Original Research Article

Assessment of community nutrition program performance through data validation in the state of Chhattisgarh

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ABSTRACT

Background: In India data shows that every 3rd child is underweight. There is a similar situation in Chhattisgarh with 37% children underweight. Women and Child Development Department initiated Nawa Jatan ("new care"), a state specific community based intervention by targeting undernourished children for Six month. Strategy of validation by 'External technical support group' can be an eye opener for strategic tactical and operational intervention to validate the data of ICDS scheme at field level.

Methods: By systematic random sampling methodology, Out of all targeted 2462 Gram Panchayats (GPs) 246 (i.e. 10%) was included in the survey. One day hands-on demonstration cum training for survey teams mixed with interns, postgraduate and volunteers were organized. Data collection done in pretested proforma.

Results: A total of 7155 children distributed in surveyed Gram Panchayats across 27 districts were covered. About 9.1% (651 out of 7155) children showed gap in reporting as they were reported normal grade of nutrition. Out of all children covered for actual field validation. There was 9.84% disagreement in weight recording in the state. Our analysis reveals 9 districts fall in poor performing districts, followed by below average performing 8 districts and average performing 10 districts.

Conclusions: There is wide gap in recorded result as normal children against the observation which was actually in the field level. In addition, there is significant proportion of disagreement of weight records when compared with actual weighing. Above observations might be possibly due to poor monitoring and supervision of weighing activity at the field level.

Keywords: Integrated child development services, Anganwadi worker, Anganwadi centre, Pre-school education, Nutrition and health education

INTRODUCTION

Globally, 26% of children are moderately to severely underweight, 10% is moderately to severely wasted, and 31% are moderately to severely stunted.[1] In India, 48% of children under 5 years are stunted and 43% are underweight and 20% of children under 5 years in the country are wasted.[2] Failing to deal effectively with the malnutrition problem in India has dire consequences for children's development. Through precipitating disease and speeding its progression, malnutrition is a leading contributor of infant and child mortality and morbidity. More than half (54%) of all deaths before the age of 5 years in India are related to malnutrition. Growth assessment is the single most useful tool for defining health and nutritional status in children at both the individual and population levels.[4] Recognizing the

extensive prevalence of malnutrition and the consequent drain on the country's human resource, the Government of India started the Integrated Child Development Services (ICDS) Scheme; to respond to the child's needs in a comprehensive and holistic perspective. The nutritional status of children can be evaluated by their growth. Under nutrition has been measured by anthropometric indicators in terms of stunting, wasting, and underweight. Stunting (low height for age) and wasting (low weight for height) are respectively associated with chronic malnutrition and current nutritional status.

Program description

The Government of India started ICDS Scheme, a centrally sponsored scheme to enhance the health, nutrition, and learning opportunities of children <6 years of age especially targeted for the poor and the deprived. Under the ICDS scheme, Anganwadi Centers (AWCs) are the focal point for the delivery of services and are run by the local community woman, the Anganwadi Worker (AWW) and a helper. Freshly, cooked food supplements are provided at all AWCs to children aged 3-6 years while take-home-rations of food grains are provided every month to children aged 6 months until 3 years (36 months). All children in the eligible age groups can avail of supplementary nutrition provided at the AWCs. The Integrated Child Development Services (ICDS) Scheme is one of the flagship programmes of the Government of India and represents one of the world's largest and unique programmes for early childhood care and development. It is the foremost symbol of country's commitment to its children, pregnant women and nursing mothers, as a response to the challenge of providing pre-school non-formal education on one hand and breaking the vicious cycle of malnutrition, morbidity, reduced learning capacity and mortality on the other. ICDS was launched on 2nd October 1975, on the auspicious occasion of the 106th birth anniversary of Mahatma Gandhi, the Father of the Nation.[5]

Weighing of each child is carried out by the AWW every month and plotted on the growth chart which is a graphical presentation of weight-for-age. Through the strategy of Nutrition and Health Education, ICDS Scheme aims at bringing about an attitudinal change in health and nutrition habits of the mothers and children and improve their nutritional status. Despite the expansion of the ICDS Scheme to cover most of the children in the country, progress in reducing child malnutrition has been slow.[3]

Growth monitoring is most important tool for community diagnosis. Cross sectional community nutritional assessment of all children in Chhattisgarh serves as basis to target children. Strategy of validation of any community intervention program by 'external technical support group' can be an eye opener for strategic tactical and operational intervention designing by WCD, Govt. of C.G. UNICEF requested Department of Community Medicine to validate the data of end line community nutrition program (i.e. Nawajatan Phase IV) across the state with following objectives:

- To validate end line Nwajatan intervention results through record validation at field level
- To validate the data of ICDS for March 2016 on the basis of actual weighing.

