Health and Infrastructural security of rural households for Sustainable Livelihood: A study in Bundelkhand region of India

ABSTRACT

Poor health tends to be critical for marginal and small farmers who work in their own field and cannot afford to hire an alternative farmer during the time of illness. The research was conducted to assess the health and infrastructural status of farm households. The present study purposefully conducted in Bundelkhand.From each selected village a list of dairy farmers based on land holding was prepared and respondents were selected based on proportionate stratified random sampling method. Data were gathered through personal interview method with the help of the structured interview schedule. The collected data were quantified and analyzed. After data collection, the results were analyzed by using some statistical tools like percentage analysis, correlation and regression. Results revealed that among the marginal farmers the majority (59.26%) of the respondents had low health security, followed by medium and high health security i.e. 32.10 and 8.64 percent respectively. The variables such as annual income and milk production had positive and highly significant relationship with health security at the 1 percent level of significance. This shows that as the value of the annual income and milk production increases the health security of the respondents also increases. The results showed that 58.20 percent variability towards infrastructural security was due to explained or undertaken variables included in the study and the remaining was due to some other factors. The fitted regression model was observed to be significant at the 1 percent level of significance. It can be concluded that there is a need to stress upon improving their overall health and infrastructural security.

Keywords: Farm; Health security; Bundelkhand; Road connectivity;Primary Health center

1. INTRODUCTION

“Health is considered as a factor that could extensively impact farmer productivity and result in not only a reduced wage income for the farmer but also a decline in farm output. Poor health tends to be critical for marginal and small farmers who work in their own field and cannot afford to hire an alternative farmer during the time of illness. Most of the studies on health and farmer productivity owe their genesis to the household production model developed” [1]. “The model is further extended by several scholars such as where the impacts of health are discussed not only on farmer productivity and farmer supply but also on the farmers’ income. Studies on health, farm production and farmer supply are scant in the Indian context”.[2-4] However, there are a few studies that assert the interdependence between household and farm production. These include studies based on Agricultural Farmer Enquiry and Rural Farmer Enquiry by [5]; based on Census and NSS data by [6-8] and based on primary data collected at different time periods by [9-12].

The infrastructure development of any economy includes development of both economic infrastructure and social infrastructure. It highlights the fact that in a rural set up where the livelihood depends largely on agriculture, the economic well-being of farmers is coupled with the size of cultivable land they possess or have access to. The loss of farm production due to poor health is considerably higher among the poorest of the poor group of individuals who are engaged in small or marginal farming. The economic infrastructure can be achieved through developing various sectors like energy, power, telecommunication, transport, irrigation, information technology and finance. On the other hand, the social infrastructure development can be achieved through Education infrastructure development and Health infrastructure development. The present study, therefore, examines the assessment of health and infrastructural security and relationship between independent variables and health and infrastructural security of farmers of Bundelkhand.

“Restrictions of *access* to food as a result of mobility reductions affecting markets and distribution channels, as reported worldwide for several value chains”[13].“The road connectivity in remote villages does lead to diversification in agriculture, which has been documented in the literature as an essential pre-condition for local economic development” [14].This effect could be particularly severe in Peru due to its long distances between rural and urban areas, complex geography, and relatively poor infrastructure to support coffee and potato production and commercialization systems.

2. METHODOLOGY

An ex-post-facto research design was adopted for the present study. According to [15] 'an ex-post facto research is a systematic empirical enquiry in which the researcher does not have direct control over the variables because their manifestations have already occurred or because they are inherently not manipulable'. The manifestation of the variables presumably had already occurred and there was no scope for manipulation of any variable, hence the ex-post factoresearch design will be used in the present study.

In social science research, selection of respondents is a crucial task, hence due care was taken while selecting the respondents. Lalitpur, Banda, Datia and Damoh districts selected randomly. Two blocks from each district, namely Talbehat and Mahroni from Lalitpur district, Banda and Naraini from Banda district, Indargarh and Bhander from Datia district and Damoh and Tendukhera from Damoh district were selected randomly. From each selected village a list of dairy farmers based on land holding were prepared and respondents were selected based on proportionate stratified random sampling method. "From each village 20 dairy farmers were selected proportionately from the prepared list. Thus, a total of 320 dairy farmers was selected for the study". [16] A structured interview schedule was developed for data collection on different aspects of socio-economic characteristics and health related aspects.

