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Food and Nutrition Security under Different Farm Households in Bundelkhand

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ABSTRACT

The concept food security was born out of an appreciation of the need to comprise nutrition in food security. Unlike food, which is generally described everything that community consume and drink to sustain existence and development, nutrition adds facet of wellbeing, a vigorous atmosphere, and nurturing practices. The study was conducted in Bundelkhand from 2018-19 to 2020-21. Respondents were selected based on proportional stratified random sampling technique. Data were collected by personal interviews using a structured interview schedule. The results revealed that among marginal farmers, the majority (70.37%) of respondents had low food security, followed by medium and high food security. Regression analysis was performed on the data to confirm the R^2 value, and it was found that the independent variables included in the study were cumulatively responsible for explaining 63.80 per cent of the variability in the dependent variable.

INTRODUCTION

The notion of food and nutrition security was developed in terms of food supply to make certain that everyone has a passable amount of food. Singh et al., (2019) found higher consumption of legumes among agricultural respondents. The statistics also showed that 21.67 per cent of kids consumed more legumes, again higher than both male and female respondents. The majority (63.33%) consumed legumes with moderate frequency. This was higher compared to male and child respondents. Meenakshi et al., (2019) revealed that respondents were interested in organic farming, so they provided and promoted growing bags and seeds to ensure food and nutrition security in rural communities. Thanks to organic farming initiatives, they were able to properly dispose of their food waste.

Kumari et al., (2019) found that many social benefits stem from home gardening practices. Improved wellbeing and nutrition, increased earnings and employment, food security in households and improved societal life in the community. Increasing your fruit and vegetable intake is one of the easiest and cheapest ways to improve your health. Most of the respondents were the moderate utilization of leafy vegetables and 25 per cent were low consuming. The grains and grain products are regularly consumed by a significant number of children. From the data, we can conclude that the respondents ate a lot of chapattis and rice. Gupta et al., (2013) highlighted the importance of entrepreneurial skills of dairy and poultry farmers for enhanced capabilities for socio economic upliftment. Formation of tribal dairy farm women committee in the form of cooperatives, strengthening the livestock extension service by recruiting sufficient number of women dairy extension personnel and liberal arrangement of credit facilities have been advocated as the damage control measures was advocated by Singh et al., (2017). The concept of food security was born out of recognition of the need to include nutrition in food security. In contrast to food, which is most often defined as the substances communities eat and drink to sustain existence and development, diet adds aspects of wellbeing services, healthy environments, and nurturing practices.

Weingärtner (2010) describe food and nutrition as the state in which sufficient food (amount, quality, well being, sociocultural suitability) has been always accessible, accessible and well utilized by all. One-size-fits-all strategies can therefore suffer from the

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failure of both exclusion and inclusion goals, as has been observed in the past with several government programs to address food and nutrition insecurity in public distribution systems (Khera, 2008). Due to its diversity and scale, this requires accurately measuring the amount and type of food households consume over time and comparing it nutritional needs. Therefore, in order to understand and consider food and nutrition scenarios in dairy farms in Bundelkhand, the present study was the primary focus on to assess food and nutrition status.

METHODOLOGY

The study was conducted from 2018-19 to 2020-21 in Bundelkhand, which includes Uttar Pradesh (7 districts) and Madhya Pradesh (6 districts). Two districts were selected from each state: Lalitpur and Banda from Uttar Pradesh, and Datia and Damoh from Madhya Pradesh. Then, from each district randomly selected two blocks. Two villages were arbitrarily selected from every block. From each selected village, a list of dairy farmers was generated based on land ownership, and respondents were selected based on a proportional stratified random sampling procedure. From each village, 20 dairy farmers were selected proportionately from a list provided. Therefore, a total of 320 dairy farmers was selected for the study. Based on an extensive literature review and consultation with experts, an index was developed to measure food and nutrition security in dairy households. The food and nutrition aspect consists of 9 indicators/parameters. The indices were processed according to 14 informal criteria suggested by Edwards (1957). Selected indicators underwent jury evaluation on the three-point continuum. Relevance weights and mean relevance weights were calculated separately for selected indicators. Respondent's livelihood status is calculated based on the sum of all indicators. Households were classified as low, medium, and high using the cumulative square root frequency technique. Data were collected through personal interviews using a structured interview schedule. In addition, we used correlation tests to calculate r-values to know the association between food and nutrition security and independent variables. Multiple regressions were performed to determine the size of the contributions of selected independent variables to food and nutrition security.

