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Is improvement of Child nutrition the cause of Mothers social benefit in urban India? Evidence from National food security act-2013.

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ABSTRACT
The nutritional development of children is a very burning issue in developing countries like India. When UNDP calls for sustainable development, it seems highly logical to accelerate the nutritional development of India's children. In India, the nutritional status of urban children lags significantly behind that of rural children. In this research paper basically trying to exploring the nutritional performance of Children below 5 years in urban India after implementation of National Food Security Act-2013 among the various general category States of India and the impact of socio demographic variables basically the access of mothers social benefit like Women who are literate , Women age 20-24 years married before age 18 years , Mothers who consumed iron folic acid for 100 days or more when they were pregnant , Pregnant women age 15-49 years who are anaemic on children's nutritional status using "t" test and fractional probit model on the basis of NFSA-IV and NFSA-V data. Nutritional improvement is so significant and socio demographic variables have remarkable impact on children nutrition..
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JEL Classification: H1, I30, I28, J12, J18.
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1. INTRODUCTION:

One of the most burning issues in less developed and developing countries around the world are children's nutritional status, sometimes known as malnutrition. Children that are malnourished do not grow normally in that sense. Malnutrition is mostly caused by a lack of an adequate nutritious and balanced diet, and children are extremely hungry as a result of insufficient food intake (De, P. et al (2019)). Although malnutrition is caused by over nutrition, but in this paper we will only consider the issue of food deficiency. This may explain why India ranks 105th out of 125 countries in the GHI (Global Hunger Index) 2024 rankings. They suffer from a variety of nutritional illness and their intellectual development is impeded. India's recent economic improvement has not increased children's nutritional development. Various data show a significant discrepancy between the rural and urban Indian economies, which is also visible in children's nutritional development. The Indian government introduced the NFSA-2013 to improve the nutritional performance of pregnant women and children. Children's nutritional development is critical issue since they represent the nation's future (Lindley, P. (2023)). Improved nutrition of pregnant women helps to reduce child mortality (Kadobera, D. et al,2017).

India has 28 states that are divided into two categories: general category states and special category states. Andhra Pradesh, Bihar, Chhattisgarh, Goa, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal, and Telangana are general category states. In this paper, we will solely consider the nutritional status of children in urban areas of general category states.

2.National Food Security Act-2013 in India:

Most recently, in 2013, NFSA-2013 was enacted, giving the nation's food supply legal right. The government has pledged to provide meals to those living below the poverty level in the majority of the country's regions. According to the Act, up to 75% of rural populations and up to 50% of urban populations are eligible for food subsidies under the Targeted Public Distribution System (TPDS), or approximately two-thirds of the total population. West Bengal enjoys the same advantages as other Indian states. The NFSA has been implemented in West Bengal since June 2015. This strategy covers the following projects: There are five types of nutrition programs: Integrated Child Development Services Scheme (ICDS), Mid-day Meal Programs (MDM), Special Nutrition Programs (SNP), Wheat-Based Nutrition Programs (WNP), and Applied Nutrition Programs (ANP) , Balwadi Nutrition Programs (BNP).

According to the NFSA Act, nutritional requirements for children aged 6 months to 3 years, breastfeeding mothers, and pregnant women should be addressed by providing "Take Home Rations" or a healthy hot cooked meal as part of the ICDS scheme. The following are the MDM Scheme standards for students in lower and upper primary classrooms:

Source:https://www.egazette.nic.in

Category	*Type of Meal*	*Calories(Kcal)*	*Protein (g)*
1	2	3	4
Children (6months to 3years)	Ration at Home	500	12-15
Children (3to6years)	Morning Snack and Hot Cooked Food	500	12-15
Children(6months to 6 years) who are malnourished	Ration at Home	800	20-25
Lower primary classes	Hot Cooked Food	450	12
Upper primary classes	Hot Cooked Food	700	20
Pregnant women and Lactating mothers	Ration at Home	600	18-20

3.Socio-economic Variables:

Many academics (A. Bose and J. Sen 2020) have demonstrated in their study articles that children's nutritional development is influenced not just by the amount of food they consume, but also by the amount of other social services they receive. Women literacy ,Women aged 20 to 24 years who married before the age of 18 Mothers who ingested iron folic acid for at least 180 days during their pregnancy, Pregnant women aged 15-49 with anaemia (<11.0 g/dl) were used as a socio demographic variable. Literacy among women is critical to improving child nutrition. Because literate women will monitor the timing of their children's vaccines and ensure that they are fed a variety of micronutrient-dense meals (Diallo, M. et. al (2023)).