METHODS

On February all the stakeholders (i.e. DWCD, UNICEF and NGO Representatives) of Nawajatan Phase IV validation met in the Dept. of Community Medicine before initiating survey in the state. There after a one day Hands-on Demonstration cum Training of Survey Teams was organized in Dept. of Community Medicine at Pt. JNM Medical College, Raipur. Out of all 2462 Gram Panchayats (GPs) of Nawajatan Phase IV project, 10% of them were included in the study i.e. 246 GPs across the state. These GPs were identified by applying Systematic Random Sampling methodology. A total of 40 teams two member in each were involved in the survey. Data collection was under-taken during April - May 2016. It was decided that team members will collect data from AWW's register and growth chart entry of February and March 2016 for the targeted children and recorded actual weight of targeted children on the day of visit. If child of identified Gram Panchayat/Anganwadi were not available due to any reason then nearby Gram Panchayat / Anganwadi of Nawajatan was visited and additional no. of children were included in the survey. After obtaining sampled Gram Panchayat list (i.e. desired no. of GPs from each district) we obtained the data of targeted children along with unique code of children given to them by DWCD. Supervision of survey teams was carried out by representatives of DWCD and Faculties/PG Scholars of Department of Community Medicine. Each supervisor had to undertake at least six supervisory visits during survey to monitor and supervise the survey team activity.

RESULTS

A total of 7155 targeted children distributed in 263 Gram Panchayats across 27 districts were covered during survey. While the data for February 2016 (end-line) reported that 52.7% of targeted children were normal, the ICDS records of the same month reported 43.6%. About 9.1% (651 out of 7155) children showed gap in reporting as they were reported normal grade of nutrition. The reported normal (9.1%) children were actually either moderately (6.9%) or severely (2.2%) underweight. We looked into ICDS data of March 2016. Out of all children covered for actual field validation there was 9.84% disagreement in weight recording in the state. Out of these, 37.4% children showed change in nutritional grade. We allocated discredit score to the district. Our analysis reveals 9 districts fall in poor performing districts, followed by below average performing 8 districts and average performing 10 districts.

Table 1: District wise distribution of children covered under Nawajatan phase IV end line validation.

S. No.	District	Total no. Of Nawa Jatan Gram Panchayats	No of Gram Panchayats covered	Aanganwadi centers covered	Target children	Children covered in validation	% children covered
1	Balod	30	3	7	60	47	78.33
2	BalodaBazar	46	5	12	155	140	90.32
3	Balrampur	95	10	63	360	548	152.22
4	Bastar	208	19	69	900	527	58.56
5	Bemetara	14	1	5	60	43	71.67
6	Bijapur	90	7	30	330	283	85.76
7	Bilaspur	62	8	46	306	361	117.97
8	Dantewada	45	4	29	170	140	82.35
9	Dhamtari	416	40	112	635	683	107.56
10	Durg	81	16	46	240	300	125.00
11	Gariyaband	58	7	20	190	134	70.53
12	Janjgir-Champa	83	9	25	60	193	321.67
13	Jashpur	17	2	14	67	69	102.99
14	Kanker	38	4	18	114	118	103.51
15	Kawardha	13	2	4	60	91	151.67
16	Kondagaon	182	22	83	660	659	99.85
17	Korba	13	3	18	60	87	145.00
18	Koriya	57	6	31	120	164	136.67
19	Mahasamund	164	17	55	400	393	98.25
20	Mungeli	70	7	26	240	225	93.75
21	Narayanpur	76	7	37	230	172	74.78
22	Raigarh	211	21	74	480	417	86.88
23	Raipur	9	3	16	60	167	278.33
24	Rajnandgaon	253	26	104	710	701	98.73
25	Sarguja	47	4	16	350	147	42.00
26	Sukma	25	3	11	60	42	70.00
27	Surajpur	59	7	38	240	304	126.67
		2462	263	1009	7317	7155	97.79

Table 2: Comparison of Nawa Jatan software data Vs Anganwadi register for February 2016 through grade of under nutrition (i.e. normal, moderate and severe) of Nawa Jatan targeted children covered for validation.

