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Rural women: The key to agricultural production and food security

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Abstract

The study yielded a number of indicators that women play a crucial role in providing and improving household food security. Women are more likely to use available resources and skills to further improve the welfare of their families specially the nutrition and health aspect. Study also deals with the women's special knowledge of food values and diverse use of plants for better nutrition, health and income. Information regarding basics of household food security in terms of technological interventions and technological milestones also gathered for assurance of food security at household level.

Keywords: Rural women, agricultural production, food security

Introduction

Women is the key input of household at first, then partner in agriculture, industries and service sectors. Women are not only reproductive agent of civilizations but also a strong living supporters of sustainable development of any society. Although they constitute almost 48.5 percent (586.47 million) of the Indian population as per the census 2011 are lagging behind socially, in the society. The women's position in employment, earning education, health status and decision making opportunities are not up to the mark.

Women are the backbone of rural economy and their contribution in the farm operation range between 36-40 percent. In general 60 to 70 percent of labor input is provided by women which increases up to 80 percent in agriculture during peak of season i.e. harvesting time. According to United Nations publication on "WOMEN CHALLENGES OF 2002" they contribute 2/3 of the work's work hours, earn only 1/3 of total income, owns less than 1/10 of the world resources and 1/100 of world's property. Women in farm families work on average seven to eight hours a day in the field, this is besides their routine duties of cooking, cleaning fetching water. People normally think that farmers are men only. They also think that the supervision of agricultural development programmes is the pedagogy of men folk. Even extension services especially in agriculture are not the jobs compatible for women. But the fact is that such counts are nothing other than gender bias and discrimination against women.

As per the census 2011, out of total female main workers 55 percent were agricultural labours and only 24 percent are cultivators. However only 12.8 percent of the operational holdings were owned by women which effects the gender disparity in ownership of landholdings in agriculture.

In India 25 percent of country citizen are living below the poverty line and more than half a billion people live on agriculture and allied sectors for their livelihoods, This represents 12.5 percent of global population or 1 in 8 people. Higher rates occur in developing countries were 852 million about 15 percent of population are chronically undernourished. A report of social watch (2004) states that every day 840 million people of the world go hungry, more than 1.3 billion people are half fed and more than 2 billion people suffer from dietary deficiency. About 225 million Indians are chronically undernourished. About 83 percent children and 56 percent women are anaemic despite of good food availability in the State. Women suffers from hunger and poverty in greater numbers and to a great degree than men. India maternal mortality rates in rural areas are among the world's highest its accounts from 19 percent of live births and 27 percent of maternal death. The high level of post harvest losses

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and food waste in Asia and Pacific pose a threat to food security.

What is food security

Food Security, at the individual, household, national, regional, and global levels [is achieved] when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preference for a healthy and active life. FAO (2001). It involves not just production but access, not just output but process, not just technology but policy, not just global balance but national conditions, not just national figure but household realities, not just rural but urban consumption and not just quantity but quality also.

What Is Community Food Security

Community Food Security is a condition in which all community residents obtain a safe, culturally appropriate, nutritionally sound diet through an economically and environmentally sustainable food system that promotes community self-reliance and social justice. Hamm and Bellows (2003) ^[7] it involves social, economics and institutional factors and their interrelationships within a community.

Household Food security.

An adequate supply of nutritious and safe food to meet the nutritional needs of all household member (men and women, boys and girls).

Nutritional security

Food security is necessary but not sufficient for ensuring nutrition security. (International Fund for Agricultural development) Nutritional security not only involves access to food, but also to health care, a hygienic environment, and knowledge of personal hygiene. Nutrition Security as “Physical, economic, environmental and social access to balanced diet and clean drinking water for every child, woman and man”. Nutrition security would require following inputs:

Physical: Production and communication.

Economic: Purchasing power - one must have the money to buy commodities for a balanced diet, fruits and vegetables.

Environmental: Hygiene, sanitation and safe drinking water.

Social: Equity in gender terms, social factors including intra and inter family distribution of balanced diet.

