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Trends and Interventions in Pediatric Diarrhea and Acute Respiratory Infections in India: A Comprehensive Analysis

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Abstract: ***Introduction: To reduce child mortality in India in the wake of the country's rapid population growth, a significant drop in the prevalence of different diseases is required. The objective of the study is to find trends and interventions in pediatric diarrhea and acute respiratory infections in India. Methodology: Data on children under 5 years old situated in 28 selected Indian states were analyzed using data from the third, fourth, and fifth rounds of the National Family Health Survey conducted in 2005 - 06, 2015 - 2016, and 2019 - 21 to identify factors related with mortality among children. Results: In NFHS 3, 4, and 5, the prevalence of diarrhea is about 9.9%, 9.2%, and 7.3% and ARI is about 6.03, 2.7, and 2.8 respectively. There are many factors influencing the prevalence of diarrhea and ARI. However, targeted efforts helped in reducing the prevalence of these illnesses. Conclusion: The findings advocate for specialized policies and programs, by those already in place which had a significant impact on millions of people. To ensure that women and their children receive adequate nutrition, future public health initiatives and policies should concentrate on vulnerable populations that were identified in the analysis.***

Keywords: Child mortality, pediatric diseases, National Family Health Survey, diarrhea prevalence, acute respiratory infections

1. Introduction

One of the leading causes of chronic diseases in children globally is respiratory infections, which also significantly increases the number of disability - adjusted life years and results in large mortality in developing countries. Lower respiratory infections (LRI) are a leading cause of death in children under the age of five worldwide. Along with that India has also faced significant challenges in reducing the prevalence of diarrhea in children. Factors such as inadequate sanitation facilities, poor access to clean water, improper hygiene practices, and limited healthcare resources contribute to the high incidence of diarrhea in the country. [1]

The objective of this study is to undertake a thorough analysis of data from the National Family Health Survey (NFHS) in India to determine trends and potential interventions for pediatric diarrhea and acute respiratory infections (ARIs) in children under the age of five. It takes into account the geographical variations, the incidence of these illnesses over the past 10 years, and potential risk factors like nutrition, sanitation, and water quality. The study will also assess how well current interventions are used and effective. It will offer specific suggestions based on the evidence for policymakers and healthcare stakeholders to improve the prevention and management of pediatric diarrhea and ARIs in India.

2. Methods

The main data sources are the NFHS datasets from numerous rounds held between 1992 and 2021. Using secondary data from NFHS, this study uses a cross - sectional study design. The NFHS is a comprehensive study carried out all over India that provides a representative sample of several health indicators, such as pediatric diarrhea and acute respiratory infections. Datasets from the NFHS are taken into consideration, covering a long enough period to examine changes in pediatric diarrhea and acute respiratory illnesses over time. Children under the age of five will make up the sample for this analysis since they are particularly vulnerable to acute respiratory infections and diarrhea. Age, gender, geographic location, socioeconomic level, maternal education, and access to healthcare services are all significant factors that will be considered as potential determinants. The prevalence of pediatric diarrhea and acute respiratory illnesses during several NFHS rounds will be compiled using descriptive statistics. Trends will be examined through trend analysis. Subgroup analysis is used to investigate the effects of various demographic and socioeconomic factors on variations in diarrhea and acute respiratory infections.

3. Review of Literature

The papertitled “Population attributable risk for breastfeeding practices on diarrhea and acute respiratory infections among children aged 0 - 23 months in India” reveals that despite efforts to prevent and manage these deadly diseases, children continue to suffer from them. The study, based on data from the National Family Health Survey conducted in 2015 - 16, analyzed a substantial sample size of 94, 144. The results indicated that early initiation of breastfeeding, exclusive breastfeeding, and predominant breastfeeding were associated with a reduced risk of diarrhea and acute respiratory infections, with population - attributable risk percentages ranging from 0.3% to 2.2%. These findings highlight the significant role

breastfeeding practices can play in preventing these diseases among young children.

The paper titled "Diarrhea and Acute Respiratory Infections (ARI) among Under - five Children in Indian Slums" highlights the absence of national research that specifically targets this vulnerable population. The National Family Health Survey data from 2005–2006 are used in the current study to highlight important factors impacting the prevalence of these diseases. The likelihood of diarrhea and ARI is greatly influenced by birth weight, age, area, access to clean water, and improved sanitary conditions. The findings highlight the need for evidence - based public health initiatives focusing on slums, including programs for affordable housing, sanitation, safe water, and nutrition. Mass media can also encourage a shift in behavior toward health.

The study "Prevalence of acute respiratory infections among children in India: Regional inequalities and risk factors" highlights geographic differences and risk factors linked to childhood ARI. The study uncovers considerable differences across regions of India using data from the Fourth Indian National Family Health Survey. Compared to children from the northeast, ARI was more common among children from the north, central, and east. The study highlights the need to treat ARI as a significant public health issue in the country, considering the effects of comorbidity, sex, age, and nutritional status on ARI prevalence.

