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Knowledge and Adoption of beneficiaries about kitchen gardening under FSN project in Eastern Vidarbha region

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Abstract

The present research was undertaken on topic "Perception of beneficiary about kitchen gardening under farming system for nutrition project" was conducted in Delanwadi, Dhumankheda and Nandgaon villages of Sindewahi taluka in Chandrapur districts of Maharashtra state with exploratory research design of social research was used for study. The data were collected, examined, classified, quantified and tabulated by personally interviewing the 120 randomly selected beneficiaries with the help of structured interview schedule. Frequencies, mean, standard deviation and coefficient of correlation was employed for interpreting the results. Kitchen Gardening is an important component for household food security contributes to household income and savings and improves the health and nutritional well-being of the family. An exploratory design of social research was used for the present investigation aims at assessing the beneficiaries. The findings of the research study revealed that Majority of the beneficiaries (80.83%) possessed high level of knowledge about Kitchen gardening and (72.50%) of the beneficiaries possessed high adoption about Kitchen gardening.

Keywords: Knowledge, adoption, kitchen gardening

Introduction

Kitchen gardening is an important component for household food security contributes to household income and savings and improves the health and nutritional well-being of the family. It is commonly a family activity including women, men, children and elderly persons and one of the world's most ancient agricultural practices. Planting and maintaining a kitchen garden brings families together and kids naturally gravitate to gardening. It is cost saving activity that can be enjoyed as a hobby. It acts as a source of relaxation during high stress period and reduction in illness and stress. Further, it is important to stay healthy to minimize healthcare expenses. Eating vegetables and fruits in sufficient quantity will boost one's immune system which helps to stay healthy. It gives dual benefits of providing food and healthy life. Therefore, kitchen garden is like a doctor/ clinic/ medicine cabin wrapped into one, expanding fresh vegetable intake, supplementing the diet with vegetables containing rich nutrient which increases immunity, cures illness and improves the quality of life. One way to offer a great potential for improving household food security and elevating micronutrient deficiencies is to grow vegetables in own kitchen garden at home and eat fresh vegetables and fruits. This will enhance food security by direct access to a diversity of fresh vegetable at fingertips. Kitchen garden plays a vital role in the lifestyle of people

living in urban areas or small towns. The main point of building up a Kitchen garden is to safeguard formal beliefs and social character of joint families. Potential benefits such as income and enhanced rural employment through additional or off season production, enhanced food security, increased availability of food and better nutrition through food diversity. Others factors like decreased risk through diversification and environmental benefits, food cycling, water nutrients, controlling shade, dust and erosion and maintaining or increasing local biodiversity also indulge the households to practice this method. One of the easiest ways of ensuring access to a healthy diet that contains adequate macro and micronutrients is to produce many different kinds of food in the Kitchen garden. This is especially important in rural and semi urban areas where people have limited income earning opportunities and poor access to markets. Kitchen gardens are becoming an increasingly important source of food and income for poor households in semi-urban and urban areas.

The World Health Organization (WHO) defines health as a state of complete physical, mental and social well-being and not merely an absence of diseases. Good health can be described as a condition where both body as well as mind is functioning properly. The main causes behind poor health condition are diseases, improper diet, injury, mental stress, lack of hygiene, unhealthy lifestyle etc. Over the past few

years, our lifestyle has changed and we often tend to ignore the importance of healthy living in one day or the other. Health is directly related to food consumed. To maintain good health taking nutritious diet in adequate amount is essential. Balanced nutrition is of fundamental importance for the growth and development of human body. Vegetables can play an important role in human nutrition. Intake of fresh vegetables is must in our daily diet as they provide essential nutrients for good health. All nutritionists encourage people to consume recommended vegetables, pulses and fruits per day. Kitchen garden plays an important role for rural families to provide diversified vegetables, fruits and pulses in their daily diet. India is the second largest producer of fruits and vegetables in the world but the intake of vegetables in our daily diet is low. According to World Health Organization (WHO) the daily per capita intake of vegetables in India is 400g whereas for a balanced diet, an adult should have a minimum daily intake of 300g of vegetables. In rural areas majority of the farmers failed to fulfil their family requirement of vegetables and pulses from their own farm and they have to purchase these from local market.

