

ANALYSIS OF HOUSEHOLD FOOD SECURITY CONCERNS AND COPING STRATEGIES OF SMALL FARMERS IN NORTHWESTERN HIGHLANDS OF PAKISTAN

R.M. Amir¹, Babar Shahbaz^{1,*}, Tanvir Ali¹, M.I. Zafar¹

¹Institute of Agricultural Extension and Rural Development, University of Agriculture, Faisalabad, Pakistan

*Corresponding author's e-mail: babar.shahbaz@gmail.com

Food insecurity is turning out to be one of the worst crises of world in future. Developing countries are especially considered vulnerable to be hit most severely by this impending danger. Resource scarce regions of Pakistan are also included in the list of marginalized areas where population is not able to manage its food by herself. The present study was designed to analyze the state of household food security concerns and identify managing strategies for dealing with shortage of food patterns in Northern Pakistan. The research was based upon a survey of randomly selected two districts. Both qualitative and quantitative research methods were used for data collection. The results indicated that prices of food items were very high. It also delineated that lack of irrigational water; limited market access, and high cost of fertilizers were leading production related constraints. As a resort to these constraints and due to low output from the food crops there was found a shift from subsistence to cash seeking cropping patterns of the growers. This increase in income was perceived as a mean to ensure household food security. Furthermore, at household level the respondents expressed to reduce their expenses on the agricultural inputs in future.

Keywords: Household food security, food security concerns, coping strategies, small farmers, Northern Pakistan

INTRODUCTION

Food security is considered as a complex phenomenon and with the passage of time the concept of food security has been taken a more convoluted form than before. Despite this difficulty the researchers have been successful in grasping the concept in some way. The notions of food availability, accessibility and consumption seem popular among the researchers as pillars of food security (Andersen, 2009).

The issues of preference and acceptability of food on part of the consumers are also considered as key factors in this regard. If the ability to acquire food, which has consumers' preference and social acceptance, is uncertain and/or unacceptable then the situation may be termed as food insecure (Bickel *et al.*, 2000).

"A situation that exists when all people, at all times have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life."

In developing countries (especially in Asia) the per capita caloric consumption is declining (Deaton and Dreze, 2009), which has severely affected the physiological and psychological health of people by leading them to the situation of more food insecurity and hunger than before (Chilton, 2009; Hadley and Patil, 2006; Cook *et al.*, 2004). In such countries, due to the seriousness of the issue, law and order situation has also, sometimes, gone under threat because the people over there staged protest against state for

not ensuring their born right of access to food. Grave intensity of the issue is beyond doubt so currently world community seems committed and many efforts have so far been made for the improvement of food security situation all over the world (Fullmer, 2007; Sander, 2008). Some common hazards have seriously affected production of food in which harsh weather, living of producers in remote areas and inadequate infrastructural facilities are supposed to be very important (Shahbaz *et al.*, 2010), likewise land sliding and soil erosion are the other similar factors in this regard (Shrestha *et al.*, 2003). Economic issues are seriously affecting food security as rise in prices can have challenging implications on food security and especially when it is also associated with the decline in import capacity in developing countries (Rosen and Shapouri, 2008). There are many coping strategies suggested in this context.

Rise in income level is predominantly considered as determinant and a solution to food insecurity because if the income goes down the availability and access to sufficient, safe and nutritious food is perceived to be difficult (Babu and Tashmatov, 2006; Bashir *et al.*, 2012). However, this is not always a right case because rise in income may have opposite effect by diversifying the diet options based upon taste, preference, and selection of more expensive but less nutritious food (Ahmad, 2003). Moreover, most of the population of rural areas living in the least developed countries (including Pakistan) is depending upon the natural resources for their livelihoods (Massuanganhe, 2008) but

