An Analysis of Integrated Child Development Scheme Performance in Contributing to Alleviation of Malnutrition in Two Economically Resurgent States

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Abstract

Background: Good economic growth is considered synonymous with good nutrition. In recent past, some states (like Bihar and Gujarat) have seen unprecedented economic growth. Despite this and introducing plethora of programs (including integrated child development scheme [ICDS]) to reduce malnutrition, one state might be performing well in reducing malnutrition whereas other with equally high economic growth rate might lag behind. Is mere economic growth good enough to alleviate malnutrition? Objectives: The aim of the article is to document a critical comparative analysis of malnutrition with special emphasis on ICDS (with respect to finances, infrastructure, training, performance) in the two economically resurgent states of Gujarat and Bihar. Material and Methods: An exploratory study using secondary data sources (for ICDS performance) to critically analyze malnutrition status in Bihar and Gujarat. Results: Gujarat, which was criticized for placing excessive emphasis on economic growth, has shown sharp improvement in combating malnutrition. Undernourished children declined from 73.04% in 2007 to 25.09% in 2013, with just 1.6% being severely malnourished. On the other hand, Bihar too exhibited an impressive economic growth but still languishes at bottom with malnutrition rate of 82%. Conclusion: A high economic growth does not have automatic immediate positive gains on malnutrition alleviation.

Keywords: Bihar, economic growth, Gujarat, integrated child development scheme, malnutrition

Introduction

As per Global Hunger Index, India fares poorly and figures almost at bottom, below even some Sub-Saharan countries.[1] Malnutrition has threatened mankind, especially in developing nations for centuries. It is not surprising that issue is seized by world community and is being debated upon, to find solutions. Countless children under 5 years age are affected by malnutrition in India and a million die due to related causes. This high level of child morbidity and mortality negatively affects finances of the family, the community, and eventually national economy.

It is argued that economic progress will bring in good nutrition and rid the world of malnutrition. However, the state of Gujarat despite having embraced a novel development model of private sector-led economic growth continued performing poorly so far as malnutrition was concerned. Gujarat was criticized for placing excessive emphasis on growth and less on human development indices (including malnutrition). However, there has been a turnaround in past few years, and Gujarat has performed creditably with respect to implementation of integrated child development scheme (ICDS) and resultant reduction in malnutrition figures. On the other hand, another economically robustly performing state, Bihar, fared poorly in malnutrition reduction.

ICDS is the premier malnutrition control program for more than four decades. Even though a large expenditure was made on the program, the results in terms of a change in incidence...
of malnutrition have not been forthcoming, more so in states like Bihar.\(^{[2,3]}\)

The present paper attempts to critically analyze and discuss this complex and contemporary issue, focusing on Gujarat being an economically resurgent state, and comparing it with Bihar, which though exhibiting significant economic revival, still languishes at bottom of malnutrition ladder. Thus, the main objective of the paper is to compare infrastructure facilities, supplementary nutrition, and if the funds allocated and released were utilized economically and efficiently. An exploratory study was therefore undertaken using quantitative data from secondary sources with respect to ICDS performance of these two states over past decade.

The paper also endeavors to explore the fundamental flaws with respect to financial monitoring, infrastructure, training, etc., in ICDS administration in Bihar which could set a stage to further dwell as to how improvements can be made for ICDS performance in future.

**Material and Methods**

An exploratory study was undertaken on two states of India for the reference period of a decade over 2006–2015. Many variables for ICDS were included; the most important exposure variable being funding for Supplementary Nutrition Programme (SNP). Moderate and severe malnutrition were taken as outcome variables. Data collection was carried out through secondary data sources, i.e., state/national health reports besides the National Family Health Survey, Economic Survey, and Planning Commission Reports, by entering data on suitable pro formas incorporating details on ICDS infrastructure, workforce, training, financial allocation, utilization, and shortfall of funds. Suitable statistical analysis was carried out to establish statistical significance, on differences found in the data. Being a program analysis, no ethical issues were envisaged; however, ethical clearance was obtained from Institutional Ethical Committee.

**Results**

Bihar and Gujarat have been analyzed in terms of financial allocation for ICDS, fund utilization, resources earmarked (for infrastructure, workforce, training, equipment), and outcome parameters in terms of achievement of targets for growth monitoring and coverage of supplementary nutrition beneficiaries and change in malnutrition incidence in these states over a decade.

