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RURAL WOMEN CONTRIBUTION IN HOUSEHOLD FOOD SECURITY IN AGRARIAN COMMUNITIES: A CROSS-SECTIONAL STUDY OF RURAL AREAS OF PUNJAB, PAKISTAN

***Madiha Naz* [*1], *Izhar Ahmad Khan* [2], *Ashfaq Ahmad Maan* [3] *and Babar Shahbaz* [4]**

ABSTRACT

This research was conducted during the year 2018 at the Department of Rural Sociology, University of Agriculture Faisalabad, Pakistan. Food insecurity is a key development issue in many developing countries. Women perform a substantial role in eliminating food uncertainty and poverty. In developing countries, there is a lack of research which deliberates the rural women's role in attaining food security at the household level in the context of Pakistan. Although in almost all rural households women are traditionally allocated an immense responsibility for food production, food access, food utilization and household management. This study investigates the rural women's contribution to the provision of food security at the household level in rural Punjab Pakistan. In this study, a quantitative data technique was used. The quantitative data were collected from a cross-sectional survey through a structured interview schedule in three districts of Punjab Pakistan, from 420 rural households through a random sampling technique. Both descriptive and inferential statistical methods were used in the data analysis. Research findings revealed that 49% of the households had food insecure status while 51% of the households had food secure status. This research investigated that rural women played an immense role in all dimensions of food security at the household level. Results revealed that 40.5% of the women were illiterate and 39.8% of the women in between 25-35 age groups. In food availability, women play a significant contribution; 67% of women participate as farmers and laborers. In food access, 57.4% of women participate as food buyer and 23% of them were involved in wage work; women's participation in income generation is vital exclusively in poor low- income households. In food utilization, women play a crucial role; 75% of women were frequently involved in food preparation, processing, and allocation. Only 15.2% of women had a great extent of knowledge about nutritious food. Furthermore, binary logistic regression model estimated that in rural household's women production activities, women's use of indigenous food-management knowledge, income, age, knowledge for household management, household income, household size, and household assets as essential factors for assuring food-security at household level. Therefore, this study recommends that food-security policies should be targeted by empowering women's capacities through income-generating activities and enhancing their knowledge and awareness level through education to produce better results.

KEYWORDS: Rural; women; farmer; food; security; Punjab; Pakistan.

[1] Ph.D. (Scholar), [2] Associate Professor, [3] Professor (Rtd.), Department of Rural Sociology, [4] Associate Professor, Institute of Agricultural Extension Education and Rural Development, University of Agriculture, Faisalabad, Pakistan.

*Corresponding author email: madihanazagri@yahoo.com

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INTRODUCTION

Present development discourses on food security are some of the foremost matters in many developing countries. Worldwide, food-security is a vital agenda in many international and national organizations (WFP, 2018). In this regard, FAO (1996) described that food security means when all people at all-time having physical, socio-economic and cultural access to safe, sufficient, and nutritious food which fulfilled their dietary requirements for an active and healthy life along with safe drinking water, sanitation, and health care services. Food security has three dimensions, availability of food, access to food and utilization of food. These dimensions can be investigated into two levels national and household level. Food-security at national or macro level generally targets aspect of food availability whereas at household or micro-level food security targets at food utilization and acquirement features (Yadav, 2017). According to FAO (2018) around the world, there is enough food to feed everyone but a still high proportion of 821 million people are suffering from food insecurity. Food security not only comprises the availability of sufficient nutritious food but also the appropriate utilization of food by all household members. United Nations Organization (2018) reported that approximately 50% population in Pakistan is suffering from food insecurity in which 24.3% of them are surviving below the poverty line.

Food and Agriculture Organization (FAO, 2017) describe that household or micro-level food security depends on several determining factors, such as food production, agriculture, the accessibility and availability of food in markets through own manufacturing or in the form of imports, revenue generation, family earning possibilities particularly for females, intra-household decision making power, control over economic resources, responsibility-sharing, education level, family size, household income, food aids received by households, resource allocation, care practices within households and health care facilities provided to family members.