contrarily the resources are not found in access. As Pakistan is included in the queue of underdeveloped countries so keeping in view the generalized results of Pelletier (2005) for such countries it can be suggested that economic alternatives (as shifting from costly to less costly food) and high production can be used as coping strategies in this regard especially in Northern Pakistan where severe resource scarcity is evident (Hussain, 2003). The same reason has made them to adopt the trend of going for daily wages for increasing their monthly incomes (Shahbaz, 2009). Some researchers argued that the only solution hidden behind the adoption of consumption related strategies, in which dietary change was one of the most important aspects, was evident in attitude of household managers in the form of shifting to less expensive food. In this way the preferred food is compromised and altered (Suleri and Haq, 2009; Oldewage-Theron *et al.*, 2006; Maxwell *et al.*, 1999). Another researcher found that budgetary/ culinary skills and food donations could solve the problem in this regard (Hamelin *et al.*, 2008). Low income households also resort to get loans as they get some emergent situation as price hikes of food, more than that they also have to reduce their nutritional intake in face of this detrimental situation. The expenditures on food for such households may also be increased as they would have to allocate a huge chunk of their budget to the food items. Household welfare is worst affected if the household spent a large amount of their income on staple foods (Zezza *et al.*, 2009) in the presence of income shocks that also affected the household food security (Mjonono *et al.*, 2009). In short, a household is having different food availability/ accessibility and coping strategies related concerns which need to be analyzed in detail.

MATERIALS AND METHODS

The research was carried out in the Khyber Pakhtunkhwa (KPK) Province of Pakistan in which cross-sectional survey was employed. For the data collection two mountainous districts Mansehra and Battagram were selected. One Tehsil

was selected randomly from each district. The data were collected from these two Tehsils by selecting two villages from each Tehsil through convenient sampling method. Fifteen respondents were taken from each village, thus making a total size of 60. Small farmers/landholders (who were also the head of their households and male) were selected through Snow Ball Sampling Technique (Trochim, 2006). Initially the availability of the respondents was found to be a little difficult but later on the cooperation provided by the farmers helped a lot to complete the data collection process. The research was a triangulation in which combination of both qualitative and quantitative techniques was followed. On the basis of qualitative findings, a well-structured quantitative instrument was developed which was further pre-tested for its workability and stability. The data were collected through personal interviews and were analyzed by using Statistical Package for Social Sciences (SPSS).

RESULTS AND DISCUSSION

Household food security concerns: The food security of a household is directly or indirectly affected by different factors, these factors influence the availability, accessibility, consumption and stability of food at different levels. The results indicated that the people of study area were having lot of problems pertaining to the food availability and access. The respondents were asked to answer certain questions regarding food availability and access and their responses are given in Table 1.

The data presented in Table 1 showed that more than 50% of the participants of this study responded ‘yes’ to 6 out of 10 questions which means that they experienced food insecurity in majority. High prices of food were one of the leading reasons that made them think of being food insecure. Almost all (98%) of the respondents agreed that the surging prices of eatables were a greater issue for them. *It was very sad to note that even the producers of food were disturbed by price hikes and were forced to purchase eatables on an*

Table 1. Perceptions regarding food availability/ accessibility and coping strategies

During last month did you ever	Yes		No	
	Frequency	%	Frequency	%
feel prices of food items as high	59	98	01	02
worry about getting food	56	93	04	07
shift to low priced food	51	85	09	15
cut the size of your meal	49	81	11	19
observe preference for meal distribution	42	70	18	30
borrow to buy food	35	58	25	42
skip at least one meal in a day	20	33	40	67
reduce diet of children	03	05	57	95
remain hungry for whole day	---	---	60	100
skip children meal	---	---	60	100

unaffordable cost. Producer may be of only one or two commodities but have to purchase various food items. In a very compulsive situation they changed their trends of frequently eating expensive diet to less expensive diet but still the preferred quantity of food items was out of range of the residents. Furthermore, a vast majority of the respondents (81%) clearly described their coping strategy of cutting short daily nutritional intake of even less expensive diet which was lentils and vegetables (a relatively less expensive commodity). Again with extreme nutritional adjustments the people were not capable of managing the preferred quantity of their nutritional intake which revealed the severity of the issue over there.

