Effect of the Coronavirus Pandemic on Income, Education and Health: A Study along the Banks of River Kharkhari, West Bengal, India

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ABSTRACT

This study goes about to analyze the consequences of the coronavirus on human livelihood. Door to door survey has been done to collect local people's responses. To find out the effect of coronavirus on human livelihood discriminant analysis has been done and Pearson's correlation analysis has been accomplished. For fulfillment of the objective of this study, 13 mouzas (small administrative units in India) and 1 census town have been selected as study units along the banks of river Kharkhari. The outcome of this study shows that the coronavirus pandemic impacted the reduction in the income level of people in the selected study units. People of villages were less affected by coronavirus than the people of towns. However, the effect of this pandemic is not less in villages and it has a considerable effect on income, education and health of people. There is a negative and significant correlation (r=-0.718, at 99 percent level of confidence) between COVID symptoms/affected and reduction in income level. The result of discriminant analysis reveals that the leading independent variable is a reduction in income level as it has the highest value (2.234) in the standardized canonical function coefficient table. A considerable number of school dropouts has been observed after the lockdown due to this pandemic. Field survey reveals that people are still in fear regarding a reduction in income level due to this pandemic.

1. INTRODUCTION

The entire world has been adversely suffering by the coronavirus pandemic for the last two years. India has received the first, second and third waves of this pandemic. The second wave of coronavirus is spreading promptly and it has severely affected India (Kumar, 2021). Moreover, there may be a possibility of getting the fourth wave. The virus has a serious impact on human livelihood. Every country has suffered remarkably from its dangerous effects. Their effects have been felt on the economy, education, and health of human livelihood. Corona pandemic has long-reaching impacts on the physical as well as mental health of individuals across the globe (Shukla et. al., 2021). The pandemic has significantly affected local people psychologically; it has led to socioeconomic vulnerability in human society (Shafi et. al., 2021). Rural communities were highly affected by COVID-19 by lowering financial resources (Luca et. al., 2020). There is a high chance of deeper poverty for 400 million workers in India engaged in an informal economy during the coronavirus pandemic (Margaret, 2020). The impacts of the COVID-19 pandemic on health, economy and education have been felt in rural America (Muller et. al., 2021). Students of rural areas of Pakistan faced the

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adverse effect of the coronavirus pandemic on education (Zahra et. al., 2020). COVID-19 introduced very adverse effect on informal rural economy in India (Singh, 2020). Jagdale and Ganatra (2021) showed the impact of the COVID-19 pandemic on the tourism industry of India. They showed that the tourism industry was badly affected by the lockdown due to COVID-19 and travelers cancelled their tours. Abbas et. al. (2021) also showed the impact of COVID-19 on tourism. Haleem and Javaid (2020) stated about the downturn of the global economy due to COVID-19. COVID-19 badly impacted daily lives of people, it had terrible consequences on business and it disrupted the world trade and movements. Very basic to say that economically stable countries or developed countries can easily cope with the effects of any disaster than the comparatively less economically stable or developing countries (Ghosh, 2022). In India, the effects of the coronavirus have been observed on human health, economic sectors, and educational sectors or simply in every corner of human life. In the villages, the effect of this pandemic is slightly different than in the towns. In this context, a focus has been made in this research to study the effects of coronavirus on some selected mouzas along the banks of river Kharkhari under the community development blocks of Raghunathganj-I and Sagardighi in Murshidabad district of West Bengal, India. This is a grassroots-level study to identify the impact of coronavirus in villages. There are limited studies on the effects of the coronavirus pandemic on the human livelihood of village people in developing countries like India. Most of the studies are related to the effect of the coronavirus pandemic on economic sectors. In this study, an attempt has been made to show the impact of the coronavirus pandemic on human livelihood using a mathematical model. The fitted mathematical model has been tested in fourteen study units. The pre-assumption under this research is "Coronavirus has significant adverse effects on income, education and health of people". This study has significance in finding out the actual impact of the COVID-19 pandemic on human livelihood. The present study is an example to show the real effects of coronavirus on villages in developing countries like India. The present study may be helpful to understand the problems introduced by this pandemic which makes it easier to take planning measures to cope up with the bad effects of coronavirus especially in villages.

