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FACTORS EFFECTING THE ADOPTING OF DIETARY DIVERSITY FOR NUTRITIONAL SECURITY AMONG RURAL FARM WOMEN IN WARANGAL, TELANGANA: A DESCRIPTIVE RESEARCH

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ABSTRACT

Dietary diversity served as a practical proxy for the micronutrient adequacy of diets consumed by rural farm women. The farm women remained disproportionately vulnerable to undernutrition despite its central role in agricultural production and household food provisioning. The present study was conducted among 30 rural farm women of reproductive age group (15 – 49 years) Warangal district village. The results revealed that majority of the respondents belonged from a selected village in (56.67%) middle age group followed by young (30.00%) and old (13.33%) age group. The category unveiled the respondents profile consisted of majority (43.33%) with Schedule caste followed by 33.33 per cent of OBC respondents and 16.67 per cent were from general category whereas only 6.67 per cent belonged to schedule tribes (ST) accounted the least. The family type of respondents belonged to nuclear (60.00%) and (40.00%) joint family type. While the factors affecting them to attain dietary diversity showed the economic constraints and agricultural as well as household work load hindered the most. Poor market assess, low decision making authority, poor nutritional knowledge and low livestock ownership were some more prominent contributors for their perceived constraints. The bottom most constraints ranked by the respondents were limited nutrition contact, limited homestead or kitchen garden followed by social norms and poor sanitation and unsafe water. The perceived constraints highlight the diverse yet important issues which rural women encounter in her highlighted life.

KEYWORDS: Dietary Diversity, Food Security, Nutritional Security, Nutrition Sensitive Agriculture, Rural Farm Women.

Rural farm women occupy a paradoxical position within the Indian and global agri-food system. They contribute a substantial share of agricultural labour, household food processing and preservation and child care. Yet they remain among the population groups most vulnerable to undernutrition. Women farmers manage the food security of their households but socio-cultural norms often lead them to neglect their own dietary needs, so that the benefits of the agricultural do not translate automatically into improved nutrition for the women produced it. Whereas, rising agricultural workloads comprise women's own energy balance, rest and self-care (Gupta, 2024). Dietary diversity is defined as the number of different food groups consumed over a given reference period; it is one of the most widely used and validated proxy indicators of diet quality and micronutrient adequacy (Martin-Prevel *et al*., 2017).

Nutritional security extends beyond calorie sufficiency to encompass consistent access to a diverse range of nutrient-rich foods, adequate care and feeding practices and a sanitary living environment which enables the biological utilization of consumed nutrients. India remains the largest producer of milk, wheat and fruit whereas in contrast carry a heavy burden of undernutrition with more than half of women of reproductive age classified as anemic (Harza *et al.,* 2025). This pattern is not new, a micro-level study of 120 farm households in Karnataka found that only 47 per cent of respondents were nutritionally secure, based on calorie intake relative to recommended dietary allowance, despite substantial gains in farm productivity and household income in the more agriculturally progressive study area (Kiresur *et al.,* 2010). This coexistence of agricultural abundance and persistent undernutrition indicates that policy attention needs to shift from food

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security which emphasizes calorie availability towards nutritional security, which addresses undernutrition, protein hunger and hidden hunger concurrently.

For rural farm households the relationship between what is grown and what is eaten is not automatic. Farm production diversity, market participation, women empowerment and intra-household time allocation mediate whether agricultural diversity us converted into dietary diversity from women and subsequently into nutritional security (Gupta *et al.,* 2019; Ogutu *et al.,* 2014). Farm women's heavy workload in both agricultural and domestic spheres further restrict the time available for food preparation, self-care and participation in nutritional education program thereby weakening the practical link between agricultural output and women's own dietary intake (Yadav *et al.,* 2026). Nutrition-sensitive agricultural interventions including homestead food production, kitchen gardening and livestock promotion are increasingly recognized as mechanisms through which extension systems can directly improve rural women's dietary diversity (Dominic *et al.,* 2023; Hazra *et al.,* 2025).

Despite a growing body of evidence on agriculture nutrition linkages, a synthesis focused specifically on rural farm women rather than on households or children remains limited within the Indian extension education literature. This review therefore synthesizes available

open access, peer-reviewed evidence of rural farm women with a view to informing extension programming and policy in this domain.

MATERIAL AND METHODS

Research Design

A study adopted a descriptive research design to systemically describe the socio-demographic profile of rural farm women and to identify the ranks based on respondents' lived experience.

Locale of the Study

The study was conduced in Rural Warangal district, representing the Central Telangana Zone (CTZ) of Telangana state, India. Warangal district was purposively selected as per the high prevalence of anaemia among women and prevalence of stunting among children 5 e" of age. Whereas, the mandal and village was selected randomly.

Sampling Design

From the randomly selected village a total of 30 rural farm women of reproductive age (15-49 years). The sample size of 30 was considered adequate for a descriptive village level study.

