

Parental Education and Child Health—Understanding the Pathways of Impact in Pakistan

MONAZZA ASLAM and GEETA GANDHI KINGDON*
University of London, UK

Summary. — This study investigates the relationship between parental schooling on the one hand, and child health outcomes (height and weight) and parental health-seeking behavior (immunization status of children), on the other. Using unique data from Pakistan, we aim to understand the mechanisms through which parental schooling promotes better child health and health-seeking behavior. The following “pathways” are investigated: educated parents’ greater household income, exposure to media, literacy, labor market participation, health knowledge, and the extent of maternal empowerment within the home. We find that while father’s education is positively associated with the immunization decision, mother’s education is more critically associated with longer term health outcomes in OLS equations. Instrumental Variable (IV) estimates suggest that father’s health knowledge is most positively associated with immunization decisions while mother’s health knowledge and her empowerment within the home are the channels through which her education impacts her child’s height and weight respectively.

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Key words — parental schooling, mother’s health knowledge, father’s health knowledge, media exposure, maternal empowerment, child health, Pakistan, South Asia

1. INTRODUCTION

The significance of establishing good health during infancy and childhood is evident from the documented link between childhood health and later economic and life outcomes such as education, learning, health, and earnings (Alderman, Behrman, Lavy, & Menon, 2001; Case, Fertig, & Paxson, 2005; Grossman, 2006; Oreopolous, Stabile, Walld, & Roos, 2006). A factor that holds significant promise for improving child health levels is parental education. However, the mechanisms and pathways through which parental schooling impacts child health are less well understood. Understanding these relationships is especially important for Pakistan because the country ranks very poorly in terms of child health indicators with 38% and 42% children aged less than 5 being under the requisite weight and height-for-age (UNDP, 2007–08).¹

While the country is unlikely to meet the Millennium Development Goal of reducing under-five mortality and other related child health targets, some believe that Pakistan is very close to achieving the target of child immunization by 2015. This is attributed to a very comprehensive and wide-spread program of immunization in the country where free immunization is provided at the doorstep to children across the country. However, despite strides in achieving targets, challenges remain. According to the World Health Organization, an estimated 23 million children under the age of one were not vaccinated in 2009 and 70% of them live in 10 countries, with Pakistan as one of them.² The Pakistan Demographic and Health Survey (Pakistan Demographic, 2008) shows that in the sample, only about 47% children aged 12–23 months had been fully vaccinated. If immunization coverage is free and as vast as reported in Government documents and newspaper reports, one wonders what factors drive health-seeking behavior in the country.

The importance of parental education in the production of child health is well-established (Behrman & Deolalikar, 1988; Strauss & Thomas, 1995). Indeed, it has even been argued that education has contributed more to mortality decline than the provision of health services (Mosley, 1985 cited in Sandiford, Cassel, Montenegro, & Sanchez, 1995). Since

Caldwell’s (1979) seminal work it has been generally maintained that mother’s education is the more critical determinant of child health. This is consistent with a division of labor within the household in which child-care is the larger responsibility of the mother (Grossman, 2006). Indeed, studies in several developing countries demonstrate that there is no “threshold” level of maternal education that needs to be reached before the benefits of maternal education on child health materialize and even small levels of education improve child survival (Hobcraft, McDonald, & Rutstein, 1984; Mensch, Lentzner, & Preston, 1985). While a major body of evidence confirms the larger association of mother’s than father’s education with child health, some recent studies find otherwise. Breievrova and Duflo (2004) find that mother’s and father’s education is equally important in reducing child mortality in Indonesia. In Bangladesh, father’s education is found to be a more consistent determinant of childhood stunting than maternal education (Semba *et al.*, 2008). This finding corroborates past evidence from Bangladesh and the Philippines (Rahman & Chowdhury, 2006; Ricci & Becker, 1996). Fewer studies have focused on the role of father’s education in determining health largely because fathers play a less obvious role in care-giving to children. However, as Chen and Li (2009) note, father’s education may be important because fathers are often more educated than mothers in developing countries. In Pakistan, for instance, the average father in our sample has 3 more years of education than the average mother and if the highest level of education matters in a household, father’s education may be an important determinant of child health. Another explana-

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tion for the role of father's education rests on low social status and empowerment of mothers that potentially limits the influence they have in decision-making regarding child health (Semba *et al.*, 2008). Alternatively, it may be that fathers play a more active role in certain *kinds* of health decisions such as immunization decisions or participation decisions particularly if they require travel to a health clinic. Mothers, on the other hand, may be involved in the day-to-day decisions on general hygiene and nutritional intake of a child. If this hypothesis is true, one would expect father's education to have a greater association with participation decisions/health seeking behavior and mother's education to impact more on longer-term measures of health such as height and weight. Regardless of the reason, further insight is needed into the role of parent's education in children's health as formal education may be critical in breaking the intergenerational cycle of poor health (Semba *et al.*, 2008).