4. Findings

Table 1: NFHS 3, 4, 5 data on the prevalence of diarrhea and ARI in children under 5 years of age

	Age of children <5		
Prevalence of	NFHS 3(%)	NFHS 4(%)	NFHS 5(%)
Diarrhea	9.9	9.2	7.3
ARI	6.03	2.7	2.8

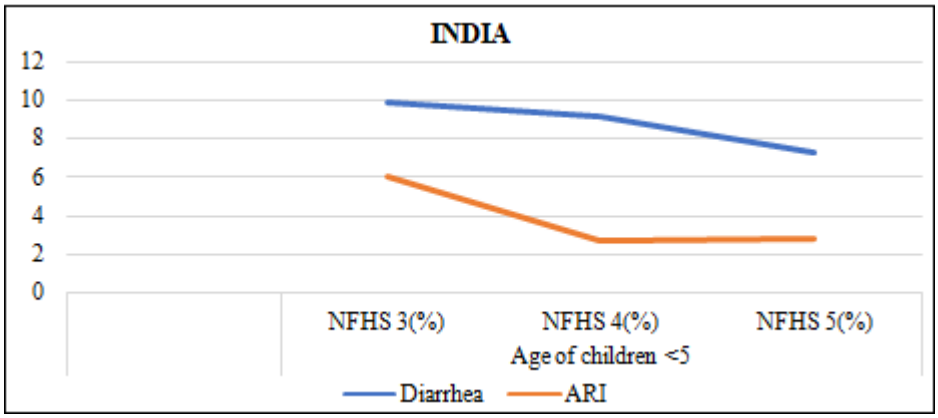

Figure 1: Prevalence of diarrhea and ARI in children under 5 years of age (NFHS data)

According to the above data **(Table.1, Figure 1)** on the NFHS 3 survey, the prevalence of diarrhea was approximately 9.9% of the population surveyed and 6.03% of the surveyed population reported suffering from acute respiratory infection.

In the NFHS 4 survey, the prevalence of diarrhea was slightly lower at 9.2%. This suggests a slight decrease in the incidence of diarrhea compared to the previous survey. The prevalence of ARI was recorded at 2.7%, which shows a substantial decrease in the occurrence of acute respiratory infections since NFHS 3.

The most recent survey, NFHS 5, reports a further decrease in the prevalence of diarrhea, with a rate of 7.3%. This indicates a positive trend of declining cases of diarrhea over time. The prevalence of ARI was recorded at 2.8%, which shows a marginal increase compared to NFHS 4 but remains at a relatively low level.

There is a gradual decline in the prevalence of diarrhea from NFHS 3 to NFHS 5. This improvement can be attributed to several factors - improved sanitation, access to clean water, health education, and healthcare interventions.

The prevalence of ARI also shows a decline from NFHS 3 to NFHS 5. It can be due to several reasons - Increased knowledge of the adverse impacts of indoor and outdoor air pollution, as well as stricter emission rules, which have all worked to reduce industrial pollution and improve air quality, which may have benefited respiratory health. Increasing access to and coverage of immunization programs, particularly for conditions like pneumonia, can lower the prevalence of ARI. The impact of respiratory infections can be lessened by improved healthcare infrastructure, which includes enhanced accessibility to healthcare facilities and experienced healthcare professionals. Reducing the incidence of ARI can be achieved by raising public awareness of respiratory health issues and promoting preventative practices such as good hand hygiene, cough etiquette, and avoiding close contact with those who are infected.

Table 2: Prevalence of diarrhea and ARI in rural and urban settings

	NFHS 3(%)		NFHS 4(%)		NFHS 5(%)	
	Prevalence of		Prevalence of		Prevalence of	
	DIARRHEA	ARI	DIARRHEA	ARI	DIARHHEA	ARI
Urban	8.9	5.1	8.2	2.3	6.2	2.3
Rural	9	6	9.5	2.9	7.7	3

The data from these surveys highlights improvements in the prevalence rates of diarrhea and ARI in both urban and rural areas in India. Still, the prevalence of diarrhea is higher in rural (7.7%) residents as compared to urban counterparts. However, it is important to note that rural areas still tend to have higher prevalence rates for both conditions, indicating the need for continued focus on public health interventions, access to clean water and sanitation, and healthcare services in these regions.

