The indirect effects of subsidised healthcare in rural Ghana

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A B S T R A C T

Social networks provide a channel through which health policies and programmes can affect those with close social ties to the intended beneficiaries. We provide experimental evidence on the indirect effects of heavily subsidised healthcare. By exploiting data on 2151 households from a randomised study conducted in a rural district of Ghana in 2005, we estimate the extent to which social networks, defined by religion, influence the uptake of primary care services. We find that people socially connected to households with subsidised care are *less* likely to use primary care services despite the fact that the direct effect of the intervention is *positive*. We extend the empirical analysis to consider the implications of these changes in behaviour for welfare but find no evidence of indirect effects on child health and healthcare spending. In the context of this study, the findings highlight the potential for healthcare subsidies to have unintended consequences.

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1. Introduction

Rural households in developing countries are located in communities where they are typically embedded in strong social networks. Such kinship relationships give rise to the possibility that policies and programmes affect not only families directly targeted but also those with close social ties to the intended beneficiaries. Indirect effects are important to capture if policymakers are to get a sense of the overall impact of a policy on the entire population. Interest is likely to be particularly acute when the indirect effects are large relative to the direct effects of a policy or operate in the opposing direction.

Indirect effects due to the disease environment have long been recognised in public health. Vaccinations against contagious disease offer protection both to individuals given the vaccine and those without immunity in close proximity. Depending on the disease, herd immunity from epidemiological externalities is estimated to protect unvaccinated individuals when the proportion immunised is as low as 80 percent (Fine, 1993), providing one of the key reasons for why governments subsidise the price of vaccines.

Less recognised are the behavioural channels through which social interactions can modify the overall impact of a health intervention. One mechanism is social learning whereby individuals learn via others about the benefits of a health product. A number of recent studies have examined the role of peers in the adoption of health interventions, showing that financial incentives to increase the uptake of disease-specific technologies — insecticide-treated bed nets, HIV testing, and deworming treatment — affect not only the behaviour of the intended beneficiaries but also that of their peers (Dupas, 2014; Godlonton and Thornton, 2012; Kremer and Miguel, 2007).

This papers examines the indirect effects of subsidised healthcare in rural Ghana. The intervention involved paying the health insurance premium of an existing prepayment scheme, thereby providing free public healthcare for beneficiaries. It provides experimental evidence on the extent to which social networks — defined primarily by religion — influence the uptake of primary care services. The findings are relevant for policy because they can inform decisions on whether and for how long to subsidise health services and, in doing so, speak to the sustainability of government and donor investments in health. The analysis builds on two previous papers reporting the direct effect of the intervention (Ansah et al., 2009; Powell-Jackson et al., 2014). It also complements a number of studies about social learning (Adhvaryu, 2014; Foster and Rosenzweig, 2010; Munshi and Myaux, 2006) and those that have used experimental variation in exposure to a health technology induced by price subsidies to identify social effects (Dupas, 2014; Godlonton and Thornton, 2012; Kremer and Miguel, 2007; Oster and Thornton, 2012).

Our paper contributes to the literature on indirect effects in

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health in several ways. First, as countries make efforts to move towards universal health coverage, social insurance schemes are increasingly being rolled out (World Health Organization, 2010). This paper provides some of the first evidence on the ripple effects of such a scheme. Second, the subsidy under investigation was applied to a broad package of health services making the findings generalisable beyond the disease-specific health products studied elsewhere. Finally, much of the literature on social effects focuses on the adoption of health technologies and stops short of assessing the implications for welfare. We extend our empirical analysis to consider the indirect effect of subsidised healthcare on child health (as measured by haemoglobin levels) and financial strain (as measured by out-of-pocket healthcare spending).

2. Literature

The theoretical literature highlights a number of channels through which healthcare subsidies could influence uptake of a health product or services through a social network. Kremer and Miguel (2007) develop a framework in which individuals in a social network receive information about adoption, effectiveness of the technology and how to use the technology. The model allows for indirect effects through the disease environment, a pure imitation effect, social learning in how to use the technology, and social learning about the benefits of the technology. Imitating the behaviour of peers and learning how to use a technology from peers always result in positive indirect effects. By contrast, externalities through the disease environment can generate negative social effects because the protection from disease afforded those in close proximity to adopters of the health technology reduces the need to adopt the technology themselves. The social effect from information on the benefits of the technology can be either positive or negative depending on the difference between prior beliefs and actual private adoption benefits.