Farming System for Nutrition (FSN) is UNICEF funded project in collaboration with ATARI, Zone-VIII (Under NARI Project), MCAER, Pune and Technical support from M.S. Swaminathan Research Foundation, Chennai. Farming System for Nutrition (FSN) is a model that entails mainstreaming the nutrition dimension in the design of the farming system based on locally available crop and animal husbandry resources and farming practices. The central objective of FSN project was to study the feasibility of a location-specific FSN approach to improve household dietary diversity. Farmer System for Nutrition (FSN) project provides agricultural remedies to the major nutritional deficiencies including micronutrients like zinc, iron, iodine, vitamin A etc. FSN will help to not only improve the yield of crops but also mainstream the nutrition dimension in the choice of crops.

FSN Strategies to fine-tune the farming system to address nutritional concerns were:

1. Promoting vegetable cultivation through household and community level gardens with naturally biofortified fruits and vegetables, species and nutrient-dense varieties especially green leafy vegetables to address micronutrient malnutrition.
2. Widen the on-farm crop diversity to improve the dietary diversity

To popularize the kitchen gardening among the farming community in rural areas, KVK Sindewahi conducted frontline demonstration (FLD) programmes for the farmers to aware them about the importance of kitchen gardening. As the part of this the beneficiaries selected were exposed to the training at KVK Sindewahi and were asked to implementing this demonstration at their own land. Accordingly, the present study was conducted to evaluate Perception about Kitchen gardening with the title "Perception of beneficiary about kitchen gardening under Farming System for Nutrition project".

Materials and Methods

Locale of the study

The present study was undertaken in Chandrapur district of Vidarbha region of Maharashtra state. The above district was selected purposively on the basis of major area under kitchen gardening where KVK Sindewahi conducted frontline demonstration (FLD) under FSN project.

Selection of respondents

The forty beneficiaries were selected randomly from each village with well-maintained kitchen gardens and who adopted the frontline demonstration (FLD) of KVK Thus, total 120 beneficiaries were the sample size for the study.

Sr. No.	District	Taluka	Name of village	No. of Beneficiaries
1	Chandrapur	Sindewahi	Delanwadi	40
			Dhumankheda	40
			Nandgaon	40
Total				120

The whole sample was considered as respondents and they were interviewed for collection of data.

Measurement of knowledge and Adoption about kitchen gardening under FSN project

Knowledge and Adoption about kitchen gardening under FSN project was measured with the help of teacher made test. The questions included in the test were of objective type in nature. They were numbered from 1 to 28. Each question was given the score of one for correct answer and zero for incorrect answer. The possible total score that a beneficiary could obtain would vary from 0 to 28. The knowledge index was calculated for each beneficiary with the help of below given formula.

$$\text{Knowledge Index} = \frac{\text{Actual obtained knowledge score}}{\text{Maximum obtainable knowledge score}} \times 100$$

Then beneficiaries were classified into three categories viz. low, medium, high respectively on the basis of mean \pm standard deviation.

Adoption is defined as extent of actual adoption behaviour in kitchen gardening by the beneficiaries. For measurement of adoption quantitatively, the cultivation practices in kitchen gardening was considered. It refers to the decision of making full use of an innovation. In case of present study, it refers to the full use of vegetable seed kit, raised own nursery etc. Their response was rate on three-point continuum i.e., fully adoption, partially adoption and non-adoption. A numerical score of two was assign for the actual use of each identified cultivation practices in kitchen gardening, one for partially adoption and zero for non-adoption.