At 1996 World food summit, the Rome declaration on food security reaffirmed “the right of everyone to have access to safe and nutritious food, consistent with the right to adequate food and fundamental right to everyone to be free from hunger. FAO (1996)

Dimensions of Food Security

A family is said to be food secure when it has necessary purchasing power to buy food grains in terms of quality, quantity and safety. Thus the overall food security entails some basic issues.

Availability

(produced, procured, arranged, imported)

Access

(distributed and made available)

Affordability

(people have means to get or purchase)

Absorption

(healthy/receptive enough to assimilate)

System Stability

(sustainability of production to supply)

The Food and Agriculture organisations of the United Nations, identified the four pillars of food security as Availability, Access, Utilization and stability.

Women and Food Security

Women are more concerned towards food security of their families by way of producing, procuring foods, feed and fodder management raising animals and kitchen orchard. It is well proven that Indian rural women are responsible for every phase of food cycle i.e Production, Preparation, and meal management, Post-harvest activities and Marketing. So here question arises that how much the involvement of women in food security of their families. Keeping this in view the present study aims at ensuring food security at household level with given objectives:

- To investigate the role of women in food security
- To find the role of women in supply of food items for their family food security
- To know the type of food security family gets with involvement of women economy

Multiple roles of women in food security

source endowment sectors Women play important roles in food security as food producers, keepers of traditional knowledge and preservers of biodiversity, food processors and preparers and food providers for their families. Because of their multiple roles, women considered as are the key players in overcoming food insecurity.

Women Contribution To Food Security

There is a strong link between food security, good nutrition and gender. Women are involved in variety of Agriculture operations such as crops production. Livestock and fish farming etc. They produce food and cash crops at subsistence and commercial level. At community level women undertake a range of activities that support natural resource management as soil and water conservation afforestation and their domestication. So all the links of the food chain including the four C' that women play role in -- Cultivation, Consumption, Conservation and Commercialization. Women contribution to food security as depicted in table below simply signified that they work as Agriculture producer, ensures food security as family food provider, nature conservator and environment protector so far.

Table: Role of Womens in Improving Household food security

Role	Very Important	Important	Fare Important	Less Important
Agricultural production	53.33	25.00	15.00	6.68
Ensuring food security	26.67	45.00	18.33	10.00
Nature conservation	5.00	33.33	45.00	16.67
Environment protection	13.79	29.31	43.11	13.79

This table therefore identified the various role of women as the major pillar of achieving household food security. They play an important role in food security as producer, Keepers of Traditional knowledge and preserver of bio-diversity, food processors and preparers and also as food providers for their families. Women have an important stake in preservation of environment and combat environmental degradations also. So because of their multiple role as depicted in table women are the key players in overcoming food insecurity. Therefore if sustainable agricultural development is to be translated into food and nutrition security, then the active engagement of women is absolutely necessary. Their involvement requires the development agents to go beyond traditional approaches for sustainable development.

Women as Farmers and Food Producer

Economic survey 2017-18 says that with growing rural to urban migration by men, there is feminization of agriculture sector with increasing number of women in multiple roles as cultivators entrepreneur and labourers. Globally there is empirical evidence that women have a decisive role in

ensuring food security and preserving agro- biodiversity. Women produce a large part of the world's food. Exact data is very hard to come but FAO estimates that women are the main producers of the world's staple foods: maize, wheat and rice. Overall, women are responsible for about 50 per cent of the world's food production

According to FAO data it shows that if women provided the same opportunities in terms of access to productive resources (seeds, fertilizers tools, loans etc.) as men, they certainly increase their yield by 20-30 percent. That reduces about 12-17 percent malnutrition among human being as we be able to feed approximately 150 million more people. (FAO 2011)

In India in Agricultural production the participation level of women is almost 60 to 90 percent. Women are crucial in translation of the products of a vibrant agricultural sector into food and nutrition security for their households. When women have income substantial evidences indicates that the income is more likely to be spent on food and childrens needs.