The qualitative information received during interviews supported the quantitative results. It was found that the access to balanced and preferred diet was rather difficult than indicated by the statistics, provided in the Table 1. They were having a plethora of difficulties in this regard. One of the leading reasons for the in-sufficiency was high prices of food commodities, as evident from the sampled response;

“...despite the fact that I am living out of my joint family and my family size is only 4 which is relatively low and I intentionally did this for the sake of reducing my expenses which earlier I thought that were because of high number of family members. But I am completely unable to give balanced nutrition to my family even afterwards. Due to rising inflation in the price of food items we are taking cheap diet. We have already changed our trends of eating lentils and vegetables. But what is happening now-a-days it shows extremely bitter realities that we even are not able to afford the less expensive diet in proper amount. The prices of lentils and vegetables are continuously going up. We have to cut short the amount of our daily intake of lentils and vegetables. It is all because of the rising prices of food items that are becoming out of the monetary ranges of the man in the street”.

Qualitative data revealed that many people have started to avert the trend of living in joint family system and reduced the number of people depending on one person as a resort to food insecurity but still they were not satisfied with their available diet. Although people living in joint family system still composed the larger portion of the quantitative data but

the comments given above were clearly showing the apprehensions of people. That was why the suggestion came in front that prices must be kept under control and the people must be given relief in this regard;

“Every layperson would be automatically benefitted if the government would bring the prices of all commodities of common use within their available financial capacity”.

Food Production constraints: The food growers are facing serious problems as far as the production of food is concerned. Among these technological, environmental, socio-economic and political issues are considered most important and are denoted as constraints to food production. Especially food producers who were directly related with agricultural activities were not very much happy with their plight rather they were having only a minor know-how about the general issues. It indicated their lack of participation in the mainstream decision making. The factors that were hampering the production of their crops were many in the area. Among these factors those having the majority response and few others are compiled in Table 2.

Lack of irrigation water was considered as the biggest bottle neck in production followed by limited access to market. Roads from their homes/ fields to the market were not good so the route to the market was not at all smooth and clear. The growers had to struggle for reaching from home to market especially from the marginalized mountainous areas. Access related factors had some depth in it, it stands that it was not very easy to understand these issues. It was literally not taken only for physical access to market but qualitative data revealed that there were found serious access related problems originating from ethnic exclusion. Local people having National Identity Card had more access to the indigenous as well as distant markets whereas foreign settlers or Afghan migrants had limited approach in this regard just because they did not have local registration proof. The third most important hurdle regarding crops production was high cost of fertilizers, again a huge majority over eighty percent (82%) mentioned this fact responsible for their low crop output.

The most important production related issue that was panicking the respondents was supposed to be scarcity of irrigation water. Water was not at all sufficient for local

Table 2. Food production constraints and related facts

Production constraints	Yes		No	
	Frequency	%	Frequency	%
Lack of irrigation water	58	96	02	04
Limited market access	54	90	06	10
High cost of fertilizers	49	82	11	18
Unavailability of credits	48	80	12	20
Low awareness regarding crop production	32	53	28	47
Unavailability of high quality seed	29	48	31	52
Lack of storage facilities for crops	21	35	39	65

growers as one of the respondents gave the comments “...water availability is a bigger issue in the area and we don't find proper amount of irrigation water. It does not stand that water is not present throughout the season but most of the water channels are not lined flash flows of water during rainy seasons or floods cause's serious damages every year. Sometimes, mud also blocks the way of water in the rainy seasons by accumulating in the water channels and hinders the smooth flow of water. Especially after earthquake of 2005; all the channels went on to dry and underground water level lowered, it has gone down from 100 feet to 120 feet. We are in dire need of bricked water channels so that the free flow of water may not be obstructed. At present, clean drinking water is also rarely available as people are adding the chemicals into the streams of water”.

