Original Research Article

Improving Nutritional and Food Security through Kitchen Gardening in Sawai Madhopur District of Rajasthan

Abstract

Nutritional deficiency like Anaemia, PEMaseriousnutritionalprobleminruraland urban areas in women,pregnant womenand adolescent girls;resultingindifferenttypesofdiseases,negative effects on physicalgrowthand retardingbraindevelopment.77 percent of families in Indian households; vegetablesandfruitsareoftentheonlysourceofmicronutrientsintheirdiet.Homesteadproduction offruitsandvegetablesprovidesthepeoplethedirectaccesstoimportantnutrientsthatmaynotberea dilyavailableorwithintheireconomicrich.Hence,kitchengardeningisanimportantstrategytoimpro vehouseholdnutritional and food security.PresentstudywasconductedinSawai MadhopurdistrictofRajasthantoquantifytheimpactof120 kitchengardenstoimprovenutritionalsecurityofhouseholdsinruralareas.Theresultsuggeststhat kitchengardeninghasprovedaFeasibility,Accessibility and Replicability to livelihoodstrategyforresourceFarming Communityintermsofnutrientaswellascalorieintakeandeconomicperformances. In 2019-2020 around 100 Kitchen Garden kits have been distributed among women beneficiaries of Padli villages, in Sawai Madhopur block under NARI programme of KVK, Sawai Madhopur.

Keywords: Nutritionalsecurity,Kitchengardening,Ruralareas

Introduction

Protein Energy Malnutrition (PEM) is a deficiency disease caused in the infants due to 'Food Gap' between the intake and requirement. It affects children under 5 mostly belonging to the poor underprivileged communities. PEM is particularly serious during the post-weaning stage and is often associated with infection. Clinical signs and symptoms of protein-energy malnutrition (PEM) includePoor weight gain,Slowing of linear growth,Behavioural changes - Irritability, apathy, decreased social responsiveness, anxiety, and attention deficits.Protein–energy malnutrition (PEM), sometimes called protein-energy undernutrition (PEU), is a form of malnutritionthat is defined as a range of conditions

arising from coincident lack of dietary protein and/or energy (calories) in varying proportions. The condition has mild, moderate, and severe degrees. EM is fairly common worldwide in both children and adults and accounts for about 250 000 deaths annually.[2] In the industrialized world, PEM is predominantly seen in hospitals, is associated with disease, or is often found in the elderly.[3]Note that PEM may be secondary to other conditions such as chronic renal disease[4] or cancer cachexia[5] in which protein energy wasting (PEW) may occur.

Protein–energy malnutrition affects children the most because they have less protein intake.The few rare cases found in the developed world are almost entirely found in small children as a result of fad diets, or ignorance of the nutritional needs of children, particularly in cases of milk allergy.[6] Itretardsgrowth,increasestheriskanddurationofillness,reducesworkoutputandslowssocialandmentaldevelopment.Forpoorhouseholds,vegetablesandfruitsareoftentheonlysourcesofmicronutrientsinthefamilydiet.Homegardeningisoneoftheworld'smostancientfoodproductionpracticesandispracticed throughout the world (Landauer and Brazil, 1985).Homesteadproductionoffruitsandvegetablesprovidesthehouseholdswithdirectaccesstoimportantnutrientsthatmaynotbereadilyavailableorwithintheireconomicrich.So,homegardening wouldbeagoodmeanstoimprovehouseholdfoodsecurity(Talukder*etal*.,2002).Therefore,presentstudywasconductedtoseetheimpactofkitchengardeninginimprovingthenutritionalsecurityofhouseholdsinruralareas.The basic nutritional need of women age group between 18-40 years. In between this age group maximum women's grow-up, conceives child and do maximum house hold works.This table clears shows daily nutritional requirement for women likes Energy,protein,fat,iron,B carotene,Vitamin C in form of different cereals,pulses,greenleafy vegetables, fruits.

Research Methodology

Fig 1. Map showing study location

ThestudywasconductedinSawai Madhopur districtofRajasthan.In Sawai Madhopur, there were total 5 blocks namely Sawai Madhopur,Chouth ka Barwara, Khandaar,Bonli, Malarna.For the study sawaimadhopur block was selected as **NARI programme** Village **" Padli".**There were all 100nutritionalgarden seed kitswere distributed to selectedfamilies Randomly. Differentcapacitybuildingactivitiesincludin g training, exposure visit and farmer's scientist'sinteraction on various aspects including vegetable grown inhomestead,homesteadvegetableutilization,averagevegetableconsumption,nutrient contributionfromhomestead vegetable gardening were planned and undertaken.Pre-survey was conducted to obtain information regardingprofile and respondent's dietary food habits and nutritionaldeficiency diseases were also pre-surveyed. After one yearof establishment of nutritional garden, a post-survey wasdone to analyses the impact of kitchen gardens on nutritionalstatus of selected families. Data were collected by interviewscheduleMap of Sawai Madhopur shows production and productivity of major recipes.