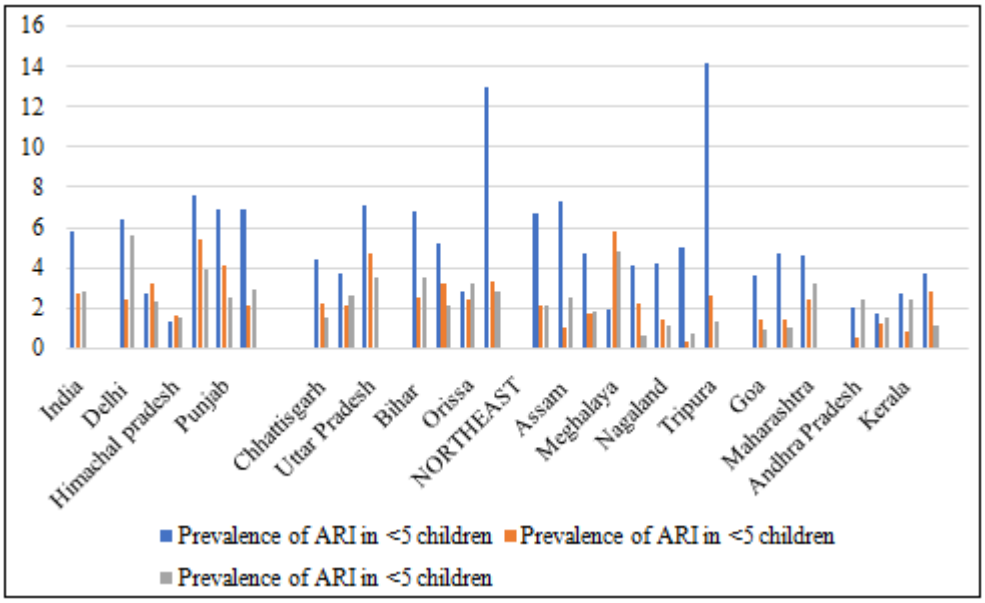

Figure 2: The geographical variation of ARI among children age under five years

Table 3: Prevalence of ARI among children age under five years (NFHS data)

States	Early childhood mortality rates by state		
	Infant mortality		
	NFHS 3	NFHS 4	NFHS 5
India	5.8	2.7	2.8
NORTH			
Delhi	6.4	2.4	5.6
Haryana	2.7	3.2	2.3
Himachal Pradesh	1.3	1.6	1.5
J and K	7.6	5.4	3.9
Punjab	6.9	4.1	2.5
Rajasthan	6.9	2.1	2.9
CENTRAL			
Chhattisgarh	4.4	2.2	1.5
Madhya Pradesh	3.7	2.1	2.6
Uttar Pradesh	7.1	4.7	3.5
EAST			
Bihar	6.8	2.5	3.5
Jharkhand	5.2	3.2	2.1
Orissa	2.8	2.4	3.2
West Bengal	13	3.3	2.8
NORTHEAST			
Arunachal Pradesh	6.7	2..1	2.1
Assam	7.3	1	2.5
Manipur	4.7	1.7	1.8
Meghalaya	1.9	5.8	4.8
Mizoram	4.1	2.2	0.6
Nagaland	4.2	1.4	1.1
Sikkim	5	0.3	0.7
Tripura	14.2	2.6	1.3
WEST			
Goa	3.6	1.4	0.9
Gujarat	4.7	1.4	1
Maharashtra	4.6	2.4	3.2
SOUTH			
Andhra Pradesh	2	0.5	2.4
Karnataka	1.7	1.2	1.5
Kerala	2.7	0.8	2.4
Tamil Nadu	3.7	2.8	1.1

According to NFHS 5 datathe prevalence is high in Delhi (5.6%), Meghalaya (4.8%), Jammu, and Kashmir (3.9%). On the contrary Mizoram (0.6%), Sikkim (0.7%), Goa (0.9%), and Gujarat (1.0%) have reported having a lower prevalence of ARI among 0–5 aged children in India.

By looking into state's data of NFHS 3 and NFHS 5, following countries made effective change in reducing prevalence of ARI in children aged under 5, like Jammu and Kashmir (from 7.6% to 3.9%), Mizoram (from 4.1% to 0.6%), Sikkim (from 5.0% to 0.7%), GOA (from 3.6% to 0.9%), Gujarat (from 4.7% to 1%).

There is a significant increase in the prevalence of ARI in Delhi when comparing data from NFHS 4 and 5.

Children living in villages, Jhuggi - Jhopri colonies, and resettlement colonies were highly likely to have acute respiratory infections and diarrheal illnesses. Children who lived in Old Urban Colonies and New Urban Colonies experienced it relatively less. Compared to children living in villages, children in New Urban colonies were 80% less likely to develop diarrheal infections and 40% less likely to develop ARIs. [2]

Especially in villages, jhuggi - jhopri colonies, and resettlement colonies, a significant proportion of deliveries were made inside homes. In East Delhi, it was discovered that every third delivery was made inside a home. Because of the poor and unsanitary living conditions in JJ colonies, children are more likely to have diarrheal infections. [2]

Area	Diarrhoeal Diseases	ARI	N
Village	19.7	73.5	1266
Jhuggi-Jhopri Colonies	25.2	70.4	1704
Resettlement Colonies	16.8	56.8	2078
Old Urban Colonies	12.1	58.1	4529
New Urban Colonies	3.2	53.6	616
DDA Flats/Govt. Qtrs.	13.5	67.7	812
All	15.5	62.0	11005

N - Sample Size

In the study, the high prevalence of ARIs and increased incidence of pneumonia may be attributed to (i) increased air pollution levels, (ii) congested and poorly ventilated housing situations, and (iii) an absence of primary healthcare systems.

