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Determinants of Adaptation during COVID-19 Pandemic by Rural Households in Cooch Behar District of West Bengal

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ABSTRACT

The COVID-19 pandemic has led to loss of human life and presented an unprecedented challenge to public health and food systems. The study was conducted to assess the factors in terms of livelihood profile determining awareness and adaptation level. Using random sampling procedure, data were collected from 80 farmers from four villages under two blocks of Coochbehar district in 2021. Altogether eleven variables i.e., age, education, information availability, social participation, quality of common facilities services, mean distance of common facility services, economic status, expenditure during pandemic, net landholding, number of migrants in family and duration of migration explain 46.9 per cent of variance in awareness level and six variables i.e., personal cosmopolite sources use, social recognition, annual family income before and during pandemic and expenditure before and during pandemic explain 63.7 per cent variance of adaptation level. Rural people should be encouraged to participate in different extension activities. Findings would serve as a valid reference for researchers and policy makers concerning pandemic issues.

INTRODUCTION

The Covid pandemic has been considered as the most crucial global health calamity of the century. The outbreak of novel coronavirus disease, caused by a novel coronavirus SARS-Cov-2 has left no sectors untouched. (Saadat et al., 2020). According to FAO (2020), COVID-19 is impacting global food systems, disrupting regional agricultural value chains, and posing risks to household food security. It is estimated that the global gross domestic product (GDP) of the developing economies will contract by 2.5 per cent in 2020 (World Bank, 2020). This could potentially result in an increase in global poverty pushing 60 to 100 million people into poverty (Lakner et al., 2020). India is the second most populous country having 68.84 per cent of rural population out of which 56.6 per cent of workers depend on agriculture and ailed activities (Census, 2011). According to statistical data available, the share of agriculture in India's total workforce was 43.21 per cent in 2019 (World Bank, 2020). Of the total agricultural workforce in India, 45.1 per cent are cultivators (farmers with land or self - employed in agriculture) and the rest 54.9 per cent agricultural labourer. (Directorate of Economics & Statistics, 2017). Severe lockdown has resulted in large scale economic distress and food insecurity as large sections of the population subsist on daily earnings without any savings. (Ray & Subramanaian, 2020). It will hit the most vulnerable sections of the population (e.g., migrant laborers, daily wage workers, and street vendors) the hardest, with reduced employment opportunities and lower earnings and disruptions to the supply chain which, in-turn, threatens to worsen the food insecurity (Gettleman & Raj, 2020). There is also scarce culturally and linguistically accessible information about COVID-19 and how to protect self and others, that further increases the risks to refugees and migrants as well as host population (WHO, 2020).

West Bengal is the fourth most populous state in India with a population of over 90 million. The pandemic has led to a devastating

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impact on adaptation behaviour besides their health. As a result of the pandemic, many people have avoided large gatherings, encouraged physical distancing, and quarantined citizens (Mckinsey & Company, 2020). Farmers are exploring alternate channels to directly sell to consumers through farmer producer companies or linking directly to retailers and wholesalers in urban centres (Reddy & Devi, 2020). Cooch Behar district of West Bengal, was one of the hardest hits during pandemic in northern region of the state. When the total COVID-19 cases per 1000 households was compared, the top five districts were Kolkata, Darjeeling, North 24 Parganas, Howrah and Cooch Behar. COVID-19 cases per 1000 households were 123, 52, 51, 33, and 29. Similarly, when COVID-19 cases per One Million population was analysed, the top five districts were Kolkata, North 24 Parganas, Darjeeling, Howrah and Cooch Behar with 2811, 1199, 1100, 726 and 690 COVID-19 cases per one billion population (Biswas et al., 2021). On this backdrop present study was conducted to measure the adaptation mechanism undertaken by rural households and factors effecting it during pandemic.

METHODOLOGY

Agriculture of Cooch Behar district shows a special feature of agro-ecology for its geographical location (Terai Zone). Agriculture is the main source of livelihood and employment for rural people. Out of 12 development blocks of Cooch Behar two blocks i.e., Cooch Behar-I and Cooch Behar-II blocks were purposively selected due to its highest number of households among all other blocks. Two villages under each block were randomly selected. A sample of 20 rural households were selected for present study. Thus, a total of 80 respondents were chosen. Based on the literature review of the secondary data, 25 statements were initially developed and the relevancy of each item was measured on 3-point continuum i.e., most relevant, relevant and least relevant by experts representing Uttar banga Krishi visvavidyalaya, KVK and state line departments. Twelve items which mean score were greater than 1.5 were kept in the schedule which was pretested in non-sampling area and thereafter the final schedule was formed and administered with the sample respondents. The responses whether the people were aware of it or not and whether it was adopted by them or not were recorded accordingly. Correlation and multiple regression analysis were done to reveal the factors in term of attributes determining livelihood profile of rural households which have influenced the awareness level of rural household on different coping strategies and their adaptation during the COVID-19 pandemic.