Even though ICDS has been operational for more 40 years, there has been limited progress in tackling malnutrition. Malnutrition rates for Bihar have been high at 82.12% in 2012 as compared to 38.77% for Gujarat and those for severe underweight being 14.7 and 10.1%, respectively, for the year 2015.\(^{[4,5]}\)

**Fund management**

Table 1 elaborates the funds released and expanded for ICDS and SNP over the years 2006 through 2015. It is observed that Bihar could not spend funds completely during 2006–2008, but in the later years, Bihar spent the entire funds allocated under ICDS head, and after including the state share expenditure, the spending was in excess of allocation. Gujarat, on the other hand, spent funds in excess of central allocation (by about an average of 10%), by virtue of spending the state share as well.\(^{[6]}\)

For SNP component, however, Bihar spent almost twice as much funds released to it. However, when the expenditure is compared to requirement, it is found that there is a shortfall of approximately 25%, in the initial years of the decade, but toward the later part (2012–2015), there was no shortfall, on the contrary, the expenditure was even higher than the requirement projected to the tune of average 25%. For SNP component, Gujarat spent in excess of two and half times of the funds released. However, when the expenditure is compared to requirement, it is found that there is a shortfall ranging from 5% to 40%. There was, however, no significant difference in shortfall of funds between the two states [Table 1].

**Nonutilization of funds**

In terms of utilization of funds allotted for flexi funding of Anganwadi centers (AWCs), entire allotment was utilized by Gujarat, which Bihar could not. As far as purchase of medicine kits was concerned, Bihar performed marginally better than Gujarat (83% as compared to 100%).

**Integrated child development scheme projects and infrastructure**

*Number of projects sanctioned and operational under integrated child development scheme (2005–2016)*

In the year 2006–2007, 71.23% projects were operational in Bihar as against 86.89% for Gujarat. In the year 2015–2016, these figures improved to 87.5% for Bihar and 95.5% for Gujarat.\(^{[6]}\)

While 75% ICDS buildings in Gujarat belonged to ICDS, it was so only for 25%, in Bihar, and others were rented. Most buildings in Gujarat (97%) were pucca/semi-pucca unlike Bihar (78%). Cooking, storage, and working space too were available significantly more frequently in Gujarat as compared to Bihar (average, 16% AWCs in Bihar as against 70% in Gujarat). Toilet and drinking water facilities too were available to almost all AWCs in Gujarat as against only 35% in Bihar.\(^{[7,8]}\)

**State of training at integrated child development scheme**

Training targets for Anganwadi workers, Anganwadi helpers, and supervisors were better achieved for Gujarat than Bihar ($P < 0.05$) [Table 2]. Training outcomes on correct knowledge on birth weight, breastfeeding, diet of pregnant women, etc., were comparable.

**Outcome parameters for performance of integrated child development scheme**

The prevalence of moderate and severe malnutrition in Bihar and Gujarat and outcome parameters for performance of ICDS and shortfall in achieving targets for growth monitoring and supplementary nutrition are depicted in Tables 3 and 4.
As per comptroller and auditor general (CAG) report, growth monitoring figures indicate that Bihar faltered 10 times worse than Gujarat for shortfall in growth monitoring targets. The rates for moderate malnutrition (Grade I/II) are comparable for Bihar and Gujarat ($P > 0.05$). However, rates of severe malnutrition for Bihar are at 36% and 26% in 2009–2010 and 2010–2011, respectively; for Gujarat, these were <1% in the 5 years before 2010 and was quoted at 4.5% in 2011 and further down to 1.61% in 2013–14; overall being better for Gujarat ($P < 0.001$). The shortfall in beneficiaries for supplementary nutrition was 64% for Bihar and 25% in 2011 for Gujarat$[^4]$ ($P > 0.05$), but shortfall in growth monitoring was significantly better for Gujarat ($P < 0.001$).

If we sum up, it is found that while there was no statistical difference in shortfall of funds between two states, Gujarat outperforms Bihar significantly in achieving targets for training, growth monitoring activities, and the bottom line of actual malnutrition figures, especially severe malnutrition.

### Discussion

It is evident that performance of ICDS in Bihar and Gujarat over past decade has been analyzed, to infer if it has a relation with malnutrition.