Women aged 20 to 24 who marry before the age of 18 suffer from a variety of diseases (Efevbera, Y. et al (2019)). As a result, malnutrition affects children as well. The consumption of iron and folic acid by women throughout their pregnancy period is critical because women require more iron during this period, and when pregnant women suffer from anemia, the children to whom the pregnant woman gives birth suffers from nutritional deficiencies.

4.Literature Review:

Under nutrition in children is one of India's biggest issues. This issue continues to plague the nation. Malnutrition, a disorder brought on by poor diet, impairs immunity and results in severe development and cognitive delays. The best indicator of children's health and nutritional status is growth assessment, which also serves as a proxy for population-wide well-being. In our study, the majority of school-age slum children had inadequate nutrition. It is advised to implement interventions like skill-based nutrition education, food fortification, efficient infection control, public health worker training, and integrated program delivery (Srivastava, A. et al (2012)).

As India's urban population grows, child growth among the urban poor has become a major public health problem due to decreasing living conditions and slums. This study examines the impact of socio-economic disparity on child under nutrition in urban poor and non-poor communities. This research analyzes data from the National Family Health Survey (NFHS-3&4) conducted in 2005-06 and 2015-16. The concentration index (CI) and concentration curve (CC) evaluate socio-economic inequalities in child growth, namely stunting, wasting, and underweight. The staff decomposition identifies main contributors to CI by categorizing relevant confounders into five groups: mother's factors, health-seeking factors, environmental factors, child factors, and socioeconomic factors (Singh, S. K. et al (2020)).

Bose and J. Sen (2020) attempted to demonstrate the severity of malnutrition among pre-school children in India in their study article titled "Some observations on malnutrition among Indian pre-school children". Malnutrition is defined as a lack of a balanced diet or an excessive diet. It encompasses stunting, wasting, underweight, obesity, and a few communicable diseases caused by nutrition. Malnutrition has an impact on children under the age of five in terms of cognitive, physical, behavioral, psychological, and thinking skills, all of which impede their growth. When the majority of pre-school children are stunted, wasting, and underweight, some in the same age group become obese and overweight as a result of their consumption of high-energy meals. This study shed light on the prevalence of stunting, wasting, and underweight among pre-school children in India as compared to the global average as reported in the Global Nutrition Report 2018 and the inter-state average as reported in the National Family Health Survey - 4. It also revealed the prevalence of anemia among children under the age of five based on NFHS-4 data. The authors of this study have demonstrated how children's eating habits have shifted from eating healthful foods to junk food. It recommended the following to lessen the issue of malnutrition in preschoolers and reduced immunity capacity at an alarming pace to protect many diseases: 1) Counsel the mother on the problems associated with malnutrition. 2) When it comes to the children's dietary needs, Anganwadi personnel need to be more proactive.3) The government must play a significant role in raising awareness of the importance of eating a healthy diet, exercising, maintaining good hygiene, and drinking free water.

Som S. et al. (2006) used the NFHS-2 data in their research paper "Socioeconomic differentials in nutritional status of children in the States of West Bengal and Assam, India" to compare the nutritional status of pre-schoolchildren aged 5 years in West Bengal and Assam states. Two states have geographical and cultural similarities. The severity of malnutrition is assumed to rely on socioeconomic factors such as birth order, interval

between births, parent's educational level, mother's employment position, mother's age at childbirth, access to drinking water, restroom facilities, and household standard of living. They used three indices: stunting, wasting, and underweight among children under the age of five. They use multivariate logistic regression to compare the indices of malnutrition among children in both states to socioeconomic indicators. Following analysis, they conclude that the effect of all socioeconomic parameters on malnutrition prevalence varies between states. In West Bengal, for example, malnutrition is positively connected with maternal illiteracy, whereas in Assam, there is no perfect correlation between child malnutrition and mother literacy. Furthermore, modern studies have indicated that both birth order and birth spacing play an important influence in measuring children's nutritional performance, particularly in West Bengal.

