



In vaccines we trust?

By Monica Martinez-Bravo and Andreas Stegmann

In July 2011, the Pakistani public learnt that the CIA had used a fake vaccination campaign as cover to hunt for Osama Bin Laden. The disclosure of the ruse led to an increase in anti-vaccination propaganda by the Taliban.

Empirical evidence suggests these events damaged the reputation of vaccines in Pakistan, eroding parental confidence in vaccines and health workers, and ultimately causing a decline in vaccination rates.

Vaccines are responsible for some of the largest improvements in human welfare in history.

The ongoing rollout of COVID-19 vaccination programmes around the world is a case in point. These programmes are regarded as a key step in ending one of the deadliest pandemics in recent history. Despite the benefits that society can derive from immunisation, vaccine scepticism is common. This holds true even in the case of well-established vaccines, for instance those that prevent measles or polio, despite the fact that these vaccines have proved safe and effective for decades.

Vaccine

scepticism has frequently been fuelled by groups that oppose the use of vaccines for ideological reasons. These groups have often spread misinformation about vaccine safety and effectiveness. This is the case both in developed countries in Europe and North America as well as in developing countries such as Nigeria, Afghanistan or Pakistan, where religious extremist groups have engaged in anti-vaccine propaganda.

Despite the potentially large negative consequences of vaccine scepticism, we still have a limited understanding of how the spread of information that discredits vaccines affects immunisation rates and the demand for formal medicine more generally. To investigate this research question, we analyse data from a sequence of recent events in Pakistan.

As part of the operations to

capture Osama Bin Laden in 2011, the CIA organised an immunisation campaign as cover for their espionage activities. The objective was to obtain DNA samples of children living in a compound in Abbottabad where Bin Laden was suspected to be hiding. This would have allowed the CIA to obtain definitive proof that Bin Laden was hiding there. In July 2011, two months after the actual capture of Bin Laden, *The Guardian* published an article reporting on the vaccine ruse and describing the collaboration of a

district of residence. Our research design compares the evolution of immunisation rates from children who were born in the months before the disclosure to children who were born after the disclosure. We also look across regions that differ in the level of their initial ideological affinity to the Taliban. Parents in districts that exhibit higher support for Islamist groups are likely to have been more exposed to the anti-vaccine propaganda campaign. It is also likely that parents with an initial ideological affinity to the

Taliban granted greater credibility to their anti-vaccine messages.

Our findings indicate that the disclosure of the vaccine ruse and the subsequent anti-vaccination campaign had

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Pakistani doctor with the CIA.

News of the CIA operation caused uproar in Pakistan. Taking advantage of this, the Pakistani Taliban launched an anti-vaccination propaganda campaign to discredit medical workers and to cast doubt on vaccines. They accused health workers of being CIA spy agents and claimed that Pakistan’s polio vaccination campaigns were a conspiracy to sterilise the Muslim population.

We evaluate how disclosure of the CIA operation and the subsequent Taliban anti-vaccination propaganda campaign affected immunisation rates and demand for other types of formal healthcare. Our main results on vaccination rates take advantage of a rich household survey that contains detailed immunisation records for a large sample of children, as well as precise information on their date of birth and

substantial negative effects on vaccination rates: districts in the 90th percentile of the distribution of support for Islamist groups experienced a decline in vaccination rates between 23% and 39% relative to districts in the 10th percentile of support for Islamist groups.

Figure 1 provides a visual representation of these effects: there is a decline in vaccination rates in areas with high support for Islamist groups after the disclosure, while vaccination rates remained stable in areas with low support for Islamist groups.

We also present evidence of effects on disease prevalence. Exploiting variation at the district and year level, we find that a one standard deviation increase in support for Islamist groups is associated with an additional 0.8 cases of polio per district. This is equivalent to doubling the average number of cases per district. ▶

We are able to show that our estimates on vaccination rates are mainly explained by changes in the demand for vaccines rather than changes in supply. Using detailed administrative data on the timing and scope of vaccination drives, we show that the intensity of vaccination activities did not systematically differ across districts with different levels of support for Islamist groups after the

disclosure of the vaccine ruse. We also find evidence that households' health-seeking behaviour changed in a way that is consistent with lower demand for formal medicine: households became less likely to consult formal doctors when their children got sick.