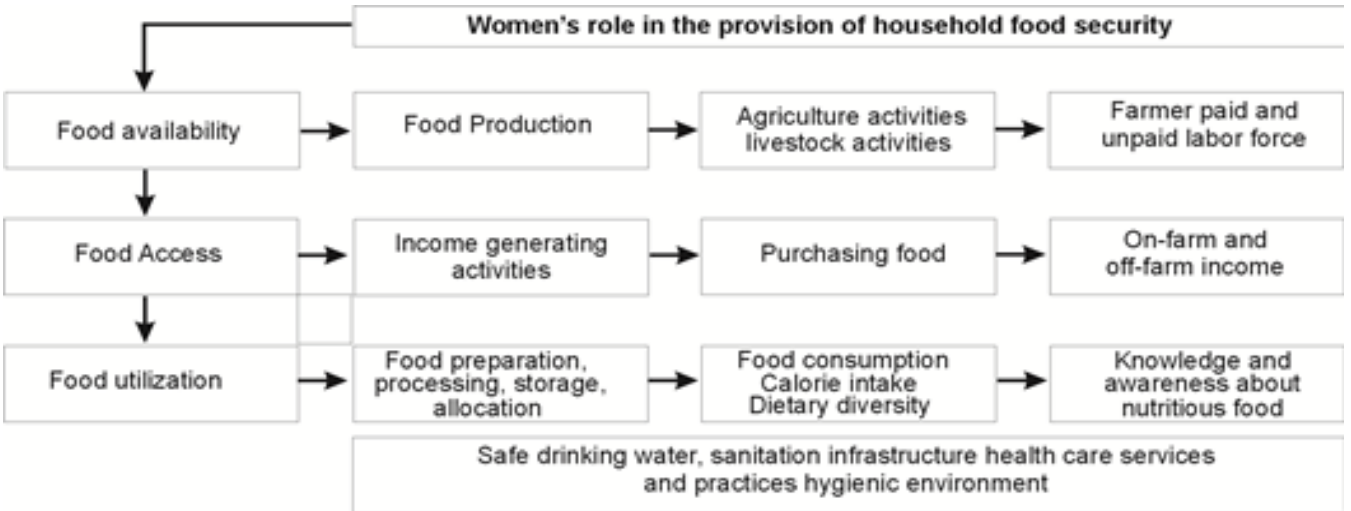
Worldwide usually both genders play different roles and perform different responsibilities concerning household food security. However both genders are income earners but men have the primary responsibility for income-earning and women have the primary responsibility for the utilization of food and home management in rural households (George, 2013). Alaba and Adeniyi, (2014) argued that in rural areas, women perform a key role as food producers (paid and unpaid worker), income earner, food utilizer and household managers for their families but they had limited access to productive resources like education, health, training and employment opportunities etc. In this regard, Kishwar *et al.* (2018) presented that women constantly prioritize household food needs. Women always spend more income on food needs as compared to men. In developing countries' like Pakistan household income, women's income earning, women's education, women's knowledge about nutritious food played essential role in assuring household food consumption and nutritional status. Likewise, Olumokaiye and Ajayi (2006) argued that women decision making power and control over household capital had a positive influence on household food consumption. Malapit *et al.* (2013) described that the educational level of women had a beneficial impact on household nutritional status and dietary diversity. Erin *et al.* (2019) similarly, it was discovered that the percentage of women's control over household income had a positive effect on family food consumption and calorie intake. Modirwa and Oladele (2017) stated that in household food security gender of the household head played a vital role. Results had shown that households controlled by female were more food-insecure due to their restricted access to productive resources than male-headed households.

Around the world, it has been recognized due to women multiple roles that they are vital actors in overwhelming food insecurity and poverty at national and household level. Hence, rural women's empowerment is crucial to attaining and improving family food security. Empowering women is an essential approach for achieving food security through enhancing their ownership of land and livestock, access to productive resources, and providing equal income-generating opportunities (Quisumbing and Smith 2007).

Compared to other developing countries, in Pakistan women's role regarding assuring household food security is not dissimilar especially within a rural traditional context. Rural Pakistani women traditionally allocated the responsibility of household management, food utilization, and preparation. Still, there is a scarcity of researches that systematically addresses this area of interest and shows the association between rural women's contribution to ensuring family food security.