S. No	Grade of children	Children reported in WCD software (February end line data)		Children reported in AWWs register (February end line data)		Deference in observation	
		No.	%	No.	%	No	%
1	Normal	3773	52.73	3122	43.63	651	9.10
2	Moderate	2455	34.31	2945	41.16	-490	-6.85
3	Severe	927	12.96	1088	15.21	-161	-2.25
Total		7155	100.00	7155	100.00		

Table 3: Comparison of Nawa Jatan Anganwadi register data vs validation weight of March 2016 through grade of under nutrition (i.e. normal, moderate and severe) of Nawa Jatan targeted children covered for validation.

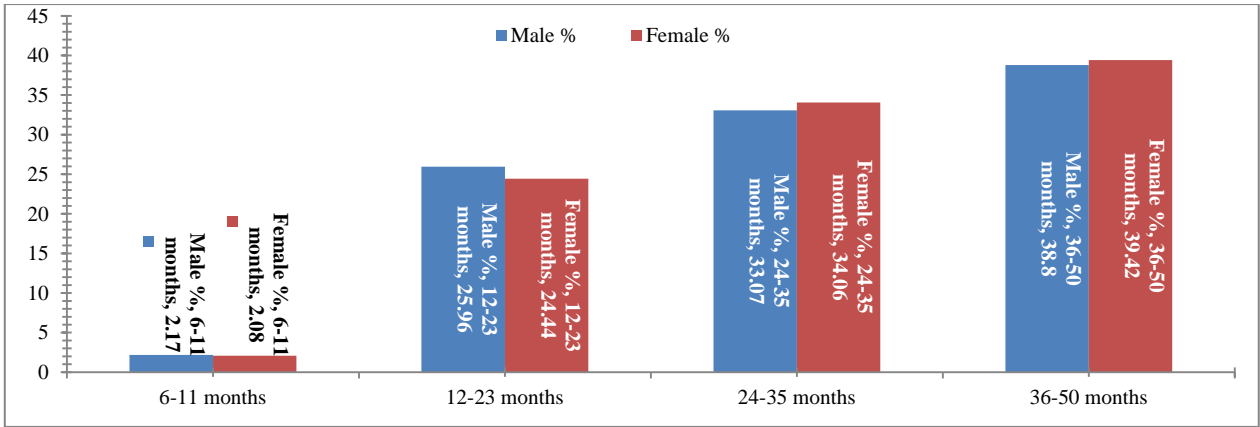| S. No	Grade of children	Children weight in AWW register (March 2016 data)		Children actual validation weight (April data)		Deference in observation	
		No.	%	No.	%	No	%
1	Normal	3176	44.39	2557	35.74	619	8.65
2	Moderate	2909	40.66	3112	43.49	-203	-2.83
3	Severe	1070	14.95	1486	20.77	-416	-5.81
Total		7155	100.00	7155	100.00		