Dasgupta S. and Wheeler D. (2019) attempted to measure the regional differences in mother and child health among Bangladesh, West Bengal, Bihar, and Jharkhand in their research paper titled "Accounting for Regional Differences in Mother and Child Health among Bangladesh, West Bengal, Bihar, and Jharkhand". They used Demographic and Health Surveys (DHS) data from India and Bangladesh, with a sample size of 124,327 people spread across 4,241 DHS clusters. Two surveys are conducted to evaluate the health of children and mothers. Waste is determined using child weight-for-height measures adjusted to Z-scores using the World Health Organization's Child Growth Standards (WHO, 2006). This investigation used logistic regression models to predict child wasting and maternal anemia. According to logistic regression analysis, the poorest, least-educated mother and her children in Barishal have better health results than their wealthiest, most educated counterparts in Jharkhand.

Marjan Z. and Taib M. et al. (1998) attempted to demonstrate the impact of numerous socioeconomic factors on young children's anthropometric status in their research article "Socio-economic determinants of nutritional status of children in rural peninsular Malaysia". Several other factors, including socio cultural factors, psychological effects, dietary concerns, and health conditions, such as parasite infestation, have been shown to influence children's nutritional status.

5. Objectives, Data Source and Methodology:

In the light of above literature review, many researchers have unfolded different topics in various research papers on the nutritional performance of children depending on certain socio-economic variables. But till now no researcher has compared the nutritional performance of urban children less than 5 years between last two NFHS report among all general category States of India after implementation of NFSA-2013.

Thus ,The main objectives of this study is to explore the nutritional performance of Children below 5 years in urban India after implementation of National Food Security Act-2013 among the various general category States of India and the impact of socio demographic variables basically the access of mothers social benefit like Women who are literate , Women age 20-24 years married before age 18 years , Mothers who consumed iron folic acid for 100 days or more when they were pregnant , Pregnant women age 15-49 years who are anaemic on children's nutritional status .

The current study was based on cross-sectional data obtained at the unit level from the two most recent consecutive National Family Health Surveys (NFHS) IV and V. These NFHS were done by the International Institute for Population Sciences (IIPS) in 2015-16 and 2019-20, respectively.

As per NFHS-4 data, different general category state occupies a different rank which is written within bracket in terms of wasted, stunted and underweight nutritional parameter of children. But a State nutrition determinant is ranked differently on different criteria. For example, Andhra Pradesh occupies 7th, 3th and 8th rank in terms of Stunted, wasted and underweight respectively as per NFHS-IV. So, it is difficult to conclude that which State is a well performer compare to rest. This problem is similar in the case of NFHS-5 data.

Morris David Morris created the Physical Quality of Life Index (PQLI) for the Overseas Development Council in the middle of the 1970s. It was developed as a result of disagreement with the use of GNP as a development indicator. The basic literacy rate, infant mortality, and life expectancy at one year of age are the three factors used by the Physical Quality of Life Index to gauge a nation's quality of life or general well-being. On a scale from 0 to 100, each is equally weighted. But in this paper, it is considered that on a scale from 0 to 1, each is equally weighted.

The following formula is used to show which state is better off based on the quality of the three nutritional determinants:

$$NPI_{it}^{j} = 1 - \frac{x_{it}^{j} - \min(x_{it})}{\max(x_{it}) - \min(x_{it})}$$

NPI stands for Nutritional Performance Index. i stands for individual indices, *j* stands for State and *t* stands for time point.