Results and Discussion

Knowledge of beneficiaries about kitchen gardening under FSN project

It is operationally defined as body of understood information possessed by the beneficiaries about different

areas of kitchen gardening. The practice wise distribution of beneficiaries according to the extent of knowledge level about kitchen gardening was ascertained and findings with distribution of beneficiaries according to knowledge about kitchen gardening under FSN project

respect to them are presented in table- 1.

Table 1: Statement wise

distribution of beneficiaries according to knowledge about kitchen gardening under FSN project

Sr. No.	Statements	Knowledge	
		Yes Frequency / Percentage	No Frequency/ Percentage
1	Do you aware about kitchen gardening?	120 (100)	0
2	Do you know about standard area required for kitchen gardening?		120 (100)
3	Do you know which type of nursery bed is required for which type of vegetable?	100 (83.33)	20(16.67)
4	Do you know the germination percentage of vegetable seeds provided by KVK Sindewahi under FSN project?	45 (37.50)	75 (62.50)
5	Do you know the difference between local and hybrid varieties of vegetables which are grown in your kitchen garden? 1. Chilli (Pusa jwala, Roshani, Teja-4) 2. Brinjal (Harshit. Phule krushna, jayant, yashwant) 3. Tomato (PKM-1, Phule raja) 4. Okra (tanvi mahabeej-333, arka arnamika) 5. Onion (AFDR, Akola safed) 6. Cauliflower (Ankur empire) 7. Cabbage (Ankur nilu, Ankur,manas) 8. Radish (Pusa ketki, JP, Dhaval kranti) 9. Cluster bean (Rani, Pusa navbahar) 10. Fenugreek (Gayatri, Pusa Early branching) 11. Spinach (All green) 12. Bitter gourd (Hirkani, Kokan tara) 13. Ridge gourd (Soloni-5) 14. Shepu (Local) 15. Amaranthus (Local) 16. Coriander (Sugandha-2) 17. Cucumber (Himangi, Shubhangi, Pune khira)	120(100)	0
6	Do you know about protected cultivation techniques?	45 (37.50)	75 (62.50)
7	Do you know about nutrient contents of vegetables which are grown in your kitchen garden?	10 (8.33)	110 (91.67)
8	Do you know about water requirements of vegetables which are grown in your kitchen garden?	30 (25)	90 (75)
9	Do you know about organic fertilizers?		
	a) FYM	120 (100)	0
	b) Earthworm compost	116(96.67)	4(3.33)
10	Do you know regarding the maturity indices of various vegetables?	114(95.00)	6(5.00)
11	Do you know what kind of indigenous methods are used to control of insect-pest and diseases?		
	i. Dashparni arka	87(72.5)	33(27.5)
	ii. Panchagavya	60 (50)	60 (50)
	iii. Neem extract	70 (58.33)	50 (41.67)
12	Do you know regarding the harvesting stages of vegetables?	117(97.5)	3(2.5)
13	Do you know what is estimated annual consumption per capita in your family?	10 (8.33)	110 (91.67)
14	Do you know about Farmer's System For Nutrition project?	120 (100)	0
15	Do you know which organization is implemented this FSN project from last three years?	120 (100)	0

A critical look at the table 1 revealed that, in case of awareness required for kitchen gardening all the beneficiaries (100%) were found in high category of knowledge level. Further, it was summarized that in case of standard area required for kitchen gardening all the beneficiaries observed in high category of knowledge level. The knowledge level about type of nursery bed is required for various vegetables were observed in high knowledge level i.e. 83.33 per cent. This was followed by 16.67 percent of the beneficiaries comes under low knowledge level respectively. While studying the knowledge level about the germination percentage of vegetable seeds provided by KVK Sindewahi under FSN project 62.50 per cent of the beneficiaries come under high level of knowledge followed by 37.50 per cent in low level of knowledge. While studying the knowledge level about the difference between local and

hybrid varieties of vegetables which were grown in kitchen garden observed that all the beneficiaries (100%) were observed in high level of knowledge.

