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Socio-economic profile and nutritional status of farm women in Barwani, an Aspirational district of Madhya Pradesh, India

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Abstract

Farm women are critical to agricultural production, yet their nutritional status remains a major rural development concern, particularly in Aspirational Districts. This study assessed the socio-economic profile and nutritional status of 140 farm women in Barwani district, Madhya Pradesh, using a descriptive research design and multistage sampling. Data were collected through structured interviews, anthropometric assessment and observation, and analysed using descriptive statistics and a Composite Nutritional Status Index (NSI). Most respondents were middle-aged (46.43%), illiterate (31.43%), smallholders (36.43%) and belonged to medium-income joint families (70.71% and 67.14%, respectively). Dietary inadequacy was observed among 90.00 per cent of the respondents. Underweight prevalence was 40.71 per cent, while 66.43 per cent of the respondents had moderate nutritional status. The findings indicate considerable nutritional concerns among farm women and highlight the need for improved dietary diversity, nutrition education and better access to nutritious foods.

Keywords: Farm women, socio-economic profile, nutritional status, body mass index, dietary adequacy, Aspirational district, Barwani

Introduction

Farm women play an important role in agricultural production as well as in household food and nutrition management. They are involved in several activities such as crop production, livestock care, food processing and household responsibilities. Despite their significant contribution, their nutritional needs are often not adequately addressed. The nutritional well-being of women is influenced by dietary intake, workload, access to food, socio-economic conditions and household food distribution practices (FAO, 2011; Rao & Pingali, 2018) [3, 10].

The nutritional status of farm women is particularly important because they perform physically demanding agricultural and household activities. Inadequate dietary intake and limited consumption of diverse food groups may affect their health, work capacity and overall well-being. Studies among farm and tribal women have also reported nutritional and socio-economic concerns, indicating the need for greater attention towards women's nutrition in rural areas (Dave *et al.*, 2019; Joshi *et al.*, 2018) [1, 6].

The Government of India launched the Aspirational Districts Programme (ADP) in January 2018 with the objective of improving the socio-economic development of relatively underdeveloped districts. The programme gives particular

emphasis to key areas including health and nutrition, education, agriculture and basic infrastructure (NITI Aayog, 2018) [9]. Nutrition improvement is therefore an important component of development efforts in Aspirational Districts. Barwani is one of the Aspirational Districts of Madhya Pradesh and has a predominantly rural and tribal population. Farm women in the district contribute substantially to agricultural and household activities, making their nutritional well-being an important area of concern. However, there is limited district-specific information covering different dimensions of nutritional status, including dietary intake, body mass index, clinical signs, food consumption and workload.

Therefore, the present study was undertaken to assess the socio-economic profile and nutritional status of farm women in Barwani district of Madhya Pradesh. The study considered socio-economic characteristics along with dietary, anthropometric and work-related aspects to provide a broader understanding of the nutritional status of farm women. The findings may help extension agencies and nutrition programmes in planning suitable and locally relevant interventions for improving the nutritional well-being of farm women in Aspirational Districts.

Research Methodology

The study was conducted in Barwani district of Madhya Pradesh, which is an Aspirational District under NITI Aayog's Aspirational Districts Programme. The district is predominantly tribal and agriculture is a major source of livelihood. A descriptive research design was adopted to assess the existing nutritional status of farm women and the factors associated with it. A multistage sampling procedure was followed for selection of respondents. All seven blocks of Barwani district, namely Barwani, Thikri, Rajpur, Niwali, Pansemal, Pati and Sendhwa, were selected. Two villages from each block were selected randomly, resulting in 14 villages. From each selected village, 10 households were randomly selected, making a total sample of 140 farm women households. The independent variables included age, education, land holding, household income, family type, family size, monthly food expenditure, dietary intake pattern, food distribution within the family, distance to the nearest

market and monthly PDS access. The dependent variable was nutritional status of farm women, assessed through Body Mass Index (BMI), workload and physical exertion, clinical signs of nutritional deficiency, protein/protective food intake and workload-related energy expenditure. Primary data were collected through a structured interview schedule, personal observation and anthropometric measurements. The collected data were coded, tabulated and analysed using appropriate statistical techniques such as frequency, percentage, mean, standard deviation.

Results and Discussion

The important socio-economic characteristics considered in the study were age, education, family type, family size, caste, landholding, household income, annual farming income, farming experience, monthly food expenditure and access to the Public Distribution System (PDS). The data related to these characteristics are presented in Table 1.

