IJSSS

International Journal of Social Sciences and Sustainability

CEPSS

Examining People's Behavioral Responses to COVID-19: The Role of Socioeconomics, Risk Perceptions, and Media in Pakistan

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ABSTRACT This study examines people's behavioral responses to COVID-19 in Pakistan. A survey instrument is designed to collect data on demographic characteristics, perception about COVID-19, and motivation to avoid it, the socio-economic impact of COVID-19, and their views about the policy responses. The survey collected responses from 404 individuals of different age groups. The data is analyzed through descriptive statistics and a logistic regression model to study human behavior to deal with the COVID-19. It is revealed that families' dependence on earners is the main obstacle for social distancing and isolation. The results indicate that people with high socio-economic conditions, perceived Severity, and social pressure are more likely to adopt social distancing and go to isolation. It is also revealed that people with lower socio-economic conditions face economic hardship due to shrinking work opportunities. Thus, the study recommends the government to manage the diversion of resources to sustain individuals' lives through a targeted approach and use expansionary fiscal and monetary policies as a prudential option.

KEYWORDS: Pandemic; Social Distancing; Isolation; Income; Governance System; Human Behavior

INTRODUCTION

The COVID-19 pandemic has led to a dramatic loss of human life worldwide and presents an unprecedented challenge to public health, food systems, and the world of work. The economic and social disruption caused by the pandemic is devastating: tens of millions of people are at risk of falling into extreme poverty, while the number of undernourished people, currently estimated at nearly 690 million, could increase by up to 132 million by the end of the year [1]. Countries dealing with existing humanitarian crises or emergencies are particularly exposed to the effects of COVID-19. Responding swiftly to the pandemic while ensuring humanitarian and recovery assistance reaches those most in need is critical. As the number of deaths increases, evidence regarding people's psychological reactions to this global public health crisis becomes increasingly important because it provides insights that could help policy-makers and practitioners improve health communication, promote preventive behaviors, and provide social and emotional support to those in need [2-3].

An epidemic is defined as an outbreak of a disease that occurs over a wide geographic area and affects an exceptionally high population. In contrast, the term pandemic relates to geographic spread and describes a disease that affects a whole country or the entire world. Pandemic resulted in adverse effects in severe illness, high mortality, and destructions until centuries. The

novel coronavirus disease 2019 (COVID-19) was an outbreak worldwide, and just after a few days, it was declared as Public Health Emergency on 30th January 2020 by the World Health Organization (WHO).

Pandemics' risk has risen over the past century due to increased international travel and migration, urbanization, intense natural degradation, and land development reforms [4-5]. Two of the top countries challenged by Covid-19 are the next neighbors to Pakistan, i.e., China and Iran. The COVID-19 started from China, widely spread in Iran. Pandemic is large-scale infectious disease outbreaks that can dramatically increase morbidity and mortality over a vast geographic region. It can cause substantial socio-economic and political instability. Many of the statistical analyses of prior pandemic data have identified possible causes of trends of mortality. Research by Chowell found that mortality rates in the UK during the 1918 pandemic were 30-40 percent higher in towns and cities than in people living in remote rural areas [6]. It is found that the frequency of infectious waves in the UK in 1918 correlated with social and economic status, age trends, possibly due to previous immunity among certain age groups [7].

Coronavirus creates significant threats to human health, as well as to other species. From 2002 to 2003, 8000 individuals were diagnosed with severe acute respiratory coronavirus syndrome (SARS-CoV), resulting in a fatality rate of 10 percent [8]. Since 2012, more than 1700 individuals were diagnosed with the Middle East Respiratory Coronavirus Syndrome (MERS-CoV) with a fatality rate of 36 percent [9-10]. Porcine outbreak coronavirus diarrhea (PEDV) had spread throughout the US wherein the mortality rate in piglets was almost 100 percent and killing out more than 10 percent of the total pig community of America in less than a year [11-13]. Also, coronavirus in humans and animals can cause tremendous harm to the gastrointestinal, respiratory, and central nervous system, risking human health and causing widespread socio-economic fall [14-15].