While studying the knowledge level about protected cultivation techniques, all the beneficiaries come under low level of knowledge. While studying the knowledge level about nutrient contents of vegetables which were grown in kitchen garden observed that majority of the beneficiaries comes under low knowledge level i.e.91.67 per cent followed by 8.33 per cent of the beneficiaries comes under low knowledge level. As regard to knowledge level about water requirements of vegetables which were grown in kitchen garden, majority of the beneficiaries i.e. 75 per cent comes under high knowledge level, and very few i.e. 25 per cent of the beneficiaries come under low level of knowledge. While studying the knowledge level about

organic fertilizers, all the beneficiaries had high knowledge about FYM and majority of the beneficiaries i.e. 96.67 per cent had high level of knowledge about earthworm compost followed by 3.33 per cent of the beneficiaries come under low level of knowledge. While studying the knowledge level of the beneficiaries regarding the maturity indices of various vegetables, majority of the beneficiaries i.e. 95 per cent come under high level of knowledge followed by 5 per cent in low level of knowledge. In case of knowledge about indigenous methods for the control of insect-pest and diseases, maximum number of the beneficiaries (72.50%) had knowledge about “Dashparni arka” were found in high knowledge with reference to major pests of vegetable crops, followed by 27.50 per cent of the beneficiaries come under low knowledge for control of major insect and diseases. Half of the beneficiaries (50%) had knowledge about “Panchgavya”. 58.33 per cent of the beneficiaries had high knowledge about “Neem extract” followed by 41.67 per cent of the beneficiaries had low knowledge about Neem extract. In case of appropriate stage of harvesting, maximum number of beneficiaries (97.50%) comes under high level of knowledge, followed by 02.50 per cent of beneficiaries comes under low level of knowledge. As regard to knowledge level about annual consumption per capita in beneficiary’s family, majority of the beneficiaries i.e. 91.67 per cent comes under high knowledge level and very few i.e. 8.33 per cent of the beneficiaries come under low level of knowledge. As regard to knowledge level of beneficiaries about Farmer’s System for Nutrition Project, all the beneficiaries comes under high knowledge level. As regard to knowledge level of beneficiaries about organizers who

implemented this FSN project, all the beneficiaries comes under high knowledge level.

Table 2: Distribution of the beneficiaries according to knowledge level

Sr. No.	Knowledge	Beneficiaries (n=120)	
		Frequency	Percentage
1	Low (up to 53)	7	6
2	Medium (54-76)	16	13.33
3	High (above 76)	97	80.83
Total		120	100.00

It was observed from the Table 2 that, majority of the beneficiaries (80.83%) possessed high level of knowledge about kitchen gardening followed by 13.33% possessed medium and 6% possessed low extent of knowledge about kitchen gardening.

Similar finding was reported by Reddy (2017) ^[5], Kachare (2012) ^[3].

Adoption of beneficiaries about kitchen gardening under FSN project

Adoption is defined as extent of actual adoption behaviour in kitchen gardening by the beneficiaries. A critical look at the table 3 revealed that, in case of area required for kitchen gardening all the beneficiaries (100%) were found in high category of fully adoption level.

Further, it is summarized that in case of source of seed 99.17% of the beneficiaries observed in high category of fully adoption level followed by negligible i.e. 0.83% of the beneficiaries were observed under partial adoption level.

Table 3: Statement wise distribution of beneficiaries according to adoption under FSN project

