

*Nothing is as important for the well-being of a society as the condition of the children. And yet children's nutrition, health, education and happiness are among the most neglected subjects in India. – Amartya Sen*

## **A Garden in every school – intervention by DRCS**

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### **1 Introduction**

#### **1.1 Background**

Majority of children in India have underprivileged childhoods starting from birth – which has a large impact in their later life. The infant mortality rate of Indian children is 50 and the under-five mortality rate is as high as 93. In the case of West Bengal, proportions of 0-6 children among the disadvantaged groups, namely, Muslims (19 percent), Scheduled Castes (15 percent) and Scheduled Tribes (17 percent) were higher than the state average (2001 Census). Thus the socio-economic composition of children adds urgency to the necessity to ensure universal access to nutrition-related services with assured quality.

The proportion of underweight children (under 3 years) in India dropped by less than one percentage point per annum between 1992-93 and 1998-99 (from 52 to 47 percent according to NFHS I and II) and in the next seven years (from 1998-99 and 2005-06) the total reduction has been only an one percentage point (from 47 to 46). This is in clear contrast to the target set by the tenth five-year plan (2002-07), which had envisaged a reduction of under nutrition from 47 percent to 40 percent. The National Family Health Survey III (2005-6) shows that the percentage of children in West Bengal who are undernourished is still rather high, even though it has declined a bit faster than the all-India average in the recent period.

In tribal villages, children, particularly those below 6 years, are neglected as their parents have to go to work everyday keeping the infant to a minor between 8 and 10. As a result their physical and mental growth is affected seriously. ICDS, run by the government, is unable to satisfy the nutritional need in terms of supply of protein, essential minerals and vitamins; and more over one time supply of food doesn't necessarily mean that the complete demand of the child is met. Their parents' literacy level, nutrition education and economic status are very poor to take proper care of the children.

#### **1.2 ICDS : The quality issue**

The ICDS programme was aimed at the issues related to the overall development of the children – their levels of nutrition, health and education, and was accordingly arranged with the different components. It has generally been found that the Nutrition Support become the central functional intervention under the programme. A 80 paise per child was allocated prior to January 2006, which became Rs.2 per child from January 1, 2006, which should be spend in the following manner:

Components	Quantity	Value in Rupee
Rice	60 grams	63 paise
Pulses (Musur dal)	25 grams	69 paise
Edible oil		08 paise
Egg	Half egg, twice in a week	30 paise
Seasonal vegetables		26 paise
Iodised salt		02 paise
Micronutrients		02 paise
Total		Rs 2.00

Source: Haq (2007); also offices of the DPOs of the studied districts.

In spite of the enhancement of the allocation for supplementary feeding, one can clearly see from the numbers presented above that it is hard to provide the required 300 k cal nutrition to the children. The market rates of rice and pulses are much higher than the assumed rates on the basis of which funds were allocated. There has been a further enhancement in the budget since January 8, 2007, but only for certain groups. The per capita allocation for severely malnourished children has been raised to Rs 2.70. The Pratichi Trust's report shows a severe shortages of supply of rice and pulses and the level of deficit ranged between 0 (in one case) and 73 percent in the case of rice, and 0 (in one case) and 75 percent in the case of pulses. The extent of shortage showed high variation across regions.

In absolute numbers, there are as many as 2.42 million deaths under the age of five each year. A large section of the parents live with a sort of helplessness of not being able to provide adequate stuff to eat, let alone nutritious food. The context however did not receive the required attention until the Supreme Court's intervention that made it mandatory for the central and state governments to provide 300 calories and 8-10 grams protein to every child up to six years of age. In West Bengal, the standard food supplied from the AWCs is *Khichuri* (rice and pulses boiled together). In addition, vegetables and eggs are also supposed to be supplied. While the ECSC (Essential Commodity Supplying Corporation) is the main supplying agency of rice and pulses (which they do up to the project level) the appointed carrying agencies make the materials available to the centres. AWWs have been given the responsibility of procuring vegetables and eggs from the local markets. In addition to cooked food a micronutrient called Vita Shakti used to be supplied by CARE, an NGO, the distribution of which has now stopped. Now in some projects a candy containing some micro-nutrients is given to the children.

It is rather strange that the supplementary nutrition provided to the children in the anganwadis took the form of a single-item menu that has remained unchanged for ever, viz. *khichuri* – dal and rice boiled together with salt, turmeric and very little oil and some vegetables, the quantity of which varies from time to time and centre to centre. As a disgusted worker pointed out, “even the poorest of the poor would revolt against a repetitive menu. But the children are voiceless. They are so hungry that they never complain. But, you know, children whose parents can feed them well at home don't touch the *khichuri* in the centre.”

