

Prevalence and Factors Associated with Food Security from Rural Community of Parbat District

¹Bijaya Parajuli, ¹Dipendra Kumar Yadav, ¹Narayan Tripathi

¹School of Health and Allied Sciences, Faculty of Health Sciences, Pokhara University, Nepal

ABSTRACT

Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food that meet their dietary needs and food preferences for an active and healthy life. Similarly food insecurity at household level refers to the inability of the household to secure adequate food for meeting the dietary needs of its members. The study aimed to assess the prevalence and factors associated with food security from rural community of Parbat district. A community based cross-sectional study was conducted among 385 participants of 21 wards from seven different Village Development Committee of Parbat district. A systematic random sampling technique was used to select the participants. Data were collected through face to face interview using the Nepalese version of Household Food Insecurity Access Scale. Ethical approval was taken from Nepal Health Research Council. Bivariate analysis was done to identify the associated factors of food security. The study revealed that more than half of the households were food insecure. There for ecommunity based food security program is recommended to improve the food security condition of the rural communities of Parbat district. The key factors associated with food security were: availability and accessibility factors as: land availability, amount of land, irrigation unavailability and allocation of money not enough for food. Sustainable agriculture production through the promotion of technologies to enhance crop by proper water management in the land and alternative solutions as provision of livestock farming to those who have less land are recommended.

Key words: Food insecurity, availability, accessibility, rural areas

Corresponding address: Dipendra Kumar Yadav, PhD
School of Health and Allied Sciences, Faculty of Health Sciences, Pokhara University
E-mail: dipendrayadavph@gmail.com

INTRODUCTION

Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food that meet their dietary needs and food preferences for an active and healthy life. At the household level, food insecurity refers to the inability of the household to secure adequate food for meeting the dietary needs of its members¹. The four pillars of food security are: availability, access, stability and utilization. Whenever households are unable to meet the four pillars of food security they are food insecure².

Agriculture has directly linked to nutrition in such a way that it provides a source of food and nutrients and a broad base of income as well as directly influencing food prices³. The food insecurity is rooted in poverty and leads to poor health, low productivity, low income, inability to support growth and development of children thus keeping into vicious cycle of poverty and leading the various nutritional complications⁵. Food insecurity is a growing concern worldwide. More than 1 billion people are estimated to lack sufficient dietary energy availability, and at least twice that number suffer micronutrient deficiencies⁶. According to the World Food

Program, about one in nine people in earth donot have enough food to lead a healthy active life and vast majority of world's hungry people live in the developing countries¹. In context of Nepal, poverty, malnutrition and food insecurity are some of the major developmental challenges. The national household food security is only 49% where the severely food insecure households are about 16%. Food insecurity and hunger are a part of daily life problems for families living in remote highland regions of Nepal⁴. The study aimed to assess the prevalence and factors associated with food security from rural community of Parbat district.

METHODS

A cross sectional descriptive study was conducted in rural areas of Parbat district. The study population was head of the households. The study was conducted from July to December 2015. The systematic random sampling was used to select participants. Seven out of 55 VDCs were randomly selected. Similarly three wards were selected from each selected VDC. Altogether 21 wards were selected from 7 VDCs and the number of respondents to be taken from each ward was 19 so as to meet the sample size of 385.

The study population was head of the household. Households having married member and children were included in the study. The locked households were excluded in the study. Ethical approval was taken from Nepal Health Research Council. Anonymity and confidentiality of the respondents were maintained throughout the study. Food security was assessed using Household Food Insecurity Access Scale (HFIAS). The data was collected after obtaining informed consent from respondents. Data were collected through face to face interview of the respondents.

Validity of the instruments was maintained by incorporating expert's opinion and through extensive literature review. Pretesting was performed in 10% of the total sample size where it was conducted among 39 household in Salyan Village Development Committee of Kaski district.