It was quite evident from the comments of one of the small farmers;

“...I work on the land hired from one of the local landowner and pay him rent of his land (6 canals). The income earned through this way is very little. It provides us (me and my family) food but only for 4 month and for rest of the year, we only know that we have to eat food with the pattern of taking wheat (our preferred food) on an alternate day”.

Coping Strategies: All the strategies that are pursued by the households when it is confronted with the unanticipated failure in livelihood sustainability may be termed as coping strategies. These strategies are different and depend on the existing assets of the household which determine the resilience of that household against shocks. The same intention actuated the inquiry of this study. The head of households (whose mean family size=8 & Standard Deviation=1.462) were also asked regarding their preferred expenditures in the presence of other expenditures and inquired that which household item they could really skip if there would be any chance of sudden increase in the prices of food items. They gave varied responses against different factors which are combined in the below given Table 3.

The data given in the Table 3 clearly indicate that almost all of the respondents (97%) showed the possibility of reduction in purchasing/ renting agricultural items/ inputs in face of sudden rise in the food items. The compromise of respondents on the expenditures that were necessary for

production, in face of price hike/shocks was not encouraging aspect for food security situation in the area followed by clothing and education (where 43% of the farmers were illiterate). Another important finding that could be derived from the data was, they (respondents) did not have sufficient savings to buy their production essentials in the presence of mostly upward fluctuating prices. A very appealing result was that the respondents were not ready to compromise on the high expenditures incurred upon their marriages and social events as a large majority negated that they would ever be able to reduce their spending on marriages or socialization/ social events. These results in somehow or the other matched with the findings of the researchers (Heyer, 2006; Krishna, 2004) who indicated that the marriage expenditures, especially for the daughter's marriages, were very high.

Shift in cropping pattern: Cropping pattern is most popularly known as sequence and arrangement of crops and fallow land in the given time and space. This sequence is dependent upon different characteristics of the area as geographic, climatic and soil related. The cultivation trends of the area had been under some transition and this transition was moving from cereals and few of cash crops to the vegetables. People had realized that the vegetables were more productive by spending less expenses incurred on it, with minimum utilization period for their small pieces of land so they started vegetable growing. These findings are in agreement with that of Adil *et al.* (2007) who considered vegetable growing a more suitable trend with high economic returns for the small landholders.

The data given in Table 4 indicated that most of the farmers were growing vegetables on their field (Mean landholding=11 kanals & Standard Deviation=1.807). It was not always so, as the qualitative data revealed that they preferred the cultivation of cereals in the past but with the entry of some Afghans who focused more on vegetable growing and set new trends in that area. Some of the qualitative responses showed the same fact as “...we are especially indebted to the Afghan immigrants who made us learn about growing of short duration crops i.e. vegetables. Now we are taking three crops in a year previously we grew crops and waited for its harvesting period, this year I would grow main crops for only my food and on a very small area,

Table 3. Coping strategies in case of rising food price/ expenditures

In case of increase in food prices you reduce expenditures of	Yes		No	
	Frequency	%	Frequency	%
Purchasing/ Renting agri. items/ Inputs	58	97	12	03
Clothing	50	83	10	17
Education (fee)	49	82	11	18
Food of the household	48	80	12	20
Medical expenses	39	65	21	35
Marriages/ social events	21	35	39	65

Table 4. Distribution of the respondents according to their trends regarding crop production

Main crop of the area	Yes		No	
	Frequency	%	Frequency	%
Vegetables	43	72	17	22
Cereals	15	25	45	75
Cash crops	02	03	58	97
Lentils	---	---	100	100
Fruits	---	---	100	100

rest all of the land will be used for vegetable cultivation. The main vegetables grown in this regard i.e. Tomato and cucumber are important vegetables among the Kharif crops whereas reddish and turnip are important vegetables among the Rabi crops". The second most grown crops were cereals but it was only considered for household consumption and not for income generation. Both qualitative and quantitative data clearly reflecting the exact picture of the situation. Qualitative data are given above inside the inverted comas and the quantitative data are visible in Table 4.

