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Does a ban on informal health providers save lives? Evidence from Malawi☆

Susan Godlonton [a,b], Edward N. Okeke [c,*]

[a] Department of Economics, Williams College, United States
[b] IFPRI, United States
[c] Department of Economics, Sociology and Statistics, RAND, United States

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ABSTRACT

Informal health providers ranging from drug vendors to traditional healers account for a large fraction of health care provision in developing countries. They are, however, largely unlicensed and unregulated leading to concern that they provide ineffective and, in some cases, even harmful care. A new and controversial policy tool that has been proposed to alter household health seeking behavior is an outright ban on these informal providers. The theoretical effects of such a ban are ambiguous. In this paper, we study the effect of a ban on informal (traditional) birth attendants imposed by the Malawi government in 2007. To measure the effect of the ban, we use a difference-in-difference strategy exploiting variation across time and space in the intensity of exposure to the ban. Our most conservative estimates suggest that the ban decreased use of traditional attendants by about 15 percentage points. Approximately three quarters of this decline can be attributed to an increase in use of the formal sector and the remainder is accounted for by an increase in relative/friend-attended births. Despite the rather large shift from the informal to the formal sector, we do not find any evidence of a statistically significant reduction in newborn mortality on average. The results are robust to a triple difference specification using young children as a control group. We examine several explanations for this result and find evidence consistent with quality of formal care acting as a constraint on improvements in newborn health.

1. Introduction

Households in developing countries receive a large fraction of their health care services from informal health providers. These providers range from traditional healers and birth attendants to drug vendors and village doctors.[1] Estimates suggests that the informal sector accounts for anywhere between 9 and 90% of all healthcare interactions (Sudhinaraset et al., 2013). Informal providers play a particularly important role in the maternal health sector in low-income countries, attending up to half of all home births in sub-Saharan Africa and up to 40% of all births in South Asia (Darmstadt et al., 2009). They may also provide services such as prenatal care and child circumcision (Ofili and Okojie, 2005). In general these informal (or traditional) birth attendants, as they are known, have little formal education and are often self-taught — in a study by Hussein and Mpembeni (2005), 78% of surveyed traditional attendants had no formal education, 63% had learnt their skills from a female relative while 25% were self-taught — and many believe that they contribute to high rates of maternal and newborn mortality in developing countries (Bergström and Goodburn, 2001; Starrs, 2006).[2] Despite the best efforts of regulators to shift births into the formal sector, the use of these informal (or traditional) birth attendants has remained popular (Titaley et al., 2010).

A recent controversial policy to influence household health seeking behavior is the imposition of a ban on these informal attendants. The logic underlying this policy is two-fold: first, that restricting access to these informal attendants will cause women to switch to formal providers, and second, that higher quality care in the formal sector will lead to reductions in mortality. It is not a priori clear that either of these assumptions is necessarily true. Regarding the first, a ban might simply shift use of these attendants underground,[3] or may force

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* Corresponding author.
E-mail address: eokeke@rand.org (E.N. Okeke).

[1] There is no universally agreed upon classification for formal/informal health providers, so we follow the taxonomy used by Sudhinaraset et al. (2013). In general these are unlicensed, unregulated providers.

[2] Others have argued that these informal attendants are vital, and ensure access to at least some form of skilled care, particularly in rural areas where there is poor access to formal providers (Bisika, 2008).

[3] The potential for bans to lead to hidden use of the proscribed behavior has been highlighted in other studies (Cheng, 2012).

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women, particularly those with limited access to formal sector providers, to give birth at home unassisted (Bisika, 2008). Either of these behavioral responses would mute the effect of the ban and might even perversely worsen outcomes. Regarding the second, there is emerging evidence that the quality of care provided by formal sector providers may not be much better than that provided by informal providers on average (Das et al., 2012). To the best of our knowledge, there are no existing empirical studies of the effect of banning the use of informal health providers.

In this paper we study the effects of a ban on informal birth attendants imposed by the Malawi government in 2007. We use data from the 2010 Malawi Demographic and Health Survey supplemented with a geocoded dataset of all health facilities in Malawi. To estimate the causal effect of the ban on outcomes, we make use of a difference-in-difference strategy that exploits variation across time and space in the intensity of exposure to the ban. We define high intensity of exposure areas as those with high (historical) prevalence rates of informal birth attendant use. We argue that such areas likely experienced greater enforcement. To establish the validity of our empirical strategy, we show that low and high-exposure areas experienced similar trends prior to introduction of the ban; we also show that the treatment variable, the interaction between exposure and the timing of the ban is unrelated to observable birth, maternal, and household characteristics.

To summarize our results, we find that the ban substantially reduced the use of informal birth attendants. Our most conservative estimates suggest that the use of informal attendants decreased by about 15 percentage points. Consistent with policy objectives, we find that majority of these births appear to appear to have shifted to the formal sector — formal-sector births increased by about 11 percentage points — with the remainder accounted for by a small increase in relative/friend-attended births. Substitution to relative/friend-attended births is primarily among women with high travel costs to health facilities. We find no evidence of an increase in the likelihood of an unattended birth.