Figure 1: Age (at baseline) and sex wise distribution of children covered under Nawa Jatan phase IV end line validation.
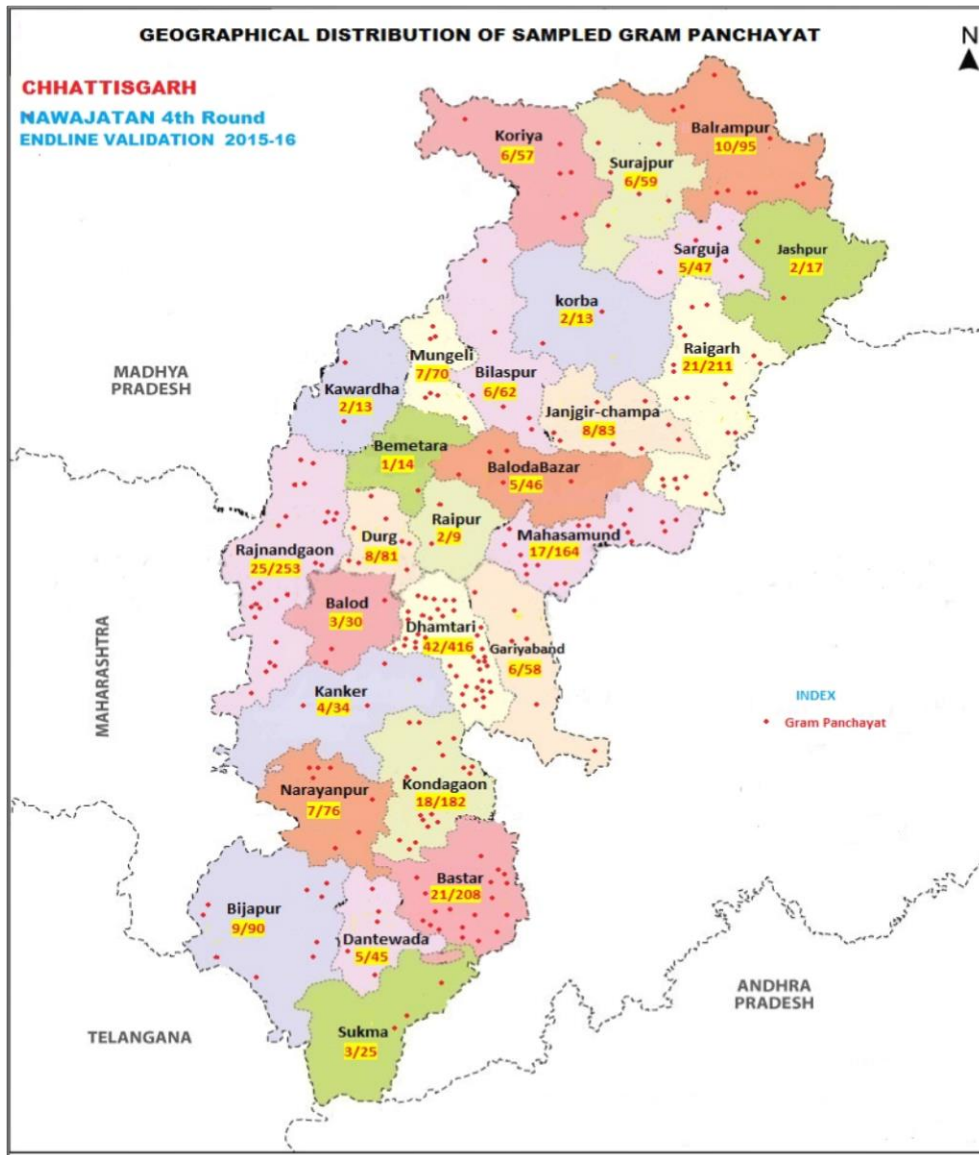

Figure 2: Map of Chhattisgarh showing geographical distribution of surveyed Gram Panchayats for Phase IV end-line validation.

Table 4: For study purpose acceptable level of difference between Nawa Jatan weight and validation weight.

Age at the time of Nawa Jatan 4th phase	Interval between Nawa Jatan weight and validation weight-grams							
	< 2 weeks		2-4 weeks		4-6 weeks		6-8 weeks	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Up to 1 month	-200	600	-400	1200	-600	1800	-600	2250
1-2 months	-200	600	-400	1200	-600	1650	-600	2100
2-3 months	-200	600	-400	900	-600	1200	-600	1500
3-4 months	-200	450	-400	750	-600	1050	-600	1350
4-5 months	-200	450	-400	600	-600	800	-600	1050
5-6 months	-200	300	-400	450	-600	600	-600	900
6 months to 50 months	-200	300	-400	450	-600	600	-600	900

Table 5: District wise distribution of disagreement of weight of children covered for actual field validation March 2016 data.