Data were entered in Epi data software and analyzed by using SPSS 20 version software. Descriptive statistics (Frequency, percentage, mean and standard deviation) were applied to calculate the food insecurity status. Associations between socio-demographic and socioeconomic characteristics, availability and accessibility factors were analyzed by using chi square test.

RESULTS

Table 1: Socio-demographic information of respondents (n=385)

Characteristics	Frequency	Percentage
Age		
30-44 years	127	33
45-60 years	258	67
Mean = 46.04 ± 6.37		
Ethnicity/Caste distribution		
Dalit	149	38.70
Disadvantaged janajati	6	1.57
Advantaged janjati	28	7.27
Upper caste group	202	52.46
Religion		
Hindu	357	92.7
Buddhist	28	7.3
Type of family		
Nuclear	261	67.8
Joint	124	32.2
Family size		
1-5 members	199	51.7
6-10 members	186	48.3
Mean = 5.70 ± 1.16		

Table 1 shows that majority of the respondents (67%) were of 45-60 years age group. The mean age was 46.04 years. Majority of the respondents (52.46 %) were of upper caste group and (92.7%) were Hindu. Majority of the respondents (67.8%) belong to nuclear type of family and more than half (51.7%) of the total respondents had family size of 1-5 members.

Table 2: Socioeconomic information of the respondents (n=385)

Variables	Frequency	Percentage
Educational status of the respondents		
Illiterate	25	6.5
Non-formal education	21	5.5
Primary	115	29.9
Secondary	105	27.3
Higher secondary	102	26.5
Graduate	17	4.41
Income source of respondents		
Agriculture	278	72.2
Business	44	11.4
Government job	17	4.4
Overseas employment	11	2.9
Domestic daily wage	35	9.1
Family income (Nepali rupees /Month)		
<5000	119	30.9
5000-10000	203	52.7
10000-15000	8	2.1
15000-20000	17	4.4
>20000	38	9.9

Majority of the respondents (29.9%) had received primary level education. Agriculture was the main source of income of majority of the respondents (72.2%) With regards to family monthly income (Nepalese rupees/month) majority of the respondents (52.7%) had income ranged between Rs 5000 to 10,000.

Table 3: Availability and accessibility factors of the respondents (n=385)

Variable	Frequency	Percentage
Arable Land availability		
Yes	261	67.8
No	124	32.2
Amount of land		
1-5 ropani	164	62.8
6-10 ropani	97	37.16
Dependent on other land		
Yes	151	39.2
No	234	60.8
Availability of irrigation facility		
Available	138	35.8
Unavailable	247	64.2
Household having enough crops for family		
Yes	172	44.7
No	213	55.3
Household having own home		
Yes	302	78.4
No	83	21.6
Monthly income enough for fulfilling daily needs		
Yes	185	48.1
No	200	51.9
Distance to food purchase market		
30-60 minutes	323	83.89
>60 minutes	62	16.10
Monthly allocation of money for food (NRs)		
<5000	215	55.8
>5000	170	44.2

Table 3 shows that majority of respondents (67.8%) had arable land and (62.8%) of respondents had 1-5 ropani of land. Two third (60.8%) of respondents were not depending on others land and irrigation. Majority of the respondents (51.9%) monthly income was not enough for fulfilling the daily needs and 83.89% of the respondents had spent 30-60 minutes to reach the food purchase market. More than half of the respondents (55.8%) were allocating less than five thousands monthly money for food.

Status of Food Security(%) n=385

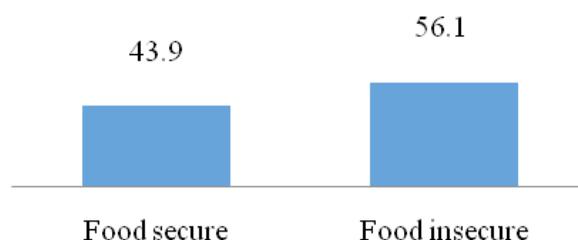


Figure 1: Status of Food Security

Figure 1 shows that more than half 216(56.1%) of total households were food insecure.

