



## CHANGING BEHAVIORS IN EMERGENCY: IDENTIFYING SOCIOECONOMIC FACTORS INFLUENCING KNOWLEDGE, ATTITUDE AND PRACTICES OF PEOPLE DURING COVID-19 IN PAKISTAN.

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### Abstract:

On the one hand, COVID-19 has exposed human systems' vulnerabilities, but it has also increased their capacity to withstand future pandemics. This study aimed to identify the factors that influenced knowledge, attitudes, and practices regarding COVID-19. Pakistan had responded to the virus relatively well. Three South Punjab districts' worth of data were gathered using a structured questionnaire. The data analysis method employed was a multivariate regression model. The findings showed that age and gender had a negative relation with COVID-19-related knowledge, attitudes, and behaviors. On the other hand, knowledge, attitudes, and practices regarding COVID-19 were positively and significantly influenced by family type, education, and income. For any upcoming pandemic, the study advised developing interventions firmly anchored in the socioeconomics of the region.

**Key Words:** COVID-19, Knowledge, Attitude, Practices, Behavior Change

### Introduction:

The world has been confronted with an unprecedented and formidable challenge in the form of the global COVID-19 outbreak. This pandemic has exerted immense pressure on healthcare systems worldwide, disrupting economies and exposing vulnerabilities in health infrastructures across the globe. Developing nations, characterized by large populations, poor rural infrastructure, limited healthcare facilities, high poverty rates, and illiteracy, have been particularly vulnerable to the impact of COVID-19.

The rapid and unanticipated spread of COVID-19 has underscored the urgency of adopting quick and effective alterations in human behavior as the primary response to such diseases. Managing this pandemic has necessitated transparent communication and a level of trust in the information provided (Bekele et al., 2021). However, the lack of comprehensive epidemiological evidence, including insights into transmission dynamics, doubling time, and reproductive frequency of the virus, has posed significant challenges in formulating an effective response to the pandemic (Li et al., 2020).

With no particular treatments or vaccines available during the early waves of COVID-19, preventive measures like social distancing and self-isolation became the only practical way to stop the virus's

spread. Thus, it has been demonstrated that individual acts and behaviors have a major impact on the morbidity and mortality rates of COVID-19, emphasizing the vital role that group engagement in preventive behaviors plays, such as upholding social distance and practicing personal hygiene (Anderson et al. 2020 & Ferguson and others. 2020). Thus, it becomes imperative to promote a culture of adherence to preventive measures among the general public.

To effectively implement public health initiatives and policies, it is essential to focus on the most vulnerable groups. Knowledge, Attitudes, and Practices (KAP) surveys have proven to be valuable tools for identifying knowledge gaps and behavioral trends across different sociodemographic groupings (Bambra et al., 2020). These disparities in health outcomes have been observed during past pandemics, where lower education levels, economic hardships, and other social factors were associated with a higher burden of illness (Lowcock et al., 2012; Rutter et al., 2012; Lee et al., 2020, 2019; Chen et al., 2020).

The pandemic has been addressed in part by the quick development of vaccines and international cooperation, but it is important to understand that governments cannot stop the virus from spreading on their own without the active involvement of the general public in preventive measures. Understanding individual attitudes and willingness to adhere to preventive measures becomes crucial in this context because they are impacted by a number of variables, such as socioeconomic status, cultural values, beliefs, perceptions of risk, and the perceived efficacy of implemented measures (Haq et al., 2020).

Pakistan, situated between two COVID-19 epicenters, China and Iran, faces unique challenges due to its porous borders and inadequate healthcare system. To combat the pandemic, the government has undertaken various actions, including policy design, national emergency preparedness, thermal screenings at entry points, and the establishment of quarantine facilities (Mughal, 2020; Gillani, 2020). However, social and cultural norms, as well as misinformation propagated through social media, have presented obstacles to the successful implementation of preventive measures (Ali and Bhatti, 2020; O'Connor and Murphy, 2020).

In the context of rural South Punjab, an underdeveloped region characterized by health inequalities and limited infrastructure, it is essential to investigate the knowledge, attitudes, and practices of the general community regarding COVID-19 preventive measures. As existing research on this subject is scarce, understanding these aspects is crucial for devising effective public health policies and timely responses to the pandemic.