Table 4: Prevalence (per 1000) of Diarrhoeal Diseases and ARI Among Children.

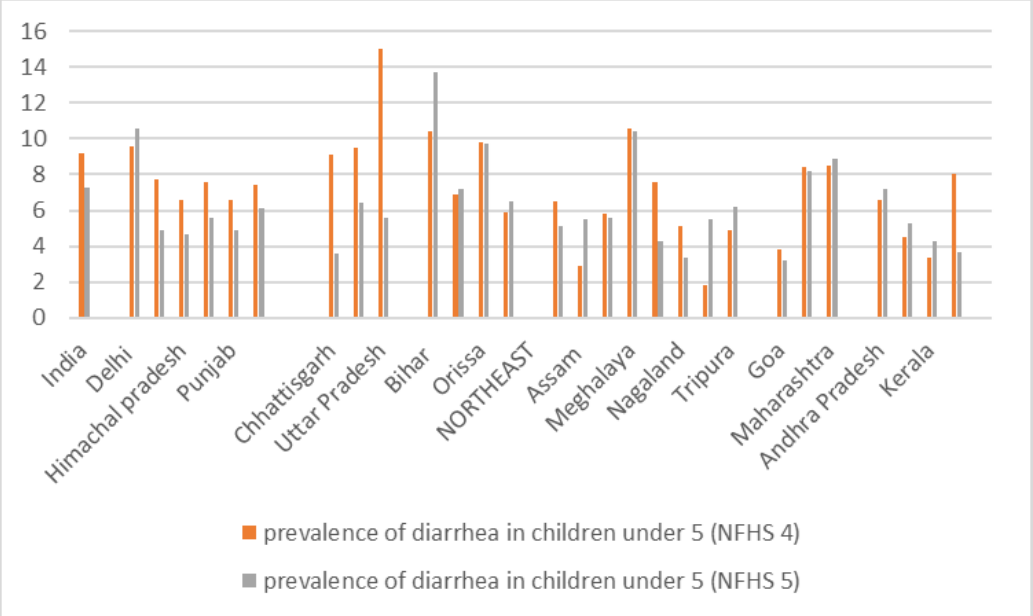

Figure 3: The geographical variation of diarrhea among children age under five years

Table 5: Prevalence of diarrhea in children under 5 years (NFHS data)

Prevalence of diarrhea in children under 5		
	(NFHS 4)	(NFHS 5)
India	9.2	7.3
NORTH		
Delhi	9.6	10.6
Haryana	7.7	4.9
Himachal Pradesh	6.6	4.7
J and K	7.6	5.6
Punjab	6.6	4.9
Rajasthan	7.4	6.1
CENTRAL		
Chhattisgarh	9.1	3.6
Madhya Pradesh	9.5	6.4
Uttar Pradesh	15	5.6
EAST		
Bihar	10.4	13.7
Jharkhand	6.9	7.2
Orissa	9.8	9.7
West Bengal	5.9	6.5
NORTHEAST		
Arunachal Pradesh	6.5	5.1
Assam	2.9	5.5
Manipur	5.8	5.6
Meghalaya	10.6	10.4
Mizoram	7.6	4.3
Nagaland	5.1	3.4
Sikkim	1.8	5.5
Tripura	4.9	6.2
WEST		
Goa	3.8	3.2
Gujarat	8.4	8.2
Maharashtra	8.5	8.9
SOUTH		
Andhra Pradesh	6.6	7.2
Karnataka	4.5	5.3
Kerala	3.4	4.3

Tamil Nadu	8	3.7

According to NFHS 5 data the prevalence of diarrhea is high in Delhi (10.6%), Bihar (13.7%), Orissa (9.7%), Meghalaya (10.4%), Maharashtra (8.9%). On the contrary, Goa (3.2%), Nagaland (3.4%), Chhattisgarh (3.6%), Tamil Nadu (3.7%) have reported of having lower prevalence of diarrhea disease among 0–5 aged children in India.

State's data of NFHS 4 and NFHS 5, following countries made effective change in reducing prevalence of diarrhea in children aged under 5, like Goa (from 3.8% to 3.2%), Nagaland (from 5.1% to 3.4%), Chhattisgarh (from 9.1% to 3.6%), Tamil Nadu (from 8% to 3.7%).