The descriptive analysis was undertaken on categorical data and presented in frequencies and percentages. A correlation analysis was done to establish the relationship between health, infrastructural security and the socio-economic characteristics of rural households. The multiple regression analysis was done to to determine the Influence of socio-economic factors on health and infrastructuralsecurity.Analyses were conducted using SPSS version 16.

3. RESULTS AND DISCUSSION

3.1 Health and infrastructural security of rural households

A perusal of the Table 1 indicated that among the marginal farmers,the majority (59.26%) of the respondents had low health security, followed by medium and high health security i.e. 32.10 and 8.64 percent respectively. "A similar trend was followed among small farmers where, the majority of the respondents had a low level of health security, i.e. 52.70 percent, followed by medium and high health security i.e. 36.48 and 10.82 percent respectively. The majority (64.91%) of the respondents among medium farmers had a medium level of health security, whereas among large farmers the majority (46.66%) of the respondents had a high level of health security".[16] It can be interpreted from the above results that the majority of the respondents had low to medium health security. This shows that the health status of

farmers in the study area is very poor and there is a need to have better access to healthcare facilities for the rural households. In the study area,some of the panchayats had primary health centres (PHCs) but they were not functional and the respondents visit nearby city hospitals for treatment.

The data in the Table 1 show that the majority (59.26%) of the respondents among marginal farmers had a low infrastructural security, followed by medium and high social security i.e. 28.39 and 12.35 percent respectively. A similar trend was followed among small farmers where, the majority of the respondents had a low level of infrastructural security, i.e. 50 percent, followed by medium and high health security i.e. 37.84 and 12.16 percent respectively. Among semi-medium farmers, the majority (>90%) of the respondents had a low to medium level of infrastructural security. The majority (47.37%) of the respondents among medium farmers had a medium level of infrastructural security, whereas among large farmers the majority (43.34%) of the respondents had a high level of infrastructural security. With respect to infrastructural security, availability and accessibility of the respondents to various infrastructural facilities available in their locality was assessed. The above results revealed that the overall infrastructural security in the study area was poor as the majority of the respondents had low to medium infrastructural security, so there is a need to stress upon improving their overall infrastructural security.

Table 1. Distribution of respondents according to health and infrastructural security (n=320)

Farm household	Category	Health security		Infrastructural security	
		Frequency	%	Frequency	%
Marginal (n= 81)	Low (<0.52)	48	59.26	48	59.26
	Medium (0.52 – 0.81)	26	32.10	23	28.39
	High (>0.81)	7	8.64	10	12.35
Small (n= 74)	Low (<0.52)	39	52.70	37	50.00
	Medium (0.52 – 0.81)	27	36.48	28	37.84
	High (>0.81)	8	10.82	9	12.16
Semi-medium (n=78)	Low (<0.52)	41	52.56	29	39.18
	Medium (0.52 – 0.81)	26	33.34	42	53.85
	High (>0.81)	11	14.10	7	8.97
Medium	Low (<0.52)	14	24.56	18	31.58

(n=57)	Medium (0.52 – 0.81)	37	64.91	27	47.37
	High (>0.81)	6	10.53	12	21.05
	Low (<0.52)	7	23.34	8	26.66
Large (n=30)	Medium (0.52 – 0.81)	9	30.00	9	30.00
	High (>0.81)	14	46.66	13	43.34

3.2 Correlation among rural households

The Table 2 is evident that milk sale had negative and highly significant relationship with health security. That means, when the milk sale increases,the value of health security associated with it decreases and vice- versa. The variables such as annual income and milk production had positive and highly significant relationship with health security at the 1 percent level of significance. This shows that as the value of the annual income and milk production increases the health security of the respondents also increases. The other variables like age, education, land holding, livestock holding, mass media exposure and extension contact had positive and significant relationship with health security at the 5 percent level of significance. Social participation had negative and non- significant relationship, whereas, experience in dairying and occupation had positive and non-significant relationship with the health security. The relationship between independent variables with the infrastructural security of the respondents was furnished in the Table 2. The variables such as land holding and annual income had positive and highly significant relationship with infrastructural security at the 1 percent level of significance. The other variables such as occupation and livestock holding and were found to have positive and significant relationship with the infrastructural security of the respondents at the 5 percent level of significance. That means, when the value of above variables increases than the value of infrastructural security associated with it also increases. The left behind variables like age, education, experience in dairying, milk production, milk sale, media exposure and extension contact had positive and non- significant relationship with the infrastructural security.

