

Review Article

Performance and status of child healthcare indicators in Haryana: A study of NFHS rounds

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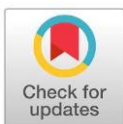
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Peer-Reviewed
Refereed
Indexed



How to cite: Sandeep., Hooda, D.S. (2024). Performance and status of child healthcare indicators in Haryana: A study of NFHS rounds. *Sports Science & Health Advances*. 2(2), 332-339. <https://doi.org/10.60081/SSHA.2.2.2024.332-339>

Received: 06-12-2024

Accepted: 22-12-2024

Published: 30-12-2024



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Abstract

This paper aims to analyse the status of child healthcare, child mortality, trends in the nutritional level and vaccination coverage among children in Haryana. Child healthcare remains one of the important parts of healthcare policy worldwide. The status of child mortality, level of nutrition among children and vaccination are considered crucial indicators of health outcomes. Most healthcare schemes and policies are prepared while taking child and maternal healthcare in their pinpoint agenda. Further, the paper combined the child mortality rate, trends in the nutritional level and vaccination coverage indicators to analyse the status of child health care in Haryana. The paper uses data from the National Family Household Survey (NFHS) rounds. The NFHS's various rounds of data have been used to capture trends in the status of child healthcare in the state of Haryana. Descriptive statistics has been used to calculate the trends and status of child healthcare.

Keywords: Child mortality rate, Immunization, Nutritional level, Vaccination coverage

Introduction

Child health is a fundamental aspect of public health, influencing not only the well-being of individuals but also the socio-economic development of a region. Monitoring and improving child healthcare indicators such as immunization coverage, nutritional status, infant mortality rates, and access to healthcare services are essential to building a healthy, productive society. In India, child health remains a key priority within national healthcare agendas, with substantial investments being made to address the challenges of child mortality, malnutrition, and preventable diseases. However, despite these efforts, disparities persist, particularly across states with varying socio-economic conditions and healthcare infrastructure. Haryana, a progressive state in northern India, has shown significant improvements in several health indicators in recent years. However, the performance and status of child healthcare indicators in Haryana continue to present challenges, particularly in rural and underserved areas. Factors such as socio-economic disparities, access to quality healthcare, cultural practices, and governmental interventions have a direct impact on the health outcomes of children in the state. Given Haryana's unique demographic and socio-economic characteristics, it is crucial to assess how these factors influence child healthcare

indicators and identify the gaps in current healthcare programs. This study aims to evaluate the performance and status of key child healthcare indicators in Haryana, focusing on immunization, nutritional status, morbidity rates, and access to healthcare facilities. By analyzing existing data, policies, and healthcare interventions, the research seeks to identify the strengths, challenges, and opportunities for improvement in child health in the state. Furthermore, the study also explores the role of public health initiatives, community participation, and inter-sectoral collaboration in improving child healthcare outcomes. The findings of this research will not only contribute to a better understanding of child health dynamics in Haryana but will also provide actionable insights for policymakers, healthcare providers, and researchers working towards improving child health in the region.

