. First, it appears that the wealthier the family, the more likely it is that they will do something rather than nothing when a child is ill. Compared to male children, girls are less likely to be taken to a private health facility. But the effect of gender on whether they seek care at all appears negligible. This refutes the common perception that boys are more likely to receive formal health care compared to girls. Finally, care is more likely to be sought for cough rather than diarrhea, but there is no information to indicate why that is the case.

### Way Forward

Punjab's health system is in need of better data collection methods and organization. But information has to be collected with an eye to its ultimate use and expressed in a way that can actually address questions of policy relevance. This is not an automatic process, and just "any" data collection is not adequate.

There is currently a vicious cycle of data collection: it remains unused, which leads to little care for its collection and quality, which produces unconvincing conclusions for policy, which in turn discourages the use of data. To break this cycle, there needs to be a system of data collection that expands naturally as the information it offers becomes increasingly useful overtime. While the usefulness of collecting new data will not become clear for some time, it will improve the current uncoordinated attempts to fill information gaps that result in data that is unused and unusable.

Given these problems, what kind of new data needs to be collected now? It is imperative in the near term to learn more about the following factors that would impact health care facility usage.

**1) Vacancies for staff in public facilities.** This is relevant if the measure of inputs is 'facilities built' since understaffed clinics' abilities to serve are undermined.

**2) Absenteeism in facilities.** It is important to investigate the reasons for absenteeism for greater accountability of public providers to policy makers.

**3) Quality of medical advice.** This divides into two overlapping questions: What do doctors know (and how much do public sector doctors know compared to private sector doctors and other practitioners) and what do they do in practice?

**4) Size of the private sector and the substitutability of public for private care.** From the patient experience, it is known that there is an enormous private sector, largely unknown to public officials. However, a much more thorough study is required of what providers exist.

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<sup>7</sup> Das, Jishnu, and Jeffrey Hammer, "The Quality of Primary Care in Low-Income Countries: Facts and Economics," *Annual Review of Economics*, no. 6 (2014): 525–553.