Bihar and Maharashtra showan increase in prevalence of diarrhea when comparing data of NFHS 4 and 5.

The results demonstrate that different healthcare programs and plans in Bihar did not significantly enhance healthcare providers' expertise or performance regarding pediatric pneumonia or diarrhea. Bihar had a low total zinc consumption rate. [3]

In the state of Maharashtra, the prevalence of childhood diarrhea is greater than the national norm. Between 2016 and 2021, the prevalence climbed from 8.5 to 8.9 percent, and about 50 percent of districts exhibited a rise in the prevalence of childhood diarrhea. The qualities and infrastructure of the home are related to its occurrence. Diarrheal diseases are more prevalent in children who live in kaccha households. [4]

The region - specific study result depicts that diarrhea cases are higher in the western (8.3%) region as compared to other geographical regions of India. The southern region (5.4%) has shown comparatively low prevalence. Childhood diarrhea prevalence is found to be higher among children living in kaccha households (9.7%) and households using unimproved sanitation facilities (8.6%). The prevalence is also higher in the rainy season compared to other seasons. [4, 5]

Table 6: Early childhood mortality rates and Immunization rates in India from 1992 - 2021

		Early childhood mortality rates				
INDIA		NFHS 1	NFHS 2	NFHS 3	NFHS 4	NFHS 5
Neonatal mortality		48.6	43.4	39	29.5	24.9
Infant mortality		78.5	67.6	57	40.7	35.2
Under 5 mortality		109.3	94.9	74.3	49.7	41.9
Full Immunization		35	42	43.5	62	76.4

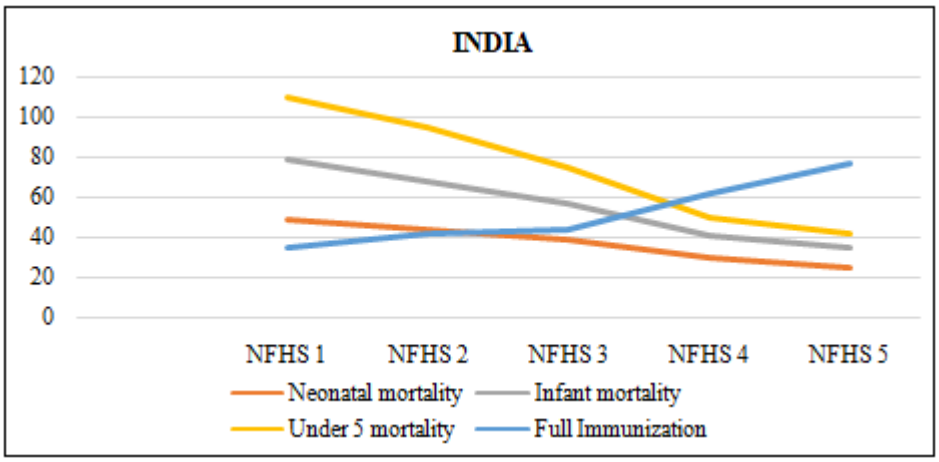

Figure 4: Mortality rates and Immunization rates in India from 1992 - 2021

As per the figure and table, at the state level, there were, however, significant variations. Infant deaths are frequently symptoms of more serious socioeconomic issues such as malnutrition, poor sanitation, and lack of immunization. Many deaths are being caused by infections like pneumonia, which are treatable at the primary level. Many infant deaths occur before they turn one because the country's primary and preventive healthcare system is ineffective.

33 out of every 1, 000 children died in their first year in 2017, a 42% decrease over 11 years (data from the government's Sample Registration System). Different causes of death, such as congenital or genetic disorders, are seen in states like Kerala that have lower infant mortality rates. A 2019 UNICEF report emphasized the importance of expanding access to high - quality antenatal care, skilled birth attendance, postnatal care for both mother and baby and appropriate care for small and sick babies to reduce under - five mortality rates.

According to NFHS data, there is a lack of specialists in community health centers, notably in regions like Uttar Pradesh and Bihar, ranging from 75% to 95% of required posts, even though the rate of institutional births has doubled since 2005, reaching 78.9% in 2015–16. As a result, parents

are compelled to seek treatment at higher - level medical facilities, which increases crowding and the danger of infection. Household wealth and maternal education also have an impact on infant and child mortality rates, with greater survival rates for children born to mothers with higher levels of education and wealth.