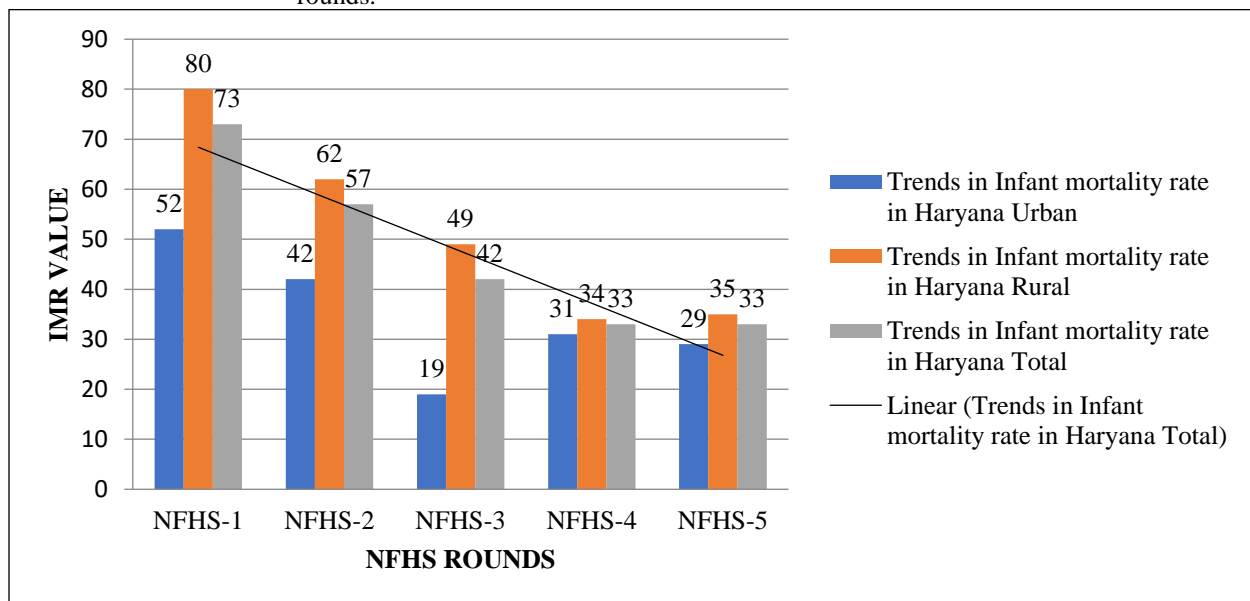
Literature Review

Child healthcare is a critical component of public health, as it significantly impacts both the immediate well-being of children and the long-term health outcomes for the population. In India, child health indicators such as infant mortality rate (IMR), under-five mortality rate (U5MR), malnutrition levels, immunization coverage, and access to healthcare services serve as important benchmarks for assessing the effectiveness of child healthcare programs. Several national programs, such as the National Rural Health Mission (NRHM) and the Integrated Child Development Services (ICDS), have been designed to address the multifaceted challenges of child health (Raghupathi & Raghupathi, 2018; Hooda, 2019). Haryana, a state in northern India, has witnessed significant improvements in child health indicators over the past few decades, although challenges persist. According to the National Family Health Survey (NFHS-5), Haryana has made notable strides in reducing IMR and U5MR, which are critical indicators of child health. However, there are persistent disparities in healthcare access between urban and rural areas, and the state continues to face challenges related to malnutrition and undernutrition (Chowdhury et al., 2020; Hooda, 2021). Despite these challenges, Haryana's healthcare system is relatively robust, with good access to basic healthcare services, such as immunization programs and maternal and child health services (Verma, 2021). Immunization coverage is a significant determinant of child health. National programs have focused on improving vaccination rates, which has led to a decline in vaccine-preventable diseases. In Haryana, the immunization coverage rates for diseases such as polio, measles, and DPT have improved significantly over the years (Singh & Kaur, 2019). However, gaps remain in reaching marginalized and rural populations, where there is a lag in achieving full immunization. Malnutrition remains one of the most pressing concerns in Haryana. The prevalence of stunting and wasting, though declining, continues to be higher than the national average (Ministry of Health and Family Welfare, 2020). Nutritional programs under ICDS, such as the provision of supplementary nutrition to pregnant women, lactating mothers, and children, have been instrumental in addressing these issues. However, the quality and reach of these programs need to be strengthened (Jain, 2021). Access to healthcare services is a critical determinant of child health. In Haryana, the state's healthcare infrastructure, including the availability of healthcare workers such as pediatricians, nurses, and Anganwadi workers, is relatively well-developed. However, there is an uneven distribution of resources, with rural areas facing shortages of skilled healthcare providers (Sharma & Kumar, 2022). The state's performance in terms of healthcare delivery has improved, with a rise in institutional deliveries and a decline in maternal and infant mortality rates. Yet, there remains a challenge in ensuring that healthcare services reach the most remote populations (Gupta & Yadav, 2019). The government of Haryana has implemented several child health initiatives, both at the state and national levels. These include the Rashtriya Bal Swasthya Karyakram (RBSK), the Janani Shishu Suraksha Karyakram (JSSK), and the Pradhan Mantri Matru Vandana Yojana (PMMVY), aimed at improving maternal and child health outcomes (Verma, 2021). Despite these initiatives, challenges such as the fragmentation of healthcare services, a lack of public awareness, and insufficient funding for health programs continue to hinder their full implementation (Chandran et al., 2020). Socioeconomic determinants, including income, education, and sanitation, significantly

affect the status of child healthcare. Haryana has a relatively higher socioeconomic profile compared to many other states in India, which has contributed to better health outcomes. However, regional disparities exist, with rural districts often lagging in terms of access to quality healthcare services, sanitation facilities, and nutrition (Singh & Kumar, 2022; Hooda and Kataria). Studies have highlighted that increasing maternal education, promoting breastfeeding practices, and improving sanitation can significantly reduce child mortality and malnutrition (Raghupathi & Raghupathi, 2018). Despite the improvements in child healthcare indicators, Haryana faces several challenges. These include tackling the rural-urban divide in healthcare access, improving the quality of nutrition programs, and addressing emerging concerns such as air pollution and non-communicable diseases among children. Additionally, strengthening the healthcare infrastructure in underserved areas and improving community engagement in child health programs are crucial for sustaining progress (Jain, 2021).