The major role the women play in agriculture production were described in the table given below –

Table: Farm women participation in different agricultural operations

Activities	Dominant Role	Supporting Role	No Role
Field Preparation	14.00	13.67	72.33
Paddy transplantation	31.66	26.67	41.67
Compost Making	49.33	25.67	25.00
Carrying inputs of field	11.66	25.33	63.00
Manuring & Fertilizer	3.33	29.33	67.33
Irrigating the crops	3.0	11.67	85.53
Construction of field Channels	11.0	14.33	74.67
Weeding Operation	59.67	37.00	3.33
Harvesting the crops	49.66	26.67	23.67
Thrashing operations	2.67	51.00	46.33
Storage of farm produces	60.33	30.39	9.33
Tending farm cattle	95.33	2.67	2.00
Collecting fodders	92.00	2.33	5.67
Selling live stock	69.67	13.33	17.00

The table on agriculture operations shows a dominant role, and supportive role played by women in various agricultural activities. It is clearly shown here that involvement of women specially in livestock tending and fodder collecting, weeding operation and harvesting involves women as to play a dominant role in agriculture production. Storage of farm produces activities mainly done by women and a maximum of 60.33 percent women were found to have their dominant role. Besides these women were also pre dominantly play important role in activities i.e compost making and paddy transplanting etc.

They perform many tasks in households, in addition to staple crop production they also grow legumes and vegetables for their families. They were also responsible for post harvest food processing, storage, transport, and marketing of their produces.

Women As Food Processors, Preparers And Providers

"Women are the backbone of rural societies as they grow and process food and make sure their families are well-fed and

well-nourished" IFDA (International Fund for Agricultural Development) thus women are universally responsible for food preparation for their families and engaged in various stages and steps of processing these foods. Women are responsible for seed drying cleaning, selection and storage also. They have developed simple selection and storage methods for all types of the food grains for their family feeding purpose. They pointed that the food grains are dried under the sun will remain maintained if we kept them in an air-tight container.

An attempt was made to know the actual role and activities which were made by the women for ensuring food security in their families. It was measured with a five point scale starting from 'Nil' to 'Once in six month' and the result is reflected in table.

Table: Role and involvement of women in food security

Role of women in food security	Degree of involvement			
	Nil	Every day	Once in a week	Once in month
Supply of green leaves from outside				
(a) Collection of wild green leaves	13.84	27.69	47.69	10.76
(b) Cultivations in household	47.69	27.69	12.30	7.69
(c) Purchase	27.69	1.53	41.53	21.53
(d) Exchange	56.92	0.00	13.84	24.61
Supply of milk and milk products				
(a) Rearing dairy animals	66.15	32.30	1.53	0.00
(b) Purchase of milk and milk products	52.30	13.84	9.23	18.46
Supply of animal protein food				
(a) Meat of animals/birds reared by women	58.46	9.23	7.69	20.00
(b) Eggs of hen/duck reared by women	52.30	12.30	20.00	13.84
(c) Fishes from local water reservoirs	95.38	0.00	4.61	0.00
(d) Purchase	16.92	0.00	26.15	35.38
Supply of fruits				
(a) Production at homestead land	84.61	3.07	1.53	1.53
(b) Collection from outside	58.46	0.00	3.07	30.76
(c) Exchange	83.07	1.53	6.16	6.15
(d) Purchase from market	6.15	0.00	29.23	38.46
Preparation of foods				
(a) Fermentation of cereals and pulses	23.07	43.07	3.07	23.07
(b) Preparation of dry food mixes	38.46	16.92	27.69	13-84
(c) Frying of pulses	49.23	18.46	16.92	10.76
(d) Preservation of food items	49.23	26.15	9.23	0.00
(e) Method for extension of shelf life of fruits/vegetables	76.92	12.30	9.23	1.53
(d) Extraction of oil through indigenous method at home	87.69	3.07	1.53	1.53
Mobilization of resources for food				
(a) Labour work	20.00	55.38	13.84	7.69
(b) Part time economic activity	64.61	10.76	16.92	7.69
(c) Barter system	52.30	6.15	20.00	20-00
(d) Selling of farm /bi-products	53.84	7.69	18.46	10.76

Table reveals that highest percentage (47.69) of women supply green leaves weekly for their families as compare to the women were involved in supply of milk and general tendency of the women to rear the cattle at home is very less. The supply of protein foods by the women in family is made weekly (26.15) and monthly (35.38). Processing and preparation of foods to secure food quality and quantity involves higher percent of women i.e. about (43.07) were involved mainly in enhancement of shelf life of cereals and pulses at home. So far as the involvement of women was found maximum when women were worked as labourers (55.38) for mobilization of resources acquired for family food.