#### Pitfalls in integrated child development scheme performance

There have been limitations in performance of ICDS, as a program. Its performance outcome has been as good as the commitment of the state implementing it. ICDS is implemented by state governments, even though it gets full financial assistance from central government for all its subprograms (except for SNP where state contributes 50%). Despite funding, efforts, and attention to ICDS, results do not tell a success story. Some reasons for its lack of performance are.

### Table 1: Funds released and expanded (Rs crore) for Integrated Child Development Scheme and Supplementary Nutrition Programme (2006-15)

| Year      | Released Under ICDS | Expenditure | Required Under ICDS | Released Under SNP | Expenditure | Shortfall % |
|-----------|----------------------|-------------|---------------------|-------------------|-------------|-------------|
| Bihar     |                       |             |                     |                   |             |             |
| 2006-7    | 209.6                | 155.54      | 369.18              | 118.29            | 246.62      | 33.14       |
| 2007-8    | 219.09               | 172.94      | 433.54              | 191.93            | 303.96      | 29.88       |
| 2008-9    | 180.02               | 212.83      | 625.41              | 153.46            | 530.27      | 15.21       |
| 2009-10   | 297.84               | 327.1       | 1020.28             | 406.95            | 922.94      | 9.57        |
| 2010-11   | 251.85               | 290.5       | 1020.28             | 483.36            | 570.53      | 44.08       |
| 2011-12   | 767.40              | 945.09      | Not available       | 354.52            | 772.17      | Not available |
| 2012-13   | 1094.00              | 1086.10     | 840.30              | 465.32            | 1027.10     | +23         |
| 2013-14   | 1147.43              | 1234.46     | 1020.44             | 510.22            | 1296.56     | +26         |
| 2014-15   | 1198.9               | 1345.8      | 806.06              | 532.66            | 1410.67     | +74.0       |

Gujarat

| Year      | Released Under ICDS | Expenditure | Required Under ICDS | Released Under SNP | Expenditure | Shortfall % |
|-----------|----------------------|-------------|---------------------|-------------------|-------------|-------------|
| 2006-7    | 127.33               | 114.88      | 114.52              | 42.97             | 77.82       | 32.04       |
| 2007-8    | 110.5                | 115.5       | 137.86              | 38.55             | 121.73      | 11.7        |
| 2008-9    | 166.97               | 158.68      | 220.56              | 74.65             | 130.84      | 40.68       |
| 2009-10   | 159.87               | 210.82      | 387.69              | 86.96             | 185.45      | 36.31       |
| 2010-11   | 189.33               | 222.5       | 451.44              | 119.86            | 420.47      | 6.86        |
| 2011-12   | 442.76               | 461.5       | 504.56              | 363.89            | 479.57      | 4.9         |
| 2012-13   | 454.20               | 471.3       | 680                 | 233.77            | 514.13      | 24*         |
| 2013-14   | 460.10               | 510.34      | 348.00              | 174.14            | 325.38      | 6.6*        |
| 2014-15   | 641.85               | 681.78      | 591.17              | 201.03            | 412.32      | 30.2        |

Shortfall: Expenditure versus required. Difference between shortfall in Supplementary Nutrition budget for Bihar and Gujarat: $P > 0.05$. ICDS: Integrated Child Development Scheme, SNP: Supplementary nutrition programme. Sources: $[^4]$, $[^5]$, $[^7]$, $[^8]$

### Table 2: State of training at Integrated Child Development Scheme

| Type of training                                                                 | Target achieved (%) | $P$  |
|---------------------------------------------------------------------------------|--------------------|------|
| AWW*                                                                           | 48.27              | 54.29| <0.05|
| AWH*                                                                           | 61.1               | 66.5 | <0.05|
| Supervisor*                                                                    | 9.4                | 81.6 | <0.001|
| Correct knowledge on diet of pregnant women $^a$                                 | 92.6               | 97.4 | >0.05|
| Correct knowledge on normal birth weight $^a$                                    | 77.1               | 66.5 | <0.05|
| Correct knowledge on initiation of breastfeeding $^a$                            | 97.6               | 100  | >0.05|
| Correct knowledge on exclusive breastfeeding $^a$                                | 96.6               | 98.5 | >0.05|
| Correct knowledge on appropriate age of child for complementary feeding $^a$   | 55.4               | 54   | >0.05|

AWW: Anganwadi workers, AWH: Anganwadi helpers, CAG: Comptroller and auditor general. *Sources: $[^4]$, $[^5]$, $[^10]$. 