Infant and Child Mortality Rate

Infant and child mortality among five-year-old children takes into account neonatal, post-neonatal, and infant child mortality rates, which are considered crucial indicators that evaluate the health status of a population in a particular region. In neonatal mortality, which is one month after birth, boys have a higher mortality than girls, while in post-neonatal mortality, girls have a higher mortality than boys. Infant mortality rate is the widely used indicator to measure the status of child health and related care. A healthy child's birth indicates the status of family planning in a particular region. Figure 1 captures trends in child mortality over a period of time in the Haryana state with the help of different NFHS rounds.



Source: NFHS-5, 2020

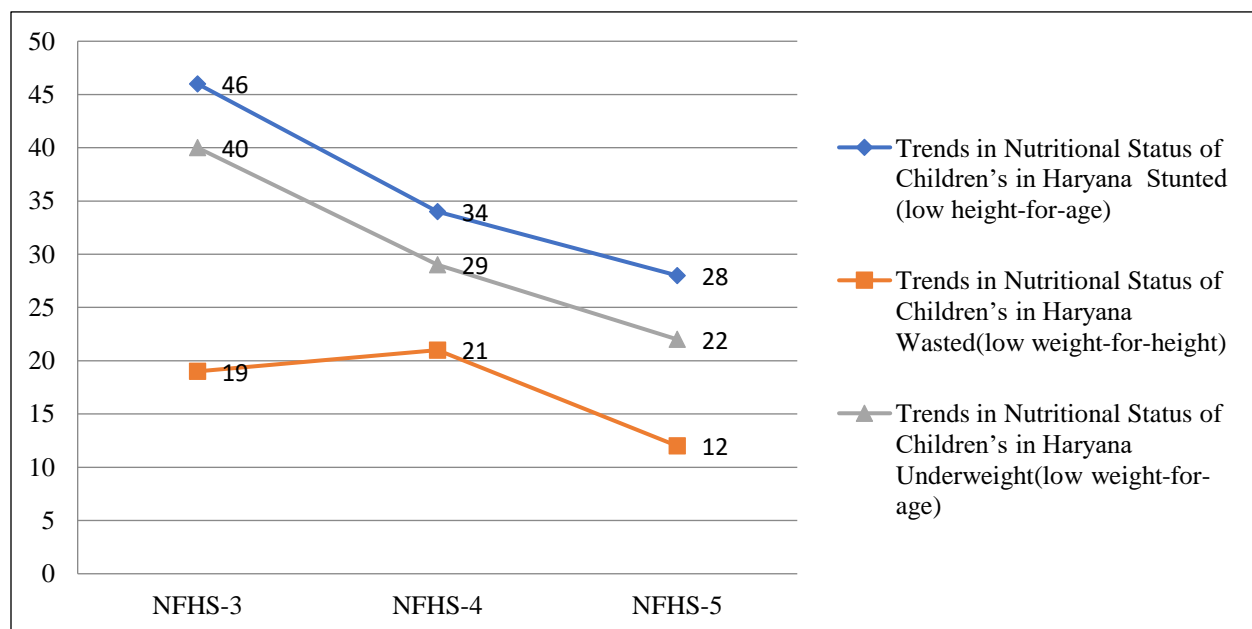
Figure 1 Trends of Infant Mortality Rate in Haryana

By region, trends in infant mortality rates are clearly showing an increase in urban and rural from NFHS 4 to NFHS 5. There is an improvement in the infant mortality rate from NFHS-1 to NFHS-5 in both rural and urban regions of the state. Figure 1 shows the linear trend line going down from NFHS-1 to NFHS-5. The high infant mortality rate in rural Haryana is indicating child health status in the rural area is in poor health. Many factors contribute to it, but access to quality healthcare service is one of the main contributing factors. Although progress has been made in improving overall child health status in recent times, we still have to go miles to achieve the millennium goals target. The state has made

progress in reducing the overall child mortality rate from 73 in NFHS-1 to 33 in NFHS-5. But, in the last five years, child mortality in the state has mildly increased from 32.8 to 33.3 from NFHS-4 to NFHS-5. However, the neighbouring states (Punjab, Rajasthan, and Delhi) have reduced infant mortality rates in the last five years. Urban mortality also increases from the third to the fifth round. Infant mortality in the state is an increase from the previous round. Infant mortality is one of the indicators of health status. The low performance in infant mortality in recent times put in question the provision of various child healthcare services in the state. The next section deals with the nutrition level of children in the state.

