International Journal of Social Science and Economic Research

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

Disparities in Child Growth Patterns: A Multi-Indicator Examination Across Districts in Uttar Pradesh

Anchal Singh[1] and Kiran Singh[2]

[1]Research Scholar, Department of Economics, University of Allahabad

[2]Professor& Head, Department of Economics, University of Allahabad

DOI: 10.46609/IJSSER.2024.v09i05.004 URL: https://doi.org/10.46609/IJSSER.2024.v09i05.004

Received: 4 May 2024 / Accepted: 16 May 2024 / Published: 20 May 2024

ABSTRACT

The Indian economy is accelerating due to its significant demographic advantage of a young and growing workforce, emphasizing the importance of addressing malnutrition to fully harness its potential. Uttar Pradesh, blessed with a vast human resource pool in its children, stands poised to significantly contribute to shaping the nation's future. Thus, addressing child malnutrition within the state is imperative. Currently, according to NFHS 5 data, malnutrition prevalence among children under 5 years is alarming, with 39.7% experiencing stunting, 17.3% facing wasting, , and 32.1% being underweight.

District-level data on child growth failure indices were sourced from NFHS-published district fact sheets of Uttar Pradesh. This study leverages data from two time periods within the NFHS series (NFHS-4 & NFHS-5) to assess changes in child growth indices at the district level. The spatial distribution of current child growth indices was visualized through thematic mapping.

The findings highlight an uptick in stunted children across 7 districts, and both underweight and stunted children in 12 and 32 districts respectively in Uttar Pradesh. NFHS-5 data reveal that several districts in Uttar Pradesh still exhibit prevalence rates exceeding 50% for stunting, 20% for wasting, and 30% for underweight.

Keywords: Childhood Malnutrition; Uttar Pradesh; Wasting; Stunting; Underweight;

1. INTRODUCTION

The prevalence of child growth failure, causing severe health risks among children and potentially leading to morbidity and mortality conditions, is a significant concern in many lower and middle-income countries, with India being no exception (Black et al., 2008). In 2022, the

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

combined efforts of UNICEF, WHO, and the World Bank yielded estimates indicating that globally, 148.1 million children under the age of 5 experienced stunting, 45.0 million faced wasting, and 37.0 million dealt with overweight issues. The 2023 release of the Joint Child Malnutrition Estimates (JME) highlighted insufficient progress towards achieving the global nutrition targets set by the 2025 World Health Assembly (WHA) and Sustainable Development Goal (SDG) target 2.2, with limited progress in halving stunting and overweight prevalence. (Who Child Nourishment Report, 2023)

The indicators of child malnourishment, including stunting (38.4% to 35.5%), wasting (21% to 19.3%), and underweight (35.8% to 32.1%), exhibited a decrease from NFHS-4 (National Family Health Survey 4, 2015-16) to NFHS-5 (National Family Health Survey 5, 2019-21). Additionally, child obesity increased from 2.1% to 3.4% during the same period. Despite extensive efforts made both domestically and internationally, the incidence of child growth failure remains significantly elevated in India.

With the largest population in India, Uttar Pradesh exhibits cultural diversity spanning from its northern to southern and eastern to western regions. Presently, based on NFHS 5 data, the state faces alarming rates of malnutrition among children under 5 years old, with 39.7% experiencing stunting, 17.3% facing wasting, 7.3% exhibiting severe wasting, and 32.1% being underweight. The continuing trend of high levels of undernutrition is still a major problem in Uttar Pradesh. The prevalence of child growth failure incidents in Uttar Pradesh persists at a higher level compared to economically similar states, with a slower decline observed over time. Currently, significant inter-district disparities in the prevalence of child growth failure incidents within the state raise concerns, particularly in light of Sustainable Development Goal 2, which aims to eradicate hunger and malnutrition by 2030. These variations across districts may stem from socio-economic disparities, disparities in reproductive and child healthcare, and differences in environmental conditions. Though some improvements were noted in Uttar Pradesh's child nutrition status between NFHS-3 and NFHS-4, with a decrease in stunting and a marginal decrease in underweight cases, wasting increased from 15% to 18%. Despite these gains, child malnutrition remains a significant challenge in Uttar Pradesh.

As far as we are aware, none of the studies have conducted a comparative analysis between the district-level NFHS-4 and NFHS-5 fact sheets of Uttar Pradesh state to identify significant accomplishments and deficiencies in progress related to key indicators concerning the nutritional status of children under 5 years old over the past five years (2015–2016 to 2019–2020).