Composite Index:

$$NPI_{t}^{j} = \frac{1}{n} \sum_{i=1}^{n} NPI_{it}^{j}$$

For Andhra Pradesh Nutritional Performance Index for individual indices as per NFHS-IV for i) Stunted children=$1-\frac{28.3-18.3}{39.8-18.3} = 0.54$

ii) Wasted children=$1-\frac{15.5-14.9}{27.7-14.9} = 0.95$

iii) Underweight children=1-$\frac{28.4-15.5}{39.3-15.5}$= 0.46

Composite Index: Nutritional Performance Index (NPI) for Andhra Pradesh as per NFSA-4 report

$$NPI = \frac{0.54+0.95+0.46}{3} = 0.65$$

In this same procedure, I have measured NPI for each state as per NFSA-V report and then determine rank using formula in Microsoft Excel. After calculation of "t" test in STATA software, it has been used to check the significance between nutritional performance of Children below 5 years as per NFHS-IV & NFHS-V data (Table1).

Table 1: Children under 5 years who are stunted (height-for-age) (%)

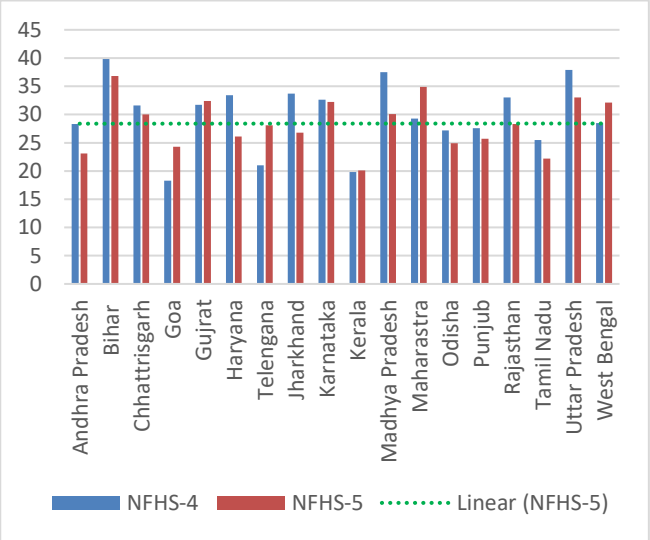
	NFHS-IV		*NFHS-V*	
State	**Stunted (%)**	**Rank**	**Stunted (%)**	**Rank**
Andhra Pradesh	28.3	7	23.1	3
Bihar	39.8	18	36.8	18
Chhattisgarh	31.6	10	30	11
Goa	18.3	1	24.3	4
Gujrat	31.7	11	32.4	15
Haryana	33.4	14	26.1	7
Telangana	21	3	28.1	9
Jharkhand	33.7	15	26.8	8
Karnataka	32.6	12	32.2	14
Kerala	19.8	2	20.1	1
Madhya Pradesh	37.5	16	30.1	12
Maharashtra	29.3	9	34.9	17
Odisha	27.2	5	24.9	5
Punjab	27.6	6	25.7	6
Rajasthan	33	13	28.3	10
Tamil Nadu	25.5	4	22.2	2
Uttar Pradesh	37.9	17	33	16
West Bengal	28.5	8	32.1	13
Max	39.8	18	36.8	18
Min	18.3	1	20.1	1
Mean	29.81		28.39	

Source: NFHS-4 & NFHS-5 and author calculation.

As per Table 1, it is quite clear that as per the NFHS –V data, the mean percentage of stunted children under five years in urban has been decreased compare to NFHS –IV data .Although it has been increased for some States. All those states are Maharashtra, Gujarat, Kerala, West Bengal, Telangana. This means that the number of children with short height for age has increased in all these states as per NFHS-V data which reveals a significant trend of malnutrition of urban children. But, overall the percentage of targeted stunted children has slightly decreased.

Figure 1 shows that the percentage of stunted urban children under five years as per NFHS-IV and NFHS- V data. The trend line reveals that percentage of stunted urban children has been declined for the most of the general states in India after implementation of National Food security Act 2013.

Figure 1: Trend of stunted children



Source: NFHS-4 & NFHS-5 and author calculation.