Household's produce consumption pattern: The arrangement which a household adopts to utilize the output of its produced crop is taken as household consumption pattern regarding its produces. The pattern in which the households in the study area consume their produce is directed towards the monetary incentives rather than to buy balance food for the household. It is clearly undergoing a gradual transition so the farming system. In the past the preferred way of farming was subsistence type (Quan, 2009) but now the demand for cash has gone higher and the commercial farming is at premium. The urgent monetary benefits are the aim of the grown produce rather than food which households may be able to use for running its daily activities.

Conclusions: Economic access to food was a dominant problem. Majority of the respondents was worried about threat to food security. The apprehension of going food insecure was coped with alternative strategies such as shifting to lower priced food, cutting the intake quantity of nutrients, and borrowing cash to buy food which took them to the more severe level of food insecurity than before. An overwhelming majority also showed the possibilities of reduction in food production inputs i.e. fertilizers and other agricultural items, and reducing food of household if the prices were expected to rise suddenly at any time. Furthermore, a shift from producing staple food crops to cash crops was strongly evident. Major production related constraints were lack of irrigation water, low access to market and high cost of fertilizers when the vegetables were turning to be the main crop of the local small level farmers. All the produce was sold for earning mainly cash income of the household as responded by majority of the food producers. As majority of the respondents selected 'yes' option for six out of ten questions asked by the researcher in

Table 2, so it is argued that overall food insecurity was prevalent 60% among the respondents.

Acknowledgements: The authors acknowledge the support of Swiss National Center of Competence in Research North-South (NCCR NS). Without support of NCCR NS it would have been impossible for the researcher to conduct research in these marginalized areas.

REFERENCES

- Adil, S.A., M.W.A. Chattha, K. Baksh and S. Hassan. 2007. Profitability analysis of summer vegetables by farm size. *Pak. J. Agri. Sci.* 44:184-188.
- Ahmad, S. 2003. An estimation of food security situation at national and household level in Pakistan. Master Thesis. Dept. Agric. Economics, Faculty of Agricultural Economics and Rural Sociology. University of Agriculture, Faisalabad, Pakistan.
- Andersen, P.P. 2009. Food security: Definition and measurement. *Food Security* 1:5-7.
- Babu, S.C. and A. Tashmatov. 2006. Attaining food security in Central Asia-Emerging issues and challenges for policy research. *Food Policy* 24:357-362.
- Bashir, M.K., S. Schilizzi and R. Pandit. 2012. Are the determinants of food insecurity for landless households different from that of other rural households? *Pak. J. Agri. Sci.* 49:393-400.
- Bickel, G., M. Nord, P.P. Cristofer, W. Hamilton and J. Cook. 2000. Measuring food security in the United States: Guide to measuring household food security (Rev.). United States Department of Agriculture (USDA), USA.
- Chilton, M. 2009. A rights-based approach to food insecurity in the United States. *Amer. J. Public Health* 99:1203-1211.
- Cook, J.T., D.A. Frank, C. Berkowitz, M.M. Black, P.H. Casey, D.B. Cutts, A.F. Meyers, N. Zaldivar, A. Skalicky, S. Levenson, T. Heeren and M. Nord. 2004. Food insecurity is associated with adverse health outcomes among human infants and toddlers. *J. Nutr.* 134:1432-1438.
- Deaton, A. and J. Dreze. 2009. Food and nutrition in India: facts and interpretations. Special Article. *Economic & Political Weekly (EPW)*. XLIV:42-65.