Data Collection Tool

A structured interview schedule was developed for data collection comprise of two parts. Part-I was consist of socio-demographic variables to assess the profile of the respondents.

Whereas, Part-II was consisted of twelve pre-decided factors (Table-2) to analyze the factors perceived influence on the respondents.

Ranking Technique

Each respondent was asked to assign ranks to the twelve factors in ascending order of their perceived influence. Based upon their ability to attain dietary diversity based on their personal experience. The most hindering factor was assigned Rank 1 whereas, Rank 12 was assigned to the least hindering factor experienced.

Analysis of Ranked Data

The ranks assigned by each of the 30 respondents to every factor were recorded in a respondent multiply factor rank matrix. For each factor, the ranks assigned by all 30 respondents were summed. Then the sum was divided by the number of respondents (n=30) to obtain the mean rank score for that factor, as follows:

$$\text{Mean Rank} = \frac{\text{Sum of the ranks assigned to the factor by all the respondents}}{\text{Number of respondents}}$$

Table 1. Sampling design at a glance

S. No.	Particulars	Details
1.	District	Purposively (POSHAN, 2019)
2.	Mandal	Randomly
3.	Village	Randomly
4.	Sample size (n)	30
5.	Sampling Technique	Simple random sampling with purposive district selection *(Mixed)*

RESULTS AND DISCUSSION

Socio-demographic Profile of the Respondents'

Table 2 presented in the study highlight the socio-demographic profile of the selected respondents. The findings showed that majority (56.67%) of the rural farm women belonged to middle age group, followed by young (30.00%) and old age (13.33) group. The category distribution unfolded that 43.33 per cent of women belonged to Schedule Caste (SC) and 33.33 per cent were from Other Backward Castes (OBCs). The respondents accounted for General category were 16.67 per cent and the least respondents accounted for (6.67%) Schedule Tribes (ST). More than half (60.00%) of the respondents came from nuclear family type and the remaining were from (40.00%) joint family.

Table 2. Demographic profile of the respondents **(n=30)**

S. No.	Particulars	Category	F	%
1.	Age	Young (15 – 26 years)	9	30.00
		Middle (27 – 38 years)	17	56.67
		Old (39 – 49 years)	4	13.33
		Total	**30**	**100.00**
2.	Category	General	5	16.67
		OBC	10	33.33
		SC	13	43.33
		ST	2	6.67
		Total	**30**	**100.00**
3.	Family Type	Joint Family	12	40.00
		Nuclear Family	18	60.00
		Total	**30**	**100.00**

Status of dietary diversity among rural farm women

Across the reviewed studies, a substantial proportion of rural women failed to achieve minimum dietary diversity. In a survey of 5,046 women of reproductive age in rural Mali, only 27 per cent of women were able to achieve the MDD-W threshold, with the lowest consumption of animal-source foods and vitamin-A rich foods recorded among the most food insecure households (Abudra *et al.,* 2019). In rural Bangladesh, only about nine per cent of women achieved combined nutritional security, defined jointly by minimum dietary diversity and adequate caloric intake (Hira *et al.,* 2025). Comparable patterns of cereal dominant diets with limited intake of pulses, dairy, fruits and animal source foods were reported among the rural women across South Asian and Sub-Saharan African farm households (Gupta *et al.,* 2019; Muthini *et al.,* 2020). These findings indicate that low dietary diversity persists among rural farm women even in regions with substantial agricultural output, suggesting that farm production alone does not guarantee dietary adequacy for the women who generate it.

Determinants of dietary diversity in farm households

Farm production diversity is positively though modestly associated with women's dietary diversity across the reviewed studies. In central Tunisia, farm production diversity was positively associated with women's dietary diversity particularly through foods produced for home consumption (Gaillard *et al.,* 2022). In Kenya, farm production diversity was significantly associated with women's and household dietary diversity although this association did not extend to children's diets (Muthini *et al.,* 2020). While comparative study of Kenya and Tanzanian smallholders found that the strength of this relationship varied with market access (Kissoly *et al.,* 2020). In West Africa, on-farm diversity combined with market participation was positively associated with the dietary diversity of rural mothers (Bellon *et al.,* 2016). Evidence from India further shows that for a given level of market purchases, women with greater decision making authority over agricultural production achieve significantly higher dietary diversity scores than women with limited authority (Gupta *et al.,* 2019) indicating that market integration and women's empowerment operate as complementary rather than substitute pathways to dietary improvement.