As of December 2013, 170 verified cases of human infection were recorded by the world health organization, including 72 death. Saudi Arabia has registered the largest number of cases of MERS-CoV. Patients treated in the UK, Germany, Spain, Tunisia, France, and Italy were also associated with the Middle East [16]. Pandemic zoonosis represents a dynamic interplay of environmental, biological, and socio-economic factors [17]. Over recent years, the research on emerging infectious diseases and the public's concern has expanded significantly [18-19]. The disease's effect on people, families, and nations continues to be highly significant, decreasing the GDP of affected countries by even more than half and decreasing the UN estimate of the world population by 480 million by 2050 [20-21].

As coronavirus disease 2019 (COVID-19) spread across the world, people faced a new and unfamiliar health threat about which only a limited set of information was available. In contrast, it was also readily changing at the initial stage. Although the outlook remains uncertain, COVID-19 has already caused high mortality, and the number is also increasing over time. To limit disease transmission, the World health organization has recommended precautionary measures such as social distancing. However, social distancing and isolation are the decisions to be taken by individuals. It primarily depends on the individual's socioeconomic characteristics, risk perception, and access to information. The implications of COVID-19 can be worsening for developing countries which are already lagging behind in socio-economic conditions, have low-risk perception and little information access. Given the importance of socio-economic conditions, risk perception, and information availability in developing countries, the present study examines people's behavioral responses to COVID-19 in Pakistan.

The study has designed a survey instrument to collect data on individuals' socio-economic characteristics and their views on specific areas of potential concern. The survey collected responses from 404 individuals of different age groups. The data is analyzed through descriptive statistics and a logistic regression model to study human behavior to deal with the COVID-19. The results revealed that the dependence of families on the earners is the main obstacle for isolation. Besides, people who perceived the pandemic and social pressure severity are more likely to go to isolation. The results are indicating that people with high socio-economic conditions are more likely to go to isolation. Notwithstanding, people with lower socioeconomic conditions are facing economic hardship due to shrinking work opportunities.

Followed by Introduction, section 2 discusses material and method, section 3 presents results and discussion, section 4 concludes the study and gives policy recommendations.

RESEARCH METHODOLOGY

The strategies to control COVID-19 are based on behavioral dispositions. Here, the social attitude toward perceived impacts depends on behavioral traits and predicting human behavior [22-23]. In principle, the Theory of Planned Behavior (TPB) constitutes an explanation of human behavior, attitudes, the individual norm as social pressure, and an ability to regulate human performance or behavior. The trait of TPB determines human intentions for the behavior because intentions directly transform

the behavior [24]. Further, the human beliefs that transform the attitude and then the behavior are based on information for any particular object. In contrast, the beliefs themselves are affected by societal attributes, cultural norms, and situational factors [25].

TPB caters to social psychology that deals with determinants of individual and societal intended behaviors linked to conscious reasoning and human intentions. These intentions are then linked to the individuals' behaviors in society to engage with certain events happening around them [26]. Furthermore, this theory is practical to describe broad-based human intentions and behaviors in all different study fields, including environment or climatic studies [26-28].

The humanely perceived ethical and moral obligations that construct an individual's emotional state are further linked to an individual's sense of responsibility and the action that changes and transforms time-to-time [29]. Thus, individual or societal attitudes, norms, and behavior predict human intentions to act and react [26]. So, the TPB is deployed in this research to predict human (individual and societal) attitudes and behavior towards COVID-19.

This study designed a survey instrument to gather individuals from Pakistan about the COVID-19 and their socio-economic characteristics. The survey collected responses from 404 individuals of different age groups in line with the demographics of Pakistan. The questionnaire is divided into six different modules: demographic characteristics, perception about COVID-19 and motivation to avoid it, the socio-economic impact of COVID-19, and their views about the government's policy quarantine. The data is analyzed using descriptive statistics and a logistic regression model.

The data is analyzed in two stages. First, all the responses are described in percentages to understand perception and motivation in all aspects. Due to the dependent variable's dichotomous nature, the binomial logistic model is used to investigate the likelihood of different variables' impact. As such, there is no other alternative to the binomial logistic regression model. It studies the association between a categorical dependent variable and a set of independent (explanatory) variables.