While the positive association between parental schooling and child health is largely undisputed, the mechanisms through which this relationship works are not as well understood and therefore a causal relationship is harder to justify.³ The problem is largely methodological and linked to difficulties in the estimation of child health production functions. This is because the underlying structural equation relates health outputs to endogenous inputs. For example, while higher parental schooling is expected to have a positive effect on child health outcomes, parental schooling is endogenous if unobserved characteristics of the parents (such as tastes, values, and preferences) are correlated with both parental education and the child's health status.

A major factor contributing to limited research in Pakistan is the lack of quality data with the indicators needed for investigating the aforementioned relationships. The Pakistan Demographic and Health Survey (2006–07) is an exception in that it provides a much-needed picture of the status of child health in Pakistan. However, the information needed to answer the questions posed in this study are not available in the PDHS survey. The availability of rich recent data from Pakistan allows us to overcome this impasse in the literature. The data come from a unique purpose-designed survey of more than 1000 households. The data were collected in 2006–07 from nine districts in Punjab and the then North West Frontier Province (NWFP) of Pakistan (now known as Khyber-Pakhtunkhwa, KP). As well as containing standard information needed for the estimation of child health functions (anthropometric information such as height and weight, child age and gender, and maternal and paternal education), the data also uniquely include measures of adult cognitive skills (scores on tests of literacy and numeracy), health knowledge scores, information on labor force participation, exposure to media, and measures of female empowerment within households. Importantly, the availability of child immunization scores also allows us to assess the impact of parental education and the proposed pathways on parental health-seeking behavior and in doing so differentiate between any potentially important differences between participation decisions and longer-term health decisions. We use a sample of children aged 0–5 in urban and rural Punjab and the KP and estimate child health functions (discussed later).

There are some striking findings. Initial estimates reveal that only mother's education is positively associated with children's height and weight while father's education matters only for health-seeking behavior measured through immunization status of the child. The introduction of several "pathways" through which father's education may translate into greater health-seeking behavior causes the direct effect of

father's education to disappear and only father's health knowledge remains significant. In child height and weight equations, the direct effect of mother's education disappears when mother's "pathways" are introduced. Mother's exposure to media, maternal health knowledge, and her participation in the labor market appear to be the key channels through which her education impacts her child's height while mother's empowerment within the household matters for child weight. However, all these "pathways" are potentially endogenous and only estimates explicitly controlling for the endogeneity of these variables are credible. Instrumental Variable (IV) estimates find that father's health knowledge is key in determining immunization status while mother's health knowledge and her empowerment within the home have large positive effects on children's health and weight outcomes.

The paper is organized as follows. Section 2 discusses some literature and Section 3 discusses the empirical methodology used. Section 4 analyzes the data and some key descriptive statistics. Section 5 presents the empirical findings and Section 6 concludes.

2. LITERATURE REVIEW

Parental education in child health functions may be proxying for different factors (at the level of the individual, household, or even the community in which the child resides). For instance, some critics maintain that mother's education encapsulates unobserved maternal characteristics (such as the values or beliefs they inherited from their own families when they were young) that may in turn be correlated with the health and nutritional status of their children. In this case, a positive coefficient on mother's schooling could be fully or partially "picking up" the effect of the intergenerational transfer of values rather than a causal impact of maternal schooling. Behrman and Wolfe (1987) are the strongest proponents of this critique and use data from Nicaragua to test their concern. Their findings suggest that when measures of "maternal childhood endowments" are excluded, mother's schooling has strong positive effects on child health and nutrition but that inclusion of maternal endowments causes the effect of maternal schooling to disappear suggesting that, at least in their sample, it is picking up the effect of intergenerational transfer of values and "cultural capital." Handa (1999) also finds that using household fixed-effects in Jamaica causes the positive association between maternal schooling and child height to disappear. Conversely, Strauss (1990) finds that mother's schooling has a positive effect on child weight and height in the Cote d'Ivoire even after using family fixed-effects estimators.

Unsurprisingly, the literature on the relationship between maternal schooling and child health has moved toward underpinning the "pathways" through which mother's education translates into improved child health. While a majority of the evidence has not directly controlled for the endogeneity of maternal schooling, introducing different "pathways" is one way of isolating the "true" impact of maternal education from the effect of confounding factors.

One such pathway that has received little attention (largely because of unavailability of data) is the impact of mother's education on mother's empowerment.⁴ The only two studies we are aware of that use mother's empowerment as a pathway are by Strauss (1990) in the Cote d'Ivoire and Handa (1999) in Jamaica.⁵ Both studies find some evidence to suggest that maternal education has a direct effect on child height but also

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