Types of nutrition security the family gets by involvement of women as food processors, preparers and providers

Table next is an attempt to know the type of security the

family gets with the involvement of women as food processors, preparers and providers. The Questions were asked through discussion and answers were presented in table.

Particulars	Nutrition
Supply Green Leaves and Vegetables	Provides minerals and vitamins
	Protects Our Body From Deficiency Diseases
	Vitamins controls metabolic reactions in the body
	Minerals For Skeletal, Nervous System, Muscular Contraction And For Constitution of Enzymes
Supply of Milk and Milk Products	Milk Serves As The Sole Food
	Essential Amino Acids of Milk Required For Maximum Tissue Synthesis
	Casein Accounts For 4/5 of the protein
	Minerals, Riboflavin, Calcium and Vitamin
Supply of Eggs through Rearing of Poultry/Duck	Cheese Made from milk contains all the essential amino acids having
	Eggs Are Excellent Sources of protein
Supply of mush -room through collection from locality in rainy season	Contain a good deal of Fat, Vitamin-A And B, Iron, Phosphorus and Calcium
	High Porcine Content
	Medicinal Effect on diabetics hypertension, heart disease acidity obesity, constipation Etc
Supply of honey through bee keeping	It Is Therefore Known As "The Meat of the Poor."
	Honey Is A Rich Source of Iron
	It Has High Energy Value
	It Is Used For Prevention of various common diseases like cold, cough

Women involved in supply of green leafy vegetables insure vitamin and mineral requirement for their families. Similarly through the supply of milk and milk products they try to insure their family protein and calcium requirement. Thus women play a great role in preparation of food materials to provide energy, protein, iron and vitamin. Nevertheless food security is not just a question of availability of food nor of financial resources to access it. People must also have consistent access to quality, and nutrition in order to ensure food security.

Women as preservers of biodiversity

To achieve food security agriculture system must undergo a transformation in order to meet 21st century challenges of Climate change and rising population. Within this process conservation of agricultural bio-diversity has become a necessary tool and it appears that women have a very important role to play in the conservation of agriculture diversity and it is also very necessary that their knowledge must be given due consideration while planning for the policies for food security.

Women are often the preservers of traditional knowledge of indigenous plants and seeds. They are the ones responsible for supplying their families with food and care, and they have a special knowledge of the value and diverse uses of plants for nutrition, health and income.

- Rural women, in their role of farmers, are key to maintaining biodiversity. They improve and adapt plant varieties, cultivate plants, and store and exchange seeds.

- In most communities, women hold the most reliable knowledge about promoting food security, preserving threatened food supplies, and ensuring their families' survival in the face of shortages.
- Women preserve their native plant and animal species for their interest in nutritive quality of the food items.
- Women tend to conserve their traditional foods

Women as food traders

Women should not only be partner in agriculture but they also should take lead in entrepreneurship and value addition. However it is when we talk about food security that all the domestic labours of women come into the light they cultivate, look after the house, kids and livestock, select and prepare food. They supplement their family income through agro-based entrepreneurship. More and more income they obtained from sells all these were invested back into the family in form of quality and nutritious food education and proper health care. Identified agro based entrepreneurship for women are:-

- Ø Processing of spices & condiments
- Ø Milk and milk products
- Ø Meat, fish and chicken
- Ø Extraction of seeds from fruits & vegetables
- Ø Preparation of snacks foods
- Ø Mushroom cultivation
- Ø Frozen vegetables
- Ø Fruit juices
- Ø Nectar making
- Ø Dehydrated products
- Ø Potato chips/waffers
- Ø Preserved foods

The analysis provides sufficient evidences to indicate the role of women ensuring food security at macro level as well as at the level of the household and at the individual level, So the key points to ensuring food and nutrition security are-

What women have to do for household food and nutrition security ?