That the food contained some vegetables and that eggs were also served to the children were confirmed by most of the mothers (92 percent). However, while the majority of them expressed clear dissatisfaction with the quantity of the vegetable, a good number of mothers (44 percent) told us that the supply of egg was so irregular that “it is difficult to remember when it was served last - *kabe kheyechhe moneo nai*”. Notwithstanding its high reputation as a vegetable growing state, it is not always easy to procure vegetables in different parts of West Bengal round the year. The problem, however, as reported by the workers, was not so much of availability of vegetables (“we can manage from one place or the other”, so they say) as it concerned the availability of fund. “Often we have to buy it from our pocket and get it reimbursed later on”, stated a worker.

The quality of the food served in many centres was found to be rather unpalatable. “*kakhano kakhano amaderi bomi uthe ase* – some times it [the bad odour of the food] makes us feel like throwing up”, said the worker. “Take a spoonful”, insisted the worker, “and taste what is given to the children. Because they are children and are hungry the double compulsion makes them take the food.” Apparently the degree of complaint was somewhat less among the mothers compared to the workers. This, however, has to be taken with some qualification. The high incidence of hunger in many parts of West Bengal, combined with the lack of choice and expectations, has perhaps made the mothers incapable of judging the good from the bad. Even if one insists on quantities, putting aside the ‘story’ of an isolated individual, the number of mothers who expressed general displeasure was not negligible: while 27 percent said the food was unpalatable, another 21 percent ranked it as average.

Criteria of quality of food	% of mothers
Very Good	1.1
Good	50.7
Average	21.1
Unpalatable	27.1

### 1.3 Midday meal scheme : The quality issue

Mid-day Meal has made positive intervention in universalisation of Primary Education by increasing enrollment and attendance of the children. The increase has been more marked with respect to girls, and SC & ST students. It is a positive intervention in eliminating classroom hunger. Cooked Mid Day Meal has averted severe under-nourishment among many children, particularly those who are socially and economically backward. These have been confirmed by many state and national level reports by many groups.

However, if we look deep in to the quality issue, it is quite evident from many reports that a majority of the schools, barring very few, provide *khichuri* (rice cooked with pulses, and seldom some vegetables) as the cooked meal. When asked whether they liked the meal or not, a large section of the children gave positive responses in favour of the meal.

*Menu served under the programme in the last week (caste wise)*

	SC	ST	Muslim	Others	Total
<i>Khichuri</i> without vegetables	52.5	21.1	50	58.3	49.3
<i>Khichuri</i> with vegetables	37.3	57.9	50	36.1	42.7
Rice and pulses	10.2	21.1	-	5.6	8

However, many of the children suggested that some improvements be made to make the food more attractive. One of the most important of them was provision of vegetable preparations. Some of the children also highlighted the need for a change in the monotonous menu of *khichuri* everyday. The following table presents the various suggestions made by the children.

*Suggestions made by the children to make the food attractive*

	SC	ST	Muslim	Others	Total
Provision for vegetable curry with <i>khichuri</i>	55.9	31.6	27.8	38.9	42
Rice and vegetables	37.3	21	44.4	27.8	34.7
Occasionally provision for egg or fish	15.3	42.1	16.7	16.7	19.3
Cleanliness has to be given priority, while cooking and serving	5.1	-	13.9	2.8	6

(Responses not mutually exclusive)

While discussing with the groups, as per the Pratchi Trust's report, the concerns were following

- Poor quality of food
- Boring menu
- Insufficient budget allocation in terms of conversion cost
- There is a potentiality of using parents and other local people in the whole programmes, which has not been explored properly.

## 2. Intervention

### 2.1 The context

According to the above discussion, we can narrow down to the following 4 issues

1. The meal supplied in school/ICDS feeding programmes, in most of the cases, are boring and inadequate in terms of nutrition
2. The poor quality is true even in a state like West Bengal, where vegetable production is plenty and demand of the children is also high
3. The fund is also inadequate
4. The parents and the community is not very well involved in the programme.
5. It is not enough to give one time meal to address the malnutrition situation, especially in tribal areas.

If we note carefully, the points 1, 3 and 5 are essentially weakness and 2 and 4 are scopes. Going deeper into issue 3 also, it shows that the fund spent for this is quite high – and a single rupee allocation in fund is equivalent to huge amount in terms of a huge country like India.