Table 2: Children under 5 years who are wasted (weight-for-height) (%)

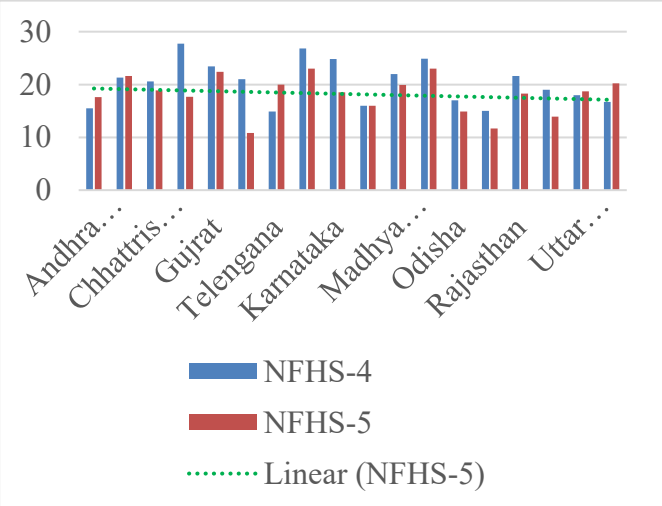
	NFHS-IV		*NFHS-V*	
State	**Wasted (%)**	**Rank**	**Wasted (%)**	**Rank**
Andhra Pradesh	15.5	3	17.6	6
Bihar	21.3	11	21.6	15
Chhattisgarh	20.6	9	18.9	11
Goa	27.7	18	17.7	7
Gujrat	23.4	14	22.4	16
Haryana	21	10	10.8	1
Telangana	14.9	1	20	13
Jharkhand	26.8	17	23	17

Karnataka	24.8	15	18.5	9
Kerala	16	4	16	5
Madhya Pradesh	22	13	19.9	12
Maharashtra	24.9	16	23	17
Odisha	17	6	14.9	4
Punjab	15	2	11.7	2
Rajasthan	21.6	12	18.3	8
Tamil Nadu	19	8	13.9	3
Uttar Pradesh	18	7	18.7	10
West Bengal	16.7	5	20.2	14
Max	27.7		23	
Min	14.9		10.8	
Mean	20.34		18.17	

Source: NFHS-4 & NFHS-5 and author calculation.

Again, as per Table 2, the percentage of wasted children under five years in urban has been marginally decreased in NFHS- V data compare to NFHS –IV for general category states in India. Because the mean value has decreased from 20.34 to 18.17. That's why, we can say without any doubt, weight children have increased with respect to their height. However, this improvement is not very remarkable rather than it is marginal. But in all the states, children did not gain weight over height, these states are Andhra Pradesh, Bihar, Goa, and Telangana, West Bengal.

Figure 2: Trend of Wasted children



Source: NFHS-4 & NFHS-5 and author calculation.

Figure 2 depicts the trend of wasted urban children under the age of five based on NFHS-IV and NFHS-V data. The trend line shows that the percentage of wasted urban children has decreased in most general category states in India since the enacted of the National Food Security Act – 2013 in our country.

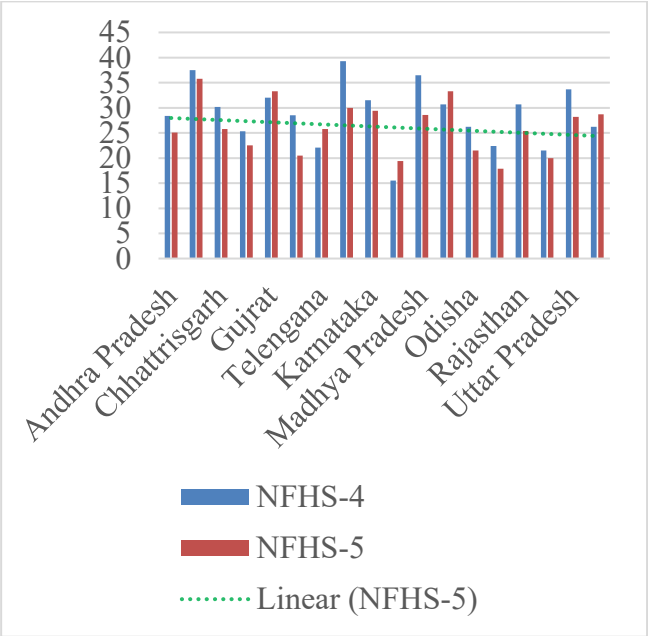
Table 3: Children under 5 years who are underweight (weight-for-age)(%)