2. METHODOLOGY

2.1. Study Area

The study area is Raghunathganj-I and Sagardighi community development blocks of Murshidabad district in West Bengal, India. The reason behind the selection of this study area is that this area is easily accessible to conduct a survey about the impact of the coronavirus pandemic on human livelihood during pandemic situation and

researchers deeply felt that this area will provide the real ground to show the impact of COVID-19 on human livelihood along the river bank. River Kharkhari is an important river under the study area after river Bhagirathi. Eight mouzas viz., Sonatikri, Srikantabati Census Town (CT), Bahadinagar, Badhkhola, Nista, Talai, Mirzapur, and Gankarhave selected under Raghunathganj-I community development block. Six mouzas viz., Chandpara, Balia, Noapara, Pilki, Balagachi, and Char sitesnagarhave selected under Sagardighi community development block as study units (Figure 1). Physiographically, the study area is more or less similar as the district Murshidabad. River Bhagirathi has divided the district into two vast geographical regions. However, these regions have almost equal areas. But they are different in respect of their geological characteristics. These two regions are the Rarh area and the Bagri area. Rarh area is located to the west of the river Bhagirathi. This region is composed of lateritic clay. Generally, the soil of this area is greyish and reddish in colour. And, the soil of Rarh area is enriched with lime and iron oxide(Census of India, 2011a). Bagri area is on the eastern portion of the river Bhagirathi. This area is generally composed of Gangetic alluvial deposits. Bagri is situated between the Ganga, Bhagirathi, and the Jalangi rivers. Bagri is formed after the formation of Rarh area (Census of India, 2011a). The Bagri region is very fertile because of fresh silt accumulation almost every year (Census of India, 2011a). The total population of Raghunathganj-I C.D. block is 195627 and the literacy rate is 64.49 % (Census of India, 2011a). The economy of the study area block basically depends on agriculture (Census of India, 2011a). The total population of Sagardighi C.D. block is 310461 and the literacy rate is 65.27% (Census of India, 2011a).
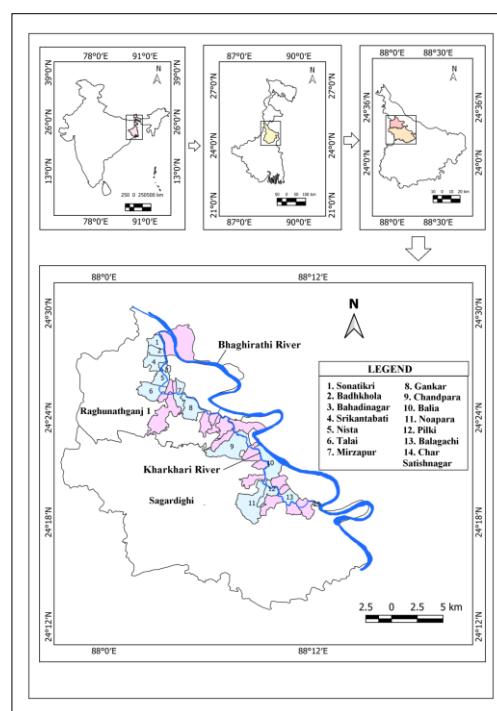

Fig 1. Location of study area

2.2. Data collection

Primary as well as secondary data have been used in this study. Primary data has been collected during field visits from the year 2021 to 2022. Along the river Kharkhari, out of 33 mouzas (small administrative units in India) total of 14 study units have been selected for the present study. From each study unit, 55 households have been taken as samples by using a random sample technique depending on a number of households living along the bank of river Kharkhari. Responses have been collected from respondents regarding the effect of the coronavirus pandemic on them with the help of a questionnaire. Responses have been collected from both females and males in the area under study. Secondary data has been gathered from the website of the census of India to previously collect information on the study area about the physical as well as socio-economic conditions. And, map of the study area has been prepared based on a map collected from the Office of National Atlas And Thematic Mapping Organization (NATMO), Kolkata and the website of the census of India.

2.3. Data table preparation and data analysis

First of all, a Data table has been prepared from the collected data. To satisfy the aims of this research, some parameters have been selected like gender (male and female), COVID symptoms / affected, death, income reduction in percentage, school dropout, social interaction loss in percentage, frustration/fear for COVID pandemic. Individual responses about the effect of the pandemic have been collected from the male and female population of the study units. Here, the taken data set is categorical. Discriminant analysis is used in this study. It is a statistical technique (Equation 1) which is the same as multiple linear regression analysis. However, in case of discriminant analysis, the dependent variable is categorical (Venkatesh, 2022). The equation of discriminant analysis (Venkatesh, 2022, Gaur & Gaur 2009) is as follows:

$$D = v_1X_1 + v_2X_2 + v_3X_3 + \cdots \ldots + v_iX_i + a \qquad \text{(Eq 1)}$$

Where, D is a discriminate function, v is the discriminant coefficient or weight for that variable, X is the respondent's score for that variable, a is constant, i is the number of predictor variables.

To analyze the effect of the pandemic on people of study units, a mathematical model has been fitted in this research. Discriminant analysis has been accomplished using SPSS software and the dependent variable is gender responses regarding the effect of the coronavirus on their livelihood and at the time of data analysis using SPSS software male is considered as 1 and female is considered as 2. Selected independent variables are- COVID symptoms / affected, death, income reduction in percentage, school dropout, social interaction loss in percentage, and frustration/fear.