The main objective of the study was to investigate the rural women's contribution to the provision of household food security and to examine the determinants of household food security in rural areas of Punjab, Pakistan.

Conceptual framework: Rural women contribution in household food security



MATERIALS AND METHODS

The present study was conducted at Department of Sociology, University of Agriculture, Faisalabad during 2018. The universe for the present study was rural areas of Punjab Pakistan. Cross-sectional survey was used for the collection of primary data. For collecting quantitative data structured interview schedule was used. The multi-stage sampling method was used for area selection and quantitative data collection from Punjab Pakistan, (Agresti and Finlay, 2008). In the first step, from 36 districts of Punjab Pakistan three districts (Faisalabad, Vehari, and Chakwal) were selected randomly. In the second step, three tehsils one from each district (Faisalabad Saddar, Burewala, and Talagang) were selected randomly. In the third step, 21 villages' seven villages from each tehsil were selected randomly. In the fourth step, 20 households were selected randomly from each village. Total of 420 households were selected for the sample. The sample size was determined through the Fitzgibbon table (Fitzgibbon and Morris, 1987). A well-structured interview-schedule was prepared according to the research objectives of the study. The interview was self-administered to every household primary woman. In this analysis primary woman is defined as a most actively participating married woman age between 18-60 years in the household which involved household activities like food preparation, processing, food production, and food utilization. So, the primary woman was considered as a spouse of a male-headed household or other married female person.

Data analysis model

In the present study together descriptive and inferential statistical techniques were used. The descriptive techniques (frequency distribution, percentage, mean and standard deviation) were primarily used to define the socio-economic features of the participants and to study the role of rural women in family food security. To examine the relationship between dependent and independent variables Bi-variate analysis was carried out. To determine the strength of relationship and correlation chi-square, and parson's correlation tests were used. Binary logistic regression was used to investigate the determinants of household food security with distinctive interest in rural women's roles.

In the current research, household food security was evaluated by using the Household Dietary Diversity Score (HDDS) established by USAID, FANTA and IFPRI in 2006. For computing, household dietary diversity score data were attained through a set of the questionnaire which contained questions of food consumption within one week seven days recall period. In the set of questionnaire nine food groups' A= cereals and grains, B= pulses and legumes, C= vegetables, D= fruits, E= meat, F= milk and dairy products, G= oil and fats, H= sugar and sweets, I= condiments and spices included according to the international rules of constructing household dietary diversity score. Food consumption groups included in questionnaire assigned two values yes positive answer (consumed) =1 and no negative answer (Not consumed) =0. Household dietary diversity score included the food groups prepared and consumed by household members within the home. Household dietary diversity score calculation was very unpretentious; it was the sum of responses by respondents about consuming each food group. HDDS=Sum (A+B+C+D+E+F+G+H+I). Average HDDS=Sum (HDDS)/Total number of households surveyed. Household dietary diversity score had nine food groups so score was spotted between 0 and 9 (Swindale and Bilinski, 2006).

Z: Household food security level (Household dietary diversity score) dependent variables
Independent variables

Y: General variable Y1, Y2, Y3 ……. Yn; X: Variables women's role X1, X2, X3……Xn

Primarily two groups of explanatory independent variables were identified on the basis of outcomes of prevailing literature and conceptual background of the research problem. Two groups of independent variables X and Y were included in the final model to measure household food security. X measured general variables and Y measured variables demonstrated women role influencing household food security. Yet in ultimate modal all variables which were identified not included because some variables had strong and some variables had a weak association with the dependent variable. So in the final model a few independent variables were included.

RESULTS AND DISCUSSION

Fig. 1 shows the household food security status in the study area, 49.0% of households have food insecure status and 51.0% of households have food secure status. According to the United Nations report (2018), around 50% population in Pakistan are suffering from food insecurity in which 24.3% of them are surviving below the poverty line.