ResearchFindingsandDiscussion

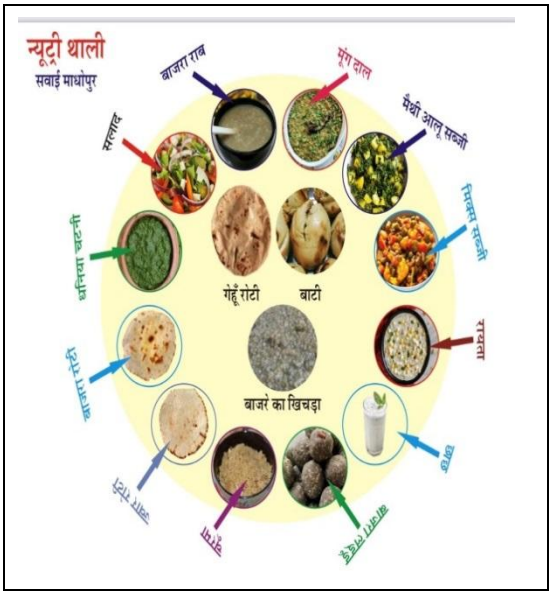
Socio-economiccharacteristicsofrespondentswereanalyzed andpresented in Table 1. The table indicatesthatmajority(75%)ofrespondentswerebelonged tojointfamilyandfollowedby(25%)nuclearfamily.Itwasfoundthatmajorityofthefamilies(65%)werefrommediumsized families followed by small size (20 %) and big size (15%).Results on family income showed that majority (76 %) ofrespondents belonged to income group of more than Rs. 1.0lack.Whilelookingattheireducationalstatus,resultsrevealedthat70percentheadsof thefamilywereliterateto primary level educated. Results on land holding depicts

thatmajority (60%) had medium scale land followed by small(30%)scalelandandonly(10%)hadlargescaleland.

Table 1. Socio-Economic Status of Families N=100

S.No	Variables	Category	Number	Percent
1	Type of Family	Joint Family	75	75
		Nuclear family	25	25
2	Size of Family	Small size(1-4)	20	20
		Medium size(5-7)	65	65
		Large size(more than 7)	15	15
3	Annual Income	< 50000	10	10
		50000-100000	14	14
		>100000	76	76
4	Education	Illiterate	70	70
		Literate	8	8
		Primary	9	9
		Middle	11	11
		Graduation	2	2
5	Land Holding	Small	30	30
		Medium	60	60
		Large	10	10

Fig 2.Nutritional food security



Before demonstration respondents cultivated hardly grows 3 or 4 vegetables in their gardens such as green chilli, brinjal,dhaniya,Padiana,palak etc.Butafterintervention they had grown 21 items of vegetables like thatbottlegourd,bittergourd,greenchilli,brinjal,summersquash, tomato, cucumber, ridge gourd, okra, cluster bean,cow pea, spinach, coriander, cualiflower, onion, cabbage,carrot, pea, fenugreek,radish,papaya,guava, improved variety of millets of bazra and jowar in *Kharif*, *Jayad* and *Rabi*seasons.Women of Padli were

efficiently doing kitchen gardening which contributes maxmimum nutritional meals in their daily Nutri -thali with fruits.Many Household women started nutria-garden and achieve nutritional food security.

ItisevidentfromTable2thatkitchengardeningdemonstration resulted in increase in homestead vegetableproduction, consumption anddistribution ofexcessvegetables to neighbors and relatives. Before intervention,respondents were practicing traditional practices; they usedto grow only one or two seasonal vegetable. To fulfil therequirement, they had to purchase vegetables from marketfor consumption. It is obvious from Table 3 that

productionofvegetablesatbeneficiariesincreased193.27percentwhichresultedinincreasedcons umption(89.55%)anddistribution (450 %) andmoney saving.