Next, we examine whether the increase in the use of formal sector care improved newborn health. Despite the large shift from the informal to the formal sector, we find little evidence of a decrease in newborn mortality, on average, either within the first week or the first month. In our preferred specification the coefficient is positive (though not statistically significant) and the associated confidence intervals suggest that we can rule out a decrease in early neonatal mortality greater than about 6 deaths per 1000 live births (relative to a baseline of 23 deaths per 1000). To account for the possibility of differential unobserved shocks to child mortality, we estimate triple difference models using young children (children 2–5 years old) as a within-area control group and obtain similar results.

To understand why the shift from the informal to the formal sector did not translate into reductions in newborn mortality we examine three possible explanations. First, we examine whether there might be offsetting effects from the (small) increase in relative/friend-attended births — if these births were more likely to result in a newborn death, this might offset any reduction in mortality from the increase in births attended by formal-sector providers. Second, we examine whether mothers induced by the ban to use formal care (the 'compliers') are low-risk women who would have a good outcome regardless of where they delivered. Lastly, we examine whether the lack of an effect is due to low average quality of care in the formal sector.

We do not find support for the first two explanations. Our results suggest that low average quality of formal sector care is why the increased use of formal sector care did not lead to a measurable decrease in newborn mortality on average. We show that only households with access to a high quality facility (defined as whether the nearest health facility was in the top quartile of the quality distribution) experienced a reduction in newborn mortality — about 1.3–1.4 percentage points within the first week, and 1.6–1.8 percentage points within the first month. The mortality coefficients for the other households are positive though not statistically significant. These results are robust to a quadruple difference specification using young children as a within-area control group. These results suggest significant distributional consequences from the imposition of the ban. In general, most women faced higher costs of health care with no return in terms of improved newborn outcomes (that are statistically significant). However, women with relatively good access to high quality care did benefit with respect to lower newborn mortality, suggesting that this type of policy may exacerbate inequality in infant health outcomes.

This paper makes an important contribution to a growing literature that estimates the returns to care in the formal sector (Adhvaryu and Nyshadham, 2015; Mazumdar et al., 2011; Okeke and Chari, 2014).[4] Despite the effectiveness of interventions designed to increase the use of formal sector care, evidence of significant health improvements, and in particular, reductions in mortality have been hard to come by.[5] Our results are largely consistent with this literature but we advance the discussion by showing that low average quality of care in the formal sector may help to explain why increased use has not translated into significant improvements in health outcomes. This paper also makes a contribution to the economic literature that studies how changes in access to providers affects health outcomes.[6] Relative to this literature, we study how restrictions in access to informal providers — in this case informal birth attendants — affects health outcomes. Finally, we make a contribution to a literature that studies the welfare implications of government bans as a policy instrument to change health-related behavior. See for example Nandi and Deolalikar (2013) who study the effect of a law banning sex-selective abortions in India, and Adda and Cornaglia (2010) who study the effect of smoking bans.

The remainder of the paper is set out as follows: in Section 2 we provide a brief overview of delivery care in developing countries and child health, in Section 3 we discuss the institutional details of the ban in Malawi, in Section 4 we discuss the data, in Section 5 we discuss our empirical strategy, in Section 6 we present the results, and in Section 7 we conclude.

2. Delivery care and child health

Nearly eight million children die every year before they turn five and reducing these deaths is of considerable policy and economic interest (Rajaratnam et al., 2010).[7] A major target of policy efforts is newborn mortality because it constitutes 40% of all under-five child deaths. According to the latest estimates, about 3 million infants die annually within a month of being born. Deaths are clustered around the time of delivery, with 25% of deaths occurring on the first day, and 75% occuring within the first week.[8] Leading causes of newborn deaths include complications of prematurity, birth asphyxia,[9] and infections. For many of these, timely intervention by skilled providers is essential for survival, and it has been estimated that skilled care during childbirth can prevent up to 50% of newborn deaths (Bhutta et al., 2014). However, nearly 60 million births worldwide take place outside of formal facilities (Darmstadt et al., 2009). In sub-Saharan Africa and South Asia, the two regions that account for most newborn deaths, nearly 60% of all

[4] There is a related US literature that estimates the marginal returns to health care. See for example Almond et al. (2010) and Almond and Doyle (2011).

[5] Adhvaryu and Nyshadham (2015), who find that care in the formal sector in Tanzania improves malaria and fever outcome for children, is one of the exceptions.

[6] Examples of this literature include Buchmueller et al. (2006) who study the effect of hospital closures in California on adult mortality, and Valente (2014) who studies the effect of the opening of abortion centers on neonatal outcomes in Nepal.

[7] The fourth Millennium Development Goal, for example, aims to reduce child deaths by 75% by 2015.

[8] Newborn deaths are also clustered in certain parts of the world. More than 65% of all newborn deaths occur in the following countries: Afghanistan, Bangladesh, China, Democratic Republic of the Congo, Ethiopia, India, Indonesia, Nigeria, Pakistan, and Tanzania (Lawn et al., 2009).

[9] Deaths due to asphyxia are now classified as intrapartum-related neonatal deaths.