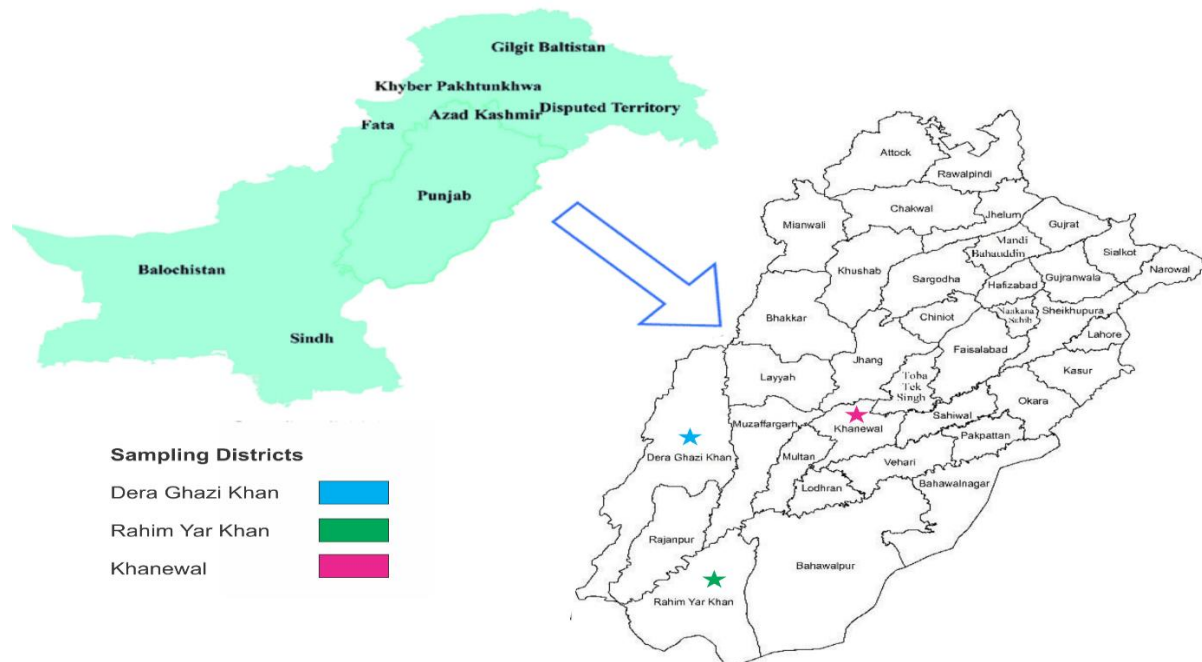
Therefore, this study was focused to explore the level of awareness among Pakistani citizens about COVID-19 transmission, symptoms, and preventive measures. Additionally, it seeks to assess the degree to which individuals in rural South Punjab adopt appropriate safety precautions against the pandemic, with the ultimate goal of informing public health policies and implementation strategies.

## **Methods**

In social research, material and methods segment explains the steps taken for investigating a research question and give rationale for applying specific methods or techniques in identification, selection, processing, and analyzing the collected information that should be used to understand the reserch question and enable the readers to critically assess the validity and reliability of research (Kallet, 2004). Methodology offers operational definitions of variables to test the working hypotheses of the investigations. This section elaborates on the primary tasks of methodology, such as planning, selection, and collecting the data. Also, a key component of this section is the pretesting of the tool used to test working hypotheses. It became crucial for developing instruments since it helped logic to be established and provided trustworthy responses. Numerous other crucial problems, such as the managing research team, selection and training of team, field controls, formatting research instrument, as well as numerical processes employed during data processing are in-depth examined.

### Sampling and Study Area

The purpose of this study was to learn more about the knowledge, attitudes, and practices of rural residents in South Punjab regarding the adoption of preventative measures against the pandemic (Covid-19). A study based on a cross-sectional survey was carried out to accomplish this goal. Any research must carefully consider the study area in order to determine whether the issue is localized or more widespread there. The research area for this study was Pakistan's Southern Punjab. Dera Ghazi Khan, Bahawalpur, and Multan are the three divisions that make up the southern portion of Punjab. It makes up 36% of Punjab's total population and 57% of the province's total area.



**Figure 1:** Map of the Study Area

To conduct cross sectional studies use of appropriate sampling is crucial. There is no agreement among the researchers on choosing the right sample size, however, Taro Yamane’s sampling formula gave a sample size for which most researchers agreed. A sample of 300 respondents was obtained using Taro Yamane’s formula. The table below shows out of three divisions of South Punjab one district was selected randomly and from each district one tehsil was also randomly selected. From each selected tehsil than 4 union councils were also randomly selected and at final stage from every union council 25 respondents were selected using random technique.