Fig. 2 depicts household dietary diversity score in the study area, 21.0% of the households had low dietary diversity score, and 46% of households had medium dietary diversity score whereas 33% of households had high dietary diversity score. In the sample majority

of household dietary diversity was between 4.5-6 score. In the study area majority household dietary consumption depends on staple food like wheat, rice with high consumption of fat and sugar. In rural areas households not consumed a variety of foods because the majority of them depend on their own food production which reduces their chances of dietary diversity. In this regard, Emily *et al.* (2017) argued that food secure households consumed more nutritious and healthy food like meat, milk and dairy products, fruit, etc. as compared to food-insecure households which consumed less expensive, cheap and less nutritious food like cereals (wheat). Food secure households had good dietary diversity as compared to food-insecure households.

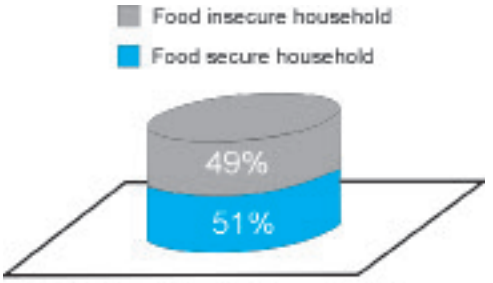


Fig. 1. Household food security status

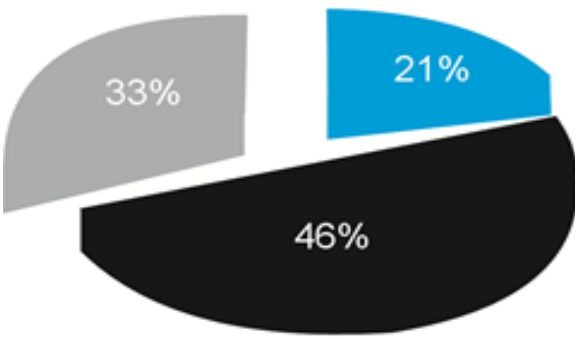


Fig. 2. Household dietary diversity score

Table 1 presents socio-economic characteristics of respondents in the study area, the majority of women 39.8% belong to the peak of their productive year's in between the age range 26-35 years. The average age of the participants was 38 years which indicates that women were in their highest productive years. Mostofa *et al.* (2008) presented that women age was a significant variable in assuring household food security. Household food security decreased with an increase in women's age. Women perform more actively in their peak productive years as compared to their older age. Women's roles changed with the change in age. Young women were more engaged in food production and food usage, and elderly females were more engaged in decision-making and capital control.

In study areas, 40.5% of women were illiterate, in rural regions of Pakistan, females were presumed to have the least economic obligation, and their primary duty were to undertake household tasks, so most parents prefer to train their girls to take responsibility for household tasks, primarily cooking, and disregard their education. In this regard, Ibrahim (2018) argued that women education level had positive impact with household food security status. Educated women had better knowledge and awareness about the proper hygienic utilization of nutritious food, improved food purchasing expertise as compared to illiterate women. Education not only empowers women to build their capacities but also provided more income-earning opportunities.

Mostly 76.9% of women were a housewife and 60% of them were involved in unpaid work. Only 23% of women were involved in income-earning/wage work. Jones *et al.* (2006) presented that women's revenue generation operations not only enhanced household food security status but also reduced malnutrition. Especially in low-income household women's income was essential for sustainable household food consumption. Economically active women were more productive which led towards improvement in food security status.

Exactly 29.5% of households had a total income within the range 10001 to 20000 Pak Rs monthly which shows that in rural areas majority middle-class households exist. Majola *et al.* (2016) stated that household income was significantly associated with food security status. Households with diverse sources of income (farm income and off-farm income) were supplementary food-secure as compared to single-source income households. Income is an essential requirement for sustainable food accessibility.

In the study area, 66.67% of households had 6 and above family members due to the joint family system and large family size. Adebayo (2012) argued that household size had a significant but negative effect on food security status. Large family size generated more burden and pressure on household economic resources. One unit increase in family size reduced per person calorie intake at the household level.

More than half 62.86% of households had livestock ownership and 76.4% of households had landownership which was the core asserts for every rural household. Bill *et al.* (2017) studied that household assets like land and livestock ownership were essential for assuring sustainable food security status. These assert not only

provided basic food but also essential income at the household level. Because rural household's primary livelihood directly depended on the agriculture and livestock sector. One unit increased in landownership reduced 44% food insecurity. Households with livestock and poultry ownership had better food consumption scores and dietary diversity.