Type of food insecurity n=216

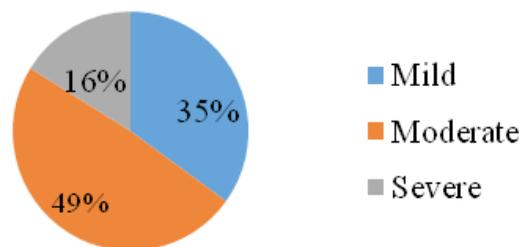


Figure 2: Type of Food Insecurity

Figure 2 shows out of total food insecure household's majority (49%) of the households were moderately food insecure.

Table 4: Coping strategy of food insecure households (n=216)

Coping strategy	Frequency	Percentage
Loan	108	49.5
Borrowing	29	13.3
Selling livestock	65	29.8
Others	16	7.3

Table 4 shows that majority of the food insecure households (49.5%) adopted loan as coping strategy.

Table 5: Association between distribution of socio-demographic characteristics and the status of food security

Characteristics n=385	Food secure	Food insecure	χ^2 value	p value	Unadjusted OR (95% CI)
Age					
30-44 years	48 (37.8)	79(62.2)	2.86	0.091	0.68(0.44-1.06)
45-60 years	121(46.9)	137(53.2)			
Family size					
≤ 5 members	109 (54.8)	90 (45.2)	19.79	0.001*	2.54(1.67-3.85)
>5 members	60 (32.3)	126 (67.7)			
Type of family					
Nuclear	130 (49.8)	131 (50.2)	11.50	0.001*	2.16(1.37-3.39)
Joint	39 (31.5)	85 (68.5)			
Ethnicity					
Brahmin/Chhetri	149 (73.8)	53 (26.2)	153.9	<0.001*	22.91(13.08-40.12)
Indigenous/ethnic	20 (10.9)	163 (89.1)			
Religion					
Hindu	154 (43.1)	203 (56.9)	1.14	0.28	0.65(0.30-1.42)
Buddhist	15 (53.6)	13 (46.4)			
Educational level					
≤Secondary	12 (7.5)	149 (92.5)	149.2	<0.001*	0.03(0.01-0.06)
>Secondary	157 (70.1)	67 (29.9)			
Major source of income					
Agriculture related	106 (38.1)	172 (61.9)	13.50	0.001*	0.43(0.27-0.67)
Non-agriculture related	63 (58.9)	44 (41.8)			

*Statistically significant at $p < 0.05$, Fig in parenthesis shows percentage

Family size, type of the family and ethnicity of the respondents were significantly associated with the status of food security from bivariate analysis. Similarly, educational level and major source of income were significantly associated with the status of the food security (Table 5).

Table 6: Association between availability and accessibility factors and food security status

Characteristics n=385	Food secure	Food insecure	χ^2 value	p value	Unadjusted OR (95% CI)
Having own arable land					
Yes	166 (63.6)	95 (36.4)	127.8	<0.001*	0.43(0.27-0.68)
No	5 (2.4)	121 (97.6)			
Amount of land					
≤5 ropani	74 (45.1)	90 (54.9)	65.09	0.001*	0.04(0.07-0.11)
>5 ropani	92 (94.8)	5 (5.2)			
Dependent on others land					
Dependent	10 (6.6)	141 (93.4)	140.2	<0.001*	0.03(0.016-0.06)
Not dependent	159 (67.9)	75 (32.1)			