Level of Nutritional Status in Haryana

The term malnutrition consists of stunting, wasting and underweight, obesity and insufficient minerals and vitamins, according to WHO, 2020. In the world, there are 38.5 million obese or overweight children at the age of five or below, 47 million who are wasted, and 144 million children stunted (WHO, 2020). There has been a rise in overweight in the lower middle-income country in recent times. On the other hand, lower-middle-income countries record a slower decrease in the prevalence of malnutrition. Malnutrition occurs due to a lack of proper diet and illness. The level of malnutrition shows the overall development of the child at an early age of the life. The poor diet intake and lack of sufficient minerals and vitamins cause various abnormalities in children across the world (WHO, 2020). This abnormality further reduces lifelong working energy and capability to work in the human being and reduces the Expected life span. Child nutrition is very important for the growth of human beings. The results of studies around the world suggest that low levels of nutrition in the child or newborn are mainly due to a lack of proper diet and low availability of family programs. There is consensus around the world that those countries that spend less money on the healthcare sector result in the poor nutrition of children. Secondly, the lack of any policy support towards maternal and child care resulted in poor nutrition levels and high mortality rates among newborns around the world. It is not affecting the newborn but also the mother as well, especially in the lower middle-income country. The below figure shows trends in the nutritional status of children in Haryana from the last three NFHS rounds.



Source: NFHS-5, 2020

Figure 2 Nutritional Status of Children in Haryana

Figure 2 shows that NFHS-5 round stunted (low height-for-weight), wasted (low weight-for-height) and underweight (low weight-for-age) under-five age children stand at 28, 22 and 12 per cent, respectively. There are decreases in overall malnutrition levels in the state. The wasted growth has been showing a lesser decrease in all three. Although there is a decreasing trend in the nutrition level in the state, it is still higher than in many states in the country. These indicators not only suggest nutrition level but improved maternal and child care in recent times. The World Health Organization recommended these indicators to measure nutrition level in the 0-5-year-old child. The detailed district-wise analysis reveals the overall nutrition status in the states. It is not only capturing district-wise nutrition levels but also variations in the nutritional status in the entire state. The comparison among districts helps to better identify severely performed districts in the nutrition level in the state. The table below 1 reflects district-wise malnutrition level in the state. The indicators of malnutrition, such as stunted (low height-for-weight), wasted (low weight-for-height) and severely wasted of fewer than five-year-old children studied comprehensively. The comparison of NFHS-4 and NFHS-5 rounds has been used to see the percentage change in the malnutrition level in all districts during this time period.

Table 1: Inter-District Variations in Malnutrition Level in Haryana

District	Stunted (Percentage)		Wasted (Percentage)		Severely Wasted (Percentage)	
	NFHS-4	NFHS-5	NFHS-4	NFHS-5	NFHS-4	NFHS-5
Jind	26	25.5	26.7	8.8	14	1.6
Hisar	25.6	27.8	23.5	16.4	9.3	5.1
Fatehabad	28.5	24.6	20.7	16	8	5.3
Bhiwani	NA	29	NA	6	NA	1.9
Ambala	19.8	24.1	37.9	10.9	18.4	4
Kurukshetra	31.9	24.9	24.1	12.8	11.9	5
Sonapat	40.2	23.6	21.6	9.2	9.7	5.1
Karnal	41	29.2	19.8	9.8	7.1	4.8
Panchkula	21.5	21.8	31.8	12	13.6	5
Rohtak	36.6	28.9	13.6	12.5	4.5	2.9
Gurugram	41.2	22.1	17.9	15.7	9.5	4.2
Nuh	52.2	44.4	17.2	14.2	7.5	7.1
Kaithal	33.6	29.9	23.8	20.7	10.2	9.5
Sirsa	34.2	25	22.5	12.6	7.2	5.1
Jhajjar	22.3	15.6	15.5	8	5.5	3.5
Palwal	34	31	21.4	9.9	10.2	4.2
Rewari	27.8	25.9	18.3	9.3	7	4.2
Faridabad	29.7	28.9	19.7	8	8.9	3.6
Yamuna Nagar	30	27.7	26.8	12.1	11.6	4.3
Panipat	44.6	25.1	25.1	9.9	11.8	2.8
Mahendragarh	23.5	25.2	19.2	8.4	6.8	2.1