Table 1. Socio-economic characteristics of the respondents

Women age (year)	**Count**	**%**
18-25	31	7.4%
26-35	167	39.8%
36-45	125	29.8%
46-55	81	19.3%
56 and above	16	3.8%
Mean	38.56	
Standard deviation	9.584	
Women education		
Illiterate	170	40.5%
Primary	75	17.9%
Middle	36	8.6%
Matric	94	22.4%
Intermediate	9	2.1%
Graduation	24	5.7%
Master and above	12	2.9%
Women occupation		
Housewife	323	76.9%
Self-employment/ business	6	1.4%
government employee	30	7.1%
private employee	8	1.9%
Laborer	39	9.2%
Other (home base work)	14	3.3%
Women income (Pak rupees monthly		
No	323	76.9%
Up to 5000	46	10.9%
5001-10000	17	4.0%
10001-15000	21	5.0%
15001-20000	8	1.9%
20001 and above	5	1.2%
Mean	2098.10	
SD	5154.440	
Houseold income monthly		
Up to 10000	34	8.1
10001-20000	124	29.5
20001-30000	100	23.8
30001-40000	46	11.0
40001-50000	39	9.3
50001 and above	77	18.3
Mean	35731.90	
SD	26451.837	
Household size (members)		
1- 3	28	6.7%
4-5	112	26.67%
6 and above	280	66.67%
Mean	6.41	
SD	2.319	
Livestock ownership		
Yes	264	62.86%
No	156	37.14%
Land ownership		
Yes	321	76.4%
No	99	23.6%

Fig. 3 showed that in the study area, only 15% of women have to great extent knowledge about nutritious food because the majority of them were illiterate. Mahfouz (2016) argued that in ensuring healthy food utilization women's knowledge and awareness about nutritious food were essential. Women with better education levels had better awareness about food consumption, dietary diversity and hygienic utilization of food.

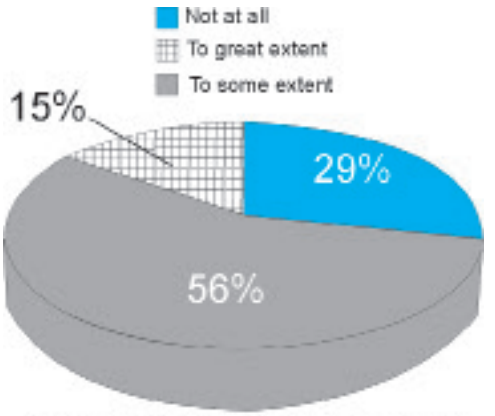


Fig. 3. Women knowledge and awareness about nutritious food

Fig. 4 showed that food availability in rural households was directly linked with the participation of females in agriculture and livestock operations. In rural households out of all farmers 75% of males and 25%, females earned income from the agriculture sector. In study areas, 67% of women participate in agriculture and livestock operations in which 60% of them were unpaid labor force from land and seed preparation, sowing, weeding, harvesting, threshing, and picking but not involved in marketing and selling. Significant point to be noted was that although the majority of women were involved in different farming activities they are not considered as farmers because women have no ownership of land. In farming activities, women were only considered as labor force sometime paid and most of time unpaid. The results showed that in rural household's women were the key player for making food available and had primary responsibility for food storage within the household to prevent an unexpected shortage. Nishi (2018) argued that in rural areas women play crucial roles in food production as they worked in the agriculture and livestock sector, provided essential labor force but the majority of their work was invisible and unpaid. Around the world, 78% of women were involved in different agriculture activities. Rural women's role was significant in food production but they had limited access to productive resources which reduced their productive capacity.