The model developed by Kremer and Miguel (2007) is concerned with adoption peer effects arising from increased exposure to a technology. Its relevance to the current study lies in the fact that the direct effect of the free healthcare intervention was to increase use of primary care services (Ansah et al., 2009). The intervention also substantially reduced health care spending by households (Powell-Jackson et al., 2014), providing an income shock which could generate indirect effects through informal risk-sharing. Angelucci and De Giorgi (2009) show that cash transfers targeting the poor can affect others within the same village when there is informal risk-sharing. In the absence of formal credit and insurance markets, beneficiaries may share part of their income by providing gifts and loans to other families in their social network. In a standard risk-sharing model, households in a village fully insure against idiosyncratic health shocks by pooling resources and consuming a fixed share of total income (Angelucci and De Giorgi, 2009; Townsend, 1994). Household consumption is thus independent of individual income conditional on total resources. The key implication is that if there is an increase in the income of some households in the village (group A), aggregate resources in the village increase, and resources are allocated to other households (group B) in the village through informal mechanisms. How informal risk-sharing affects healthcare utilisation of households in the social network then depends on the nature of the resources transferred, as we discuss in Section 5.

The most rigorous empirical research on social networks in health exploits experimental variation in the exposure to a health technology induced by price subsidies to identify indirect effects. Studies on insecticide-treated bed nets, menstrual cups, and HIV testing have found evidence of positive social effects, whereby adoption of a health product or service by an individual leads others in the same social network to take it up (Dupas, 2014; Godlonton and Thornton, 2012; Oster and Thornton, 2012). By contrast, a study in Kenya found evidence of negative social effects in the adoption of deworming treatment (Kremer and Miguel, 2007). In these studies, the most plausible explanation for the emergence of social effects is social learning. Through social interaction, individuals learn how to use or learn about the benefits of a technology, which in turn affects their own behaviour. In the study of deworming, it is argued negative learning effects were driven by households learning that private costs from the side effects of the drugs (nausea) outweighed private benefits (lower infection rates).

3. Methods

3.1. Free care experiment

We use data from a randomised trial of removing user fees for health care undertaken in 2005 in Dangme West, a poor rural district in Southern Ghana (Ansah et al., 2009; Powell-Jackson et al., 2014). Malaria was the leading cause of morbidity and mortality in children under five in Ghana at the time of the study, accounting for 45 percent of reported deaths in this age group (World Health Organization, 2009). The study provided free health care to households randomly assigned to the intervention group by paying the premium for them to enrol into an existing prepayment health insurance scheme in May 2004. Households in the control group continued to pay a fee-for-service for publicly provided health services in accordance with the national policy at the time. The community prepayment insurance scheme covered the costs of primary care, including diagnostics and drugs with no limit, and a limited set of services provided at the secondary level referral hospital. It covered the costs of health services in the public sector, allowing members to choose from any of the primary health facilities in the district and a referral hospital of their choice when referred.

The study was announced to the public only once the enrolment window for the year was closed, such that all households that were going to self-select into insurance had already done so and were excluded from randomisation. Treatment and control thus comprised households that had chosen not to self-enrol into the insurance scheme. No household was able to change their assigned group at any point during the one year study period because the enrolment process occurred only once a year. The study assisted households with the administrative process of enrolment, informing members of their benefits and ensuring picture identification cards were issued. Ethical approval for the original trial was obtained from the ethical review board of the Ghana Health Service and the London School of Hygiene and Tropical Medicine.

3.2. Sample

Households with at least one child aged 6–59 months and not already enrolled in the prepayment health insurance scheme were eligible to participate in the study. The sample frame consisted of approximately 8700 households with children under five years of age living in the study area. A total of 2332 households were selected at random using a computer random number generator and then visited in person. No household refused consent but 138 were excluded from the main experimental study because they had already enrolled voluntarily into the prepayment health insurance scheme by the time the registration window had closed.

The remaining 2194 households were randomly assigned to