The attributes determining livelihood profile of rural households were, viz., age, education, personal localite information sources use, personal cosmopolite sources use, mass media use, ICTs use, social media use, information accessibility/ availability, participation in extension activities, social participation, extent of cohesiveness, social recognition (household status), quality of common facilities services, mean distance of common facilities services, level of physical assets holding, economic status, annual family income, monthly family expenditure, credit behaviour, financial awareness, financial safety, net land holding, net cultivated area, livestock holding, number of migrants in family, duration of migration, perceived level of financial constraints, perceived level of marketing constraints, perceived level of production & labour constraints, perceived level of personal & general constraints.

RESULTS AND DISCUSSION

Table 1 shows the distribution of respondents according to the adaptation mechanisms. All the respondents were aware of the maintenance of social distance in public places. Singh et al., (2021) also revealed that 64 per cent of respondents had moderate knowledge about the characteristics of COVID19. Bhati et al., (2020) in their study reported that majority of the respondents felt necessity of wearing mask and sanitizing hands. Julie Howard (2020) stated that the pandemic will creates an opportunity to accelerate the use of digital technologies in smallholder agriculture, not only for extension advice but to crowdsource information about COVID-19 impacts. Digital logistics, both in rural and urban areas, can play crucial services in reducing the impacts of COVID-19 on whole transport, aggregation, and retail systems (Maji et al., 2020). Majority of the respondents were not aware about different digital technologies however Arogya Setu mobile app was a well-known name to majority, about 88.75 per cent were aware of use of Arogya Setu mobile app and 61.92 per cent came to know about this app through mass media. Most of the respondents have adopted it

Table 1. Distribution of respondents according to the adaptation mechanisms

S.No.	Strategies	% of farmers (N=80)									
		Awareness		Sources of Information				Adapted		Found it useful	
		Yes	No	PL	PC	MM	SM	Yes	No	Yes	No
1.	Social distance maintenance in public places	100.0	-	17.5	-	67	16.25	100	-	100	-
2.	Proper farm sanitation	77.5	22.5	75.0	-	11.7	13.4	45.0	55.0	37.5	62.5
3.	SHG or farmer club meetings through WhatsApp	35.0	65.0	67.8	-	-	32.14	31.25	68.75	28.75	71.25
4.	Use of post office linkage model for input services	7.5	92.5	16.7	-	16.7	66.7	-	100	-	100
5.	Use of e-farm advisory	13.75	86.25	9.09	-	-	90.9	-	100	-	100
6.	Use of Arogya Setu mobile app	88.75	11.25	21.12	-	61.92	17	68.75	31.25	35	65
7.	Use of FSC start-up linkage	8.75	91.25	-	-	-	100	-	100	-	100
8.	Regular visit of the veterinary & human health team	71.25	23.75	43.8	50.8	-	3.5	32.5	67.5	32.5	67.5
9.	Use of KCC	65.0	35.0	59.6	-	-	40.3	42.5	57.5	33.75	66.25
10.	Imparting education through online platform	70.0	30.0	8.92	92.8	-	-	45.0	55.0	38.75	61.25
11.	Doorstep services for different inputs	47.5	52.5	76.3	-	-	23.6	21.25	78.75	17.5	82.5
12.	Cultivation of short duration variety	32.5	67.5	-	-	19.2	80.7	8.75	91.3	8.75	91.25

(68.75%) and only 35 per cent have found it useful. Only 13.75 per cent of respondents were aware about the use of e farm advisory. However, Slathia et al., (2012) stressed that to maintain trust among the farming community requires induction of professionally qualified personnel and their regular trainings. Three fourth respondents feels that even the education system cannot afford lock down (Bhati et al., 2020). About 70 per cent of respondents were aware about imparting education through online platform and 45 per cent had adapted it.

Table 2 shows that there were significant associations between the awareness level and respondent's attributes like social participation, annual family income during pandemic as evident from significant correlation coefficient values. While attributes like mean distance of common facility services and number of a migrants in family showed significant negative relation with the awareness level.

Adaptation level of the respondent was having significant associations with the personal cosmopolite sources use, participation in extension activities during pandemic, social recognition (household status) and livestock holding with the significant correlation coefficient values of each while attributes like mean distance of common facility services, number of migrants in family and duration of migration showed significant negative relationship with the adaptation level.

