

Nutrition Garden – A Route to Improve Diet Diversity in the Family Circle: A Lesson from a Field Experience of Bihar

Parimal Chandra

State Consultant, UNICEF, Bihar Field Office

Abstract

This paper is an attempt to focus on the effects of establishing a nutrition garden or a backyard farm, with other sub-systems, for a regular supply of fresh and leafy green vegetables to the kitchen, thereby increasing diet diversity and reducing the micro-nutrient deficiencies of the family circle. The field experience is taken from a pilot project being implemented by State Rural Livelihood Mission/JEEViKA in Bihar, with technical support from UNICEF. The pilot project has been implemented in two blocks and eight panchayats of Kasba and Jalalgarh Blocks of the Purnea district of Bihar.

The pilot focus upon three critical components: WHAT, WHY and for WHOM the nutrition garden is essential. It will try to highlight the importance of nutrition gardens and other sub-systems at a family-circle level, thereby increasing the diet diversity in the food plate of the family. It will also demonstrate low-cost recipes from the locally available food items.

Poor diet diversity of <2 food groups, with a large quantity of carbohydrates being consumed, high prevalence of micro-nutrient deficiency, anaemia in the state and in Purnea. There is also a high level of undernutrition in Bihar and Purnea.

The pilot is for those who are at the critical window of opportunity, target groups of the family circle comprise of pregnant women, lactating mothers having children below 2 years of age and adolescent girls (age group of 10-19 years), addressing diet diversity and nutritional micro-nutrient deficiency in the family circle.

The pilot has been designed on the basis of randomised control trial methodology over a period of four years. The surveys were conducted based on the tools designed, both qualitative and quantitative. The project has already completed its four-year cycle and is scheduled for the end-line findings.

The field-level experiences of the practitioners carrying out the practice of nutrition garden and the other sub-systems and getting benefits have been taken into consideration. At some point of time, it is also seen that after the self-consumption in the family circle, the produce also goes to the market and contributes towards raising the economic status of the family, thereby increasing the purchasing power and establishing food security for the family.

Keywords: *Nutrition, diet diversity, JEEViKA, adolescent girls, POSHAN ABHIYAN*

Background

Bihar, as per the data, is one of the most populated states of India, with 100 million¹¹ people living in the state. It is the third most populous state, with a population density of 1106 people living per square kilometre. The burden of undernutrition in the state is no less, with an average of 48.3%, and 51.8% in Purnea. Similarly, is the case of Anaemia, Bihar has 47.8 % and Purnea has 67.7% of cases. When it comes to the percentage of cases of Anaemia in the age group of 15-49-year-old women, the

overall percentage in Bihar is 60.4%, whereas in Purnea it is 58.0 %.

The pilot project was designed to provide enough scope to women and adolescent girls, by engaging them through community-meeting cycles whenever they sat for their monthly contribution of the SHG. The adolescent girls were also engaged through a separate cadre for nutritional messaging during the meeting.

Intervention

¹¹ The data presented in the paragraph is from the census of India – 2011. NFHS -4 and CNNS survey conducted in 2018, fact sheet for Bihar.

A baseline study was conducted by the International Institute of Population Sciences, Mumbai, in the year 2016, to understand the actual status of diet diversity and the feeding habits of the family circle with different age groups of women (15-49 years). The midline of the pilot was also conducted in the year 2018, to understand the trends in the interventions carried out with the women at the family circle level, through the regular messaging on nutrition, practicing nutrition garden and the sub-systems at their backyard. The graphs below will reflect on the improved consumption patterns of various nutrients in the food palate of the family circle among the target groups (pregnant and lactating mothers with less than U2 children, and adolescents in the age group of 10-19 years).