In this context, the primary objective of this study is to examine the alterations in child growth indicators through anthropometric measurements of children under 5 years old across all districts of Uttar Pradesh. Additionally, this study presents the prevailing prevalence of child growth

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

indicators (including stunting, wasting, and underweight) in the districts of Uttar Pradesh as of 2019–2020. The findings of this study will prove valuable for policymakers and healthcare professionals in comprehending the evolving prevalence and variations in child growth indicators across different districts of Uttar Pradesh (Khan et al., 2018).

2. ANTHROPOMETRIC MEASURES

Child growth failure indicators are determined through the corresponding scores, namely height-for-age Z-score (HAZ), weight-for-height Z-score (WHZ), and weight-for-age Z-score (WAZ), derived from the children's height/length, weight, and age data provided in the respective NFHS dataset. The NFHS protocol authorizes surveyors to gather anthropometric data on children's height and weight measurements and permits the statistical evaluation team to calculate (Z-score) the current nutritional status of under-5 children in India. Each of these indices offers distinct insights into children's growth and body composition, aiding in the assessment of their nutritional status. Children with HAZ below minus two standard deviations (-2 SD) from the reference population's median are classified as stunted, using the same criterion for WHZ to identify wasted children. Additionally, WAZ serves as a composite index considering both acute and chronic undernutrition, with children having WAZ below minus two standard deviations (-2 SD) from the reference population's median considered as underweight.

3. METHODOLOGY

This study is conducted based on data from two-time frames of the NFHS series: NFHS-4 (2015–2016) and NFHS-5 (2019–2020) from district-level fact sheets of Uttar Pradesh state, as published by the National Family Health Survey (NFHS), India. These fact sheets are publicly accessible on the respective website (http://rchiips.org/nfhs/) without requiring any prior request. All NFHS surveys are overseen by the Ministry of Health and Family Welfare (MoHFW), Government of India, with the International Institute for Population Science (IIPS), Mumbai, designated as the survey's nodal agency. Data were collected on height, weight, and other anthropometric measurements of children born within the 5 years preceding the survey. Due to the similarity in content between NFHS-4 and NFHS-5, it is feasible to compare child growth trends.

The article examines the significant achievements and shortcomings in progress made regarding key indicators related to the nutritional status of children under 5 years old over the past five years (2015–2016 to 2019–2020), employing a comparative analysis between district-level NFHS-4 and NFHS-5 fact sheets of Uttar Pradesh state. The study estimates district-wise changes in each child growth failure indicator by calculating the difference between the prevalence in the previous round (NFHS-4) and the current round (NFHS-5). Thematic mapping

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

techniques are employed to illustrate the current prevalence of each child growth failure indicator across different districts of Uttar Pradesh.

4. DISCUSSION

4.1. Identifying Growth Disparities among Stunted Children Across Uttar Pradesh Districts

According to NFHS fact sheets, a consistent upward trend in the prevalence of stunted or severely undernourished children has been noted across 7 districts (Ballia [10%], Banda [9.21%], Firozabad [6.59%], Hamirpur [24.68%], Jhansi [13.30%], Lalitpur [14.50%], and Raebareli [29.83%]) in Uttar Pradesh (refer to **Table 1**). Siddharth Nagar [35.75%], Mau [37.90%], Ayodhya [38.68%], and Balrampur [34.39%] emerge as the top-performing districts, displaying the highest decline between the NFHS-4 (2015–2016) and NFHS-5 (2019–2020) rounds. Conversely, Jalaun [1.10%], Bareilly [1.32%], Fatehpur [2.48%], and Farrukhabad [2.65%] are among the poorest-performing districts, exhibiting minimal decline in comparison.

Table1. District-wise change detection in prevalence of stunted children, Uttar Pradesh

Districts of Uttar Pradesh	NFHS Round		Change in %
	NFHS 4	NFHS 5	
Agra	44.7	35.9	-19.69
Aligarh	49.1	35	-28.72
Prayagraj	43.8	37.9	-13.47
Ambedkar Nagar	43	31.1	-27.67
Auraiya	43.6	39.7	-8.94
Azamgarh	40	33.4	-16.50
Baghpat	35.8	25.5	-28.77
Bahraich	65.1	52.1	-19.97
Ballia	39.6	43.8	10.61
Balrampur	62.8	41.2	-34.39
Banda	46.7	51	9.21
Barabanki	51.5	41.9	-18.64
Bareilly	45.6	45	-1.32
Basti	48.9	35.9	-26.58
Bijnor	42.6	36.2	-15.02
Badaun	55.1	51.8	-5.99
Bulandshahr	43.2	37.6	-12.96
Chandauli	43.3	39.5	-8.78
Chitrakoot	50.9	47.5	-6.68
Deoria	41.2	36.8	-10.68