Source: Various NFHS Rounds

The district-wise analysis of four districts, Hisar, Panchkula, Ambala and Mahendragarh, shows an increase in stunted rate. All other district shows decreasing trends in stunted rate. The wasted rate (low weight-for-height) decreases in the entire state. The Ambala record the highest percentage decrease in 37.9 to 10.9 per cent from NFHS 4 to NFHS 5. The other districts, such as Panchkula, Jind, and Panipat, followed suit, with 19.8, 17.9, and 15.2 per cent, respectively. All the district shows decreasing trends in severely wasted children, but Ambala district shows a maximum decrease from 18.4 to 4 per cent.

All in all, there is a decrease in the nutrition level in the entire state, but the pace has not been constant throughout the period.

Status of Vaccination Coverage

An increase in vaccination coverage is one of the most effective tools for child survival. The Indradhanush scheme in our nation provides basic coverage of childcare vaccines. The higher vaccine coverage, the higher the chances of child survival. Governments all over the world, especially in lower and middle-income countries, provide free vaccination. This is an effective tool to fight the diseases which are prevalent for longer periods in society. Immunization is a program started in the mid-seventies in our country. It is a key intervention by the government to protect children against life-threatening diseases. The immunization program has been a key scheme for child health and national reproductive programs since the nineties in India. The NHM also collaborate with these programs as a key mission to protect the child against preventable diseases such as Polio, Peruses, Tetanus, Measles, Diphtheria, Haemophilus influenza type b (Hib) and Diarrhea, severe form of Childhood Tuberculosis and Hepatitis B. The Universal immunization program has been an essential component of our healthcare service delivery system for a long period of time. The inter-district comparison shows coverage of essential vaccination in the states. There is a constant effort being made to increase immunization coverage throughout the states. These programs intensify coverage of vaccines in children and women against common preventable twelve diseases in the country. The state of Haryana implemented an immunization program under a national health mission to provide coverage against life-threatening diseases. The district-level coverage in the state is shown in the below figure.