As per comptroller and auditor general (CAG) report, growth monitoring figures indicate that Bihar faltered 10 times worse than Gujarat for shortfall in growth monitoring targets. The rates for moderate malnutrition (Grade I/II) are comparable for Bihar and Gujarat ($P > 0.05$). However, rates of severe malnutrition for Bihar are at 36% and 26% in 2009–2010 and 2010–2011, respectively; for Gujarat, these were <1% in the 5 years before 2010 and was quoted at 4.5% in 2011 and further down to 1.61% in 2013–14; overall being better for Gujarat ($P < 0.001$). The shortfall in beneficiaries for supplementary nutrition was 64% for Bihar and 25% in 2011 for Gujarat$[^4]$ ($P > 0.05$), but shortfall in growth monitoring was significantly better for Gujarat ($P < 0.001$).

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There have been limitations in performance of ICDS, as a program. Its performance outcome has been as good as the commitment of the state implementing it. ICDS is implemented by state governments, even though it gets full financial assistance from central government for all its subprograms (except for SNP where state contributes 50%). Despite funding, efforts, and attention to ICDS, results do not tell a success story. Some reasons for its lack of performance are.
Inappropriate targeting
In practice, children aged 4–6 years are primary targets of ICDS and the most vulnerable group of under two years is neglected.

Poor physical infrastructure
Many AWCs had poor\(^4\) infrastructure.

Insufficient material
Many AWCs lacked preschool education kits, materials/aids for nutrition, and health education. During 1999 and 2005, only one-tenth of the budget was utilized.

Inadequate supplementary nutrition
Supply of nutrient supplements was not regular.

These pitfalls might be of generic nature; but between the two states under study, it is clear that performance of Gujarat is superior to Bihar. This is reflected in terms of financial allocations for ICDS, fund utilization (and nonutilization), resources earmarked, and utilized (including basic infrastructure, workforce, training, and equipment). The impact of financial allocation/utilization and infrastructure efficiency can be visualized in the outcome parameters. The achievement of targets for growth monitoring and coverage of SNP beneficiaries is more effective for Gujarat than Bihar. The net difference is seen in the change in malnutrition incidence in these states over a decade, which is remarkable for Gujarat.

There is a need to sharpen ICDS efforts in Bihar and probably emulate the measures implemented by Gujarat. There is a need to conduct fresh situation analysis of malnutrition, recategorize districts as per malnutrition rates, and prioritize them for intensive ICDS implementation. Simultaneously, there is a need to revamp ICDS funding, infrastructure, training, implementation, and monitoring. There has to be a political will and commitment to eliminate malnutrition. Good governance and transparency are other tenets in the fight against malnutrition.

Economic resurgence and malnutrition
Initially, tackling of malnourishment in Gujarat was severely criticized. The private sector-led economic growth was being criticized for placing excessive emphasis on growth and less on human development indices, including malnutrition rates. However, subsequently, CAG report showed improvement in malnutrition for many states, especially Gujarat.

Gujarat is noted to be one of the most economically resurgent states in the past decade and also the most improved state with overall malnourishment rate down to 38.77% - the sharpest improvement in India. Gujarat features somewhere in the middle of the national table, in terms of child development, which proves the critics wrong that even with high economic growth, Gujarat has cared for its children!

Considering this improvement, in October 2013, Gujarat government did not agree with CAG’s opinion (at that time) that 66% of children are underweight and claimed that the incidence has come down from 73.04% in 2007 (one of the highest in the country) to 36.07% in 2012 and finally to 25.09% in 2013, due to various nutrition interventions taken by government (including an intensified ICDS). Thus, there was a significant decline of 10.98% in underweight children in 1 year, the best in India.\(^9\) Gujarat is now comfortably above national average on malnourishment at 41.16%.

| Table 3: Prevalence of moderate and severe malnutrition (%) in Bihar and Gujarat |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| State                          | 2008-2009       | 2009-2010       | 2010-2011       | 2013-2014       | 2015            | P               |
|--------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Moderate malnutrition          |                 |                 |                 |                 |                 |                 |
| Bihar                          | 39.16           | 39.16           | 36.04           | 39              | 37.1            | 0.30            |
| Gujarat                        | 57.97           | 53.88           | 34.21           | 35              | 33.6            |                 |
| Severe malnutrition            |                 |                 |                 |                 |                 |                 |
| Bihar                          | 36.01           | 36.01           | 25.94           | 24.8            | 14.7            | <0.001          |
| Gujarat                        | 0.66            | 0.74            | 4.56            | 1.61            | 1.5             |                 |