- Hadley, C. and C.L. Patil. 2006. Food insecurity in Rural Tanzania is associated with maternal anxiety and depression. *Amer. J. Human Biol.* 18:359-368.
- Hamelin, A.M., C. Mercier, A. Bedard. 2008. Perceptions of needs and responses in food security: divergence between households and stakeholders. *Public Health Nutrition* 11:1389-1396.
- Heyer, J. 2006. The role of dowries and daughters' marriages in the accumulation and distribution of capital in a South Indian Community. *J. Int. Develop.* 4:419-436.
- Fullmer, M. 2007. Healthy people 2007. Available online with updates at: http://programs.weber.edu/hpstudents/meganfullmer/healthy_people_2010.pdf
- Hussain, A. 2003. Pakistan national human development report 2003. Poverty, growth and governance. United Nations Development Program (UNDP), Islamabad, Pakistan.
- Krishna, A. 2004. Escaping poverty and becoming poor: who gains, who loses, and why? *World Development.* 32:121-136.
- Mjonono, M., M. Ngidi and P.S.L. Hendriks. 2009. Investigating household food insecurity coping strategies and the impact of crop production on food security using coping strategy index (csi). 17th Int. Farm Management Cong. Bloomington/Normal, Illinois, USA.
- Massuanganhe, I.J. 2008. Capacity building for integrated rural development systems and local economic development in least developing countries: the new inclusive rural development paradigm based on experiences and practices. Policy paper 9. UNCDF and UNDP.
- Maxwell, D., C. Ahiadeke, C. Levin, M. Armar-Klamesu, S. Zakariah and G.M. Lamptey. 1999. Alternative food-security indicators: revisiting the frequency and severity of coping strategies. *Food Policy* 24:411-429.
- Oldewage-Theron, W.H., E.G. Dick and E.N. Carin. 2006. Poverty, household food insecurity and nutrition: coping strategies in an informal settlement in the Vaal triangle, South Africa. *Public Health* 120:795-804.
- Pelletier, D. 2005. Food safety and consumer choice policy. p. 113-156. In: K.V. Grebmer and S.W. Omamo (eds.). *Biotechnology, agriculture and food security in Southern Africa.* Intern. Food Policy Res. Inst. (IFPRI), Washington, USA.
- Quan, T.T. 2009. Transition from subsistence farming to commercial agriculture in quangbinh Province, Vietnam. Ph. D thesis, Lincoln University, New Zealand.
- Rosen, S. and S. Shapouri. 2008. Rising food prices intensify food insecurities in developing countries (Feature). *Amber Waves.* 6: 16-21.
- Sander, H. 2008. Healthy people 2010. Community health agencies and services. Available online with updates at <http://programs.weber.edu/hpstudents/heathersanders/professional/3150/Healthy%20people%202010.doc>
- Shahbaz, B. 2009. Dilemmas in participatory forest management in Northwest Pakistan. A livelihood perspectives. *Human Geography Series.* 25.
- Shahbaz, B., T. Ali, A.K. Izhar and M. Ahmad. 2010. An analysis of the problems faced by farmers in the mountains of Northwest Pakistan: Challenges for agri. Extension. *Pak. J. Agri. Sci.* 47:415-418.
- Shrestha, D.P., J.A. Zinck and E.V. Ranst. 2003. Modelling land degradation in the Nepalese Himalaya. *Catena.* 57: 135-156.
- Suleri, A.Q. and S. Haq. 2009. Food insecurity in Pakistan {Report} sponsored by SDC, SDPI, WFP. Available online with updates at <http://vam.wfp.org.pk/publication/food%20insecurity%20in%20Pakistan%2009%20-%202020Aug%202010.pdf>.
- Trochim, W.M.K. 2006. The research methods knowledge base, 2nd ed. Available online with updates at <http://www.socialresearchmethods.net/kb/>
- Zeza, A., B. Davis, C. Azzari, K. Covarrubias, L. Tasciotti and G. Anriquez. 2009. The impact of rising food prices on the poor. Contributed Paper at the Intern. Assoc. Agric. Econ. Conf., Beijing, China.