Table 3. Factors hindering dietary diversity attainment among rural farm women

S.No.	Determinants	Description	Mean Rank	Rank
1.	Low farm production diversity	Production remains important, especially for subsistence households, but evidence suggests that production diversity alone has a weaker effect than income and market integration unless it includes nutrient-rich crops, livestock and kitchen gardens.	3.13	III
2.	Poor market access	Market access often has a stronger association with dietary diversity than production diversity because households increasingly purchase diverse foods.	5.13	V
3.	Low household income/ purchasing power	Income determines affordability of nutrient-dense foods such as fruits, vegetables, pulses, milk and eggs.	1.27	I
4.	Low household decision-making authority	Decision-making power affects food allocation, dietary choices and resource utilization. FAO identifies women's agency as a major determinant of nutrition outcomes.	5.97	VI
5.	Limited control over income, input use, output sales and group memberships	Women's financial autonomy strongly influences food purchasing decisions and household diet quality. Women's agency is one of the most important pathways identified in recent reviews	1.90	II
6.	Socio-cultural norms of self-neglect	Gender norms influence food allocation and women's autonomy. Their effects are substantial but are often mediated through income control and decision-making rather than acting independently.	11.03	XI
7.	Heavy agricultural and domestic workload/ time poverty	Time poverty reduces time available for food preparation, childcare and self-care, negatively affecting women's diet quality.	3.87	IV
8.	Lack of nutrition knowledge/ awareness	Nutrition education consistently improves dietary diversity even after controlling for income. Women with better nutrition awareness tend to consume more diverse diets.	7.03	VII
9.	Limited extension/ nutrition education contact	Extension services support nutrition-sensitive agriculture and improve knowledge but their effect is usually indirect through adoption of improved practices.	9.43	IX
10.	Low livestock ownership	Livestock ownership improves access to milk, eggs and animal-source foods and contributes positively to dietary diversity.	7.73	VIII
11.	Limited homestead/ kitchen garden production	Homestead gardens improve availability of fruits and vegetables, but their contribution is generally smaller than income, market access and women's agency.	9.77	X
12.	Inadequate sanitation and unsafe water	WASH is a critical determinant of nutritional status, infections and child growth, but it has a comparatively weaker direct relationship with dietary diversity itself.	11.73	XII

Women's empowerment encompassing decision making in production, control over income and access to resource is consistently associated with improved dietary outcomes. Among vulnerable tribal populations in Odisha, women's empowerment is positively associated with household dietary diversity and with reduced child underweight and wasting with empowerment in input use, output sales, income control and group membership each contributing independently to improved outcomes (Ogutu *et al.,* 2014). Extension-led Interventions in India similarly demonstrate that structured educational modules on diet and nutrition improve farm women's knowledge and dietary practices in aspirational districts (Dominic *et al.*, 2023). While experimental evidence from a two-year integrated homestead food production and nutrition behaviour change programme in Burkina Faso shows that combining agricultural training with nutrition education increased women's empowerment and dietary diversity and reduced maternal underweight, alongside reductions in child wasting, anaemia and diarrhoea even though the programme significantly increased the time women spent on agricultural activities (van den Bold *et al.,* 2021).

Structural and time-related constraints continue to restrict rural farm women's ability to translate agricultural resources into dietary diversity. A study applying Garrett Ranking Technique among rural farm women in Adilabad, Telangana identifies heavy workload and associated time poverty as the foremost perceived constraint to nutritional security ahead of economic and empowerment related barriers (Yadav *et al.,* 2026). Instrumental variable evidence from Ghana refines this picture by showing that the nutritional consequences of time poverty depend on whether the underlying work is compensated: time poverty driven by unpaid domestic and care work significantly worsens household food insecurity whereas time poverty driven by paid work is associated with reduced food insecurity, an effect operating largely through household asset accumulation (Martey and Koomson, 2025). Livestock ownership by contrast is associated with improvement nutritional security through greater access to animal source foods alongside women's education and household sanitation status (Hira *et al.,* 2025). Kitchen garden interventions in rural eastern India similarly improve women's dietary diversity and self reported health status particularly where interventions are combined with nutrition education and sustained monitoring (Hazra *et al.,* 2025).

CONCLUSION

Dietary diversity is a critical and measurable link between agricultural production and nutritional security of rural farm women. The rural women of Warangal district majority belong to medium age group followed by young and old age group. Meanwhile the category distribution unfolds the respondents were from SC followed by OBC category and remaining accounts for General and ST. The family type revealed that majority were from nuclear (60.00%) and remaining (40.00%) respondents were from joint family type. The rural farm women were asked to rank the perceived factors affecting them to attain dietary diversity. The results highlighted economic factors were ranked 1st and 2nd (Low household income; and Limited control over income) were the prominent factors. The 4th and 5th ranks unveiled that agricultural production and double burden of farm and household work accounted as distinguished factors. Poor market asses (5th rank), low decision making authority (6th rank), lack of nutritional knowledge (7th rank) and limited or low livestock ownership (8th rank) accounted as other eminent factors. Limited nutrition education contact (9th rank), limited homestead (10th rank), social norms (11th rank) and inadequate sanitation and unsafe water (12th rank) were ranked bottom by the respondents.

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