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

Etah	51	48.8	-4.31
Etawah	53.2	38.8	-27.07
Ayodhya	49.9	30.6	-38.68
Farrukhabad	49.1	47.8	-2.65
Fatehpur	52.4	51.1	-2.48
Firozabad	44	46.9	6.59
Gautam Buddha Nagar	32.2	25.5	-20.81
Ghaziabad	34.7	28.2	-18.73
Gazipur	41.4	39.3	-5.07
Gonda	56.9	45.9	-19.33
Gorakhpur	42.1	29.6	-29.69
Hamirpur	38.5	48	24.68
Hardoi	50.5	44.5	-11.88
Jalaun	45.6	45.1	-1.10
Jaunpur	48	40.5	-15.63
Jhansi	36.1	40.9	13.30
Jyotiba Phule Nagar	44.7	42.2	-5.59
Kannauj	50.4	43	-14.68
Kanpur Dehat	45.9	44.1	-3.92
Kanpur Nagar	43.6	34.6	-20.64
Kashiram Nagar	51.5	45.1	-12.43
Kaushambi	50.1	40.2	-19.76
Kheri	53.9	47.6	-11.69
Kushinagar	45	32.2	-28.44
Lalitpur	40.7	46.6	14.50
Lucknow	37.5	32.1	-14.40
Mahamaya Nagar	44.2	39.1	-11.54
Maharajganj	53.3	40.5	-24.02
Mahoba	44.6	42.3	-5.16
Mainpuri	46.5	44.3	-4.73
Mathura	40.8	31.6	-22.55
Mau	40.9	25.4	-37.90
Meerut	35.3	32.1	-9.07
Mirzapur	49.1	43.4	-11.61
Moradabad	45.1	34.7	-23.06
Muzaffarnagar	40.8	29.8	-26.96
Pilibhit	51.5	38.9	-24.47
Pratapgarh	41.3	35.5	-14.04
Raebareli	36.2	47	29.83

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

Rampur	46	40.4	-12.17
Saharanpur	36.9	28.8	-21.95
Sant Kabir Nagar	50.5	42.3	-16.24
Sant Ravidas Nagar	51.4	42.7	-16.93
Shahjahanpur	49.3	44.5	-9.74
Shrawasti	63.5	50.9	-19.84
Siddhartha Nagar	57.9	37.2	-35.75
Sitapur	56.4	47.8	-15.25
Sonbhadra	45.9	38.3	-16.56
Sultanpur	45.9	33.4	-27.23
Unnao	46.5	39.2	-15.70
Varanasi	44.7	37.4	-16.33

Source: District fact sheets published by National Family Health Survey, India (NFHS-4, 2015-2016 & NFHS-5, 2019-2020, Uttar Pradesh)

4.2. Identifying Growth Disparities among Wasted Children Across Uttar Pradesh District

The data presented in **Table 2** highlights a surge in the prevalence of wasting among children under 5 in 32 districts of Uttar Pradesh, notably Balrampur [141.75%], Deoria [87.92%], and Siddhartha Nagar [81.02%], between 2015–2016 and 2019–2020. Lucknow emerges as the top-performing district in Uttar Pradesh, witnessing a remarkable decrease of 65.77%, along with Bijnor [58.04%], Raebareli [58.60%], Pratapgarh [57.98%], and Sant Ravidas Nagar [57.67%], showcasing significant declines in wasting between the NFHS-4 (2015–2016) and NFHS-5 (2019–2020) rounds. Conversely, Jyotiba Phule Nagar [1.32%] and Chandauli [2.25%] are among the poorest-performing districts, experiencing minimal declines (almost below 5%) over the same time frame.

Table 2. District-wise change detection in the prevalence of wasted children, Uttar Pradesh

District	NFHS Round		Change in %
	NFHS 4	NFHS 5	
Agra	14.9	16.4	10.07
Aligarh	14.6	10.9	-25.34
Prayagraj	20	15.1	-24.50
Ambedkar Nagar	22.7	17.8	-21.59
Auraiya	26.5	19.4	-26.79
Azamgarh	16.9	14.4	-14.79
Baghpat	14.9	10.3	-30.87
Bahraich	13.7	14.4	5.11

