Pathways for the outbreak of Encephalitis in the Muzaffarpur District, Bihar: Evidence from National Family Health Survey, 2015-16

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Abstract

We used data from the latest round of NFHS (2015-16) to understand reasons of Encephalitis in Muzaffarpur. We have used bi-variate analysis to understand the nutritional status of the child by their immunization coverage and by poor and non-poor status of the household. In Muzaffarpur, about half of children were found to be stunted, while 17% were wasted, and 59% were anaemic. The poorer section of the district was mostly affected by the disease, where 55 percent were stunted, 18 percent wasted, 60 percent were anaemic. Also, wasting among the children was high in April to July, and the AEV onsets from April and peaks in the months of June, which makes child more susceptible to the disease. The condition of the health facility was also found to be not up to the mark. Only 630 Public health facilities are available in the district, and around 79.5% of the 1719 villages don't have availability to the Public health facilities. Also, only one doctor was available for approximately 50 patients in the district. The government should educate people about vaccination, clean drinking water and use of proper sanitation facility with the help of ASHA workers.

Introduction

- Acute Encephalitis Virus (AEV) is defined as the onset of acute fever and change in the mental state of an individual of any age at any time of the year showing symptoms not limited to confusion, coma, disorientation and inability to talk[1]which generally occurs during the rainy season.
- In India, JE was the major disease attributed to AEV, with almost 50,000 deaths in the country between 2005 to 2015.
- In Muzaffarpur till July 2019, more than 150 children died due to the AEV. Many studies including media and newspapers have highlighted consumption of litchi was the main reason for the outbreak but ignored other possible reasons and pathways.
- Therefore we used the latest round of National Family Health Survey-4 (NFHS) (2015-2016) to identify the possible pathways for the outbreak of the disease in Muzaffarpur.

Data

- For this study we have used the data from India DHS, conducted in 2015-16.
- The effective sample for the study was 429 children aged 6-59 months.

Methodology

- Bi-variate analysis was used to identify pathways for the outbreak of the disease in the district of Bihar.
- The nutritional status of the child was associated with the full immunization coverage and poor and non-poor status of the household.

Findings

Figure 1: Nutritional Status among Children aged 6-59 months in Muzaffarpur district, Bihar, India, NFHS (2015-2016)

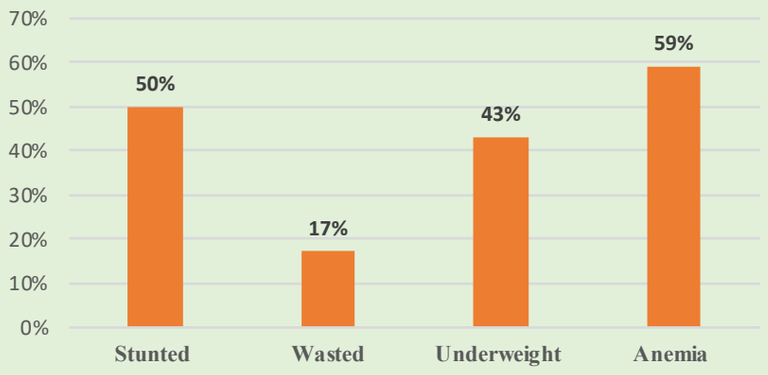

Figure 2 : Double-burden of nutrition among children aged 6-59 months in Muzaffarpur district, Bihar, India, NFHS (2015-16)