Table 1: Socio-economic and situational profile of farm women

Variable	Category	Frequency	Per cent
Age	Young (<35 yr)	46	32.86
	Middle (35–50 yr)	65	46.43
Education	Old (>50 yr)	29	20.71
	Illiterate	44	31.43
	Primary (up to 5th)	29	20.71
	Middle (up to 8th)	29	20.71
	Secondary (up to 10th)	21	15.00
	Senior secondary (up to 12th)	14	10.00
	Graduate and above	3	2.14
Land holding	Marginal (<1.0 ha)	46	32.86
	Small (1.0–2.0 ha)	51	36.43
	Semi-medium (2.1–4.0 ha)	32	22.86
	Medium (4.1–10.0 ha)	11	7.86
	Large (>10 ha)	0	0.00
Household income	Low	18	12.86
	Medium	99	70.71
	High	23	16.43
Family type	Nuclear	46	32.86
	Joint	94	67.14
Family size	Small (≤ 4)	20	14.29
	Medium (5–8)	79	56.43
	Large (>8)	41	29.29
Monthly food expenditure	Low	23	16.43
	Medium	86	61.43
	High	31	22.14
Dietary intake pattern	Inadequate	126	90.00
	Adequate	14	10.00
Food distribution	All family members eat together	72	51.43
	Equal quantity served to all	59	42.14
	Adult male served hot food first	89	63.57
	Women eat after serving others	91	65.00
	Special importance to children's food	105	75.00
	Separate arrangement for elderly	41	29.29
Distance to nearest market	≤ 10 km	46	32.86
	10.1–20 km	67	47.86
	>20 km	27	19.29
Monthly PDS access	Yes	103	73.57
	No	37	26.43
Timely ration among PDS users (n = 103)	Yes	67	65.05
	No	36	34.95

Age

Table 1 shows that the largest proportion of the respondents (46.43%) belonged to the middle-age group (35–50 years), followed by young-age respondents (32.86%) and old-age respondents (20.71%). Thus, the majority of the farm women were in the middle-age category.

Education

Table 1 shows that the highest proportion of respondents (31.43%) were illiterate. Equal proportions (20.71% each) had completed primary education up to 5th standard and middle school education up to 8th standard. Further, 15.00 per cent had studied up to secondary level, 10.00 per cent had attained senior secondary education and only 2.14 per cent were graduates or above. Thus, the educational status of the respondents was relatively low.

Size of land holding

Table 1 shows that the majority of the respondents (36.43%) possessed small landholdings of 1.0–2.0 ha, followed by 32.86 per cent with marginal landholdings below 1.0 ha and 22.86 per cent with semi-medium landholdings of 2.1–4.0 ha. Only 7.86 per cent had medium landholdings of 4.1–10.0 ha, while none possessed large landholdings above 10.0 ha. Thus, most respondents were associated with small and marginal landholdings.

Household income

Table 1 shows that the majority of respondents (70.71%) belonged to the medium household-income category, followed by 16.43 per cent in the high-income category and 12.86 per cent in the low-income category. The mean annual household income was ₹72,085.15 with a standard deviation of ₹25,418.78. Thus, most respondents belonged to the medium-income category.

Family type

Table 1 indicates that 67.14 per cent of the respondent households belonged to the joint family category, whereas 32.86 per cent belonged to nuclear families. Thus, the majority of the respondent households were joint families.

Family size

Table 1 shows that 56.43 per cent of the respondent households had medium-sized families of 5–8 members, followed by 29.29 per cent with large families of more than 8 members and 14.29 per cent with small families of up to 4 members. Thus, medium-sized families predominated in the study area.

Monthly food expenditure

Table 1 shows that the majority of the respondents (61.43%) belonged to the medium monthly food expenditure category, followed by 22.14 per cent in the high expenditure category and 16.43 per cent in the low expenditure category. The mean monthly food expenditure was ₹2,843.23 with a standard deviation of ₹412.62. Thus, the majority of the respondents had medium monthly food expenditure.

Dietary intake

Table 1 shows that the majority of the respondents (90.00%) had inadequate dietary intake, whereas only 10.00 per cent

had adequate dietary intake. Thus, inadequate dietary intake was predominant among the farm women.

Food distribution within the family

Table 1 shows that 75.00 per cent of the respondents gave special importance to children's food, followed by women eating after serving other family members (65.00%) and adult male members being served hot food first (63.57%). Further, 51.43 per cent reported that all family members ate together, while 42.14 per cent reported equal quantities being served to all family members. A separate food arrangement for elderly members was reported by 29.29 per cent of respondents.

Distance to nearest market

Table 1 shows that 47.86 per cent of the respondents lived at a distance of 10.1–20 km from the nearest market, followed by 32.86 per cent who lived within 10 km and 19.29 per cent who lived more than 20 km away. Thus, the majority of respondents had a medium distance to the nearest market.

Monthly PDS access

Table 1 shows that 73.57 per cent of the respondents had monthly access to the Public Distribution System (PDS), whereas 26.43 per cent did not have access. Among the PDS beneficiaries, 65.05 per cent received their ration on time, while 34.95 per cent did not receive it on time. Thus, the majority of respondents had access to PDS, although timely receipt of ration was not universal.

The nutritional status of the farm women was assessed using selected indicators, namely Body Mass Index (BMI), workload and physical exertion, clinical signs of nutritional deficiency, protein and protective food intake, and workload and energy expenditure. The data related to these nutritional status indicators are presented in Table 2.