To explore the correlation among the taken parameters Pearson's correlation analysis has been done using SPSS software.

3. RESULTS AND DISCUSSION

Results of the study show the effect of the coronavirus pandemic still exists among the people. This pandemic has had remarkable effects on the income, education, and health of the people. The fitted model shows that the discrimination between the groups is significant as the probability value (p value) of the F test is less than 0.05 at 6 degree of freedom (Table 1). The fitted model has better discriminating power and it is also a good model because of low value of Wilks' Lambda which is 0.365 and again the canonical correlation value is 0.797 (Table 1). This model has a high eigen value (1.740) (Table 1). Therefore, the dataset is fit for this analysis and the model has good discriminating power. The result of discriminant analysis reveals that the leading independent variable is a reduction in income level as it has the highest value (2.234) in standardized canonical function coefficient table (Table 1). So, it can be said that the prime effect of the coronavirus pandemic is a reduction in the income level of the people especially those who are attached to informal economic sectors in villages. Most of the people in the study area are mainly engaged in informal economic sectors like various agricultural activities, daily labour, household workers etc. Again, correlation between parameters like COVID symptoms / affected and income reduction in percentage is negative (r=-0.718) and significant at 99 percent level of confidence (Table 2). COVID symptoms / affected is second leading independent variable with coefficient of 1.674 (Table 1). Death is third leading independent variable with coefficient of 1.343 (Table 1). Fear or frustration has least explanatory power with coefficient of 0.264 (Table 2). Therefore, it is clear that the major effect of corona pandemic in villages is reduction in income level.

Table 1. Discriminant analysis's result

Function	Wilks' Lambda	Chi-square	degree of freedom	Significance	Eigen value	Canonical Correlation	Standardized Canonical Discriminant Function Coefficients	
							Independent variables	Function
								1
1	0.365	23.185	6	0.001	1.740[a]	0.797	COVID symptoms / affected	1.674
							Death	1.343
							Income Reduction in percentage	2.234
							School dropout	-0.063
							Social interaction loss in percentage	-0.959
							Frustration / Fear	-0.264

a. First 1 canonical discriminant functions were used in the analysis.

Table 2. Relationship among the parameters

		COVID symptoms / affected	Death	income reduction in percentage	School dropout	Social interaction loss in percentage	Frustration / Fear
COVID symptoms / affected	Pearson Correlation	1	0.696**	-0.718**	-0.534**	0.782**	-0.239
	Significance		0	0	0.003	0	0.22
Death	Pearson Correlation	0.696**	1	-.647**	-.407*	.523**	0.025
	Significance	0		0	0.032	0.004	0.901
income reduction in percentage	Pearson Correlation	-0.718**	-.647**	1	0.28	-.500*	0.112
	Significance	0	0		0.15	0.012	0.572
School dropout	Pearson Correlation	-0.534**	-0.407*	0.28	1	-.616**	0.501**
	Significance	0.003	0.032	0.15		0	0.007
Social interaction loss in percentage	Pearson Correlation	0.782**	0.523**	-0.500*	-0.616**	1	-0.391*
	Significance	0	0.004	0.012	0		0.039
Frustration / Fear	Pearson Correlation	-0.239	0.025	0.112	0.501**	-0.391*	1
	Significance	0.22	0.901	0.572	0.007	0.039	

**. Correlation is significant at the 99 level
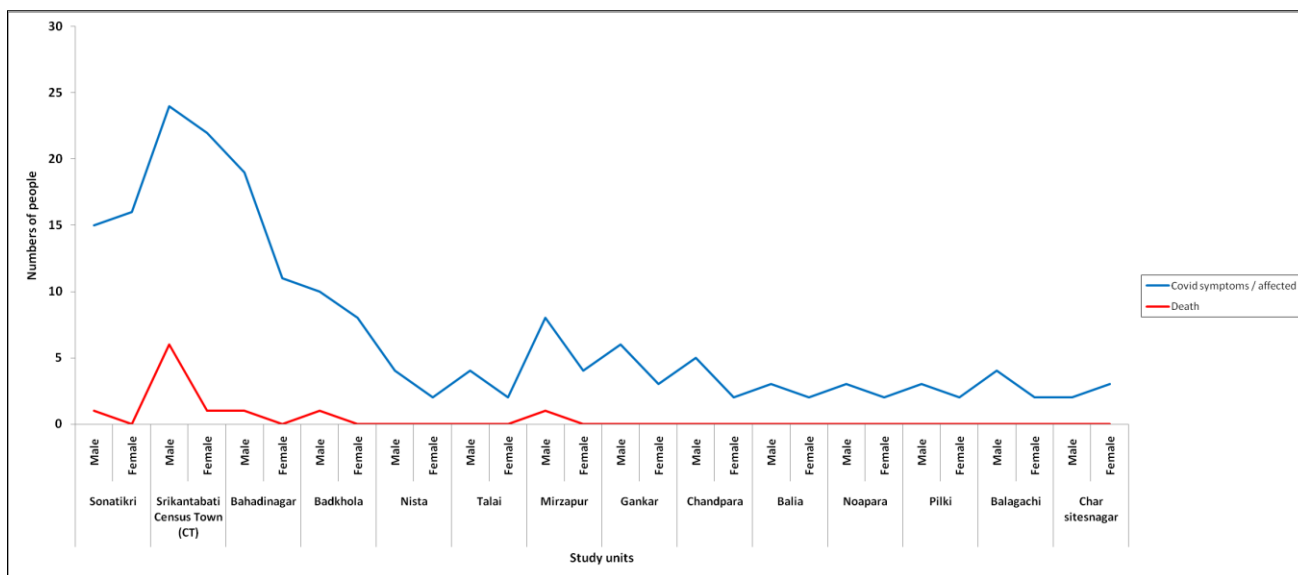
*. Correlation is significant at the 95 level