S. No.	District	Status of agreement		Total	Disagreement (%)	Grade change with agreement as no.	Percentage (%)
		No	Yes				
1	Balod	5	42	47	10.64	0	0.00
2	BalodaBazar	2	138	140	1.43	1	50.00
3	Balrampur	49	499	548	8.94	10	20.41
4	Bastar	54	473	527	10.25	25	46.30
5	Bemetara	4	39	43	9.30	1	25.00
6	Bijapur	86	197	283	30.39	42	48.84
7	Bilaspur	38	323	361	10.53	9	23.68
8	Dantewada	16	124	140	11.43	8	50.00
9	Dhamtari	40	643	683	5.86	11	27.50
10	Durg	24	276	300	8.00	6	25.00
11	Gariyaband	9	125	134	6.72	5	55.56
12	Janjgir-Champa	21	172	193	10.88	9	42.86
13	Jashpur	5	64	69	7.25	4	80.00
14	Kanker	12	106	118	10.17	5	41.67
15	Kawardha	3	88	91	3.30	0	0.00
16	Kondagaon	97	562	659	14.72	40	41.24
17	Korba	2	85	87	2.30	0	0.00
18	Koriya	16	148	164	9.76	7	43.75
19	Mahasamund	26	367	393	6.62	9	34.62
20	Mungeli	10	215	225	4.44	3	30.00
21	Narayanpur	40	132	172	23.26	18	45.00
22	Raigarh	33	384	417	7.91	10	30.30
23	Raipur	12	155	167	7.19	2	16.67
24	Rajnandgaon	47	654	701	6.70	14	29.79
25	Sarguja	20	127	147	13.61	13	65.00
26	Sukma	3	39	42	7.14	1	33.33
27	Surajpur	30	274	304	9.87	10	33.33
Total		704	6451	7155	9.84	263	37.36

DISCUSSION

Despite rapid economic development along with increase in food production in recent decades and several nutritional intervention programmes in operation since the last three decades, childhood under nutrition remains an important public health problem in India. It is one of the important reasons for ill health and child mortality.[6] In present study 97.79% of children were covered out of all sampled children while in a Quick Evaluation Study of Anganwadis under ICDS, done by NITI AAYOG in June 2015 in 19 Districts (one from each State/UT); 50.6% children of total sample size with respect to the total enrolled children were included in study.[7] In this study it was observed that maximum children under the study belonged from the age group of 24-35 months i.e. 32.16%. Silva and Silva in their study found that more than half of the children (64%) belonged to 6-36 month age group.[8] Bhimisetti et al in their study had most of the children from the age group of 0-12 months.[9] While 50.9% children were male in present study, 47.49% were male in study done by Philip et al.[10] Gope et al included

57.7% boys in their study done in urban area of Waynad district.[11] In current study 35.74% children were found normal, 43.49% were moderate and 20.77% were severe under-weight. Similarly, it was found in study done by Agrawal et al, in urban slums of Agra city that 32.6% of preschool children were labeled as normal and the rest were underweight; with about 20.5% children were below 3SD weight.[12] While in study done by Bhimisetti et al, among tribal population of Andhra Pradesh 12.7% of children were severe undernourished.[9] In a quick