Table 2: Nutritional status indicators of farm women (n = 140)

Indicator	Category	Frequency	Per cent
Body Mass Index (BMI)	Underweight (<18.5)	57	40.71
	Normal (18.5–24.9)	77	55.00
	Overweight (25.0–29.9)	6	4.29
	Obese (>30)	0	0.00
Workload and Physical Exertion	Low	24	17.14
	Medium	86	61.43
	High	30	21.43
Clinical Signs of Nutritional Deficiency	Pale eyes/face – Anaemia	67	47.86
	Hair fall	66	47.14
	Cracked lips	48	34.29
	Weakness/Fatigue	75	53.57
	Night blindness	21	15.00
	Bleeding gums	28	20.00
	Dry skin	53	37.86
	Brittle nails	38	27.14
	Loss of appetite	40	28.57
	Frequent dizziness	47	33.57
	Recent illness	50	35.71
	Pulses	132	94.29
Protein and Protective Food Intake	Milk	86	61.43
	Milk products	50	35.71
	Dry fruits	16	11.43
	Egg/Meat/Fish	39	27.86
Workload and Energy Expenditure	Farm work only	45	32.14
	Household + Farm work	47	33.57
	Household + Livestock + Farm	48	34.29

Multiple responses were recorded for clinical signs of nutritional deficiency and protein and protective food intake.

Body Mass Index (BMI)

Table 2 shows that the majority of the respondents (55.00%) had normal BMI (18.5–24.9 kg/m²), followed by 40.71 per cent who were underweight (<18.5 kg/m²). Only 4.29 per cent of the respondents were overweight (25.0–29.9 kg/m²), while none were found in the obese category. Thus, the majority of the farm women had normal BMI, although a considerable proportion was underweight.

Workload and Physical Exertion

Table 2 shows that the majority of the respondents (61.43%) belonged to the medium workload category, followed by 21.43 per cent with high workload and 17.14 per cent with low workload. Thus, medium workload and physical exertion were predominant among the farm women.

Clinical Signs of Nutritional Deficiency

Table 2 shows that weakness/fatigue was the most commonly reported clinical sign (53.57%), followed by pale eyes/face suggestive of anaemia (47.86%) and hair fall (47.14%). Dry skin was reported by 37.86 per cent, recent illness by 35.71 per cent, cracked lips by 34.29 per cent and frequent dizziness by 33.57 per cent of the respondents. Further, 28.57 per cent reported loss of appetite, 27.14 per cent brittle nails, 20.00 per cent bleeding gums and 15.00 per cent night blindness. Thus, weakness/fatigue was the most prevalent clinical sign among the farm women.

Protein and Protective Food Intake

Table 2 shows that pulses were consumed by the majority of respondents (94.29%), followed by milk (61.43%) and milk products (35.71%). Egg, meat or fish were consumed by 27.86 per cent of the respondents, whereas only 11.43 per cent consumed dry fruits. Thus, pulses were the most commonly consumed protein and protective food, while the consumption of dry fruits and animal-source foods was comparatively low.

Workload and Energy Expenditure

Table 2 shows that 34.29 per cent of the respondents were engaged in household, livestock and farm work, followed by 33.57 per cent who performed household and farm work. The remaining 32.14 per cent were engaged in farm work only. Thus, household, livestock and farm work together constituted the most common type of work performed by the farm women.

Table 3: Overall nutritional status

NSI category	Score range	Frequency	Per cent
Poor nutritional status	Up to 22	33	23.57
Moderate nutritional status	23–26	93	66.43
Good nutritional status	Above 26	14	10.00

Table 3 shows that the majority of the respondents (66.43%) had moderate nutritional status, followed by 23.57 per cent who had poor nutritional status. Only 10.00 per cent of the respondents had good nutritional status. Thus, the majority of the farm women were in the moderate nutritional status category, while nearly one-fourth were in the poor nutritional

status category.

Conclusion

The farm women of Barwani district were predominantly middle-aged, had relatively low educational attainment, possessed small landholdings and generally belonged to medium-income joint families. Dietary intake was inadequate among most respondents, particularly for fruits, green leafy vegetables, pulses and milk and milk products. Food distribution practices indicated that women often ate after serving other family members. A considerable proportion of respondents were underweight and reported medium to high workload and tiredness after work. The Composite Nutritional Status Index showed that 66.43 per cent of the respondents had moderate nutritional status, 23.57 per cent had poor nutritional status, while only 10.00 per cent had good nutritional status. The findings suggest that nutrition improvement strategies should focus on dietary diversity, nutrition education, locally available protective foods, regular and timely access to food through the Public Distribution System (PDS), and reduction of excessive workload through appropriate labour-saving technologies. Extension agencies and nutrition programmes can use these findings to develop location-specific interventions for improving the nutritional well-being of farm women in Aspirational Districts.

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