Sl. No.	Statements	Adoption		
		FA	PA	NA
		Frequency / Percentage	Frequency / Percentage	Frequency / Percentage
1	Do you adopt kitchen gardening?	120 (100)	0	0
2	Do you adopted standard area required for doing kitchen gardening?	120 (100)	0	0
3	Use of different type of nursery bed is required for different type of vegetables?	70 (58.33)	18 (15)	32(26.67)
4	Do you check the germination percentage of vegetable seeds provided by KVK Sindewahi under FSN project?	88 (73.33)	0	32(26.67)
5	Do you grow various local and hybrid varieties of vegetables in your kitchen garden? 1. Chilli (Pusa jwala, Roshani, Teja-4) 2. Brinjal (Harshit, Phule krushna, jayant, yashwant) 3. Tomato (PKM-1, Phule raja) 4. Okra (tanvi mahabeej-333, arka arnamika) 5. Onion (AFDR, Akola safed) 6. Cauliflower (Ankur empire) 7. Cabbage (Ankur nilu, Ankur,manas) 8. Radish (Pusa ketki, JP, Dhaval kranti) 9. Cluster bean (Rani, Pusa navbahar) 10. Fenugreek (Gayatri) 11. Spinach (All green) 12. Bitter gourd (Hirkani, Kokan tara) 13. Ridge gourd (Soloni-5) 14. Shepu (Local) 15. Amaranthus (Local) 16. Coriander (Sugandha-2) 17. Cucumber (Himangi, Shubhangi, Pune khira)	120 (100)	0	0
6	Do you adopt protected cultivation techniques?	0	0	120(100)
7	Do you grow nutrient rich vegetables in your kitchen garden?	80 (66.67)	40 (33.33)	0

8	Do you read any horticulture book to know water requirements of vegetables which are grown in your kitchen garden?	44(36.67)	66(55)	10(8.83)
9	Do you use organic fertilizers?			
	a) FYM	90 (75)	30 (25)	0
	b) Earthworm compost	45 (37.50)	15 (12.5)	60 (50)
10	Do you know regarding the maturity indices of various vegetables?	11(9.17)	99(82.5)	10(8.83)
11	Use of indigenous methods to control of insect-pest and diseases?			
	i. Dashparni arka	78(65)	35(29.17)	7(5.83)
	ii. Panchagavya	60 (50)	40 (33.33)	20 (16.67)
	iii. Neem extract	55 (45.83)	45 (37.50)	20 (16.67)
12	Do you know regarding the harvesting stages of vegetables?	83(69.17)	4 (3.33)	33(27.5)
13	Do you calculate estimated annual consumption per capita in your family?	10 (8.33)	30 (25)	80 (66.67)
14	Do you know about Farmer's System For Nutrition project?	120	0	0
15	Do you know which organization is implemented this FSN project from last three years?	120	0	0

Fa- Fully adoption, Pa- Partially adoption, Na- Non adoption

A critical look at the table 3 revealed that, all the beneficiaries (100%) were found in fully adoption category. Further, it was summarized that in case of standard area used for kitchen gardening, all the beneficiaries observed in fully adoption category. The adoption level about type of nursery bed is used for various vegetables were observed in fully adoption category i.e. 58.33 per cent. This was followed by 26.67 percent and 15 per cent of the beneficiaries comes under partial and non adoption level respectively. While studying the checking of germination percentage of vegetable seeds provided by KVK Sindewahi under FSN project 73.33 per cent of the beneficiaries come under fully adoption category followed by 26.67 per cent in non adoption level. While studying the adoption level about the growing local and hybrid varieties of vegetables in kitchen garden observed that all the beneficiaries (100%) were observed in fully adoption category. While studying the adoption level about protected cultivation techniques, all the beneficiaries come under non adoption category. While studying the adoption level about nutrient rich contents of vegetables were grown in kitchen garden, majority of the beneficiaries comes under fully adoption category i.e.91.67 per cent followed by 8.33 per cent of the beneficiaries comes under non adoption level. As regard to beneficiaries read any horticulture book to know water requirements of vegetables which were grown in kitchen garden, majority of the beneficiaries i.e. 36.67 per cent comes under high adoption category followed by 55 per cent and 8.33 per cent of the beneficiaries come under partial and non adoption level respectively. While studying the adoption level about use of organic fertilizers, in case of use of FYM, majority of the beneficiaries i.e. 75 per cent comes under high adoption category followed by 25 per cent comes under partial adoption category and in case of use of earthworm compost, 37.50 per cent of the beneficiaries come under fully adoption category followed by 12.50 per cent and 50 per cent of the beneficiaries come under partial and non adoption level respectively. While studying the adoption level of the beneficiary regarding the use of maturity indices for harvesting of various vegetables, 9.17 per cent of the beneficiaries come under fully adoption category followed by 82.50 per cent and 8.33 per cent of the beneficiaries come under partial and non adoption level respectively. In case of use of indigenous methods for the control of insect-pest and diseases, maximum number of the beneficiaries (65%) used "Dashparni arka" were found in fully adoption