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

Ballia	14.1	21.9	55.32
Balrampur	10.3	24.9	141.75
Banda	18	25.7	42.78
Barabanki	12.2	18.1	48.36
Bareilly	18.6	15.4	-17.20
Basti	14.1	24.2	71.63
Bijnor	22.4	9.4	-58.04
Badaun	20.1	18.2	-9.45
Bulandshahr	16	14.8	-7.50
Chandauli	17.8	17.4	-2.25
Chitrakoot	33.3	24.8	-25.53
Deoria	14.1	26.5	87.94
Etah	9.6	15	56.25
Etawah	11.4	13.9	21.93
Ayodhya	19.3	12.4	-35.75
Farrukhabad	8.4	14.3	70.24
Fatehpur	14.9	17.8	19.46
Firozabad	11.7	9.5	-18.80
Gautam Buddha Nagar	16.2	12	-25.93
Ghaziabad	13.9	17.1	23.02
Gazipur	17.7	25.7	45.20
Gonda	9.8	12.1	23.47
Gorakhpur	19.9	23.3	17.09
Hamirpur	32.3	20.6	-36.22
Hardoi	14.7	22.3	51.70
Jalaun	32.2	19.5	-39.44
Jaunpur	27.3	14.8	-45.79
Jhansi	27.2	25.2	-7.35
Jyotiba Phule Nagar	22.8	22.5	-1.32
Kannauj	12.7	21.5	69.29
Kanpur Dehat	15.4	12.5	-18.83
Kanpur Nagar	24.1	21.4	-11.20
Kashiram Nagar	11.6	19.3	66.38
Kaushambi	29.9	18.3	-38.80
Kheri	17.5	15.8	-9.71
Kushinagar	14.6	24.3	66.44
Lalitpur	39	18.7	-52.05
Lucknow	33.6	11.5	-65.77

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

Mahamaya Nagar	9.7	12	23.71
Maharajganj	12.5	21.8	74.40
Mahoba	23.9	25	4.60
Mainpuri	11.5	14.6	26.96
Mathura	12.9	11	-14.73
Mau	19.7	21.2	7.61
Meerut	18.8	10.2	-45.74
Mirzapur	20.8	12.5	-39.90
Moradabad	16.4	19.1	16.46
Muzaffarnagar	18.8	20.7	10.11
Pilibhit	21.8	20.1	-7.80
Pratapgarh	23.8	10	-57.98
Raebareli	31.4	13	-58.60
Rampur	20.8	17.5	-15.87
Saharanpur	18.5	22	18.92
Sant Kabir Nagar	10.9	19	74.31
Sant Ravidas Nagar	21.5	9.1	-57.67
Shahjahanpur	23.6	17	-27.97
Shrawasti	40.1	20.3	-49.38
Siddhartha Nagar	13.7	24.8	81.02
Sitapur	14	18.2	30.00
Sonbhadra	22.5	26.8	19.11
Sultanpur	19.1	10.7	-43.98
Unnao	13.1	12.1	-7.63
Varanasi	25.3	21	-17.00

Source: District fact sheets published by National Family Health Survey, India (NFHS-4, 2015-2016 & NFHS-5, 2019-2020, Uttar Pradesh)

4.3. Identifying Growth Disparities among Underweight Children Across Uttar Pradesh Districts

Table 3 presents the weighted prevalence of underweight children across various districts of Uttar Pradesh. While the proportions of underweight children (Under-5) increased in 12 districts, notably Ballia [36.6%], Deoria [24.68%], Gazipur [20.82%], and Banda [20%] of West Uttar Pradesh from 2015–2016 to 2019–2020, the remaining districts managed to decrease the proportion of underweight children. Notably, a significant decreasing trend in the prevalence of underweight children was observed in Bijnor (47.61%), Sant Ravidas Nagar (46.03%), Lucknow (42.70%), and Jaunpur (42.50%) between NFHS-4 and NFHS-5 rounds. Conversely, Jhansi

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

[0.51%] and Farrukhabad [0.96%] emerged as the two worst-performing districts in Uttar Pradesh, showing minimal declining trends (less than 1%) in underweight children.

Table 3. District-wise change detection in the prevalence of underweight children, Uttar Pradesh

Districts of Uttar Pradesh	NFHS Round		Change in %
	NFHS 4	NFHS 5	
Agra	34.8	26.2	-24.71
Aligarh	38.2	26.3	-31.15
Prayagraj	43.4	32.6	-24.88
Ambedkar Nagar	41	29.2	-28.78
Auraiya	46.4	32.6	-29.74
Azamgarh	33	28	-15.15
Baghpat	33.3	26	-21.92
Bahraich	44	38	-13.64
Ballia	31.1	42.5	36.66
Balrampur	43.5	37.2	-14.48
Banda	41.5	49.8	20.00
Barabanki	40.2	31.9	-20.65
Bareilly	42.1	35.2	-16.39
Basti	33.3	39.2	17.72
Bijnor	41.8	21.9	-47.61
Badaun	53.6	43	-19.78
Bulandshahr	33.8	26.5	-21.60
Chandauli	34.8	29.9	-14.08
Chitrakoot	52.5	41.8	-20.38
Deoria	31.6	39.4	24.68
Etah	32.2	30.6	-4.97
Etawah	32.6	24.3	-25.46
Ayodhya	44.9	27.5	-38.75
Farrukhabad	31.4	31.1	-0.96
Fatehpur	40.4	38	-5.94
Firozabad	27.9	25.6	-8.24
Gautam Buddha Nagar	28.4	21.9	-22.89
Ghaziabad	29.6	23.4	-20.95
Gazipur	31.7	38.3	20.82
Gonda	38.6	28	-27.46