Table2:Vegetable ProductionandUtilization

S. No.	Particular	Production (kg)	Purchase(kg)	Distribution (kg)	Consumption(kg)
1	Before Intervention	205	72	12	265
2	After Intervention	990	0	91	563
3	Change	785	-72	79	298
4	Per cent of Change	193.27	100	450	89.55

Different essential nutrients contribution fromvegetablesispresentedinTable3.Nutritionalvalueofdifferentvegetableswascalculatedaccor dingICMR guidelines.Table3indicatesthattherewassignificantincreaseinconsumptionof all nutrients and food items were increased with quantity as well as quality. Table 3 clear shows difference between before and after intervention. Data in table 3 reveals cereals increased by 223.12,pulses by 39.00,green leafy vegetables 50.00, root tubers by 72,fruits by 50.3. Table further depicts that after intervention farming families receives energy 1945,fat 21.00,calcium 382, Iron 16.00, B carotene 3120, Vitamin C 35.is highly close to ICMR recommendations. Although Dietary need of body varied situation to situation but recommendations were follows the graph of normal and healthy dietetics values.It was also found that intakeof energy, protein and iron increased after intervention ofkitchen gardeningintervention.The basic nutritional need of women age group between 18-40 years. In between this age group

maximum women's grow-up, conceives child and do maximum house hold works. This table clears shows daily nutritional requirement for women likes Energy, protein, fat, iron, B carotene, Vitamin C in form of different cereals,pulses,green leafy vegetables, fruits.Kitchengardens predicts as best source of nutritional and Food security in contexts of Accessibility,Replicability and Utility.

Accessibility asKitchen gardens are helpful to provide nutritional & economically advantages. Nutritionally &economically beneficial for farm families & Urban Households. Replicability asKitchen gardening is only given at KVK campus.Utility asby growing kitchen gardens a family can save about 50 thousand rupees yearly.

Table 3. Change in Nutritional Status through Homestead Vegetable Production

S.No.	Essential Nutrients/Food Groups	Per Head Per Day Consumption through Vegetables/ Oils/ Fruits/Nutrients		
		Balanced Diet	Before Intervention	After Intervention
1.	Cereals(g/d)	270	201.01	223.12
2.	Pulses(g/d)	60	32.30	39.00
3.	Green leafy vegetable(g/d)	100	36.2	50.00
4.	Root-tubers(g/d)	200	55	72
5.	Other vegetables(g/d)	250	85.01	120
6.	Fruits	100	25.3	50.3
7.	Milk & milk products(g/d)	300	134	142
8.	Fat & oil(g/d)	20	30	26.8
9.	Sugar(g/d)	20	40	22
10.	Energy(Kcal)	2230	1512	1945
11.	Protein(g)	55	25.35	39.33
12.	Fat(g)	25	22.30	21.00
13.	Calcium(mg)	600	280	382
14.	Iron (mg)	21	10.53	16.00
15.	B Carotene (ug)	4800	1130	3120
16.	Vitamin C(mg)	40	24	35.2

#(ICMR,2017) Nutrition to Women Between 18-45 years of Age**

Conclusion:

Itmaybeconcludedthatestablishmentofkitchengardenshadimmenseroleintacklingtheproblemofmalnutritionandmicronutrientsdeficienciesinruralareas. Farm families were highly

satisfied by growing kitchen gardens which provide them daily best meal in their thali, nutrition, variety, economically well saving and easily available.afterintervention they had grown 21 items of vegetables like thatbottlegourd,bittergourd,greenchilli,brinjal,summersquash, tomato, cucumber, ridge gourd, okra, cluster bean,cow pea, spinach, coriander, cauliflower, onion, cabbage,carrot, pea, fenugreek,radish,papaya,guava, improved variety of millets of bajara and jowar in *Kharif, Jayad* and *Rabi*seasons.Women of Padli were efficiently doing kitchen gardening which contributes maximum nutritional meals in their daily Nutri -thali with fruits. productionofvegetablesatbeneficiariesincreased193.27percentwhichresultedinincreasedconsumption(89.55%)anddistribution (450 %) andmoney saving. Many Household women started nutria garden and achieve nutritional food security. Above study reveals cereals increased by 223.12,pulses by 39.00,green leafy vegetables 50.00, root tubers by 72,fruits by 50.3. Table further depicts that after intervention farming families receives energy 1945,fat 21.00,calcium 382, Iron 16.00, B carotene 3120, Vitamin C 35. Kitchengardens predicts as best source of nutritional and Food security in contexts of Accessibility, Replicability and Utility.Accessibility asKitchen gardens are helpful to provide nutritional & economically advantages. Nutritionally &Economically beneficial for farm families & Urban Households. Replicability asKitchen gardening are only given at KVK campus.Utility as by growing kitchen gardens a family can save about 50 thousand rupees yearly.

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Jump up to:[a b c] "Dietary Reference Intake: The Essential Guide to Nutrient Requirements" published by the Institute of Medicine and available online at https://www.nap.edu/read/11537/chapter/14?term=protein-energy+malnutrition#151

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ICMR,Guidelines e-mannual,2017.#(ICMR,2017)**Nutrition to Women Between 18-45 years of Age.