Table 7: Infant mortality rates by different states

States	Early childhood mortality rates by state		
	Infant mortality		
	NFHS 3	NFHS 4	NFHS 5
NORTH			
Delhi	39.8	31.2	24.5
Haryana	41.7	32.8	33.3
Himachal Pradesh	36.1	34.3	25.6
J and K	44.7	32.4	16.3
Punjab	41.7	29.2	28
Rajasthan	65.3	41.3	30.3
CENTRAL			
Chhattisgarh	70.8	54	44.3
Madhya Pradesh	69.5	51.2	41.3
Uttar Pradesh	72.7	63.5	50.4
EAST			
Bihar	61.7	48.1	46.8
Jharkhand	68.7	43.8	37.9
Orissa	64.7	39.6	36.3
West Bengal	48	27.5	22
NORTHEAST			
Arunachal Pradesh	60.7	22.9	12.9
Assam	66.1	47.6	31.9
Manipur	29.7	21.7	25
Meghalaya	44.6	29.9	32.3
Mizoram	34.1	40.1	21.3
Nagaland	38.3	29.5	23.4
Sikkim	33.7	29.5	11.2
Tripura	51.5	26.7	37.6
WEST			
Goa	15.3	12.9	5.6
Gujarat	49.7	34.2	31.2
Maharashtra	37.5	23.7	23.2
SOUTH			
Andhra Pradesh	53.5	34.9	30.3
Karnataka	43.2	26.9	25.4
Kerala	15.3	5.6	4.4
Tamil Nadu	30.4	20.2	18.6

States like Uttar Pradesh and Bihar, which have the highest infant death rates, also have lower proportions of women with more than ten years of schooling and a higher prevalence of child marriages. The risk of infections in low birthweight babies is increased by inadequate nursing advice. Unexpectedly, newborn birth weights are comparable in states with high and low infant death rates. However, compared to areas with low infant mortality rates, like Kerala, Goa, and Tamil Nadu, states with high infant mortality rates, like Uttar Pradesh, and Bihar have much lower percentages of infants that are fed within an hour of birth. In comparison to Assam, Gujarat, and Uttar Pradesh, Tamil Nadu and Goa have higher rates of young children under two receiving the most basic immunizations.

Significantly more children die from preventable conditions like pneumonia and diarrhea. In India, pneumonia caused 12.9% of all pediatric deaths whereas diarrhea was responsible for 8.9%. However, there is still a lack of easy - to - access, affordable treatments for many illnesses. For instance, only 50.6% of children with diarrhea received oral rehydration solution (ORS), and only 20.3% received zinc supplementation, which helps in fighting diarrhea. With 127, 000 recorded deaths from pneumonia among children under five in 2018, India ranked second worldwide. In the same way, 90, 000 kids under the age of five died from diarrhea in 2017. These statistics demonstrate the urgent need for better healthcare infrastructure, more accessibility to life - saving medications and preventative care, and increased focus on tackling societal factors that affect children's health, such as malnutrition, sanitation, and immunization rates. [6]

The National Rural Health Mission (NRHM) of India was established in 2005 to enhance healthcare in rural regions, with a concentration on 18 states with poor infrastructure and public health indices. After the NRHM was put into place, the infant mortality rate (IMR) decreased from 58 in 2005 to 44 in 2011, with the annual rate of decline accelerating by almost 37%. Before the introduction of NRHM, several initiatives, such as the Expanded Program of Immunization (EPI), the Universal Immunization Program (UIP), oral rehydration therapy (ORT), and the Child Survival and Safe Motherhood (CSSM) Program, made a positive impact on lowering infant mortality and enhancing child health from 1978 to 2002. During its 2005–2012 implementation phase, the NRHM further improved healthcare access and outcomes for rural communities by integrating and enhancing existing efforts. [7] Community health centers are being upgraded to Indian Public Health Standards. Increase First Referral Unit use from under 20% to 75%. Recruiting in 10 States 250, 000 female Accredited Social Health Activists (ASHAs). A Health Day is held at the Anganwadi level on a set day or month to provide immunizations, antenatal and postnatal checkups, and services related to the health of mothers and children, including nutrition. Improved institutional delivery facilities, including Janani Suraksha Yojana (JSY) - funded referral, transport, attendant, and better hospital care for families living below the poverty line. Building of indoor toilets. Annual District Reports on People's Health (should be created in cooperation with the government and NGOs). [8]

Over the years, Karnataka and Madhya Pradesh have achieved great success in lowering their infant mortality rates (IMRs). Madhya Pradesh was able to lower its IMR from 76 to 41.3 between 2005 and 2021, whereas Karnataka recorded a decline from 50 to 25.4 over the same time frame. [4]

Karnataka has made major progress toward improving its primary healthcare system, especially in rural regions. Between 2005 and 2012, the number of Sub Centers and Primary Health Centers (PHCs) in the state increased. During this time, the number of PHCs reached from 1681 to 2310, while the number of Sub Centers increased from 8143 to 8871. Karnataka topped all the states in the development of PHCs, with Assam, Chhattisgarh, and Bihar following closely behind. Madhya Pradesh, on the other hand, made considerable strides in the development of Community Health Centers (CHCs), adding 104 CHCs between 2005 and 2012. [9]