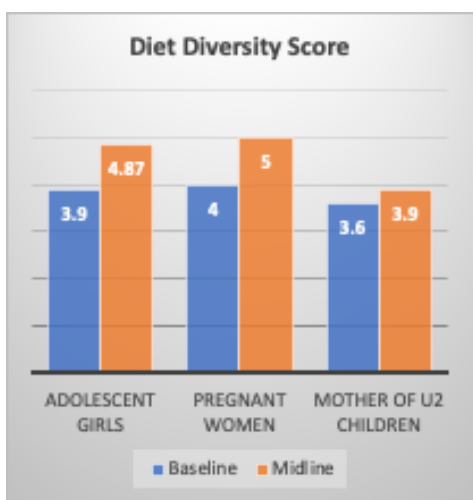


Figure 1: Diet Diversity Score of Target Groups

The above graph -1¹² shows a significant increase in the diet diversity score of the Target Groups as the diversity score in adolescent girls increased from 3.9 to 4.87, whereas in the pregnant women, there is an increase of one more food group in the food plate of the family circle.

The analysis of the graph-2 shows the different kinds of food groups eaten by the target groups, such as animal protein eaten from the backyard, poultry, eggs, meat, green leafy vegetables, lemons, fruits and the pulses from the nutrition garden, revealing that there is an increase in the consumption patterns of different food groups as they have been incorporated into the food plate of the family circle. Regarding the intake of pulses, the cropping pattern in the Purnea district is different as very few farmers grow pulses and generally people buy them from the market.

Recently, the prices of the pulses in the local market have increased, thereby making a purchase for the vulnerable population difficult, and therefore we see very insignificant change in the consumption pattern of pulses across the target groups.

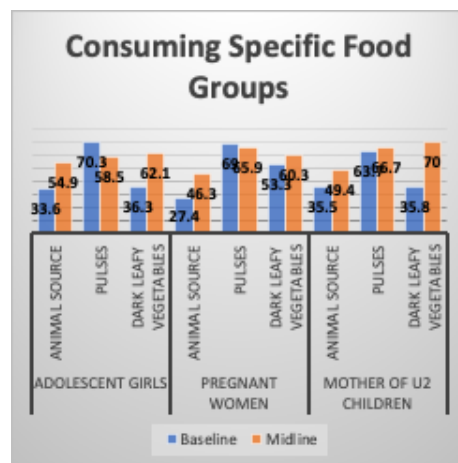
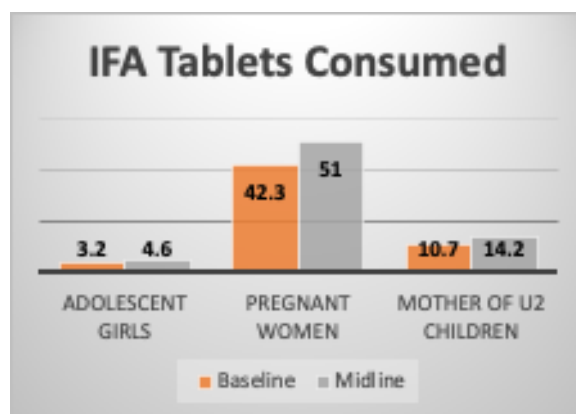


Figure 2: Consumption of specific food groups by target groups

Graph-3 reflects upon the Iron and Folic Acid (IFA) tablet consumption, in comparison to all the target groups of the pilot. The tablet is supplied at the VHSND sites or at the Arogya Diwas organised at the AWC in the village. The focus of the pilot and the government was on pregnant women, as a part of the 1K days life cycle approach. So, there is a rise in the consumption of the IFA tablets in pregnant women. The Weekly Iron Folic Acid Supplementation (WIFS) program for in and out-of-school going adolescent girls by the government started late in Bihar; it was launched in August 2019. Due to behavioural aspects, lactating mothers do not consume IFA tablets. However, the pilot project worked to overcome this barrier and hence there has been some increase in consumption.