evaluation study of Anganwadis under ICDS, done by NITI AAYOG in June 2015 in 19 Districts the health status of 78.8%, 17% and 4.2% of the children recorded during the month of February, 2014 was normal, moderately malnourished and severely malnourished respectively. Further, the on the spot weight measurement carried out during April, 2014 revealed that the health status of 77.4% of the children are in normal grade, 17.6% are in moderate grade and 5% are in Severe grade.[7]
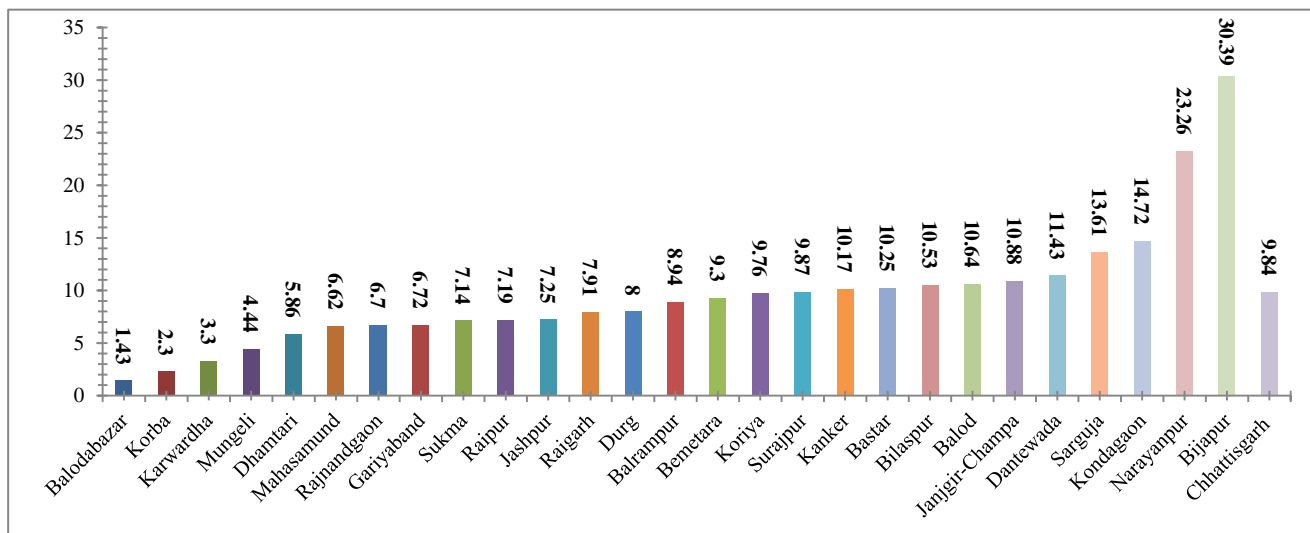

Figure 3: District wise distribution of disagreement of weight of children covered for actual field validation March 2016 data.

Table 6: Distribution of discredit score on the basis of difference in observation and disagreement in weighing of Nawa Jatan targeted children.

S. No.	District	Disagreement status			Difference in observation in nutritional grade WCD software to Anganwadi record									Total Score
					Severe underweight			Moderate underweight			Normal weight			
		<10%	10-20%	>20%	<5%	5-10%	>10%	<10%	10-20%	>20%	<10%	10-20%	>20%	
1	Balod		B		A				B		A			10
2	Baloda Bazar	A			A		A					B		4
3	Balrampur	A			A				B		A			8
4	Bastar		B		A			A			A			6
5	Bemetara	A			A			A			A			4
6	Bijapur			C		B		A			A			10
7	Bilaspur		B		A			A			A			6
8	Dantewada		B		A			A			A			6
9	Dhamtari	A			A			A			A			4
10	Durg	A			A			A			A			4
11	Gariyaband	A			A			A			A			4
12	Janjgir Chapa		B		A				B			B		10
13	Jashpur	A				B			B				C	12
14	Kanker		B			B			B			B		12
15	Kawardha	A			A				B			B		8
16	Kondagaon		B		A			A				B		8
17	Korba	A			A				B			B		8
18	Koriya	A			A			A			A			4

S. No.	District	Disagreement status			Severe underweight			Moderate underweight			Normal weight			Total score
		<10%	10-20%	>20%	<5%	5-10%	>10%	<10%	10-20%	>20%	<10%	10-20%	>20%	
19	Mahasamund	A			A			A			A			4
20	Mungeli	A			A			A			A			4
21	Narayanpur			C			C	B					C	18
22	Raigarh	A				B		A				B		8
23	Raipur	A			A					C			C	12
24	Rajnandgaon	A			A			A			A			4
25	Sarguja		B				C	A			A			10
26	Sukma	A					C	A					C	12
27	Surajpur	A			A			A			A			4
	Total	17	8	2	20	4	3	18	8	1	15	8	4	