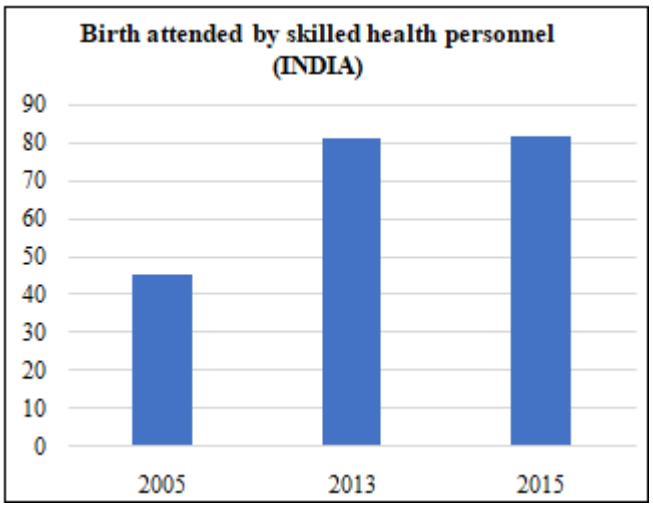

Figure 5: Birth attended by skilled health personnel (INDIA) [12]

The availability of human resources is a key factor in determining the standard of healthcare provided at PHCs and CHCs, along with physical infrastructure. Karnataka reported a rise in ANMs (2899) and doctors (48) but a fall in specialists (196) from 2005 to 2012. On the other side, from 2005 to 2012, Madhya Pradesh had an increase of 859 ANMs and 218 specialists and a reduction of 25 doctors. [9]

The continuous decrease in infant death rates over the past 10 years can be attributed to several factors, including economic development, higher living standards, improved access to clean water and sanitary facilities [10], a rise in maternal literacy rates, the availability and use of healthcare services, improvement in receiving immunization. [11]

The trend of breastfeeding has increased. Recent statistics show that the number of babies being breastfed within one hour of birth has nearly doubled over the past ten years. Specifically, from 23.4% to 41.8% (NFHS - 3, 2005 - 06 and 5, 2019 - 21). Additionally, there has been significant improvement in the number of infants exclusively breastfed, which increased from 46.4% in the NFHS - 3 to 63.7% in the NFHS - 5. However, given the high percentage of institutional deliveries in the nation, there is still room for improvement in breastfeeding rates within one hour of birth.

5. Results and Discussion

The analysis of NFHS 3, 4, and 5 data shows a positive trend in the decline of diarrhea and acute respiratory infections (ARI) among India's children under the age of five. The prevalence of diarrhea has gradually decreased from 9.9% in NFHS 3 to 7.3% in NFHS 5, reflecting improvements in sanitation, access to clean water, health education, and healthcare interventions over time. A similar declining pattern is seen in ARI, with rates falling from 6.03% in NFHS 3 to 2.8% in NFHS 5. The disparities between urban and rural areas highlight the need for ongoing efforts in rural areas, where prevalence rates remain higher. State - specific variations indicate that some regions have seen successful interventions, while others continue to face challenges. The impact of living conditions, environmental factors, and government programs on infant mortality and immunization rates highlights the intricate interplay of socioeconomic and healthcare factors in shaping childhood health outcomes in India.

The study based on NFHS - 3, 4, 5 (conducted in 2005–21) not only finds the high prevalence and hotspot districts of pediatric diseases in India but also the risk factors for the illness. According to the data, ARI and childhood diarrhea showed medium to high degrees of association in all of India's districts between 2005 and 2021. According to the National Family Health Survey 5 (3) conducted in 2019 - 2021, approximately 7.3% of children under the age of 5 in India had diarrhea in the two weeks preceding the survey. The study reveals children of age who live in rural regions are more likely to get diarrhea and ARI. The study makes the following recommendation considering the findings: public health programs should implement a district - level policy by focusing on hotspot districts where the higher prevalence of diarrhea is still present and should take the necessary preventive steps to reduce the incidence and burden of childhood disease in India. Since the incidence of ARIs and pneumonia is generally reduced with age, it may be more beneficial to focus preventative and control efforts exclusively on newborns. Before the start of the peak season, two fortnight - long intensive mass - media campaigns before Holi and Dusshera, on the lines of "Malaria Month" and "Breast Feeding Awareness Week" are likely to be effective in raising awareness and disease control.

The study emphasizes the importance of ongoing government interventions, such as the National Diarrheal Disease Control Programme, Integrated Diarrhoea Control Fortnight, and National Immunisation Programme, in combating childhood diseases. The success stories of states like Karnataka and Madhya Pradesh in lowering infant mortality rates demonstrate the benefits of improved primary healthcare infrastructure. However, challenges remain, particularly in areas with limited healthcare resources and socioeconomic disparities. The Integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea (GAPPD) emerges as a comprehensive strategy for reducing child morbidity and mortality. The findings emphasize the importance of continued commitment to public health initiatives, strengthened healthcare infrastructure, and targeted interventions in reducing childhood diseases in India.