1. Balanced food production requires promotion of proper post harvest processing which is also important to prevent wastage, generate employment, and making food available to population.
2. Appropriate technologies to extend shelf life of various foods need to be developed.
3. There is need of more innovative technologies for value added foods for nutritional security.
4. Quality of foods needs to be given due emphasis.
5. Consumption behaviour at the household requires to be modified to meet the nutritional need of the entire household
6. Awareness generation in health and nutrition is must.
7. Home Science College must take efforts to develop dietary guidelines in local languages and guide women to diversify the diet using local foods.
8. To reduce the incidences of degenerative diseases and increase the productivity of the population maintaining healthy life style, plant based diet i.e. increased intake of whole grains, fruits, vegetables and limiting the intake of total and saturated fat, sugars and salt and physical activity be promoted.
9. There is a need to establish more R & D institutes dealing with food, nutrition, processing and post harvest preservation of foods.
10. Food based approach to control micronutrient

malnutrition is challenge before scientists to investigate how best the vast era of foods that are available at doorstep could be optimally used in judicious combination to combat micronutrient deficiencies.

11. In order to be globally competitive there is urgent need for training of personnel for quality analysis of foods. People need to be aware about safety and quality aspects of food.
12. Simple, feasible, energy saving, eco-friendly technologies like simple dehydration leading to negligible changes in nutritional and sensory attributes of foods could be explored for nutritional security
13. Documentation of traditional plant foods and awareness generation among population for their increased use through involvement of schools and institutions, social groups, mass media is the prime necessity.
14. In addition to awareness generation propagation of traditional plant foods through backyard gardens, home or community gardens as a measure for increased use among the population.
15. Awareness generation among the population on nutrition, small family norms, health, environment and sanitation is the key for the success of all government and non-government programmes on health and nutrition and be on priority of nutrition and health professionals.

Women's major technological interventions proposed to ensure food security:

- Cropping systems, Intensification, diversification to vegetables and improved production technologies.
- Orchard management, livestock management and backyard poultry.
- Organic farming, Seed and planting material and Farm mechanization.
- Allied enterprises- Mushrooms, fisheries, apiary.
- Micro-watershed, water harvesting and protected cultivation.
- Management of non arable land, rural energy.
- Agro-processing value addition and marketing.
- Drugery reduction interventions

Major technological milestones identified to ensure food security

Formulation of infant food using buffalo's milk: the basis for India's flourishing baby food industry today

Extraction of plant protein for the nutrition base for a new class of food supplements: Energy Food, Indian Multipurpose Food, Miltone, Bal Ahar and several weaning foods have been the most preferred foods in human welfare/relief activities throughout the developing world. Improvement in the efficiency of processes for handling, drying and milling of staple cereals to avoid qualitative and quantitative losses

Design and fabrication of energy-efficient and cost-effective equipment for milling food grains and pulses

Refinement of millets and production of diversified millet products with enhanced nutritive value. Evolution of efficient methods for parboiling paddy to render the resultant rice nutritious and organoleptically acceptable. Formulation of products with built-in convenience (mixes) for preparing traditional Indian snacks. Automation of the process of making traditional Indian snacks. Production of high-nutrition products from coarse grains (e.g., semolina and flakes)

Preservation of fruits & vegetables: Simple processes to increase shelf-life.

Storage, transportation/shipping and packaging of perishable food materials: Controlled /Modified atmosphere and similar technologies.

Papad making/leaf-cup making machines: Basis for a huge cottage industry.

Diversification of the use of spices into non-traditional value-added "derived" spice products.

Food colours from beet root, safflower, kokum and grapes

Fortification and enrichments of common foods i.e Vit A, Iron, Iodine.

Prepare special nutritious supplements for therapeutic purpose i.e Amylase rich flour.

Conclusion

The rural women plays an essential role in the four pillars of food security i.e availability, accessability,utilization and stability. However women in rural areas are at a disadvantage due to the fact that they do not have access to the same opportunities or resources owing to stereotypical issues based on gender. Going by the findings of the study it is generally revealed that women play a significant role in ensuring household food security. Ensuring national food self sufficiency translated through the household food security. While the determinations of the food security situation of households may provide an indispensable tool for assessment and planning, monitoring food security situation of particular population.

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