**Table 1**

Divisions	Districts	Tehsils	Union Councils	Total Population
Dera. Ghazi. Khan	Dera. Ghazi. Khan	Dera. Ghazi. Khan	Gaddai Gharbi	21583
			Paigan No, 2	16848
			Kot Mubarak Janubi	12055
			Drahma	18055
Bahawalpur	Bahawalpur	Liaquatpur		
	Bahawal Nagar			
	Rahim yar Khan		Dafla Kabir khan	37918
	Chak No. 42/A	37245		
	Jhoke Gulab shah	23195		

			Ahmed ali Lar	34313
Multan	Multan			
	Lodhran			
	Vehari			
	Khanewal	Kabir Wala	24	14160
			27	10880
29			11726	
35			12526	

### Survey Team and Field Experience

After the finalization of questionnaire, the interviewers were given special training, including lectures, group discussions, and a weeklong practice session to ensure they understood how to conduct interviews and surveys in the research area. Prior to the interviews, the research team identified the areas of interest and established contacts with locals, including Nambardars, councilors, and community elders. These locals were instrumental in helping the research team to become familiar with the area and to reach the targeted households at an appropriate time.

### Multiple Linear Regression

The current study employed multiple linear regression to illuminate how independent variables affect dependent variables, knowledge, attitude, and practices. Generally, the regression equation looks like this;

$$y = \alpha + b_1x_1 + b_2x_2 + b_3x_3 + \dots + b_nx_n + e$$

y is the dependent variable's predicted value, a is the y intercept (y's value when all x values are zero), Xs stands for different independent variables, and bs are the regression coefficients that are assigned to those different independent variables.

## Results

### Socio-economic and demographic characteristics of Respondents

Gender	f	%
Female	125	41.7
Male	175	58.3
<b>Age (in years)</b>		
18-30	144	48.0
31-45	92	30.7
46 and above	64	21.3
<b>Education</b>		
Illiterate	166	55.3
Primary-Middle	54	18.0
Matric	39	13.0
Above Matric	41	13.7
<b>Marital status</b>		
Married	257	85.7
Unmarried	40	13.3
Widowed	3	1.0
<b>No. Of Children</b>		
No children	77	25.7
1-2 children	16	5.3
3-4 children	85	28.3
5-6 children	57	19.0
7 and above	25	8.3

NA (unmarried)	40	13.3
<b>Source of income</b>		
Daily Wage Labor	124	41.3
Housewife	72	24.0
Farmer	41	13.6
Private Job	36	13.7
Govt. Job	10	3.3
Other	10	3.3
Unemployed	8	2.7
<b>Household income (PKR)</b>		
Up to 15000	129	43.0
15,001-30,000	125	41.7
Above 30000	46	15.3

The sample respondents' gender distribution shows that 58% of them were men and 42% of them were women. The behavioral reaction to emergency measures is also impacted in Pakistan's rural areas, where gender roles are highly segregated. The respondent's age is a significant determinant of the impact on behavioral response. It has been reported that in times of health emergencies, younger people are more receptive than older people to any anticipated behavioral change. Of the sampled respondents in the current study, 48% were young (between the ages of 18 and 30), 31% were in the medium age group (between the ages of 31 and 45), and 21.3 percent were in the age group (above 46 years). Pakistan's emergency response to COVID-19 received praise from all around the world, in part because of its young, receptive population, who are willing to alter their behavior quickly (Akhtar et al. 2021).

The majority of people in the sample were young, which is consistent with previous cross-sectional studies that found a similar population in a rural area. Khan et al., (2022) revealed that thirty-point zero percent of the study population was between the ages of 31 and 45, and the majority (60 percent) belonged to the young age group (16–30). Saqlain et. al., (2021) and Iqbal and Younas (2021) corroborated the notion that the bulk of participants were young. According to the study's findings, the majority of participants—55.3%—were illiterate, while 18.0% had only completed primary or middle school and 13.0% had completed high school. On the other hand, about 14% had education beyond the matriculation level. The current study was carried out in South Punjab's rural areas, where the literacy rate is lower than it is in other regions of the province. When faced with emergencies, people with higher levels of education typically react by changing their behavior more quickly than those with lower levels of education (Sparrow and Spaniol, 2016).

According to literature, educated people prefer to wait for more time and approval before making a behavioral change, which makes it challenging to act quickly in an emergency. The situation can be compared to outcomes from developed nations where implementing lockdown procedures and meticulous precautions was challenging. The size of the family and marital status are significant factors that influence behavioral changes following emergencies such as COVID-19. Individuals who have dependents and families tend to be more sensible and quick to take precautions. In spite of the large and youthful population, the majority of participants in the current study—85.7%—were married, 13.3% were single, and 1% were widowed. In a similar vein, roughly 60% of the respondents were parents, with 28% having three or more children.