As a measure to that we have taken the following steps

1. Introducing garden in the school
2. Involving mother's group in the maintenance of the garden
3. Motivated mothers to initiate garden and include vegetables in the meal
4. The mother's group donates vegetables, egg, potato etc to improve the quality of meal
5. A garden can also be considered as a platform to learn recycling of waste materials (like paper, tiffin waste and waste from the garden itself) through composting and vermicomposting. Garden can be a very useful physical activity.

Development Research Communication and Services Centre (DRCSC – [www.drcsc.org](http://www.drcsc.org)) initiated the idea of school garden during 2006 with garden introduced in 5 pre-primary centres in tribal dominated area to support midday meal with vegetables, leafy vegetables etc. The mothers also were given hands on training to initiate garden in their homestead so that nutrition issue of the children is addressed properly in all the meals they take. From 2009, we formed an informal network of 30 ICDS centres who also initiated garden in the household of the children. Time to time, part of our work has been supported by WE 21 (Japan), ABA (Japan), Ms. Takako Chiba (Japan) and Mutsu High School (Japan)

Later on, we started doing school garden in 20~25 primary schools (including 2 schools in Andhra Pradesh) to support midday meal.

In 2008, we started doing garden in 15 urban 10+2 schools also with the idea that

- it will act as a living laboratory to learn many thing
- children will be getting interest to eat vegetables as they grow it on their own
- it can supply food to the midday meal occasionally

## 2.2 The Impact

In a rural setup, the ICDS centres, primary or high schools, there is ample scope to raise garden to supplement midday meals with vegetables, which can bring about a sea change in the nutrition status of the children. If we select plants that

- gives large amount of fruit vegetables (like various types of bean) or leaves (like Ipomia, bitter gourd leaf, pumpkin leaves)
- need less care, water
- is suitable for local ecology

it can meet the daily nutrition demand of children. A 20' X 20' space can supply vegetables 5 days a week to 30 children of age 3-6.

When consider data from one centre (Village Sarbanandapur, Birbhum, West Bengal) with 30 Children of age 3-5 of Santhal Tribe, we follow the following trend.

Maximum weight gain : Year 2 to Year 1 - 2.4 Kgs

Average weight gain : Year 2 to Year 1 - 1.47 kgs

Maximum weight gain: Y3 to Y2 - 2.37 Kgs

Average weight gain: Y3 to Y2 - 1.34 kgs

Maximum Height gain : Y2-Y1 - 8.17 cm

Maximum Height gain: Y3-Y2 - 9.42 cm

It is also noticed that

- No stunted growth noticed
- Trend of growth is better during October to February.
- Though vegetable/food availability is better during June-September, growth rate is slower. Perhaps it has linkages with health and hygiene related issues as it is rainy season.
- The circumference of head and arm shows no negative trend.
- The occurrence of absenteeism is negligible.
- The occurrence of major health related problem is also negligible.

The vegetables produced in 2008-09 from 20'X20' space which are used in mid-day meal is following (apart from this eggs and other vegetables were donated by the mother's group)

Month	Types	Amount
April	Lady finger, Long bean, Amaranths (Red and White), Indian Spinach, Ridged Gourd, Papaya, Tomato	9 Kgs
May	Pumpkin, Indian Spinach, Brinjal, Beans, Ridged Gourd, Bottle gourd and leaves of bottle gourd	10 Kgs
June	Papaya, Indian Spinach, Beans, Ridged Gourd, Bottle gourd and leaves of bottle gourd	8 Kgs
July	Indian Spinach, Snake Gourd, Lady Finger, Ridged Gourd, Bottle gourd and leaves of bottle gourd, Sweet Jute	7.5 Kgs
August	Brinjal, Radish, Leaves of sweet potato, Indian Spinach, Beans, Long bean, Peas	7 Kgs
September	Indian Spinach, Ash Gourd, Spinach, Snake Gourd, Brinjal	7 Kgs
October	Indian Spinach, Long bean, Radish, Brinjal, Leaves of Sweet potato, Radish leaves	6 Kgs
November	Cabbage, Magic Bean, Amaranths (Red and White), Cauliflower, Bottle Gourd, Spinach, Coriander	8 kgs
December	Cabbage, Magic Bean, Amaranths (Red and White), Cauliflower, Tomato, Coriander	9 Kgs
January	Cabbage, Magic Bean, Amaranths (Red and White), Cauliflower, Bottle Gourd, Spinach, Coriander	8 Kgs
February	Magic Bean, Sweet Jute, Amaranths (Red and White), Brinjal, Ridged Gourd, Tomato	7.5 Kgs
March	Amaranths (Red), Indian Spinach, Ridged Gourd, Papaya, Pumpkin, Brinjal	8.5 Kgs

The above crops, however, can be altered and improved further keeping the following things in mind.