	NFHS-IV		NFHS-V	
State	**Underweight (%)**	**Rank**	**Underweight (%)**	**Rank**
Andhra Pradesh	28.4	8	25.1	7
Bihar	37.5	17	35.8	18
Chhattisgarh	30.2	10	25.8	9
Goa	25.3	5	22.5	6
Gujrat	32	14	33.3	16
Haryana	28.5	9	20.5	4
Telangana	22.1	3	25.8	9
Jharkhand	39.3	18	30	15
Karnataka	31.5	13	29.4	14
Kerala	15.5	1	19.4	2
Madhya Pradesh	36.5	16	28.6	12
Maharashtra	30.7	11	33.3	16
Odisha	26.2	6	21.5	5
Punjab	22.4	4	17.9	1
Rajasthan	30.7	11	25.4	8
Tamil Nadu	21.5	2	20	3
Uttar Pradesh	33.7	15	28.2	11
West Bengal	26.2	6	28.7	13
Max	39.3		35.8	
Min	15.5		17.9	
Mean	28.78		26.17	

Source: NFHS-4 & NFHS-5 and author calculation.

As per Table 3, The percentage urban children under 5 years who are underweight has been fall down as per NFHS-V data compare to NFHS- IV. Because, the percentage mean value has declined from28.78 to 26.17. The number of underweight urban children has been decreased which shows the marginally improvement of nutritional status in unban area of general category states . Although in case of Gujrat, Kerala, Maharashtra, West Bengal and Telangana states underweight children has been increased in urban areas of general category states in India in light of NFHS– V report.

Figure 3: Trend of underweight children



Source: NFHS-4 & NFHS-5 and author calculation.

According to NFHS-IV and NFHS-V report, Figure 3 depicts the trend of percentage of urban children under five who are underweight. The trend line shows that since the National Food Security Act -2013 was put into effect, the percentage of underweight urban children has decreased for majority of India's general category states.

On the basis of above data, it reveals that the nutritional improvement of children in urban areas of general category states of India has not been substantial as it is clearly seen that there is considerable improvement in all the indicators of undernutrition. The National Food Security Act introduced by the Government of India in 2013 for improvement of the nutritional status of children. But, in urban areas, it has not been significantly improved the nutritional status of children in the general states of India rather deteriorate for several general category states.

The three determinants of nutritional progress are whether a state has improved in one indicator but deteriorated in other indicators. To determine the overall nutritional performance of children, Morris David Morris created the Physical Quality of Life Index (PQLI) has used.

Table 4: Nutritional performance of urban children

State	NFHS-IV	Rank	NFHS-V	Rank	% change
Andhra Pradesh	0.65	6	0.62	7	-4.61
Bihar	0.19	17	0.04	18	-78.94
Chhattisgarh	0.44	9	0.43	10	-2.27
Goa	0.53	8	0.64	6	20.75
Gujrat	0.34	14	0.15	16	-55.88
Haryana	0.42	10	0.83	2	97.61
Telangana	0.86	2	0.44	9	-48.83
Jharkhand	0.12	18	0.31	14	158.33
Karnataka	0.29	15	0.34	12	17.24
Kerala	0.94	1	0.83	2	-11.7
Madhya Pradesh	0.22	16	0.36	11	63.63
Maharashtra	0.36	12	0.08	17	-77.77
Odisha	0.66	5	0.72	5	9.09
Punjab	0.76	3	0.86	1	13.15
Rajasthan	0.39	11	0.49	8	25.64
Tamil Nadu	0.7	4	0.83	4	18.57
Uttar Pradesh	0.36	13	0.33	13	-8.33
West Bengal	0.65	6	0.3	15	-53.84

Source: NFHS-IV & NFHS-V and author calculation.