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

Gorakhpur	35.2	33.7	-4.26
Hamirpur	39.8	36.3	-8.79
Hardoi	39.9	33	-17.29
Jalaun	49.2	36.1	-26.63
Jaunpur	52.7	30.3	-42.50
Jhansi	39.5	39.3	-0.51
Jyotiba Phule Nagar	42.4	35.4	-16.51
Kannauj	32.9	33.5	1.82
Kanpur Dehat	36.1	32.8	-9.14
Kanpur Nagar	41.8	27.8	-33.49
Kashiram Nagar	32.8	35.5	8.23
Kaushambi	52.8	36.8	-30.30
Kheri	40.8	36.3	-11.03
Kushinagar	35.1	36.6	4.27
Lalitpur	48.8	34.8	-28.69
Lucknow	44.5	25.5	-42.70
Mahamaya Nagar	31.7	24.5	-22.71
Maharajganj	37.1	37.4	0.81
Mahoba	47.7	33.4	-29.98
Mainpuri	32.5	33.6	3.38
Mathura	27.7	21.3	-23.10
Mau	35.1	30	-14.53
Meerut	35.2	23.7	-32.67
Mirzapur	46.5	27.6	-40.65
Moradabad	43.2	27	-37.50
Muzaffarnagar	36.9	29.9	-18.97
Pilibhit	44.1	29.4	-33.33
Pratapgarh	42.6	27.7	-34.98
Raebareli	41.3	28.8	-30.27
Rampur	44.4	32.1	-27.70
Saharanpur	36.1	21.7	-39.89
Sant Kabir Nagar	36.5	34.2	-6.30
Sant Ravidas Nagar	49.1	26.5	-46.03
Shahjahanpur	54.3	34.7	-36.10
Shrawasti	39.2	40	2.04
Siddhartha Nagar	43.5	36.3	-16.55
Sitapur	48.6	37.9	-22.02

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

Sonbhadra	46.4	46.5	0.22
Sultanpur	39.8	28.3	-28.89
Unnao	34.3	29.3	-14.58
Varanasi	45.4	39	-14.10

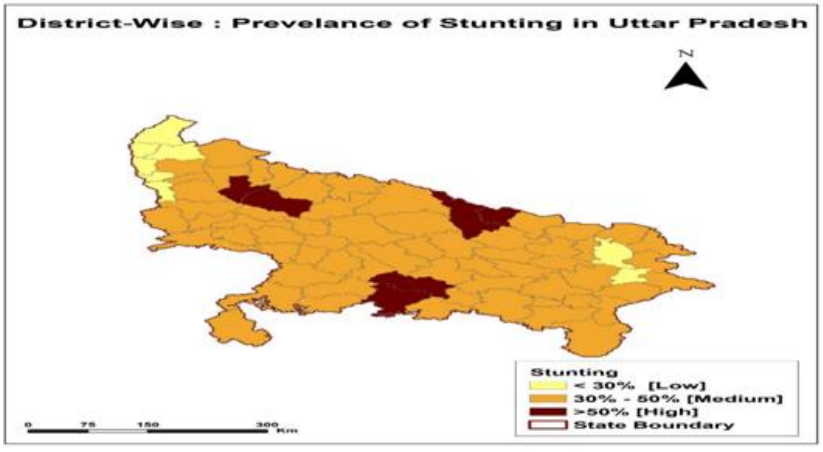
Source: District fact sheets published by National Family Health Survey, India (NFHS-4, 2015-2016 & NFHS-5, 2019-2020, Uttar Pradesh)

Note: In the above analysis of change in the prevalence of Stunting, Wasting, and Underweight, four districts of Uttar Pradesh (Amethi, Hapur, Sambhal, and Shamli) are not included because they were formed after NFHS Round 4.

4.4. Variations in Stunted Child Rates Across Districts of Uttar Pradesh

Currently, in Uttar Pradesh, 39.7% of children under the age of 5 are experiencing stunting or acute undernourishment. The prevalence of stunting among children under 5 in Uttar Pradesh has changed since 2015–2016. According to the state-level NFHS report (2019–2020), the percentage of children under 5 who are stunted decreased slightly from 46.3% to 39.7% between the last two consecutive NFHS surveys across Uttar Pradesh. The prevalence of stunted children in Uttar Pradesh (refer to **Fig. 1**) ranges from 25.4% in Mau to 52.1% in Bahraich. Four districts in Uttar Pradesh (Bahraich [52.1%], Badaun [51.8%], Sambhal [51.6%], and Banda [51%]) have high prevalence rates, with over 50% of children experiencing stunting. Conversely, only four districts (Baghpat [25.5%], Gautam Buddha Nagar [25.5%], Ghaziabad [28.2%], and Mau [25.4%]) in Uttar Pradesh have comparatively lower prevalence rates, around 30%. The remaining districts of Uttar Pradesh fall into the category of moderately prevalent, with the weighted proportion of stunted children ranging between 30% and 50%.