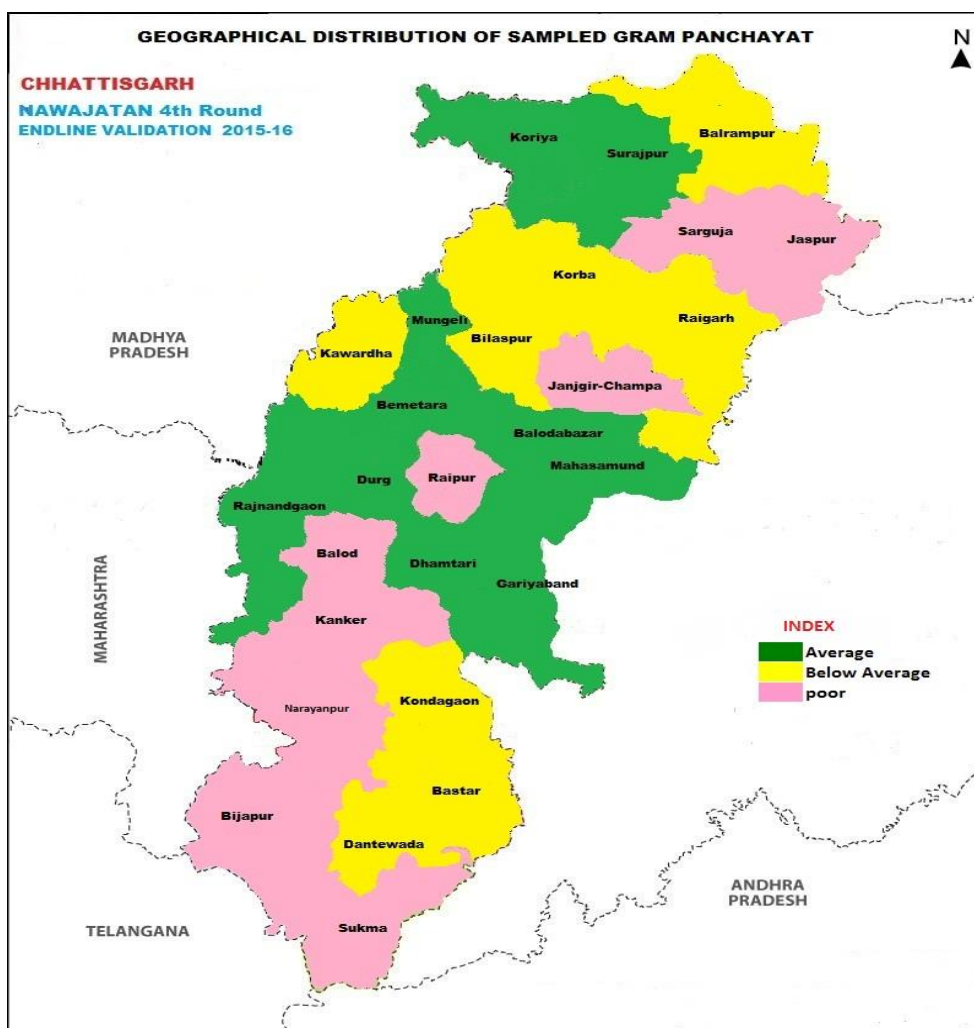| Discredit score on the basis of difference in observation and disagreement in weighing	Composite score grade range	No. of districts falling in the category	Interpretation of performance of district based on composite score	Color code showed in map
A=1	0 - <5	10	Average	Green
B=3	5 - <10	8	Below Average	Yellow
C=5	≥10	9	Poor	Pink

Figure 4: Map showing categorization of district on the basis of performance based on difference in observation and disagreement in weighing during validation.

CONCLUSION

All though Survey findings showed that community Nutrition intervention program was operational in all visited Gram Panchayats/Anganwadis. As per survey finding there is wide gap in recorded result as normal children against the observation which was actually in the field level (i.e. Anganwadi register). This may be probably either due to wrong data entry, over reporting and/or incorrect weighing. In addition, there is significant proportion of disagreement of weight records when compared with actual weighing. Out of all disagreement more than one third children showed change in their nutritional grade. Above observations might be possibly due to poor monitoring of weighing activity leading to significant level of gap in observation in grade of malnutrition as well as recording of weight.

Recommendations

Based on these observations, Department of Woman and Child Development undertakes a review of district's performance based on the above findings to find out 1) the reasons for the disagreements, 2) to understand whether these observations are limited to the sampled panchayats or across all targeted areas in the respective districts, and 3) suggested measures to guard from such inaccuracies in the future. The Department should consider a stratified approach to further capacity building and monitoring, such that the poor performing (in terms of accuracy) should receive intense capacity building and monitoring of weighing and recording, the below average performing should receive monitoring and average performing should receive routine services.

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