In household food access income is a key determining factor. In the sample, 23% of women were involved as having some kind of income generation and the majority of women was housewives or worked as

unpaid labor. It is important to notice that in poor low-income household's women proportion of share income indicates a positive relationship with the status of food safety and dietary diversity. Rural women's income not only positively effects household food access but also helpful in improving and maintaining smooth food consumption and dietary diversity within the household by escaping impulsive food scarcities. In the study area, 57.4% of women were frequently involved in purchasing household food which directly links with calorie intake and dietary diversity. Women spend more income on food needs as compared to men. Additionally, the study showed that when rural women having decision making power at the household level and household economic resources were controlled and managed by women then households had a greater capacity to sustain a good food intake which enhances the chance of being food secured. Blumberg (2005) argued that women income-earning activities had a significant association with household food security status. But in rural areas the majority of women were involved in unpaid family work. Women had less income generation opportunities as compared to men.

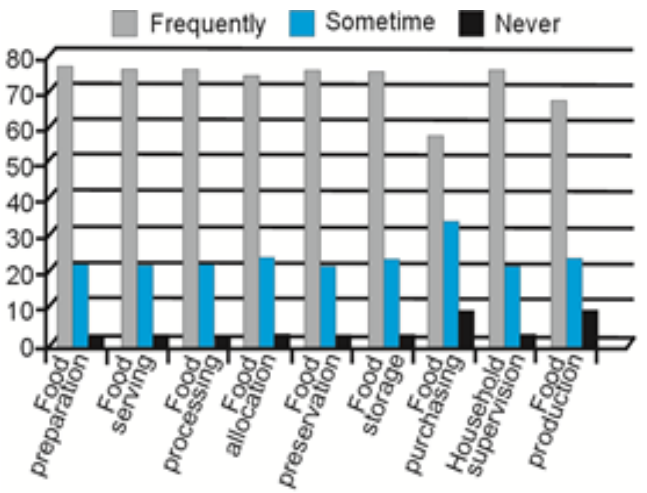


Fig. 4. Women contribution of household food security

Household food utilization is unswervingly associated with women's roles. Because the eventual usage of food depends on food preparation, processing storage and allocation which is straightly associated with women. Results showed that 75.7% of women prepare food for household members with the help of indigenous food management knowledge and 75% of women were preserving food like drying vegetables, meat, making of jam, pickles, etc. for their households to keep food available for all times. Rural women's education level and knowledge about preparing nutritious food were positively related to household food consumption and dietary diversity. Households with educated women consumed more variety of food like milk and milk products, fruits, and meat as equated with less educated women households. Shelia (2017) stated that in rural areas food utilization, cooking food, processing, storage, and distribution was directly in the hands of women. Women were primarily responsible for the hygienic use of food and the provision of nutritious food to family members.

Table 2 presents the association between women's activities and the status of family food security. Chi-square value indicates a significant association between women's household operations and household food-security status. Households with low women's contribution had 41.7% of food security; households with women medium roles had 35.3% household food security, whereas households with high women roles had 62.2% household food security. Study results revealed that food-security situation at household level increased with the increase of women's contribution. In this regard, Boakye (2012) presented that rural women played multiple roles throughout their life. Household management, care, and hygiene were the chief responsibility of every woman. Food management (calorie intake and dietary diversity) was unswervingly linked with women. Women not only performed domestic chores but also involved in food production and income generation activities which was crucial for ensuring food security status.

Table 2. Association between women activities and household food security status

Women activities	Food insecure house hold	Food secure house hold	Total
Low	7	5	12
% within women activities	58.3%	41.7%	100.0%
% within HFS	3.4%	2.3%	2.9%
Medium	108	59	167
% within women activities	64.7%	35.3%	100.0%
% within HFS	52.4%	27.6%	39.8%
High	91	150	241
% within women activities	37.8%	62.2%	100.0%
% within HFS	44.2%	70.1%	57.4%
Total	206	214	420
% within women activities	49.0%	51.0%	100.0%
% within HFS	100.0%	100.0%	100.0%

Chi-square:29.013, df: 2, sig: 0.00, Pearson's R: 0.244

Table 3 showed the binary logistic regression analysis results. Women's age with B value (-0.178) and family size with B value (-2.851) have a significant but negative effect on household food security status. However, Ahmad and Sultan (2004) reported that women's participation level in household care and management activities decreased with an increase in their age. Likewise, Amaza (2006) reported similar results that an increase in household size created more

Table 3. Determining factor of household food security binary logistic regression