RESULTS AND DISCUSSION

Food and nutrition security of the dairy farmers

A perusal of the Table 1 showed that among the marginal farmers the majority (70.37%) of the households had low food security. The above results explain that the food security of the marginal household was very poor. Similar results can be seen among small farmers where, the majority of the households had a low food security, i.e. 58.11 per cent. Among semi-medium farmers majority (>75%) of the respondents had low to medium food security. Medium and large farmers follow a similar trend where most of the respondents had medium to high level of food security. The higher the household income, the more likely the household will be able to secure food. This is anticipated, as superior incomes mean improved admittance to food, which is too supported by (Arene & Anyaeji, 2010).

The study focused on some critical issues of food security like food availability in terms of production of foods like wheat, rice, vegetables and milk. It was understood that a farmer cultivating food grain crops along with rearing livestock has very less dependency on the market for their food consumption. The majority of the farmers in Bundelkhand region had marginal, small and semi-medium land holding producing small quantity and farmers focused on staple food production rather than other cash crops. Table 1 revealed that among the marginal farmers the majority (56.79%) of the households had low nutrition security. Farmer entrance to staple foods is largely supported by production, domestic produce, purchases, transfers from community programs, or other households (Baiphethi & Jacobs, 2009). Rice and corn are staple foods for farmers, making them more readily available than other products (Carolina & Hidajat, 2016).

The above results revealed that the nutrition security of the marginal farmers was very poor. Table 1 revealed that among the marginal farmers the majority (56.79%) of the respondents had low nutrition security. The above results showed that marginal farmers have very poor food security. Adequate food production should be promoted in the study area as a necessary step towards regional food security. Habits of consuming nutritious and healthy foods should be fostered among farmers in the locality. The incorporation of agriculture and farm animals increases the availability and accessibility of food, and reduces dependence on markets.

Current research, especially conducted to focus on food security issues, such as ensuring that all household members are always getting adequate nutrition, including protein, energy, vitamins and minerals (IFPRI, 2016). Food security means that all communities has admitted to adequate quantity and quality of food at every time in terms of diversity, multiplicity, nutritional substance and safety, and that together with a hygienic environment means to be healthy. It exists when the necessary nutrition and food preferences for a vigorous living are met (FAO, 2012). Food security exists as soon as food security is pooled with hygienic conditions, satisfactory medical care, and good concern and nutrition

Table 1. Distribution of respondents according to food and nutrition security

Farm household	Category	Food security No. (%)	Nutrition security No. (%)
Marginal (n= 81)	Low	57 (70.37)	46 (56.79)
	Medium	22 (27.16)	28 (34.56)
	High	2 (2.47)	7 (8.65)
Small (n= 74)	Low	43 (58.11)	38 (51.35)
	Medium	28 (37.84)	31 (41.89)
	High	3 (4.05)	5 (6.76)
Semi-medium (n=78)	Low	18 (23.07)	27 (34.62)
	Medium	41 (52.57)	43 (55.12)
	High	19 (24.36)	8 (10.26)
Medium (n=57)	Low	11 (19.29)	17 (29.82)
	Medium	17 (29.83)	23 (40.35)
	High	29 (50.88)	17 (29.83)
Large (n=30)	Low	4 (13.34)	8 (26.67)
	Medium	12 (40.00)	16 (53.33)
	High	14 (46.66)	6 (20.00)

practices that, make sure a vigorous living for each and every one (World Bank, 2015). Agricultural production in emergent countries has to increase to get together the food needs of the increasing inhabitants (Branca et al., 2013)

Correlation among farm households

A perusal of Table 2 shows the relationship between the independent variables viz., age, education, experience in dairying, social participation, occupation, land holding, livestock holding, annual income, milk production, milk sale, mass media exposure and extension contact with food security were analyzing with a coefficient of correlation (r). It was clear from the table that land holding, livestock holding, annual income and milk production had positive and highly significant relationship with food security. It indicates that by increasing the standards of the above factors, the value of food security of the respondent's augment. Other factors, such as milk sale had negative and highly significant association with food security. Family food security increases as farm dimension increases.