Table 2. Pearson correlation among households **(n=320)**

Variables	Correlation coefficient (r)	
	Health security	Infrastructural security
Age	0.362*	0.097^{NS}
Education	0.289*	0.214^{NS}

Experience in dairying	0.128 NS	0.126 NS
Social participation	-0.104 NS	0.094 NS
Occupation	0.115 NS	0.375*
Land holding	0.294*	0.521**
Livestock holding	0.394*	0.362*
Annual income	0.672**	0.448**
Milk production	0.421**	0.103 NS
Milk sale	-0.552**	0.219 NS
Mass media exposure	0.347*	0.107 NS
Extension contact	0.296*	0.094 NS

** Significant at 1% level of significance
* Significant at 5% level of significance
NS: Non significant

3.3 Influence of socio-economic factors on health and infrastructural security

From these findings in the Table 3, we can conclude that 69.40 percent variance on dependent variable, i.e. health security of the respondents, was due to the explained or undertaken factors of health security; and the rest 30.60 percent variance was due to some other factors, that were not included in the study. The F stat value was 16.624, which was significant at the 1 percent level of significance. “Among the 12 variables, education, occupation, annual income and extension contact were found to be significant ($p<0.01$). The contribution of independent variables towards dependent variable, i.e. infrastructural security was illustrated in the Table 3. The findings conveyed that the independent variables such as land holding and annual income significantly contributes towards infrastructural security at the 1 percent level of significance. The other variables like education and mass media exposure significantly contributes towards social security at the 5 percent level of significance. The results showed that 58.20 percent variability towards infrastructural security was due to explained or undertaken variables included in the study and the remaining was due to some other factors. The fitted regression model was observed to be significant at the 1 percent level of significance”.[16]

Table 3. Influence of socio-econmic factors on health and infrastructural security(n=320)

Variables	Health security		Infrastructural security	
	Regression coefficients (b) value	“t” value	Regression coefficients (b) value	“t” value

Age	0.084	2.063*	-0.085	1.084^{NS}
Education	0.121	2.841**	0.063	2.437*
Experience in dairying	-0.086	0.894^{NS}	0.154	0.861^{NS}
Social participation	0.105	1.369^{NS}	-0.106	1.106^{NS}
Occupation	-0.046	2.714**	0.001	1.582^{NS}
Land holding	0.063	2.076*	0.087	4.293**
Livestock holding	0.121	1.992*	0.124	0.968^{NS}
Annual income	0.175	5.218**	0.173	3.581**
Milk production	0.007	1.925^{NS}	-0.016	1.262^{NS}
Milk sale	-0.081	1.238^{NS}	0.107	1.695^{NS}
Mass media exposure	0.102	1.234^{NS}	0.115	2.386*
Extension contact	0.095	2.865**	-0.026	1.037^{NS}
R^2= 0.694; F stat= 16.624**			R^2= 0.582; F stat= 9.265**	

** Significant at 1% level of significance
* Significant at 5% level of significance
NS: Non significant

4. CONCLUSION

The infrastructure development of any economy includes development of both economic infrastructure and social infrastructure. The health status of farmers in the study area is very poor and there is a need to have better access to healthcare facilities for the rural households. In the study area some of the panchayats had primary health centres (PHCs) but they were not functional and the respondents visit nearby city hospitals for treatment. The variables such as annual income and milk production had positive and highly significant relationship with health security. The above results revealed that the overall infrastructural security in the study area was poor as the majority of the respondents had low to medium infrastructural security, so there is a need to stress upon improving their overall infrastructural security. The findings conveyed that the independent variables such as land holding and annual income significantly contributing towards infrastructural security.

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