category with reference to major pests of vegetable crops, followed by 29.17 per cent of the beneficiaries come under partial adoption for control of major insect and diseases followed by 5.83 per cent of the beneficiaries come under non adoption level. Half of the beneficiaries (50%) used "Panchgavya" were found in fully adoption category, followed by 33.33 per cent of the beneficiaries come under partial adoption and 16.67 per cent of the beneficiaries come under non adoption level. 45.83 per cent of the beneficiaries used "Neem extract" were found in fully adoption category, followed by 37.50 per cent of the beneficiaries come under partial adoption and 16.67 per cent of the beneficiaries come under non adoption level. In case of appropriate stage of harvesting, maximum number of beneficiaries (69.17%) comes under fully adoption category, followed by 3.33 per cent of beneficiaries comes under partial adoption and 27.50 per cent of the beneficiaries come under non adoption level. As regard to annual consumption per capita in beneficiary's family, majority of the beneficiaries i.e. 66.67 per cent comes under non adoption category, followed by 25 per cent of beneficiaries comes under partial adoption and 8.33 per cent of the beneficiaries come under fully adoption level. As regard to adoption level of beneficiaries about Farmer's System for Nutrition Project, all the beneficiaries comes under fully adoption level. As regard to knowledge level of beneficiaries about organizers who implemented this FSN project, all the beneficiaries comes under fully adoption level.

Table 4: Distribution of the beneficiaries according to Adoption level

Sr. No.	Adoption	Beneficiaries (n=120)	
		Frequency	Percentage
1	Low (up to 33.33)	18	15.00
2	Medium (33.34 to 66.66)	15	12.50
3	High (above 66.66)	87	72.50
Total		120	100.00

It was observed from the Table 4 that, majority of the beneficiaries (72.50%) possessed high level of adoption about kitchen gardening followed by medium (12.50%) and low (15%) extent of adoption about kitchen gardening. Similar finding was reported by Potsangbam *et al.* (2018)^[4] and Kaur (2020)^[12].

The probable reason might be due to fact that majority of the beneficiaries had good literacy status, source of

information, mass media exposure and participation in demonstration/ training etc.

Conclusion

It can be concluded that 80.83 per cent of beneficiaries had high level of knowledge regarding different areas of kitchen gardening practices. The probable reason behind this finding might be due to Kitchen gardener's knowledge and awareness about hazards effect of pesticide through source of information, participation in training, Demonstration (FLD) and mass media exposure of different programmes. The beneficiaries had good literacy status, participation in KVK programmes, voice mail/SMS services. Knowledge is essential to beneficiaries for the efficient and effective utilization of fresh vegetables for consumptions. On the basis of findings, it can be concluded that frontline demonstrations are effective in increasing the knowledge level of beneficiaries and adoption of kitchen gardening practices. Many other social benefits have emerged from demonstrations on kitchen gardening practices as the demonstrated beneficiaries were aware about better health and nutrition, income saving by reducing expenses of vegetable from market. The FLDs on kitchen gardening established a belief that household and small communities can take advantage of vacant land and contribute to their household food needs. Therefore, it is suggested that kitchen gardening should be popularized for its wider adoption.

This finding is in the line with finding of Reddy (2017) ^[5], Kachare (2012) ^[3], Potsangbam *et al.* (2018) ^[4] and Kaur (2020) ^[2].

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