As per Table 4, nutritionally improved states is Kerela, then Telangana State and Punjab have occupied third position among general category States in India according to NFSA-4 data and worse performer states is Jharkhand then Bihar, Madhya Pradesh, Karnataka.But as per NFHS-V data, best performer state is Punjab followed by Haryana and Kerala has occupied third position in terms of rural children nutritional status. Gujarat is the worst performer states followed by Goa, Jharkhand, Maharashtra.

From the above discussion it can be said that the states which had better nutritional status of urban children under 5 years they are in good condition later on but the states which had bad performance in respect nutritional performance they are bad performer later on.

But overall, it can be said that the nutritional status of children in the states has deteriorated to some extent which is evident from the table 5. Because the mean value fall down at present (NFHS-V) as compared to earlier (NFHS-IV) (0.47<0.49). Although this deteriorated value is very marginal amount. So, with the implementation of the National Security Act, the government's objective was to accelerate the nutritional development of 50% of urban children. But according to the data the objective was not properly realized or implemented. On the other hand, the variance is increased from NFHS-IV to NFHS-V (0.0676>0.0529) as table 5. An increase in variance means that states that were nutritionally advanced improved marginally, and states that were nutritionally lagging also marginally regressed.

Not much of a significant change happened in NFHS-V compare to NFHS-IV in terms of nutritional performance of urban children under 5 years. Since Calculated ‘t’ value is less than “t Critical two-tail” (0.18< 2.03224451). So, there is no significant between nutritional performance of

Children below 5 years as per NFHS-IV & NFHS-V data (Table5).

Table 5: Two-sample t test with equal variances

```
Variable     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------------------------------------------------------------------------
   NFHS4      18    .4933333   .0557598    .2365686    .3756905    .6109761
   NFHS5      18    .4777778   .0625992     .265586    .3457049    .6098506
---------------------------------------------------------------------------
combined      36    .4855556   .0413338    .2480028    .4016435    .5694676
---------------------------------------------------------------------------
    diff            .0155556   .0838321               -.1548117    .1859228
---------------------------------------------------------------------------
diff = mean(NFHS4) - mean(NFHS5)                              t =   0.1856
Ho: diff = 0                     degrees of freedom =       34

Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
Pr(T < t) = 0.5731         Pr(|T| > |t|) = 0.8539          Pr(T > t) = 0.4269
```

Source: NFHS-4 & NFHS-5 and author calculation.

6. Discussion:

There is no doubt that the National Food Security Act is pivotal social project for nutritional development of urban children in India but as per Table 4 , it appears that the benefits of the National Food Security Act have not had any remarkable effect on the increase in nutritional status in a few states that have benefited relatively more. Nutritional status of urban children depends on not only benefits of NFSA Act but also on the extent to which women enjoy social demographic benefits.

In this paper, women literacy, Women age 20-24 years marriage status, Mothers who consumed iron folic acid for 180 days or more when they were pregnant, Pregnant women age 15-49 years who are anaemic (<11.0 g/dl) have been taken as a socio demographic variable. To show the association between nutritional status of children below 5 years in urban areas and above four mentioned variables.

$$Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where,

Y stands for nutritional performance

x_1 stands for scale change value of women who are literate.

x_2 stands for scale change value of Women age 20-24 years married before age 18 years

x_3 stands for scale change value of Mothers who consumed iron folic acid for 180 days or more when they were pregnant

x_4 stands for scale change value of Pregnant women age 15-49 years who are anaemic (<11.0 g/dl)

α stands for co-efficient of intercept term and β_1, β_2, β_3 and β_4 are the co-efficient of independent variable respectively.

Fractional probit model is employed to measure the effect of proposed socio demographic variable on nutritional performance. Since, the number of observations is less i.e. below 40 and the value of nutritional performance are fractional value that's why Fractional probit model is used and marginal effect is calculated to access the impact of women social benefit. Before run regression, check multicollinearity among proposed socio demographic variable in STATA and VIF value 2.14 which is less than 5. So, there is no multicollinearity among the variables.