Fig 2. Number of people having COVID symptoms / affected and death in the selected study units

Miyah et al., (2022) stated the negative impact of COVID-19 on the mental health of people and they showed that people became frustrated, depressed, anxious and attempting suicide due to the pandemic. As per responses collected during field survey, the numbers of people having COVID symptoms were there but they were not surely corona affected. Very few cases of death have been observed in villages. But, the main impact of this pandemic has been highly noticed in the case of the economy. Due to restrictions in social interaction during pandemic situation, people were not allowed to go outside, unless in emergency cases. This results in a reduction in their income level. The correlation between variables like social interaction loss in percentage and reduction in income level is negative (r=-0.5) and significant at a 95 percent level of confidence (Table 2). There is also a negative and significant (99 percent level) correlation (r=-0.534) between school dropout and COVID symptoms / affected (Table 2). There is also a negative and significant (99 percent level) correlation (r=-0.616) between school dropout and social interaction loss in percentage (Table 3). There is also a negative and significant (99 percent level) correlation (r=-0.500) between school dropout and death (Table 2). Therefore, it can be said that coronavirus pandemic has a remarkably bad effect on education of children in villages. Many children under the age group 5 and onwards were unable to enroll their names in schools due to this pandemic. As per response received during field survey, there are huge losses in the economic condition of the people in villages, as a result many of their children are now engaged in work to give economic support to their families. The adverse effect on the income of the people due to the pandemic introduces dropout of many children from school. Again, the health of people is affected during the pandemic but now people are frustrated or afraid

regarding their economic loss or reduction in income if there is a further outbreak of the virus.

In villages, social interaction among the village people was not restricted during the pandemic. They kept normal interaction among them. Study units like Srikantabati, Bahadinagar which are near the main town Raghunathganj have more numbers of COVID symptoms / affected. Again, the number of deaths is also more observed in Srikantabati, Bahadinagar during the pandemic (Figure 2). Therefore, it can be said that people of villages have got the impact of coronavirus especially on income, education and mental health. Death is very limited in villages due to this pandemic but the effect of the pandemic is long run and highly observed on their entire livelihood.

4. CONCLUSION

This coronavirus pandemic has introduced a huge loss in the income level of people especially those engaged in informal economic sectors. Reduction in income brings school dropout of many children in villages. The mental health of the people is affected. Coping with the problems introduced by any hazards or disasters is relatively easier to handle in economically stable countries than in developing countries. Economically weak countries need more time to cope with the problems introduced by any hazards. Therefore, people with poor economic conditions have to face the effects of any hazards in the long run sometimes generation after generation. Finally, it can be concluded that the coronavirus pandemic has brought adverse effects on the income, education and health of the people in villages. Here, the preconceived idea 'Coronavirus has significant adverse effects on income, education and health of people' has been fitted very well. Now, questions have risen about the implementation of management plans to cope with the problems introduced by this coronavirus pandemic. A

vaccination programme has already been in force by the government to prevent the disease of COVID-19. However, management plans for minimizing the effects of the coronavirus need to be implemented by competent authorities to cope with the consequences brought by the coronavirus pandemic during the last three years. In this case, the authority needs to focus on creating employment opportunities, providing subsidies in agricultural sectors, and creating plans to return dropout children to school. But, it needs to be said that there are so many initiatives taken by competent authorities but as per the response received during the field survey there is a question mark regarding the proper fruitfulness of various government schemes. Corruption in the system is the main problem for getting benefits from different schemes launched by the government.

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