Fig. 1. Prevalence of stunted children in different districts of Uttar Pradesh, India, 2019–2020



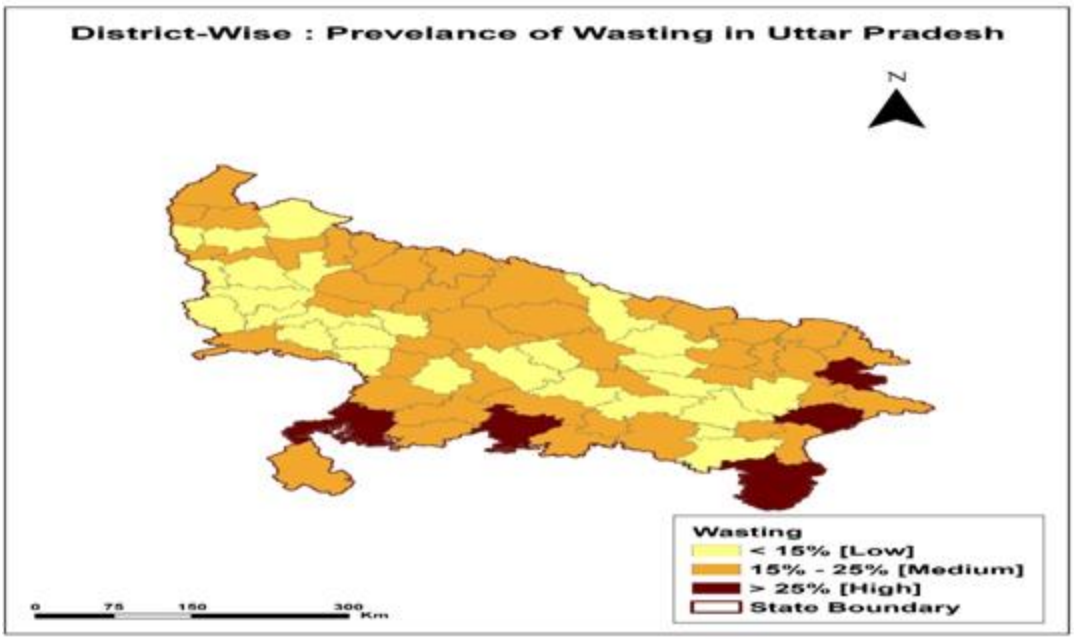
ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

4.5 Variations in Wasted Child Rates Across Districts of Uttar Pradesh

Figure 2 illustrates the current weighted prevalence of stunted children under 5 years of age across all districts of Uttar Pradesh. Despite a slight decrease in the weighted prevalence of wasted children from 17.3% in NFHS-4 (2015–2016) to 17.9% in NFHS-5 (2019–2020) across the state, the proportions vary among districts. The weighted proportion of wasted children (those too thin for their height) ranges from the highest in Sonbhadra [26.8%] to the lowest in Bijnor [9.4%]. Five districts (Meerut [10.2%], Pratapgarh [10%], Firozabad [9.5%], Bijnor [9.4%], and Sant Ravidas Nagar [9.1%]) are the top performers in addressing wasting issues. Conversely, only five districts (Sonbhadra [26.8%], Deoria [26.5%], Gazipur & Banda [25.7%], and Jhansi [25.2%]) in Uttar Pradesh exhibit a higher prevalence of wasting children compared to the state average (18%), indicating they are the most severely affected by undernourishment. The prevalence of underweight children is moderate in the remaining districts of Uttar Pradesh.

Fig. 2. Prevalence of wasted children in different districts of Uttar Pradesh, India, 2019–2020



