Diphtheria Deaths in Kerala

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The diphtheria deaths in Kerala have shown the signs of a public health crisis. If it is not tackled through action and awareness then it may have far-reaching consequences and demean the much-acclaimed Kerala model of health.

Malappuram district in Kerala, which has a history of poor vaccination coverage, reported a group of about 30 students in an orphanage contracting the disease in the month of September 2015 (Nijish 2015). One of these kids died due to diphtheritic myocarditis—a life threatening complication of diphtheria. Though no polio cases were reported in the state since 2000, vaccine preventable diseases like diphtheria, whooping cough, measles, and tetanus are being reported from different parts of the state after a long gap (Draft Kerala Health Policy 2013).

India’s Immunisation Program and Diphtheria Vaccine

A potentially life threatening bacterial disease caused by corynebacterium diphtheria, diphtheria is very contagious (Nath and Mahanta TG 2010). The Expanded Program of Immunization (EPI) by World Health Organization (WHO) recommends three doses of DPT vaccine starting at six weeks of age. The Universal Immunization Program in India also offers two booster doses at 18 months and between 54 to 72 months of age after the above-mentioned three doses of primary vaccines, which protects up to 94–100% of the vaccinated children (Broader KR 2006).

Diphtheria vaccine was available in the country since the 1930s, which was included in the Extended program of Immunization (EPI) launched in India in 1978, the national wide immunization program which was launched following successful eradication of small pox in the same year (Lahariya 2014). From an estimated 40,000 cases of diptheria in 1980s India could reduce the burden to about 3500 in 2011 thanks to the consistent improvement in vaccination coverage.

Kerala—Are the Achievements Sustainable?

Kerala was way ahead of other states in implementing vaccination programs right from the beginning. Kerala was the second state in India to have eliminated maternal and neonatal tetanus as a public health problem, after Andhra Pradesh (Kiran 2004), the state had not reported Polio for more than a decade, had consistently high rates of state-wide vaccination coverage throughout all these years compared to most other states (Draft Kerala Health Policy 2013). Kerala was one of the first states in the country to start pulse Polio campaign in 1993/94 (Lahariya 2014) after the World Health Assembly resolved to eradicate Polio globally (WHO 1988) Kerala was also the first state to launch the Pentavalent (DPT, H-Influenza B and Hepatitis B) vaccine in Immunization schedule in 2011.

But, after a sharp increase in percent of fully immunised children from 54 in the year 1992–93 to 80 in 1998–99, the state has seen a decline in the rate to 75 when it comes to 2005–06 (NFHS 2006). That means, although Kerala ranks third among all states in full immunisation coverage, one-fourth
of children age 12–23 months in Kerala have not received all the recommended vaccinations (NFHS 2006). Official figures show that Malappuram district with a very high Muslim population has 23,912 out of 342,657 children below the age of five who are not fully immunised which is the highest in the state, among them 6,132 children below two years of age have not received any of the vaccinations. Thirty six percent of children aged between 5 and 10 in the district never had any immunisation. Malappuram’s neighbouring district of Kozhikode also reported five cases of pertussis, four of diphtheria (out of total nine in the state) and 170 cases of measles in 2011 and 11 cases of diphtheria (of the total 14 in the state), 28 of pertussis and 85 measles cases in 2012.

When the Ministry of Health and Family Welfare, Government of India recently launched Mission Indradhanush to intensify its efforts in immunisation covering 201 poor performing districts (which accounts for nearly 50% of all unvaccinated or partially vaccinated children), three districts from Kerala (Malappuram, Palakkad and Kasargode) were included in the list (Ministry of Health and Family Welfare 2015).

Reasons for the Break Down

There are multiple reasons that can be attributed to the decreasing coverage of vaccination. Some popular newspapers and magazines in the state have consistently carried articles written by self-declared medical practitioners (Lateef Naha 2015), homeopaths and naturopaths blaming vaccines for every child death in the state.

These distorted articles tried to mislead the general public, for example, by citing data on Acute Flaccid Paralysis, equating them to polio and attributing them to polio vaccines (KP Aravindan 2014). There were also attempts by certain faith groups to spread rumours that vaccines may lead to impotency and that these are “inventions” by westerners to destroy certain communities (John 2015). Even leaders of mainstream religious sects consider vaccinating children as “personal choice of freedom” and the leaders of political parties are as well, hesitant to come out openly advocating for vaccination (Lateef Naha 2015).

However, it remains a fact that the weakening public health system should be blamed for the decrease in trust on vaccination program, more than anything else. As the latest National Sample Survey had shown, a vast majority of the population in Kerala depends on the private sector for health care (Ministry of Statistics and Programme Implementation 2014). Once known for its strong public health system and “health at low cost model” (Balabanova D, McKee M and Mills A 2011) Malappuram district has dismally low number of health sub centres (HSC) and primary health centres (PHC) when compared to the state average, leave alone the national standards fixed long back. It was envisaged decades ago that a PHC should be available for every 30000 population and a HSC for every 5000 (Government of India 1946). However Malappuram still has one PHC for every 50,000 to 100,000 persons and one HSC for every 10000 to 15000 persons in 2015 (Nair 2015). This low penetration of primary care systems with subsequent less presence of field staffs at the lowest cadre results in non-availability of services at the nearest point for the community, including adequate information, education and communication services.

How to Overcome the Crisis?

One important step to be initiated is to regain the confidence of the public in general and mothers in particular in the under-performing districts. The state department should have a well defined strategy to ensure that vaccinators are trained and equipped to identify underlying conditions of the child before vaccinating. They should also help the parents understand the risks of vaccinating
in case of any underlying condition and ensure post-vaccination care if there is any event of complications post-vaccination.

This will ensure that confidence is built up in the community that vaccines are safe, if safely and appropriately administered after taking due precautions. We have examples from institutions like Christian Medical College and Hospital, Vellore, Tamil Nadu where around 31,200 infants receive the vaccine annually. However not a single death has been reported so far where a systematic screening for existing illnesses and capacity building of vaccinators has been done. Similarly, in the case of Sri Lanka, where it was found that infant deaths after immunisation were due to congenital heart disease, infants are now immunised under medical supervision, especially if there are underlying health conditions ([WHO 2013](#)). In Kerala, all vaccination sessions have a medical officer’s presence since long time, including for outreach sessions.

Pentavalent vaccines are now part of the immunisation schedule in most of the Indian states. With over 10 million doses administered in the country so far of this vaccine in the public sector itself, only a few hundred serious cases of Adverse Events Following Immunization (AEFI) have been reported so far with death being a rare entity. The vaccine was used in private sector almost 10 years before even it was introduced in the public health care system, with rarely any adverse event being reported. ([Parthasarathy 2013](#))

What is required is clear instructions on how health workers and local medical officers should track and monitor the pre-vaccination medical status of children. They also trained to take action in case they suspect any underlying morbidity; and more importantly to clearly communicate to mothers and family members about the necessity and importance of vaccines.

The state should also take strong scientific evidence-based positions when it comes to the issue of the practitioners of certain “medical streams” and “not-formally qualified practitioners” publically and privately opposing vaccination and the publications, which spread false propaganda against vaccines. There are strong arguments by medical associations and child rights activists that non-immunisation should be considered a violation of child rights and section 23 in the Juvenile Justice Act can be invoked against the resistance groups ([Meethal 2015](#)). Some state action in this regard is required to re-assure the parents about safety and efficiency of vaccines. Else this may lead onto a far-reaching crisis, which may demean the much-acclaimed Kerala model of health.

**References**