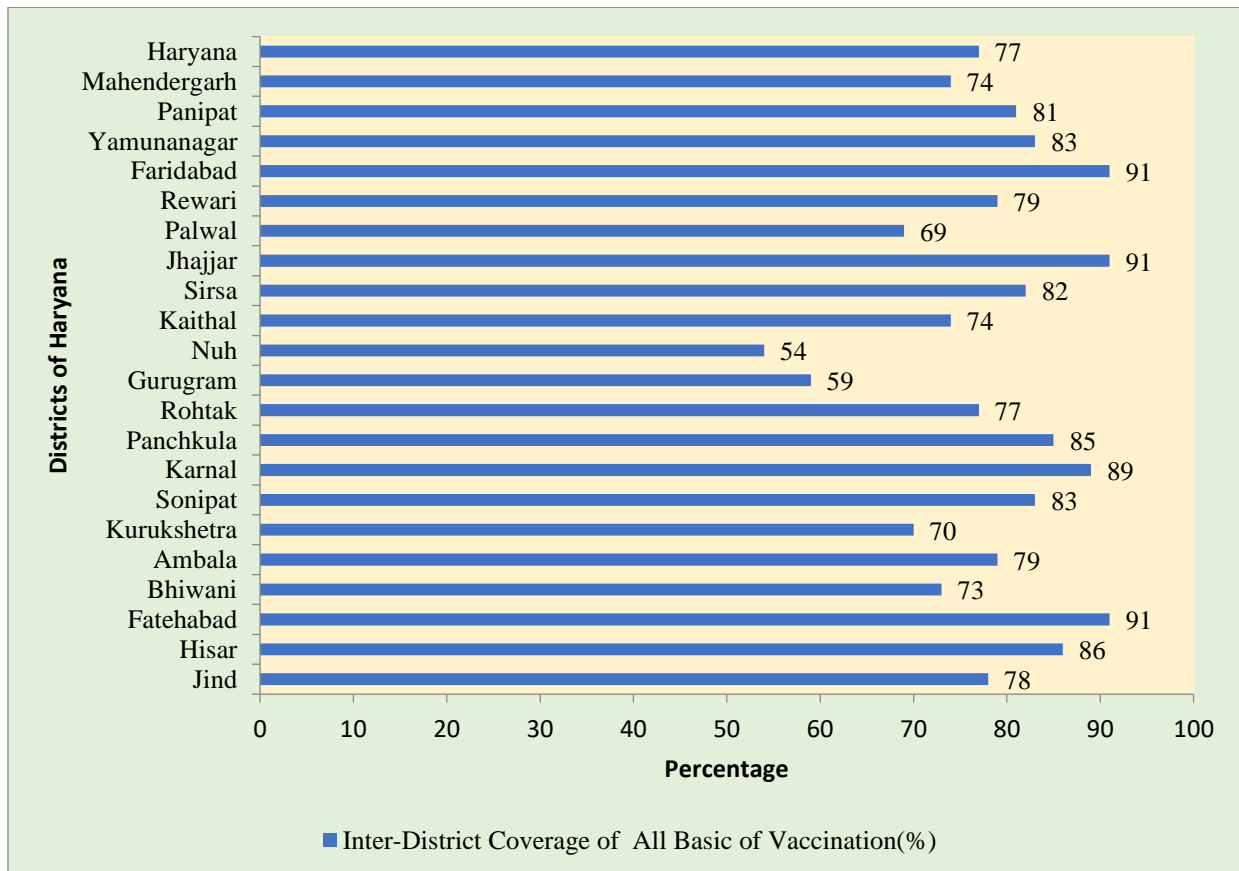


Figure 3 District-wise coverage of All Basic Vaccination

The NFHS-5 round data shows inter-district vaccine coverage in Haryana. The vaccine coverage covers BCG, Polio, DPT, measles, etc. The Nuh district shows (54 per cent) the lowest coverage. Three districts, Faridabad, Fatehabad and Jhajjar, show the highest joint coverage in all districts. The overall state coverage hovers around 77 per cent. The status of immunisation coverage is low in the state compared to other states in India. This indicates that the state's efforts towards child and maternal healthcare services lack seriousness. Indicators such as infant mortality, malnutrition level and immunisation coverage present a picture of health status and health outcomes related to child care and maternal care. It helps us understand conditioning in the provision of healthcare services in the entire state.

Conclusion

The performance and status of child healthcare in Haryana have seen positive changes in the past few decades, driven by both state and national efforts. However, challenges related to malnutrition, healthcare access, and disparities between urban and rural areas persist. The high infant mortality rate in rural Haryana is indicating the child's health status is in poor condition. There are many factors contributing to it, but access to quality healthcare service is one of the main contributing factors. The state has made progress in reducing the overall child mortality rate from 73 in NFHS-1 to 33 in NFHS-5 rounds. But, in the last five years, child mortality in the state has mildly increased from 32.8 to 33.3 from NFHS-4 to NFHS-5. However, the neighboring states reduced infant mortality rates (Punjab, Rajasthan, and Delhi) in the last five years. There are decreases in overall malnutrition levels in the state. The wasted growth has been showing a lesser decrease in all three indicators. Although there are decreasing trends of nutrition levels in the state, it is still higher than many states in the country. The district-wise analysis shows that there are four districts, Hisar, Panchkula, Ambala and Mahendragarh show an increase in stunted rate. The wasted rate (low weight-for-height) decreases in the entire state. All the district shows decreasing trends in severely wasted children, but Ambala district shows a maximum decrease from 18.4 to 4 per cent. The status of immunization coverage is low in the state compared to other states in India. There are high variations in the states when the study compares inter-district vaccination coverage. The study found that there is progress made in the last decade or so but the pace of the progress has been slow and there are high variations in the growth of the overall health program. These results indicate the performance of national and state health programs. Multiple issues need to be resolved to achieve sustainable development goals by 2030. The emphasis should be given to the healthcare sector in the policy agenda as well as on the financing front. The overall state healthcare financing needs to expand at the national and state of Haryana. The urban and rural gap in access to healthcare services should be filled by strengthening the primary healthcare system. The study also suggests that continued focus on improving healthcare delivery, addressing social determinants, and ensuring equitable access to resources is essential for further improving child health outcomes in Haryana.

Conflict of Interest: No Conflict of Interest Declared Among Authors

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