Let

$$p_i = pr(y = \frac{1}{x=x_i}) \ldots (1)$$

p_i represents the probability of social distancing, which is dependent on explanatory variable (x_i), the model can be written as

$$\log\left(\frac{p}{1-pi}\right) = logit(p_i) = \beta_0 + \beta_i x_i \ldots (2)$$

If we consider x_i is *Severity of the disease,* and when $x_i = 1$, β1 shows the log of odds of social distancing in the case of non-believer on the effect of social distancing on lifestyle. We can write the model in terms of odds as:

$$\frac{p_i}{(1-p_i)} = \exp(\beta_0 + \beta_i x_i) \ldots (3)$$

Transforming equation (3) in terms of the probability of the outcome, after including the residual terms yields:

$$P_i = p_i + f_i = \exp(\beta_0 + \beta_i x_i) / (1 + \exp(\beta_0 + \beta_i x_i)) + f_i \ldots (4)$$

RESULTS AND DISSCUSSION

Table 1 depicts the gender, age, qualification, employment status, and monthly household income. More than 51 percent of the respondents were females. Fifty-seven percent of the total respondents were of age less than 25 years, whereas around 36 percent were of age from 25 to 45 years of age bracket. The respondents' qualification varies from high school to university level with different employment status and monthly income.

Table 1: Respondents demographic characteristics

Demographic		**Percentage**
Gender	Male	48.33
	Female	51.67
Age		
	< 25	57.42
	25-45	35.89
	> 45	6.70
Qualification		
	≤ High School	33.49
	Graduate	41.15
	Postgraduate	25.36
Employment status		
	Full-time employed	27.75
	Part-time employed	11.00
	Unemployed	6.70
	Others (Students & Housewife)	54.55
Monthly Household Income		
	<25000	16.81
	25000-50000	30.83
	50000-100000	27.27
	100000 above	25.09

Only less than 1 percent of the respondents were not aware of the COVID-19 that can be seen as a positive indicator to deal with the pandemic, but unfortunately, only 57 percent of them were of the view that it can be transmitted with human interaction. It provides insight to run a massive awareness campaign to communicate about the misery COVID-19 can cause. About precautionary measures to avoid transmission of Covid-19 sourced from human interaction, 94 percent of the respondents agree with the preventive measures. More than 61 percent of the respondents believe that there are obstacles and barriers to protect from COVID-19 whereas 85 percent of the respondents believe COVID-19 can cause damage to health or life. The results are presented in Table 2.

Table 2: People perception of COVID-19 (percent)

Sr. No	**Items**	**Yes**	**No**
1	Are you aware of the current global pandemic, COVID-19?	99.04	0.06
2	Do you think coronavirus is transmitted from human interaction?	57.42	42.58
3	Are you taking precautionary measures against coronavirus?	93.78	6.22
4	Are there serious obstacles and barriers to protect yourself from COVID-19?	61.72	38.28
5	Do you believe that COVID-19 can affect your health or life?	95.22	4.78

Table 3 shares the motivation of respondents to avoid COVID-19. 88 percent of the respondents are motivated to avoid COVID-19 because everyone is talking about it, whereas 95 percent of the respondents are aware of the steps to avoid interaction with this pandemic. 86 percent of the respondents highlighted social media as the primary motivator to prevent the COVID-19. 94 percent view prevention as a better option than cure. Interestingly, around 60 percent of the respondents were concerned about their families because of their dependence. Almost 59 percent of the respondents were trying to be isolated, and more than 87 percent of the respondents have started using masks, sanitizer, and practicing frequent hand wash.