¹² The reference to the graph can be seen from the table in annexure -1

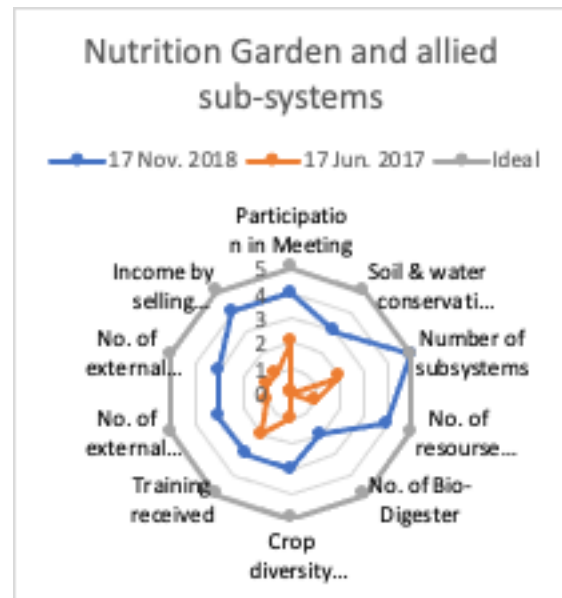
Figure 3: IFA consumption pattern among the target groups

Across every age group we see an increasing trend, whether it is on diet diversity score, consuming specific food groups, or on micro-nutrient supplementation. The increase is due to the varied activities carried out with women and adolescent girls. The intervention was in the form of messaging on nutrition, diet diversity and recipe demonstration by SHG members who were trained for it. Another factor is the development of the nutrition garden along with sub-systems and support of the cadres of SRLM's. Teachings were given on the diversification of diet and preservation of food. The meetings were in the form of awareness and various sessions on health and nutrition. The screenings of the nutritional at-risk category of target groups was carried out at the Village Health Sanitation and Nutrition Day¹³ (VHSND) sites on Arogya Diwas, by the Auxiliary Nurse Midwife (ANM).

Maize is found in abundance in this part of Bihar and it grows throughout the season. It is considered as a cash crop because of huge storage warehouses store maize and then sell it to the food processing unit. Through the training by the SHG, women have learnt to make various food products, such as postik ladoos⁷, snacks and jalebee. These items were mixed with supplemental nutri-mix and other ingredients of different food groups to make it more nutrient-rich. These are consumed by pregnant, lactating women and adolescent girls of the family circle. The ladoos are sold to pregnant and lactating mothers in and around the family circle locally on demand and they fetch money.

Case study

Sushma devi, a resident of the Jalalgarh Block of the Purnea district, was one to develop nutritional garden and its sub-systems. There were five sub-systems along with the nutrition garden. The sub-systems include backyard poultry, bio-digester, aqua-culture, fruit trees and birds. The web-diagram¹⁴ given below was performed by Sushama devi in the field over a



period of one-year from November 2017 to November 2018.

The intervention of the nutrition garden and its allied sub-systems has shown results, as the graph shows that there has been an increase in the overall aspects. The family circle has introduced backyard poultry in the form of chicken and ducks to consume meat and eggs. They also developed vermi-compost pits to make organic compost for the nutrition garden. They introduced new crop varieties in the nutrition garden, such as French beans, broccoli, different varieties of spinach and seasonal oyster mushrooms. Plants like drumstick/moringa and lemon not only provide the required dose of nutrition to the body, but also fetch money when reach the market. The family also introduced bird's pigeon and quail for meat and eggs. A small pond owned by the family in the village transformed into a site of aqua-culture and various fishes like Rehu, Katla and cat fish were introduced.

When the activity was presented to the family, they had very little knowledges to use the land in an optimum manner. The different trainings imparted to the SHG women made this possible. The family is now earning an average of INR 5K, after self-consumption in the family circle. The intervention has benefitted the family circle in many ways by increasing the diet diversity, increase in consumption of various specific food

¹³ VHSND – Village health sanitation and nutrition day is an activity that is organised once in a month at the Aaganwadi centre (AWC) to provide different kinds of health services to women, adolescent girls and children. This activity is being organised as a convergence modal between the various government departments, especially Health and Social Welfare department at the ICDS. It is a way to provide services to the target groups at their doorsteps by the Government.