4.6. Variations in Underweight Child Rates Across Districts of Uttar Pradesh

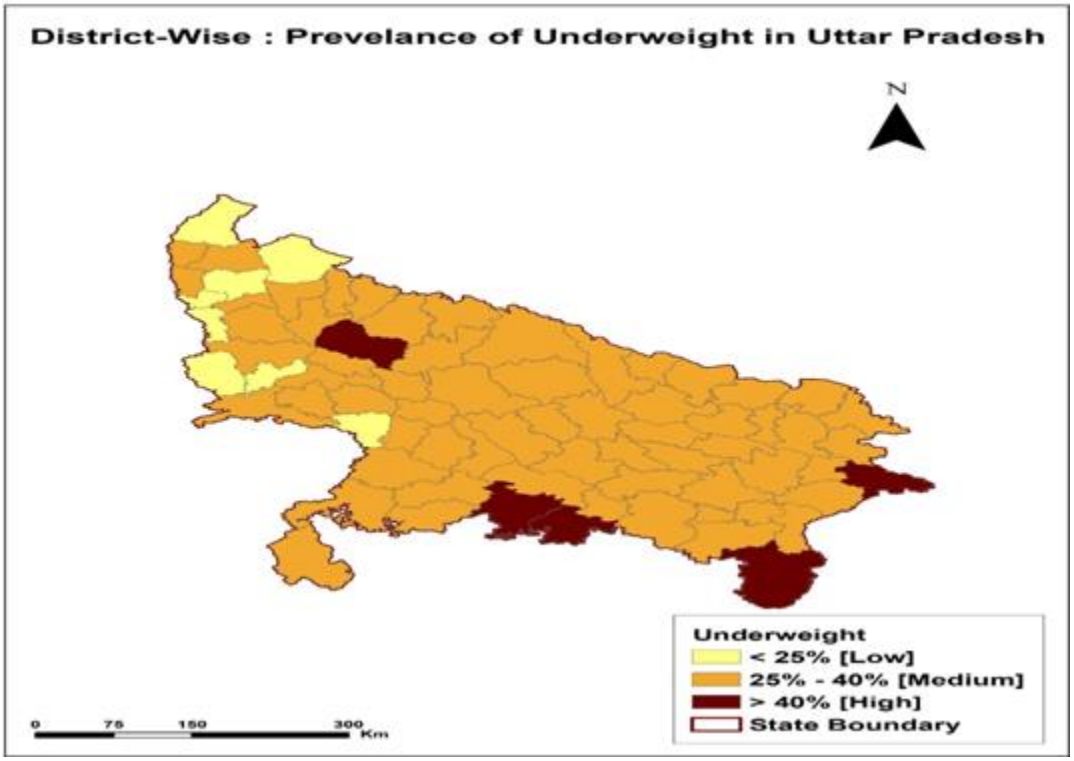
Figure 3 depicts the current geographic distribution of underweight children across various districts of Uttar Pradesh. Similar to stunted children, the weighted prevalence of underweight children also decreased from 32.1% in NFHS-4 (2015–2016) to 39.5% in NFHS-5 (2019–2020) across the state, yet the proportions vary among districts. The weighted proportion of

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

underweight children (those with low weight for their age) ranges from the highest in Banda (49.8%) to the lowest in Mathura (21.3%). Five districts (Banda [49.8%], Sonbhadra [46.5%], Badaun [43%], Ballia [42.5%], and Chitrakoot [41.8%]) in Uttar Pradesh have high prevalence rates, with over 40% of children being underweight. Conversely, only eight districts (Mathura [21.3%], Saharanpur [21.7%], Bijnor & Gautam Budh Nagar [21.9%], Ghaziabad [23.4%], Meerut [23.75%], Etawah [24.3%], and Mahamaya Nagar [24.5%]) have a weighted prevalence of underweight children below 25%. Aside from districts with high and lower prevalence rates, the remainder of Uttar Pradesh's districts experience moderate levels of underweight conditions among children under 5 years old.

Fig. 3. Prevalence of underweight children in different districts of Uttar Pradesh, India, 2019–2020



5. DISCUSSION

In two hotspot districts (Banda and Ballia), all child growth failure indicators have shown increasing trends. Ten districts (Balrampur, Basti, Deoria, Gazipur, Kannauj, Kashiram Nagar, Kushinagar, Maharajganj, Mainpuri, and Sonbhadra) have failed to decrease at least two child growth failure indicators. Only one district (Gautam Budha Nagar) falls under the 'Low Prevalence' category for all indicators. Seven districts (Ghaziabad, Saharanpur, Bijnor, Etawah,

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

Mahamaya Nagar, Mathura, and Meerut) are categorized as 'Low Prevalence' in at least two indicators. One district (Banda) is classified as a 'High Prevalence' district in all indicators, while two districts (Badaun and Sonbhadra) fall under 'High Prevalence' for at least two indicators. Therefore, Banda emerges as the worst-performing district, and Gautam Budha Nagar is the best-performing district in Uttar Pradesh.

Multiple prior studies have demonstrated that factors such as inadequate parental education, impoverished household conditions, parental unemployment, insufficient maternal antenatal and postnatal care, child marriage, maternal malnutrition, limited dietary diversity for mothers and children, and low immunization coverage are significantly linked with incidents of child growth failure. (Parsons et al., 2012; McDonald et al., 2015; Vir SC et al., 2015).