### Multivariate Linear Regression Analysis

A multiple linear regression model was used to find out the relationship among all the included variables in the study. In this model, there are two main statistics that the researcher focused namely R-Square and Coefficients to determine the relationship between variables,

**Table 4.46: Factors affecting the participants' knowledge about Covid-19**

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.035	.203		5.106	.000**
	Gender	-.257	.067	-.168	-3.859	.000**
	Age	-.069	.047	-.068	-1.468	.143 <sup>NS</sup>
	Education	.120	.026	.247	4.607	.000**
	Income	.449	.054	.425	8.263	.000**
	Family type	.155	.075	.096	2.061	.040*

a. Dependent Variable: Knowledge

$R^2 = .48$       Adjusted  $R^2 = 47$       F-value = 54.01      P-value = .000\*\*

\* = Significant, \*\* = Highly significant

In the above table the R-Square value of 0.48 illustrates that all the included variables in the model are explaining 48% variation in the knowledge about Covid-19 of the participants. The model included 5 variables which signifies that all the five variables are causing 48% of the variation in the dependent variable which is quite good considering it as the survey research method. The F-Value of 54.01 also shows the overall significance of the model used by the researcher in the current study.

The relationship between participants' gender and level of Covid-19 knowledge is significant and negative, as indicated by the beta value of -0.257. This indicates that, in comparison to the male participants, the majority of the female participants understood Covid-19 at a deeper level (Chang, 2020). The relationship between the participants' ages and their levels of Covid-19 knowledge is negative and not statistically significant, as indicated by the beta value of -0.069. It shows that there is an inverse, albeit non-significant, relationship between the participants' ages and their Covid-19 knowledge levels. Ladiwala et al., (2021) discovered a negative correlation between respondents' age and their knowledge of COVID-19.

The fact that the beta value (0.122) indicates that there is a positive and significant link between education and knowledge about Covid-19 for the participants. This demonstrates that people with higher levels of education have a better understanding of Covid-19 when compared to participants with lower levels of education.

The fact that the beta value (0.449) indicates that there is a positive and significant link between income and knowledge about Covid-19 for the participants. This demonstrates that people with higher levels of income have a better understanding of Covid-19 when compared to participants with lower income (Arceo-Gomez et al., 2022). The beta value (0.155) represents a positive and significant relation of family type with knowledge about Covid-19 of the participants. It shows that joint families' participants were having more knowledge about Covid-19 as compared to those participants who were living in nuclear family system. The outcomes of this model reveal, gender, education, family type and income had an impact on their participants knowledge towards Covid-19. Saqlain et al. (2021) using regression model found that high income and highly qualified persons had adequate knowledge about Covid-19.

**Table 4.47 Factors affecting the participants' attitude toward Covid-19**

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.427	.190		12.800	.000**
	Gender	-.241	.063	-.190	-3.827	.000**
	Age	-.124	.039	-.157	-3.176	.002**
	Education	.090	.022	.223	4.105	.000**
	Income	.232	.051	.264	4.600	.000**
	Family type	.137	.069	.102	1.991	.047*
	Knowledge	.110	.043	.133	2.570	.011*

a. Dependent Variable: Attitude

$R^2 = .33$       Adjusted  $R^2 = .32$       F-value = 23.89      P-value = .000\*\*  
 \* = Significant, \*\* = Highly significant

In the above table the R-Square value of 0.33 illustrates that all the included variables in the model are explaining 33% variation in the attitude toward Covid-19 of the participants. The model included 6 variables which signifies that all the five variables are causing 33% of the variation in the dependent variable which is reasonable considering it is the survey research method. The F-Value of 23.89 also shows the overall significance of the model used by the researcher in the current study.

The beta value of -0.441 suggests that the participants' gender and attitude toward COVID-19 are significantly correlated in a negative way. This indicates that compared to the male participants, the majority of the female participants had a more positive attitude toward Covid-19. Rana et al., (2021) discovered a similar relationship in which Pakistani women perceived greater risk and were more proactive in changing their behavior. An additional Glasso et al. study. (2020) discovered comparable findings, indicating that women viewed risk as higher and gave earlier responses. Ngwewondo et al. (2020) conducted a study and reported that compared to men, women adopted fewer practices. The beta value of 0.124 shows that the participants' attitudes toward Covid-19 and their ages are significantly and negatively correlated. It shows that there is a significant and inverse relationship between the participants' attitudes toward COVID-19 and their ages. It indicates that younger participants than older participants had a more positive attitude toward COVID-19. The beta value (0.090) shows that the participants' attitudes toward Covid-19 and their level of education are positively and significantly correlated. This indicates that, in comparison to participants with lower levels of education, those with higher levels of education have a better attitude toward Covid-19. So, it was observed that educated participants had a more positive attitude to.