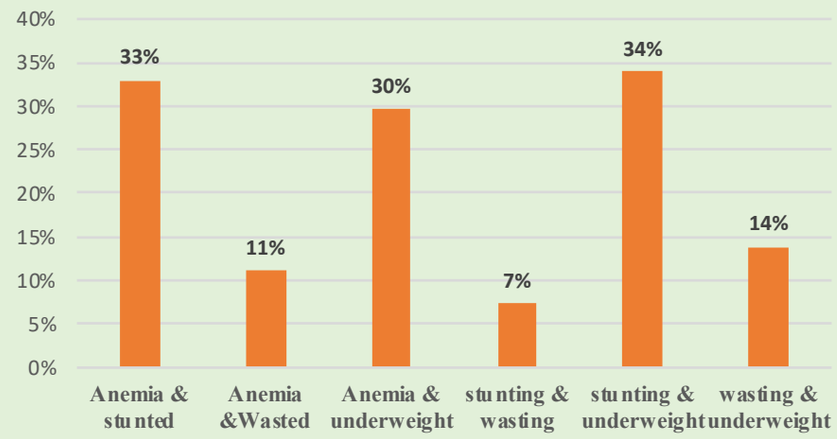

Table 1:Bi-variate analysis of children aged 12-59 months who did not receive vaccination by type of nutritional status in Muzaffarpur district, Bihar, India, NFHS (2015-2016).

	Proportion (95% CI)			
	Stunted	Wasted	Underweight	Anaemia
No BCG	45.8 (31.1, 61.1)	14.4 (6.6, 28.6)	32.0 (17.8, 50.0)	56.7 (43.3, 69.2)
No measle	49.5 (37.6, 61.4)	14.0 (8.2, 22.8)	37.0 (27.0, 48.2)	58.2 (49.6, 66.3)
No Polio	50.2 (40.8, 59.5)	13.6 (8.0, 22.3)	36.5 (27.3, 47.0)	54.9 (46.4, 63.1)
No DPT	52.7 (43.0, 62.1)	14.2 (8.7, 22.5)	38.0 (27.2, 50.0)	57.3 (47.9, 66.3)
Not Fully vaccinated	49.8 (42.5, 57.1)	16.4 (11.5, 23.0)	38.3 (30.6, 46.5)	56.2 (49.2, 63.0)

Figure 3 : Nutritional status among children aged 6-59 months by poor-non-poor household in Muzaffarpur district, Bihar, India, NFHS (2015-16)

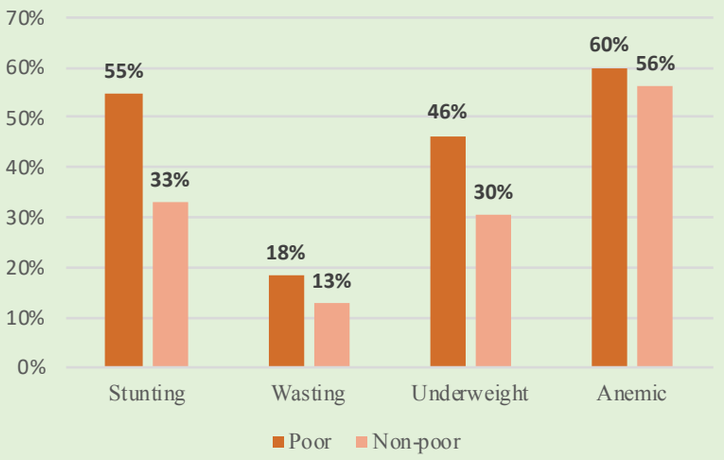

Table 2 : Percentage Distribution of Immunization covered among Children aged 12-59 months by poor-non-poor household in Muzaffarpur district, Bihar, India, NFHS (2015-2016).

	Proportion (95% CI)	
	Poor	**Non-poor**
No BCG	94.5 (83.9, 98.3)	5.5 (1.7,16.1)
No measles	85.0 (77.1, 90.6)	15.0 (9.4, 23.0)
No Polio	87.9 (78.3, 93.6)	12.1 (6.4, 21.7)
No DPT	89.5 (78.7, 95.1)	10.5 (4.9, 21.3)
Not Full vaccinated	85.3 (77.9, 90.6)	14.7 (9.4, 22.2)

Conclusion

- The study shows that the nutritional status of children and vaccination coverage was very low in the Muzaffarpur district, which may result in the child acquiring AEV.
- To overcome this government should take more initiatives to educate people about the importance of vaccination, clean and safe drinking water and use of proper sanitation facility in their living area. A proper system to monitor the growth of children is strongly recommended.
- The Anganwadi workers should be more empowered to educate the mother about the importance of healthy food, and regular monitor checks in the Anganwadi centre is required.
- Also, a strong surveillance system together should be implemented with a high quality of immunisation program.