- Management possibility is low
- Select crops which produce more biomass.

The crops can be following

### Summer and Rainy Season

Long bean, Ridged gourd, Cucumber, Pumpkin, Snake gourd, Indian Spinach, Jungle potato, Sweet potato, Chilli, Okhra, Taro, Turmeric, Ginger, Pigeon Pea, Amaranths, Wild spinach, Yam, Taro, Ash Gourd

### Winter Season

Broad bean, Long bean, French Beans, Bottle gourd, Bitter gourd, Beans, Amaranths, Radish, Spinach, Chilli, Coriander, Carrot, Ipomia

## All time

Papaya, Drumstick, Curry Leaf, Lemon

## Basic principle

- Mixing of different root depth and height
- Mixing of creeper + bush + standing
- Mixing of vegetables+ tuber + leguminous
- High organic matter + mulching as the watering possibility and caring is less

## 3. Possibilities

### 3.1 Pre-primary/ICDS/Nursery/Montessori centres and Primary schools

- Village to donate a 20'X20' space/30 child of age group 3-5 nearby source of water, preferably adjacent to the space where children come for learning. A garden to be initiated and maintained by the teacher/worker.
- If the garden is planned properly with purposefully chosen species, it can supply food 5 days a week throughout the year.
- The species selection criteria will be - which produces good quantity yield, it has to be a mix of spices, tubers, leafy vegetables, fruits and legumes.
- Vermicompost & liquid manure can be prepared from the waste of the midday meal
- Seed will be stored and shared with the guardians to initiate garden in their household too.
- *It is better to start the project as a pilot to clusters of 25~30 such centres, so that a scope of cross learning is created and relationship with having vegetable in midday meal and parameters of growth & cognitive development can be established with large number of data. This will help creating a policy outline as the school garden along with mothers initiating garden in the household should be an integral part of the ICDS scheme.*

### 3.2 10+2 schools

- In village area, if school can provide space, large scale garden can be initiated with the same principle described in A.
- Management can be done by the students group (Eco-group) by rotation. The caretaker, teacher incharge of eco-group should take the lead.
- Gardening can be a subject in vocational stream or co-curricular activities.
- In urban areas, focus should be more on learning science from the garden (see booklet by DRCS: Science in the garden) as space might be limited.
- The students group can take vegetables to the home.

### 3.3 Day Boarding or schools with hostels

- As hostel or day boarding schools has large amount of organic waste everyday, it can collaborate with a farmer's group/organization so that they take the waste, turn it out to compost, use it for growing vegetable, sell the vegetable to the school. So that the waste is treated properly and the children get organic vegetables.
- The school can do miniature of the similar thing as a project by the children.
- I have tried this with a day boarding well known school in Kolkata, but at the last stage the authority did not want to go for such contact with the nearby community, who are farmers.

### 3.4 Major Challenges

- ICDS/Govt. primary schools are looking the school garden thing as an extra burden. Teachers are not willing take the pain of doing this, it is better for them not to give vegetable. We managed to do it in a very small scale because we employed our own worker for this. Until and unless the work pressure of ICDS workers are reduced (they have to do number of things which are not at all related to their primary objective) and the instruction is coming from the senior authority it is difficult to initiate this as mandatory. Proper policy influence with proper scientific validation only can make such changes.



- A rapport has to be established with the mother's group, guardians group. Tribes are sometimes reluctant to have vegetables.
- It is difficult to pursue 10+2 schools particularly in urban areas. We need to create example. We can think it within the scope of newly introduced Environment Education or Eco Clubs.
- The school authority and the concerned teachers have to take interest.
- To be frank, we did it with our own manpower, but the whole initiative can be made sustainable only if there is a policy or schools get interest.
- Doing school garden is not a very difficult or large fund demanding activity, but the monitoring and management needs large support.

#### 4. Album



## References

- *Presentation dr. Gopal, nipccd*
- *Cooked mid-day meal programme in West Bengal – a study in Birbhum district by pratichi trust(Major part of the background note has been taken from this report)*
- *Pratichi child report :a study on the delivery of ICDS in west Bengal (Major part of the background note has been taken from this report)*
- *Reports from unicef*
- *Census report*
- *NFHS survey*