The fact that the beta value (0.232) indicates that there is a positive and significant link between income and attitude about Covid-19 of the participants. This demonstrates that people with higher levels of income have a better attitude toward Covid-19 when compared to participants with lower income. The beta value (0.137) represents a positive and significant relationship of family type with the attitude toward Covid-19 of the participants. It shows that joint family participants were having more positive attitude toward Covid-19 as compared to those participants who were living in nuclear family system. The fact that the beta value (0.110) indicates that there is a positive and significant link between participants' knowledge and attitude toward Covid-19. This demonstrates that people with higher knowledge have a better attitude toward Covid-19 when compared to participants with lower-level knowledge.

The outcomes of this model reveal, participants' gender and age had inverse relation with their attitude toward Covid-19. However, education, family type, income and knowledge had an impact on the participants' attitude toward Covid-19 (Al-Jayyousi, 2021).

**Table 4.48 Factors affecting the participants' practices towards Covid-19**

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
		B	Std. Error	Beta			
1	(Constant)	.768	.214			3.582	.000**
	Gender	-.083	.071	-.053		-1.176	.241 <sup>NS</sup>
	Age	-.159	.046	-.160		-3.459	.001**
	Education	.131	.027	.260		4.835	.000**
	Income	.369	.060	.337		6.153	.000**
	Family type	.113	.081	.068		1.395	.164 <sup>NS</sup>
	Knowledge	.107	.051	.103		2.103	.036*

a. Dependent Variable: Practices

$R^2 = .44$       Adjusted  $R^2 = .43$       F-value = 38.72      P-value = .000\*\*  
 \* = Significant, \*\* = Highly significant, NS = Non-significant

In the above table, the R-Square value of 0.44 illustrates that all the included variables in the model explain 44% variation in the practices toward Covid-19 of the participants. The model includes 6 variables which signifies that all the five variables are causing 33% of the variation in the dependent variable which is quite good considering it is the survey research method. The F-Value of 38.72 also shows the overall significance of the model used by the researcher in the current study.

The beta value of (0.083) indicates that there is a non-significant negative relationship between participants' gender and their level of precautionary practice toward Covid-19. This demonstrates that both male and female participants had almost the same precautionary practices toward Covid-19. The gender and COVID-19 diagnosis were also found insignificant by Ballering et al., (2021). The beta value of (0.159) indicates that there is a negative and significant link between the participants' ages and their levels of precautionary practices toward Covid-19. It demonstrates that an inverse and significant link exists between the participants' ages and the levels of their precautionary practices regarding Covid-19. It means young age participants had precautionary practices towards Covid-19 as compared to aged persons.

The beta value (0.131) indicates that there is a positive and significant link between education and precautionary practices toward Covid-19 among the participants. This demonstrates that people with higher levels of education have better precautionary practices toward Covid-19 when compared to participants with lower levels of education. So, it was observed that educated participants had more precautionary practices toward Covid-19 compared to illiterate persons. The fact that the beta value (0.369) indicates that there is a positive and significant link between income and practices about Covid-19 of the participants. This demonstrates that people with higher levels of income have better precautionary practices toward Covid-19 when compared to participants with lower income. The beta value (0.113) represents a non-significant relationship of family type and practices toward Covid-19 of the participants. It shows family structure had no relationship with precautionary practices toward Covid-19.

The fact that beta value (0.107) indicates that there is a positive and significant link between participants' knowledge and precautionary practices toward Covid-19. This demonstrates that people with higher knowledge have better precautionary practices toward Covid-19 when compared to participants with lower-level knowledge. The outcomes of this model reveal that participants' age had an inverse relation with their precautionary practices toward Covid-19. However, education, income and knowledge had a positive impact on the participants' precautionary practices toward Covid-19. Saqlain *et al.* (2021) also applied a regression model and found that high income and highly qualified persons had an adequate precautionary practice toward Covid-19.

## Conclusion

Most of the respondents were young, poor and married with varying no. of kids. Gender and age are important as we conclude that women and young people were more likely to have knowledge, positive attitude and adopt practices regarding COVID-19. The study also concluded that education, income and family type positively influenced knowledge, attitudes and practices about COVID-19. The study recommends considering socio-economic realities in devising pandemic specific interventions.

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