6. Challenges

Still, there is inadequate vaccination coverage, the impacts of malnutrition and poverty, limited access to clean water and sanitation, inadequate healthcare infrastructure in remote areas, low health awareness and education in rural communities, logistical challenges in reaching remote areas, cultural and social norms that prevent the adoption of interventions, so, there is need for efficient monitoring and evaluation systems.

7. Conclusion

The analysis of NFHS 3, 4, and 5 data reveals a positive trajectory for addressing childhood health challenges in

India. The decreasing prevalence of diarrhea and ARI reflects the effectiveness of comprehensive interventions that include sanitation improvements, access to clean water, and targeted healthcare programs. Challenges persist in regions with limited resources, emphasizing the importance of targeted strategies. The findings highlight the complex interplay of environmental, socioeconomic, and healthcare factors, urging continued support for public health initiatives and evidence - based interventions.

Ethical approval
The Institutional Review Board approval is not required.

Declaration of patient consent
Patient consent is not required as there are no patients in this study.

Financial support and sponsorship
Nil

Conflicts of interest
There are no conflicts of interest.

References

[1] Ghosh, K., Chakraborty, A. S., & Mog, M. (2021). Prevalence of diarrhea among under five children in India and its contextual determinants: A geo - spatial analysis. Clinical Epidemiology and Global Health, 12 (100813), 100813. https: //doi. org/10.1016/j. cegh.2021.100813
[2] Gupta, R. K., & Pandey, A. (2007). Status of children in east Delhi: Care during delivery, immunization, and occurrence of some acute diseases. Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine, 32 (1), 88. https: //doi. org/10.4103/0970 - 0218.53419
[3] Kumar, S., Roy, R., & Dutta, S. (2015). Scaling - up public sector childhood diarrhea management program: Lessons from Indian states of Gujarat, Uttar Pradesh and Bihar. Journal of Global Health, 5 (2), 020414. https: //doi. org/10.7189/jogh.05.020414
[4] National Family Health Survey 5 data, fromhttp: //rchiips. org/nfhs/NFHS - 5_FCTS/COMPENDIUM/NFHS - 5%20State%20Factsheet%20Compendium_Phase - I. pdf
[5] National Family Health Survey 5 data, fromhttp: //NFHS - 5_FCTS/Final%20Compendium%20of%20fact%20sheets_India%20and%2014%20States_UTs%20 (Phase - II). pdf
[6] Ghosh, K., Chakraborty, A. S., & SenGupta, S. (2023). Identifying spatial clustering of diarrhea among children under 5 years across 707 districts in India: a cross sectional study. BMC Pediatrics, 23 (1), 272. https: //doi. org/10.1186/s12887 - 023 - 04073 - 3
[7] Yadavar, S., & Raman, S. (2020, January 9). Infant deaths not one hospital's problem. Here's why infants continue to die across India. Indiaspend. https: //www.indiaspend. com/infant - deaths - not - one - hospitals - problem - heres - why - infants - continue - to - die - across - india/
[8] Researchgate. nethttps: //www.researchgate. net/profile/Singariya/publication/270608202_Assessment_of_Progress_Made_in_Health_Infrastructure_and_Manpower_through_NRHM_and_Their_Impact_in_Reducing_IMR_in_India/links/54d78b890cf2970e4e73c367/Assessment - of - Progress - Made - in - Health - Infrastructure - and - Manpower - through - NRHM - and - Their - Impact - in - Reducing - IMR - in - India. pdf
[9] National Rural Health Mission (2005 - 2012) Mission Document from https: //nhm. gov. in/images/pdf/guidelines/nrhm - guidelines/mission_document. pdf
[10] Rural Health Statistics in India, 2012. Ministry of Health and Family Welfare, Government of India. https: //nhm. gov. in/images/pdf/publication/RHS - 2012. pdf
[11] Who. int. https: //apps. who. int/iris/bitstream/handle/10665/342579/2020 - SEARProfile - IND - eng. pdf?sequence=1&isAllowed=y
[12] DLHS 3, INTERNATIONAL INSTITUTE FOR POPULATION SCIENCES. http: //rchiips. org/pdf/rch3/state/India. pdf
[13] World Health Organization. Regional Office for South - East Asia. ((2021 :laog GDS htlaeh eht gnirotinoM htlaeH dlroW .aidnI - ssergorp llarevo fo rotacidnI .aisA tsaE - htuoS rof eciffO lanoigeR .noitazinagrO https: //apps. who. int/iris/handle/10665/342579

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