Irrigation availability					
Available	123 (89.1)	15 (10.9)	178.7	<0.001*	35.83(19.18-66.90)
Unavailable	46 (18.6)	201 (81.4)			
Crops enough for family					
Enough	166 (96.5)	6 (3.5)	349.5	<0.001*	-
Not enough	3 (1.4)	210 (98.6)			
Having own home					
Yes	166 (55)	136 (45)	69.71	0.001*	32.54(10.05-10.53)
No	3 (3.6)	80 (96.4)			
Having monthly income enough for the family					
Yes	164 (88.6)	21 (11.4)	289.6	<0.001*	-
No	5 (2.5)	195 (97.5)			
Distance to food purchase market					
30-60 minutes	150 (46.4)	173 (53.6)	526.9	0.02	1.96(1.09-3.51)
>60 minutes	19 (30.6)	43 (69.4)			
Allocation of money for food					
≤5000	5 (2.32)	210 (97.67)	125.5	0.001*	0.09(0.03-0.029)
>5000	164 (95.60)	6 (3.52)			

*Statistically significant at $p < 0.05$, Fig in parenthesis shows percentage

Availability factors of the respondents as: having arable land, amount of land, dependent on others land, irrigation availability on land, crops enough for the family were significantly associated with the status of the food security from bivariate analysis. Accessibility factors except distance to food purchase market were significantly associated with the status of the food security from bivariate analysis (Table 6).

DISCUSSION

Food insecurity is the key issue of the rural areas. In this study majority of the households were having a nuclear family (67.8%), with mean family-size being 5.70 (SD±1.16) and the mean monthly household income being Nepalese rupees 10827(SD ±11773).The findings contradicts with the study conducted in northern India where majority of the households were having a nuclear family (61.6%), with mean family-size being 5.5 (SD±2.5) and the mean monthly household income being Indian rupee 9,784 (SD±631) The difference is due to geographical variation ⁷.

In this study 35.8% of the land was irrigated land. In contrast to the study conducted Dailekh district 60% of the households own the irrigated land⁸. This might be because of the variation in the irrigation facilities inside the country.

Agriculture was the major source of income of 72.2% of the respondents. Similar study conducted in western Canada where households reported their major source of income as welfare, unemployment insurance or workers compensation among those who did not own their own homes⁹. It is because

Nepal is the agricultural country and also the unemployed people are not supported by insurance facilities by Nepal government.

This study was based on the food quantity and didn't focus on the quality of the food. The similar study was conducted on the rural Tanzania where two main factors emerged from the rotated principal component factor analysis: insufficient food quality and insufficient food intake¹⁰.

In this study, 55.8 % spent below NRs 5000 on food. Similar study was conducted on South Africa. Rural households spend R588 per month on food which was about 23% of household expenditure. The difference might be because of the country economy and variation in currency¹¹.

In this study the prevalence of food insecurity was 56.1%. Similar study was conducted in Kailali district, Nepal where 69% of households were food insecure¹². This might be because of the variation in socio-demographic and socioeconomic characteristics within country. Similar study conducted in India shows the high prevalence of food insecurity in the marginalized section of the urban society⁷. This shows that food insecurity is also the prime concern of urban areas too.

In this study households that were vulnerable to food insecurity were found to depend on different coping strategies as 49.5% of households were adopting loan, 29.8% selling livestock, 13.3% adopting borrowing and 7.3% were

adopting the other coping strategies as temporary migration in search of income opportunities. The findings were consistent with the study from Chitwan and Gorkhadistrict¹³. Similar study was conducted in a poor rural community in Malaysia. The food insecure households had adopted coping strategies as: borrowing money, used a system in the communities whereby the villagers could take the food or non-food items from the grocery or sundry shops and pay at the end of the month or later¹⁴. Similar study in Toronto adopted coping strategy of sending children elsewhere for a meal when threatened with acute food shortage and hunger¹⁵. The difference might be because of cultural variation.

Significant association was observed between age group of respondents and religion and status of food security. Similarly, there was significant difference between family size, type of family, caste and educational level of participants. Evidence of association family size and ethnicity/caste was found consistent with the study of Baitadi, Nepal¹⁶.

Present study revealed the significant association between land available for the production, amount of land with the status of food security. Similar study conducted in Nigeria. Significant relationship was there between food security level experienced by the households and their farm size. This indicates that farm size under cultivation largely influenced the level of food availability in the households¹⁷.

