Immunisation and Infant Mortality in EAG States in India

AFEEQ K. AND DR. AJEET JAISWAL

Department of Epidemiology and Public Health, Central University of Tamil Nadu, Thiruvarur, Tamil Nadu

Abstract: **Introduction:** Immunization coverage is a key predictor in infant mortality rate in mostly all the developing countries, Infant mortality rate is a health indicator of great importance which gives the overall health status of the region. **Method:** The study is an analysis of infant mortality and the immunisation coverage of the states in the empowered action group. Best and worst performing states are identified. Pearson correlation coefficient was calculated for IMR and immunisation coverage and under 5 mortality rate and immunisation. **Results:** Immunisation coverage and IMR, and U5MR are negatively correlated but the p values is greater than 0.05 so it's not statistically significant. **Discussion:** Odisha with higher immunisation and Rajasthan with comparatively low immunisation rates have somewhat same IMR. This shows that infant mortality have several determinants affecting it.

Introduction

Infant mortality rate is a health indicator of great importance which gives the overall health status of the region as women and children are most vulnerable people in the population.

Immunization coverage is a key predictor in infant mortality rate in mostly all the developing countries[3]. A child is said to be fully immunised when they had received one dose of BCG vaccine, three doses of polio vaccine, three doses of the combined diphtheria, tetanus toxoid and pertussis (DTP3) vaccine, and one dose of measles vaccine[2].

The ministry of health and family welfare , government of India have defined 8 states as empowered action group states to facilitate focused efforts to promote the reproductive and child health program[1]. EAG states are those with high fertility rates ,weak socio-demographic and health indicators[1]. These EAG states are Bihar, Jharkhand, Chhattisgarh, Uttar Pradesh, Uttarakhand, Odisha and Rajasthan[1].

The National Family Health Survey (NFHS) is a large-scale, multi-round survey conducted during a stratified sample of households throughout India[4].

Methods

The data for infant mortality and immunisation coverage is retrieved from the public domain of national family health survey NFHS 4 which was conducted on 2015-16.Infant mortality is measured in Infant mortality rate (IMR) it is the number of deaths per 1,000 live births of children under one year of age.

Continuous variable infant mortality rate (IMR), under 5 mortality and immunisation coverage is taken from the NFHS 4 data for the EAG states like are Bihar, Jharkhand, Chhattisgarh, Uttar Pradesh, Uttarakhand, Odisha and Rajasthan.

The study is a analysis of infant mortality and the immunisation coverage of the states in the empowered action group. Best and worst performing states are identified. Pearson correlation coefficient was calculated for IMR and immunisation coverage and under 5 mortality rate and immunisation. P value of > 0.05 was taken as significant. SPSS 25 on window was used for calculation.

Result

The national average for IMR is 41/1000 live births and for under 5 morality 50/1000, comparing it NFHS 3 there is a large decrease in IMR and U5MR through the country and also in the EAG states. The immunisation coverage also improved in the country and also in the EAG states.

The base data for IMR, IMC and U5MR are given in table 1 Odisha has better immunisation coverage , followed by Chhattisgarh. The states like Uttar Pradesh and Madhya Pradesh are the poor performing states in case of IMR, IMC and U5MR in the EAG states.

Table 1: IMC, IMR and U5MR in EAG States

State	IMC in %	IMR	U5MR
Bihar	61.7	48	58
Chhattisgarh	76.4	54	64
Uttar Pradesh	51.1	64	78
Uttarakhand	57.6	40	47
Odisha	78.6	40	48
Rajasthan	54.8	41	51
Jharkhand	61.9	44	54
Madhya Pradesh	53.6	51	65

IMC- immunisation coverage, IMR- infant mortality rate, U5MR- under 5 mortality rates.

Table 2: Correlation between immunisation and IMR and U5MR

factors	Correlation	*P value*
IMR	-0.264	.527
U5MR	-0.340	.410

Immunisation coverage and IMR, and U5MR are negatively correlated but the p values is greater than 0.05 so it's not statistically significant.

Discussion

This article is on immunisation coverage and the effect of infant mortality across the EAG states in India, when correlating immunisation coverage with IMR and U5MR it is seen that it is negatively correlated.

Female literacy and sanitation facilities also have an huge impact on infant mortality of region in fact greater than of the immunisation coverage[5]. The ecological study by A Mukherjee in 2019 showed that female literacy is a strong determinant of IMR in rural areas of India.[7,8,9]

From the study it is seen that apart from Odisha and Chhattisgarh the immunisation coverage less than 55% excluding Bihar. Odisha with higher immunisation and Rajasthan with comparatively low immunisation rates have some what same IMR. This shows that infant mortality have several determinants affecting it.

The likelihood of child getting immunised increases if the child is residing in urban area, his or her mother is literate and educated, mothers' awareness about immunisation, ASHA worker visiting the home of people with children and making awareness about vaccination, antenatal care, post-natal care[6].

References

Ministry of Health and Family Welfare. 2020- Report EAG sates.

WHO. (2020). Immunisation coverage -Immunization coverage (who.int)

Shimouchi A, Ozasa K, Hayashi K. (1994). Immunization coverage and infant mortality rate in developing countries. *Asia Pac J Public Health.* 7(4): 228-32. doi: 10.1177/101053959400700406. PMID: 7605698.

National family health survey 4- (2015-2016). National Family Health Survey (rchiips. org) last accessed 27 June 2021.

Trends and Differentials in Fertility and Family Planning Indicators of EAG States in India.

Patra Nilanjan (2019). Exploring the Determinants of Childhood Immunisation. 14-19.

Mukherjee A, Bhattacherjee S, Dasgupta S. (2019). Determinants of infant mortality in rural India: An ecological study. *Indian J Public Health.* 63: 27-32.

Jaiswal, A. (2014). An anthropological vision on the impact of globalization on Indian rural women: A critical reality. *Arts and Social Sciences Journal*, 5(2), 1-9.

Jaiswal, A. (2012). A Study on Factors Associated With the Deterioration of Respiratory Function Among Male Textile Workers in Uttar Pradesh. *Indian Journal of Public Health Research & Development*, 3(3).