¹⁴ Web diagram- is a participatory tool used in the field, directly with the project participants to analyse the changes or trends in the changes happening over a period of time and then by plotting the same based on the desired indicators we get the changes happened on a five-point scale.

groups, especially meat, fish and seasonal green leafy vegetables. The enhanced knowledge and skills led to a better use of resources, such as turning waste from the sub-systems into dry leaves, and converting excreta and fodder into organic manure and pesticides. The extra income of the family circle brought food security, enhanced the livelihood of the family and increased their purchasing power that reduced their dependency on outside foods.

Conclusion

The crux of the intervention is that even less resources can yield good results, if you are aware of the know-how and its usage. This awareness can keep your family circle healthy and improve the quality of life. The nutrition garden has been widely supported by the SRLM/JEEViKA through its cadres in the villages with the SHG's. It has also been seen that through POSHAN ABHIYAN's innovation funds, several AWCs in association with the regional Krishi Vigyan Kendras, have developed nutrition gardens at the AWCs. The pilot project area also witnessed 40 such AWCs with nutrition gardens

to support the nutrition and well-being of the women living in the family circle.

An alternate model for the people who are landless can involve growing a few of the creeper plants using a gunny bag and tying the plant to the thatched roof to climb and bear fruits. This also provides seasonal green vegetables to the plate of family.

There have been multiple benefits of the nutrition garden as apart from providing a good nutrition dose of various food groups, the garden also has the potential to introduce many different varieties of crops and vegetables. Furthermore, it also paves way for the excess produce to the market and enhances the scope of livelihood for the family circle.

The whole world is facing a crisis situation due to the global pandemic of COVID-19, and India is no different. Even in the crisis state of lockdown and restricted movement, keeping and maintaining the required nutrition and diet diversity in the plate of the members of the family circle nutrition garden is a good option.

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Annexure- 1

Sl. No.	Key Indicators	Baseline	Midline
1	Diet Diversity		
1.1	AG's mean diet diversity Score (DDS)	3.9	4.87
2	Adolescent girls consuming food from specific food groups		
2.1	Animal-source food (meat, poultry, fish and egg) (%)	33.6	54.9
2.2	Pulses (beans, peas and lentils) and nuts or seeds (%)	70.3	58.5
2.3	Dark green leafy vegetables and other vitamin A, C & Fe -rich fruits and vegetables (%)	36.3	62.1
3	Adolescent girls by number of food groups consumed		
3.1	Adolescent girls with minimum DDS (5 or more out of 10) (%)	31.8	56.6
4	Micro-nutrient supplementation		
4.1	IFA tablets consumed	3.2	4.6
5	Pregnant women Diet Diversity		
5.1	Pregnant women's mean Dietary Diversity Score (DDS)	4.0	5.0
6	Pregnant women consuming food from specific food groups		
6.1	Animal-source food (meat, poultry, fish and egg) (%)	27.4	46.3
6.2	Pulses (beans, peas and lentils) and nuts or seeds (%)	69.0	65.9
6.3	Dark green leafy vegetables and other vitamin A, C & Fe -rich fruits and vegetables (%)	53.3	60.3
7	Pregnant women by number of food groups consumed		
7.1	Pregnant women with minimum DDS (5 or more out of 10) (%)	13.6	13.6
8	Micro-nutrient supplementation		
8.1	IFA tablets consumed	42.3	42.3
9	Mother of U2 Children's		
9.1	Mother of U2 Children's mean Dietary Diversity Score (DDS)	3.6	3.6
10	Mother of U2 Children's mean consuming food from specific food groups		
10.1	Animal-source food (meat, poultry, fish and egg) (%)	35.5	49.4
10.2	Pulses (beans, peas and lentils) and nuts or seeds (%)	63.7	66.7
10.3	Dark green leafy vegetables and other vitamin A, C & Fe -rich fruits and vegetables (%)	35.8	70.0
11	Mother of U2 Children's mean by number of food groups consumed		
11.1	Mother of U2 Children's mean with minimum DDS (5 or more out of 10) (%)	8.5	8.5
12	Micro-nutrient supplementation		
12.1	IFA tablets consumed	10.7	14.2