Table 3: People motivation to avoid COVID-19

Sr. No	Items	Yes	No
1	Are you aware of the steps that can be taken to avoid pandemic?	95.22	4.78
2	As everyone is talking about COVID-19, so it has motivated you to avoid it.	88.04	11.96
3	Is it better to take preventive measures rather than cure for coronavirus disease?	94.26	5.74
4	Is there an increased pressure from social media and news to take preventive measures?	86.12	13.88
5	You are more concerned about your family because they are dependent on you.	59.81	40.19
6	Are you trying to keep yourself isolated or social distancing from others to avoid COVID-19?	58.85	41.15
7	Have you increased the use of mask, sanitizers and practice frequent hand wash?	87.56	12.44

This study runs a logistic regression model by taking isolation and social distancing as a dependent variable and finding the relationship of Severity, social pressure, motivation to avoid, human interaction, age, gender, income, and education with isolation and social distancing. Whereas this study has defined isolation, Severity, social pressure, motivation to avoid, and human interaction as follow: -

Isolation and Social distancing:	*People who are trying to keep themself isolated or social distancing from others to avoid COVID-19.*
Severity:	*People who believe that COVID-19 can affect their health or life.*
Social pressure:	*People who take pressure from social and news media to take preventive measures.*
Motivation:	*People who are more concerned about their family because they are dependent on them.*

Table 4 provides estimates about predictors of social distancing and isolation. The odds ratio from the logistic regression model confirmed that people who believed that COVID-19 could affect their health or life are 2.67 times more likely to go into isolation and keep social distancing. Furthermore, people who feel more pressure from social media and news are 1.32 times more likely to adopt social distancing or go into isolation. Furthermore, people who are more concerned about their family members are 1.43 times more likely to protect themselves from COVID19 through isolation or social distancing. Likewise, people who believe coronavirus transmits from human interaction are more likely by 2.90 to isolate themselves or keep themselves socially distant. It is also evident from the study that it is less likely to keep social distancing or go into isolation for an additional year of age. It is an essential concern because aged people are more vulnerable to COVID-19 because of less immunity. However, because of economic dependence on their family livelihood, they are forced to go out of home for jobs and cannot follow the isolation or social distancing hence vulnerable to COVID-19. In this perspective, the government needs to understand the constraint behind not following the social distancing guidelines for the significant proportion of the population, especially in earners. It demands vigorous policy to take responsibility for those who have no food at home. This way, isolation and social distancing can be made possible. Insufficient funds availability with the government cannot be accepted as an argument, especially in a country where taxes and policy rates are already very high.

In such an emergency, it is the government's responsibility to arrange for financial resources. In this regard, it is critical to understand that the government has to take one of the two options, i.e., either be ready for the heavy life losses and get a permanent dent in the society and economy or go for a short-lived economic downturn. Naturally, there should be no option except to go into lockdown for a certain period to avoid an unforgettable misery. The gender-segregated results shown that males were 30 percent less likely to go into isolation or social distancing than females. Furthermore, higher-income groups are 1.5 more likely to live isolation strategy/social distancing because of having enough financial resources. People with more education or higher qualification are also 1.69 more likely to keep themselves isolated or distant socially.

Table 4: Logistic regression Model

	Isolation/social distancing
Severity	2.67***
Social Pressure	1.32**
Motivation to Avoid	1.43***
Human interaction	2.90***
Age	0.50**
Gender	0.70***
Income	1.50**
Education	1.69*

***is significant at 99 percent, ** 95 percent * 90 percent

CONCLUSION

This study examines the behavioral responses of individuals to COVID-19 in Pakistan. A survey instrument is designed to collect data from individuals regarding socio-economic characteristics along with others. The data is analyzed through descriptive statistics and a logistic regression model. The primary data results reveal that there is a need to increase awareness among the population about the transmission of COVID-19 through human interaction. People are facing obstacles in social distancing and going into isolation. These obstacles are primarily the dependence of their families to earn a livelihood. Even in the absence of complete lockdown and at the initial stage of vulnerability, people face a decline in their earnings due to the shrinkage of economic activities. The logistic model results further confirm that people understand the Severity, feel pressure from social media and news, are motivated because of their families, and understand the transmission of COVID-19 from human interaction. Therefore, they are more likely to practice social distancing and isolation.

The economic sustainability bound them to compromise on social distancing and isolation. It is strongly recommended that the Governments of low-income countries like Pakistan should put all of their resources and efforts to make social distancing and isolation possible in the pandemic situation so that loss of human lives can be avoided. Otherwise, it will be too late because a pandemic is a natural coping mechanism, but it spreads widely due to human negligence. In contrast, the primary responsibility rests with the governance system.

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