CAG: Comptroller and auditor general. *Sources: \(^4\),\(^5\),\(^10\)

| Table 4: Shortfall in achieving targets: growth monitoring and supplementary nutrition |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Parameter                       | Year            | P               |
|--------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Shortfall in growth monitoring (%) | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2015 | <0.001 |
| Bihar                          | NA              | NA              | 41.2           | 41.2           | 41.2           | 34.3*          | |
| Gujarat                        | NA              | NA              | 4.9            | 4.9            | 4.9            | 4.1*           | |
| Shortfall in coverage of supplementary nutrition beneficiaries (%) |                         |                 |                 |                 |                 |                 |
| Bihar                          | 64              | 64              | 64             | 64             | 64             | 57.1*          | 0.80            |
| Gujarat                        | 43              | 51              | 44             | 42             | 25             | 31.2*          | |

ICDS: Integrated Child Development Scheme. *Sources: \(^4\),\(^5\),\(^10\)
Gujarat government had further stated that the figures seemed high in 2010, when the new WHO growth standards (based on three gradation zones) were adopted, which seemingly increased the figures by 4.75% (in severely underweight category in). In fact, since Gujarat fully implemented these new WHO standards within an year, the increase was noted. Further, in 2013–2014, percentage of severely malnourished children was reduced to 1.61%.

Traditionally, the so-called economic determinants (gross domestic product and net state domestic product [NSDP]) are considered to be driving the financial well-being of a country/state. Health, nutrition, and malnutrition can thus be taken as a function of these “economic determinants.”

**State net state domestic product and malnutrition**

Overall, even if malnutrition is lower in higher income states, there is significant discrepancy in this relationship. Even for same NSDP, stunting levels vary vastly. In 2013–2014, average Indian per capita NSDP at constant (2004–2005) prices was Rs 48,753. Punjab, which best represented the per capita income of India (Rs 49,529), had prevalence of stunting at 30.5% (well below the national average of 39%). Tamil Nadu and Gujarat have similar income, but Tamil Nadu has lower stunting rate at 23.3% while it is 41.8% for Gujarat.\(^{[10]}\)

On face value, economic growth and human development may not be congruent. The Gujarat economic growth mode, run by the private sector was not alone responsible for an initially perceived ‘higher’ rate of malnutrition. Gujarat has undoubtedly registered remarkable progress in curtailing malnutrition recently, paralleling economic resurgence. Bihar too has shown remarkable economic resurgence, but the malnutrition rates in Bihar remain pathetically high, languishing almost at the bottom of the table (for all states). Hence, on interpreting the results from these two states, it is clear that though the improvement in malnutrition rates (as in Gujarat) could be partially attributed to high economic growth itself, these could be owing to spinoffs of improved economy leading to good nutrition and not necessarily “attributable” solely to the economic resurgence. However, since Bihar (with as good an economic resurgence) did not figure in the list of states with improved nutrition and it has a high malnutrition rate of 82%, it can be interpreted that economic growth of a state per se does not guarantee a reduction in malnutrition. While other major determinants (demographic, social, cultural, political, health services) are important, effective implementation of ICDS has to be looked into, to alleviate malnutrition.

**Conclusion**

Clearly, Gujarat has clocked remarkable improvement in addressing malnutrition. Severely malnourished children (at <1% in earlier years) had risen marginally to 4.56 in 2010–2011 (attributed to change in grading system) and again fell to 1.61% in 2013–14. This is incredible. On the other hand, another “High growth” state, Bihar, has 26% severely malnourished children. This indicates that mere economic growth of a state cannot guarantee automatic improvement in malnutrition, as there are many other determinants of malnutrition playing crucial role in its persistence. Criticism of Gujarat on malnourishment has probably helped the state to turn the tables and emerge a winner, a lesson for others to emulate. Moreover, so far as Bihar is concerned, since there is no shortfall of funds for ICDS, a greater introspection needs to be done into other determinants of malnutrition, and immediate corrective measures are required in the implementation of ICDS to offset this human challenge.

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**Conflicts of interest**

There are no conflicts of interest.

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