Variables							95% C.I. for Exp (B)	
	B	S.E.	Wald	d.f.	Sig.	Exp (B)	Lower	Upper
X1Women age	-.178	.046	14.953	1	.00	.837	.764	.916
X2Women education level	.553	.253	4.788	1	.02	1.738	1.059	2.851
X3Women employment status	.832	.738	1.271	1	.02	2.298	.541	9.765
X4Women indigenous knowledge for household management	.165	.045	13.386	1	.00	1.180	1.080	1.289
X5Women income	1.353	.326	17.228	1	.00	3.868	2.042	7.328
X6Household income	5.883	1.198	24.129	1	.00	358.961	34.321	3754.303
X7Women knowledge and awareness about nutritious food	1.817	.895	4.120	1	.04	6.151	1.065	35.541
X8Family size	-2.851	.781	13.319	1	.00	17.313	3.744	80.061
X9Women intention of preparation nutritious food	.541	.784	.477	1	.04	1.718	.370	7.982
X10Household assets	.479	.181	7.036	1	.00	.619	.435	.882
Constant	-24.755	4.968	24.826	1	.000	.000		
-2 Log likelihood			**Cox & Snell R Square**			**Nagelkerke R Square**		
83.910[a]			0.695			0.926		

burdens on household economic resources which negatively affected on household food consumption level. While women's education level, women's knowledge and awareness about nutritious food, women's household management, women's intention to prepare nutritious food, women's employment status, and women's income have a significant effect on household food-security status. Zinat *et al.* (2017) reported that educated women had better knowledge and awareness about hygienic utilization of nutritious food and had better income generation opportunities as compared to illiterate women. Household income has a significant effect on food security status. Abu *et al.* (2016) reported that higher household income leads towards increase in household budget that automatically uplifts the household food-security status. Household assets have a significantly positive effect with household food-security status. In this regard Jack *et al.* (2017) reported that households with ownership of land and livestock had better food consumption and dietary diversity score because these households had their own food production which enhanced their food-security status.

CONCLUSION AND POLICY RECOMMENDATIONS

The study found that in household food availability majority of rural households accomplish their food dietary requirements from their own cultivation. For household food availability women are primarily responsible and involved in maintaining food stocks and storage for their households with the usage of their indigenous knowledge. Likewise in the dimension of household food access women contribution in income generation is substantial for enhancing household food access, particularly in poor low-income rural households. Women's income improves the household capacity to sustain suave consumption and dietary diversity in the time of vulnerability and shortage.

The study also revealed that income in the hands of women not only improves household food consumption and dietary diversity but also the probability of being food secured. Furthermore, women decision making power improved household food security status, food consumption quality and dietary diversity.

The third most important dimension is food utilization in which women perform a foremost role because; food preparation, preservation, processing, and allocation all are fundamentally done by women within the household. The results revealed that despite that woman faces many constraints in achieving household food security they are involved in productive, income-generating activities and engaged in household care and management activities. Concerning the second objective, the study revealed that women age, women education, women occupation, women income, household income, household size, household assets, women knowledge about nutritious food, women intention of preparing hygienic food, women indigenous knowledge of household management as significant factors for rural food security at household level.

Hence, from the above outcomes following recommendations can be made to improve the role of women in achieving family food security.

- In assuring household food security, improvement in women income earning opportunities are very important. Rural women should be encouraged for small scale income-generating activities within home or nearby homes, like home-based work, cottage industry so that women could focus more on household activities.
- Moreover improving rural women's knowledge and awareness about nutritional food is very essential. In rural areas awareness campaigns should be launched about nutritious food, preparation of hygienic food and consuming balanced diet.

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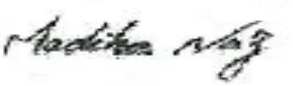
S. No.	Author name	Contribution	Signature
1	Madiha Naz	Planned and conducted the research and wrote-up manuscript	
2	Izhar Ahmad Khan	Supervised and provided the guidance in research work	
3	Ashfaq Ahmad Maan	Provided guidance in research work, finalizing methodology and data analysis.	
4	Babar Shahbaz	Critically reviewed the manuscript