Abu & Soom (2016) also noted in a study conducted in Benue state that as farm size increases, farmers are likely to increase their awareness in farming and continue to advance their actions and production. The relationship between the independent variables viz., age, education, experience in dairying, social participation, occupation, land holding, livestock holding, annual income, milk production, milk sale and informational factors with nutrition security were analyze with coefficient of correlation (r) and results were represented in Table 2. It was clear from the table that livestock holding, annual income and milk production and milk sale had positive and highly significant relationship with nutrition security. It indicates that by escalating the values of the above factors, the value of nutrition security of the respondent's amplifies.

Factors like education, occupation, land holding, mass media exposure and extension contact had encouraging and significant relationship with nutrition security. However, variables such as age, experience in dairying, social participation was not found to be correlated with the nutrition security of the respondents. Food utilization describes as the intake and digestion of sufficient and high quality food to maintain health, proper use of food, adequate energy and nutrient needs, storage, processing, basic nutrition, parenting and illness (Kuwornu et al., 2013).

Table 2. Pearson Correlation among households

Variables	Correlation coefficient (r)	
	Food security	Nutrition security
Age	0.267^{NS}	0.153^{NS}
Education	0.351*	0.327*
Experience in dairying	0.089^{NS}	0.139^{NS}
Social participation	0.117^{NS}	0.087^{NS}
Occupation	0.103^{NS}	0.294*
Land holding	0.528**	0.251*
Livestock holding	0.461**	0.532**
Annual income	0.482**	0.407**
Milk production	0.653**	0.536**
Milk sale	-0.597**	0.475**
Mass media exposure	0.286*	0.296*
Extension contact	0.328*	0.317*

**Significant at the 0.01 level; *Significant at the 0.05 level
NS: Non significant

Influence of socio-economic factors on food and nutrition security

Table 3 shows the results of a regression analysis performed to split the predictive power and degree of variability in food security explained by the independent variables. Beta coefficients and their corresponding values indicate different contributions to the dependent variable within the study. Regression analysis of the data was performed to confirm the R^2 value, and it was found that the independent variables included in the study were cumulative, accounting for 52.80 per cent of the variability towards Food security. The fitted regression model was observed to be significant.

Further, the variables land holding, livestock holding, annual income, milk production, mass media exposure and extension contact were found to be highly significant ($p<0.01$) while, education and milk sale were found to be significant ($p<0.05$). Table 3 shows that when the data were subjected to regression analysis to confirm the R^2 value, it was found that the socio-economic variables

Table 3. Influence of socio-economic factors on food and nutrition security

Variables	Food security		Nutrition security	
	Regression coefficients (b) value	"t" value	Regression coefficients (b) value	"t" value
Age	-0.243	1.637^{NS}	0.215	1.529^{NS}
Education	0.053	2.136*	0.137	2.217*
Experience in dairying	0.097	0.452^{NS}	0.086	0.328^{NS}
Social participation	-0.024	0.054^{NS}	0.153	0.064^{NS}
Occupation	0.154	0.154^{NS}	-0.132	0.172^{NS}
Land holding	0.215	3.248**	0.179	2.013*
Livestock holding	0.036	4.126**	0.042	4.147**
Annual income	0.087	6.215**	0.093	5.831**
Milk production	0.186	2.981**	0.178	2.736**
Milk sale	0.265	1.984*	0.217	1.857*
Mass media exposure	0.452	5.412**	0.381	2.938*
Extension contact	0.258	3.216**	0.301	2.045*
	R^2= 0.528; F stat= 23.247**		R^2= 0.638; F stat= 17.372**	

** Significant at the 0.01 level; * Significant at the 0.05 level; NS: Non significant

incorporated in the study were cumulatively responsible and explained 63.80 per cent of the variability to nutrition security. The fitted regression model was observed to be significant. However, livestock holding may be a source of income. If held by households for historical and cultural reasons, this can too affect the association between livestock and family nutrition security.

CONCLUSION

From this result, we can conclude that most of the medium-sized farmers have low to moderate food security. Food security on marginal farms was very poor, and on medium-sized farms, the majority of respondents had low to moderate food security. Land holding, livestock holding, annual income, and milk production had positive and highly significant associations with food security. We find that increasing the scores of the above factors increases the value of food security for respondents. Improved wellbeing and nutrition, increased earnings and employment in households and improved societal life in the community. Adequate employment and earnings has a constructive impact on family food security. Households should be encouraged to be productive, especially when new training technique and skill provided to the farmers.

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