As per table 6, the value of Adjusted R^2 is 0.58 , it reflects that model is significant i.e. a strong correlation between nutritional performance of children and women literacy , Women age 20-24 years married before age 18 years, Mothers who consumed iron folic acid for 180 days or more when they were pregnant , Pregnant women age 15-49 years who are anaemic (<11.0 g/dl). It is very interesting to note that nutritional performance of children was positively related to the number of literate women. Hence, in Fractional probit regression result the co-efficient value of respective variable is positive (β_1 =0.29) (p<0.1) . Because literate women are conscious about their health and are well aware of what kind of food should be feed to children and at what time.

Table 6: Fractional probit regression results of Average marginal effects (dy/dx)

	Nutritional Performance index of children
Women who are literate (%)	0.29***
Women age 20-24 years married before age 18 years (%)	-0.34**
Mothers who consumed iron folic acid for 100	0.57*

days or more when they were pregnant (%)	
Pregnant women age 15-49 years who are anaemic (<11.0 g/dl) (%)	-0.08***
Adjusted R^2	0.58

*, ** ,*** indicates 1% , 5% , 10% level of significance respectively.

In this case , a negative relationship is seen between nutritional performance of children between the Women age 20-24 years married before age 18 years. Since co-efficient value between nutritional performance of children between the Women age 20-24 years married before age 18 years is (β_2 = -0.34) as per Fractional probit regression (Table 6). Because if girls are married below 18 years, the children suffer from malnutrition due to their various physical problems.

There is a positive relation between the nutritional performance of children and Mothers who consumed iron folic acid for 180 days or more when they were pregnant (β_3 = 0.57). When women take adequate amounts of folic acid during pregnancy, it helps children develop intellectually and physically.

There is a negative relation between the nutritional performance of children and Pregnant women age 15-49 years who are anaemic (<11.0 g/dl) (β_4 = -0.08). If pregnant women are anemic, the babies they give birth to are also more likely to be anemic and suffer from iron deficiency malnutrition.

7. Conclusion and Policy recommendation:

The National Food Security Act -2013 was basically launched by the Government of India to improve the nutritional status of children and women in rural and urban areas. But mainly the nutritional development of children and women in urban areas was given more importance because urban areas have always been backbone in terms of nutrition, so the government said that 50 percent of urban areas should be covered under this scheme.

All general category States in India that were lagging behind in terms of nutritional performance showed marginal improvement in nutrition compared to states that were marginally better in terms of nutritional performance before implementation of NFSA Act. Thus overall, the disparity in nutritional performance among All general category States in India has been narrowed to a small extent. But the nutritional status of children did not significantly improve because NFSA-2013 did not emphasize on the infrastructural development. It is true that people have received government goods at a lower subsidized price such as rice, wheat, sugar and other goods but they did not receive a better nutritious and protein rich foods and also balance diet food items like milk. And in those states where nutritional development of children in urban areas is not up to the mark, special schemes should be launched by identifying the urban areas in order to accelerate the nutritional development of children in rural areas. Women literacy, Women age 20-24 years married before age 18 years, Mothers who consumed iron folic acid for 180 days or more when they were pregnant, Pregnant women age 15-49 years who are anaemic (<11.0 g/dl) are the very crucial factor for the nutritional improvement of the urban children of general category States in India. The NFSA is trying to play a breakthrough role to improve children nutritional status. But it has not been able to shape up the government's objective regarding nutritional performance of Children below 5 years so far in the case of All general category States in India. So, Government should improve infrastructural development and nutritious food production through Public Private Partnership model in ahead of future development and has to be provided the better access of social benefits to the women to reach the sustainable development goal2.

8. Limitation of this study:

The present study is limited because of only eighteen general category states have been consider for exploring the nutritional performance of Children below 5 years in urban India after implementation of National Food Security Act-2013 among the various general category States of India and the impact of socio demographic variables basically the access of mothers social benefit like Women who are literate , Women age 20-24 years married before age 18 years , Mothers who consumed iron folic acid for 100 days or more when they were pregnant , Pregnant women age 15-49 years who are anaemic on children's nutritional status .So, researcher can consider all states of India.

9. Conflicts of Interest:

There are no conflicts to declare.

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