Literacy differential exists among different districts of Uttar Pradesh. In addition, there is a wide range of gaps between male and female literacy; rural and urban literacy; rural male & female literacy; urban male & female literacy etc. (Kumar, 2017).There can be other reasons also which are responsible for regional inequality such as a change in the regional disparities in income, health, and other indicators (Kumari, 2014).Analysis reveals minor variations in undernutrition by age, gender, and household characteristics, with rural areas showing higher rates of underweight and stunting compared to urban areas. (Rani et al., 2021)

Despite the presence of various schemes and initiatives in Uttar Pradesh aimed at combatting malnutrition among children and mothers, the rates of malnutrition have remained persistently high. The Integrated Child Development Services (ICDS) scheme, intended to provide vital services such as supplementary nutrition and health check-ups to children under 6, pregnant women, and lactating mothers, has not succeeded in significantly reducing malnutrition rates. Similarly, the National Nutrition Mission (Poshan Abhiyan), which targets the reduction of stunting, wasting, underweight, and anaemia, has not effectively achieved its goals. Although the Mid-Day Meal Scheme (MDMS) endeavors to ensure school children receive nutritious meals to promote regular attendance and indirectly address malnutrition, it has not resulted in substantial decreases in malnutrition rates. Despite the incentives offered by Janani Suraksha Yojana (JSY) to encourage institutional deliveries and contribute to better maternal and child health, malnutrition rates among children and mothers have not seen significant improvements. This underscores the urgent need for comprehensive reforms and enhanced implementation strategies to effectively tackle malnutrition in Uttar Pradesh (Kumar, 2017).

6. CONCLUSION AND SUGGESTIONS

Child growth failure, manifested through indicators like stunting, wasting, and underweight, is a critical sign of malnutrition, particularly among children under the age of 5, who are especially

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

vulnerable to nutritional deficiencies. This study focuses on the situation in Uttar Pradesh and reveals that in several districts, the prevalence rates of these indicators exceed not only the state average but also the national average. This indicates a widespread and serious issue of malnutrition affecting a significant portion of the child population in these areas.Furthermore, the study identifies a concerning trend of a gradual increase in these malnutrition indicators in certain districts of Uttar Pradesh. Banda tends to be the worst district and Gautam Budha Nagar tends to be the best district in Uttar Pradesh. This suggests that efforts to combat malnutrition may not be having the desired impact or may be insufficient in these regions.

It highlights the necessity of implementing targeted interventions tailored to the specific needs of each district and the state as a whole. There is a need for collaboration among various stakeholders, including government bodies, non-governmental organizations (NGOs), and local communities. Lessons from the best-performing districts must be taken to combat the issue in worst-performing districts. More target programs such as project Sampoorna of Bongaigaon District, Assam must be implemented in Uttar Pradesh.

REFERENCES

Black, Robert E., et al. "Maternal and child undernutrition: global and regional exposures and health consequences." *The Lancet* 371.9608 (2008): 243-260.

WHO Child Nourishment Report, 2023. Available at (https://www.who.int/publications/i/item/9789240073791)

C. Rani, Manju, and Atvir Singh. "Social Inequalities in Child Nutrition in Uttar Pradesh, India." *Indian Journal of Public Health Research & Development* 12.3 (2021): 561-570.

D. Khan, Junaid, and Sanjay K. Mohanty. "Spatial heterogeneity and correlates of child malnutrition in districts of India." *BMC Public Health* 18.1 (2018): 1-13.

E. Kumar, Nomita P. "Reaching Out to Mother and Child Through ICDS: Insights from a Field Study in Uttar Pradesh." *Indian Journal of Human Development* 11.2 (2017): 251-267

F. Kumari, Reena. "Growing regional disparity in Uttar Pradesh: Inter-district analysis." *Artha Vijnana* 56.3 (2014): 339-360.

ISSN: 2455-8834

Volume:09, Issue:05 "May 2024"

G. Kumar, Nomita P. "Reaching Out to Mother and Child Through ICDS: Insights from a Field Study in Uttar Pradesh." *Indian Journal of Human Development* 11.2 (2017): 251-267.

Parsons CE, Young KS, Rochat TJ, Kringelbach ML, Stein A. Postnatal depression and its effects on child development: a review of evidence from low-and middle-income countries. British medical bulletin. 2012 Mar 1;101(1):57–79.

McDonald CM, McLean J, Kroeun H, Talukder A, Lynd LD, Green TJ. Household food insecurity and dietary diversity as correlates of maternal and child undernutrition in rural Cambodia. European Journal of Clinical Nutrition. 2015 Feb;69(2):242–246.

Vir SC, Adhikari T, Pandey A, Nigam AK, Malik R. Child undernutrition in India: age-wise trend and risk factors. Statistics and Application. 2015 Jan 1;13:85–9.