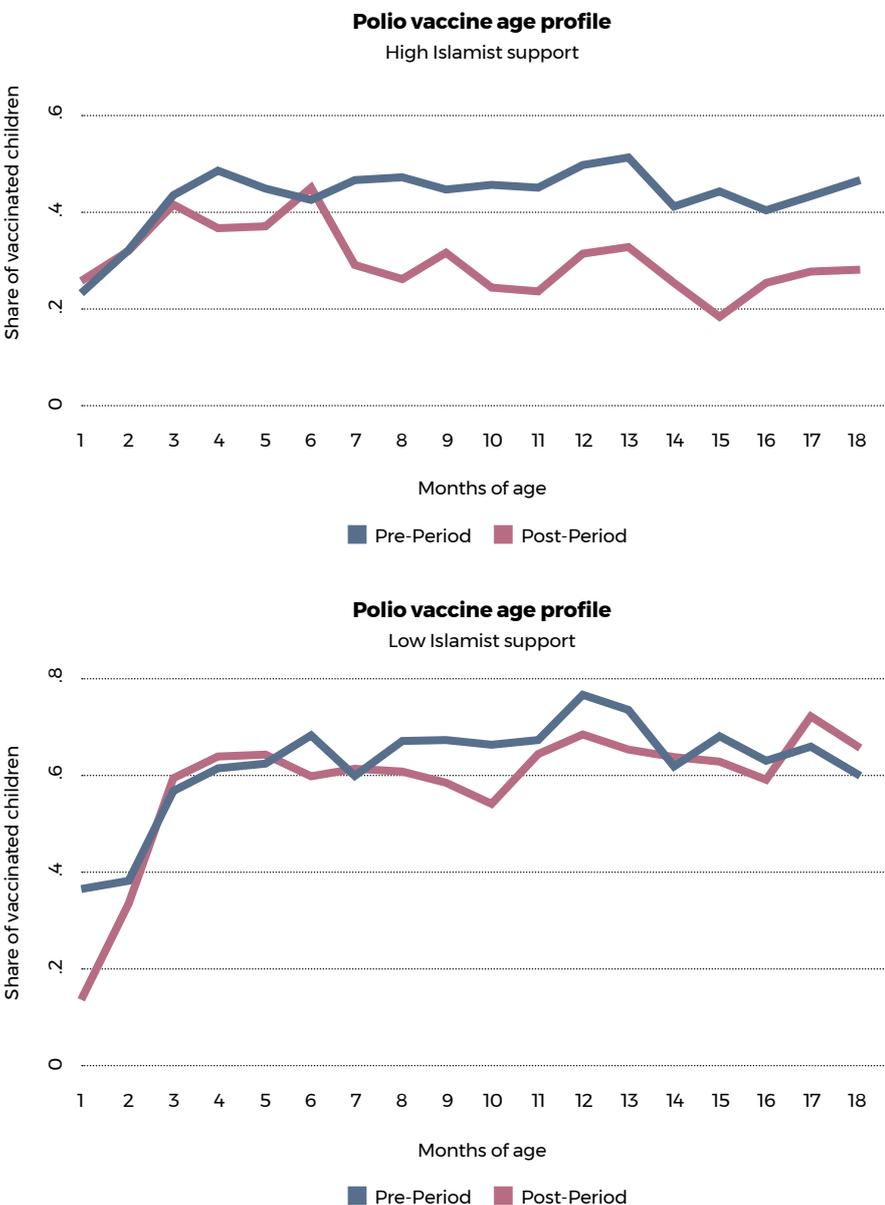
These results are consistent with the hypothesis that the disclosure of the vaccine ruse damaged the

reputation of vaccines and formal medicine. There is substantial anecdotal evidence describing the vaccine ruse as the triggering factor and the Taliban propaganda as fueling vaccine scepticism.

Indeed, we provide a number of pieces of evidence that are consistent with the Taliban's propaganda playing an important role. We show that our effects are driven by districts where a large fraction of people do not trust or consume mainstream media. We also show that the negative effects on immunisation rates are larger for girls than for boys. This result is consistent with the notion that some parents granted greater credibility to a rumour spread by the Taliban that the polio vaccine was intended to sterilise Muslim girls.

Our findings highlight the importance of safeguarding trust in health systems. Events that cast doubt on the integrity of health workers or vaccines can have severe consequences for the acceptance of immunisation, despite its widespread positive effects. Moreover, our results suggest that events that cast doubts against vaccines can be magnified in the presence of motivated groups with the objective of seeding mistrust. These lessons are particularly relevant at a time when public acceptance of the new COVID-19 vaccines is crucial in the fight against the virus. ◀

Figure 1: Share of vaccinated children, before and after the disclosure of the CIA vaccine ruse, in areas with high Islamist support compared to areas with low Islamist support.



Note: High (low) support for Islamist groups is defined as the top (bottom) quartile of the distribution.

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Publication details

This article is based on the paper Martinez-Bravo, M. and Stegmann, A. (2021). In vaccines we trust? The effects of the CIA's vaccine ruse on immunisation in Pakistan. Accepted for publication in *Journal of The European Economic Association*.