Table 3 shows the multiple regression (backward elimination) between the attributes, awareness and adaptation of respondents on different coping strategies**.** Accordingly, eleven variables namely age, education, information availability, social participation, quality of common facilities services, mean distance of common facility services, economic status, expenditure during pandemic, net landholding, number of migrants in family and duration of migration found having significant regression coefficient at 0.9, 1.5, 6.8, 0.4, 6, 4.7,9, 0.5, 7.1, 0.9 and 3.3 per cent level of significance respectively. Altogether these eleven variables explain 46.9 per cent of variance in awareness level. Patel & Palandurkar (2020) described that there is a lack of awareness among the people and often they confuse common cold with COVID19. Additionally, these communities live in small, overcrowded spaces and expose a lot many people to the infection if they are the carrier. For adaptation level, accordingly six variables namely personal cosmopolite sources use, social recognition (household status) annual family income before and during pandemic and expenditure before and during pandemic found having significant regression coefficient at 1.2, 1,

Table 2. Correlation analysis between the attributes and awareness level of respondents

S.No.	Attributes	Correlation coefficient (r)	
		Awareness	Adaptation
1.	Age	0.061	0.075
2.	Education	0.157	0.140
3.	Personal localite information sources use	0.013	0.078
4.	Personal cosmopolite sources use	0.150	.225(*)
5.	Mass media use	0.083	0.191
6.	ICT use	0.014	0.068
7.	Social media use	0.037	0.021
8.	Information availability	-0.004	-0.071
9.	Participation in Extension activities before pandemic	0.141	0.202
10.	Participation in Extension activities during pandemic	0.150	.244(*)
11.	Social participation	.314(**)	0.177
12.	Extent of social cohesiveness	0.116	0.006
13.	Social recognition (household status)	0.195	.274(*)
14.	Quality of common facilities services	0.174	0.126
15.	Mean distance of common facilities services	-.266(*)	-.292(**)
16.	Number of physical assets	-0.033	-0.033
17.	Economic status	0.123	0.041
18.	Annual family income before pandemic	0.092	-0.160
19.	Annual family income during pandemic	.259(*)	0.154
20.	Expenditure before pandemic	0.197	0.032
21.	Expenditure during pandemic	0.201	-0.041
22.	Credit behaviour	0.097	0.134
23.	Financial awareness	0.076	0.072
24.	Financial safety	0.098	0.077
25.	Net land holding	0.002	-0.032
26.	Livestock holding	0.204	.225(*)
27.	Number of migrants in family	-.310(**)	-.296(**)
28.	Duration of migration	-0.208	-.242(*)
29.	Perceived level of financial constraints	-0.149	-0.028
30.	Perceived level of marketing constraints	-0.057	-0.005
31.	Perceived level of production & Labour Constraints	-0.145	-0.213
32.	Perceived level of personal & general Constraints	-0.063	-0.011
	Awareness		.684(**)

** significant at 1% level of significance * significant at 5% level of significance

Table 3. Multiple Regression (Backward Elimination) between the attributes, awareness and adaptation level of respondents

S.No.	Coefficients	Unstandardized Coefficients	Standardized Coefficients	T	Sig.
		Std. Error	Beta		
	FOR AWARENESS LEVEL				
	(Constant)	27.719	(22.365)	0.807	0.423
1.	Age	0.157	0.341	2.674	0.009
2.	Education	0.447	0.316	2.498	0.015
3.	Information availability	0.605	-0.189	-1.856	0.068
4.	Social participation	1.995	0.303	2.998	0.004
5.	Quality of common facilities services	0.452	0.190	1.909	0.060
6.	Mean distance of common facilities services	0.107	-0.225	-2.020	0.047
7.	Economic status	3.360	0.184	1.720	0.090
8.	Expenditure during pandemic	0.000	0.301	2.932	0.005
9.	Net land holding	1.288	-0.200	-1.834	0.071
10.	Number of migrants in family	2.696	-0.266	-2.702	0.009
11.	Duration of migration	1.536	-0.213	-2.175	0.033
	$R = 0.685$; $R^2 = 0.469$; F statistic = 1.918				
	FOR ADAPTATION LEVEL				
	(Constant)	5.210	(-0.118)		
1.	Personal cosmopolite sources use	2.010	0.196	2.570	0.012
2.	Social recognition (household status)	1.800	0.206	2.635	0.010
3.	Annual family income before pandemic	0.000	-0.320	-3.020	0.003
4.	Annual family income during pandemic	0.000	0.196	1.915	0.060
5.	Expenditure before pandemic	0.001	0.516	2.385	0.020
6.	Expenditure during pandemic	0.001	-0.578	-2.620	0.011
7.	Awareness level	0.066	0.607	7.810	0.000
	$R = 0.798$; $R^2 = 0.637$; F statistic = 3.590				

0.3, 6, 2 and 1.1 per cent level of significance respectively altogether these six variables explain 63.7 per cent variance of adaptation level.

CONCLUSION

The respondent's attributes like social participation, annual family income during pandemic showed a positive significant relationship with the awareness level. While adaptation level of the respondent was having significant associations with the personal cosmopolite sources use, participation in extension activities during pandemic, social recognition (household status) and livestock holding. The attributes like mean distance of common facility services and number of a migrants in family showed significant negative relation with both the awareness and adaptation level, Thus, respondents should be encouraged to participate in different social initiatives and extension activities while maintaining safety precautions due to pandemic. They should be encouraged to use different emerging digital and ICT technologies.

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