CONCLUSION

The study concluded that more than half of the households were food insecure. Similarly, households that were vulnerable to food insecurity adopted coping strategies as: taking loan, borrowing, selling livestock and migrating outside villages in search of income opportunities. Therefore community based food security program is recommended to improve the food security condition of the rural communities of Parbat district. The key factors associated with food security were: family size, type of family, ethnicity, religion; monthly income, educational level of participants, land availability, amount of land, dependency on other land, having own home, availability of irrigation on arable land, having enough income for the family and monthly allocation of money for food. Sustainable agriculture production through the promotion of technologies to enhance crop by proper water management in the land and alternative solutions as provision of livestock farming to those who have less land are recommended.

CONFLICT OF INTEREST

We declare that we have no conflict of interest.

ACKNOWLEDGMENT

We want to forward our special thanks to Nepal Health Research Council for providing ethical clearance for the research. Similarly, we are grateful to all the participants of Parbat district who voluntarily provided their valuable information.

REFERENCES

1. Clay E. Food security: concepts and measurement. Trade reforms and food security: Conceptualising the linkages. 2002;25-34.
2. Barrett CB. Measuring food insecurity. Science. 2010;327(5967):825-8
3. Khanal P. Millennium development goals. Health Prospect. 2012;10:57-60
4. Sapkota P, Bastola U, Marsh T. Role of Food Insecurity And Women's Autonomy on Child Health :Empirical Evidence From Nepal.2015
5. FAO, Food Security and Agricultural Projects Analysis Service (ESAF), "Food Insecurity and Vulnerability in Nepal: Profiles of Seven Groups," ESA Working Paper No. 04-10, (2004)
6. Food, Nations Organization, The state of food insecurity in the world. Meeting the 2015 international hunger targets: Taking stock of uneven progress. FAO Rome; 2015
7. Chinnakali P, Upadhyay RP, Shokeen D, Singh K, Kaur M, Singh AK, et al. Prevalence of household-level food insecurity and its determinants in an urban resettlement colony in north India. Journal of health, population, and nutrition. 2014;32(2):227
8. Khatri-Chhetri A, Maharjan KL. Food insecurity and coping strategies in rural areas of Nepal. Journal of International Development and Cooperation. 2006;12(2):25-45.
9. Vozoris NT, Tarasuk VS. Household food insufficiency is associated with poorer health. The Journal of nutrition. 2003;133(1):120-6.
10. Knueppel D, Demment M, Kaiser L. Validation of the household food insecurity access scale in rural Tanzania. Public health nutrition. 2010;13(03):360-7
11. Bonti-Ankomah S, editor. Addressing food insecurity in South Africa. SARP conference on land reform and poverty alleviation in Southern Africa Pretoria; 2001: Citeseer
12. Osei A, Pandey P, Spiro D, Nielson J, Shrestha R, Talukder Z, et al. Household food insecurity and nutritional status of children aged 6 to 23 months in Kailali District of Nepal. Food & Nutrition Bulletin. 2010;31(4):483-94.
13. Khanal B, Regmi P, Kattel R, Shively G. Food insecurity analysis in two Chepang communities in Nepal
14. Shariff ZM, Khor GL. Household food insecurity and coping strategies in a poor rural community in Malaysia. Nutrition research and practice. 2008;2(1):26-34.
15. Tarasuk VS. Household food insecurity with hunger is associated with women's food intakes, health and household circumstances. The Journal of nutrition. 2001;131(10):2670-6
16. Joshi NP. Relationship between Income-poverty and Food insecurity in Rural Far western Mid-hills of Nepal. 2009
17. Ahmed FF, John N. Socioeconomic characteristics and food diversity amongst high income households: a case study of maiduguri metropolis, borno state, Nigeria. Am J SocMgmt Sci. 2014;5(1):19-26