

## A Cross Sectional Survey: Evaluation of COVID-19 awareness level among Pakistani residents and Preliminary Future Insight.

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### Abstract

**Background:** The outbreak of COVID-19 (corona virus disease 2019) have infected more than 60 lac individuals worldwide. The leading reason for horrible spread of disease was the lack of awareness. We therefore conducted a survey to evaluate the knowledge of clinical symptoms, confidence and practices among residents of Pakistan. **Material and Method:** Relying upon the author's network of people, friends and relatives online survey was completed via different social media sources. Overall 660 participants throughout the country completed the survey, and the response was evaluated based on the different demographic characters.

**Results:** Among the (n=660) survey completers total score of knowledge based questions was 83.5%, (10.03±1.23) but knowledge score significantly differed between different demographic characters (P<0.05). Almost all the participants were agreed that the COVID-19 situation will be controlled in Pakistan and about 80% participants avoided going to the crowded place, while 83% participants wore mask while going outside. Results of binary logistic regression showed a significant relationship of response compared the demographic characters. Furthermore, the future impacts of adopted preventive measures was described.

**Conclusion:** This study concluded that public health awareness programs shall be aimed at improving COVID-19 awareness level and to develop a positive attitude during this pandemic situation.

**Key Words:** COVID-19; Coronavirus; Pandemic; Awareness; Symptoms

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### I. Introduction

COVID-19 (Corona Virus Disease-2019) is a severe respiratory disorder caused by a newly discovered corona virus. The disease start spreading from Wuhan, a city of China in December 2019 (Zhong et al., 2020) The disease shows clinical symptoms within 14 days after the infection, most common symptom was fever which accompanied by headache, dry cough, shortness of breath, muscular pain or tiredness which sometime also develops into nausea or vomiting and diarrhea (Guan et al., 2020). Recent studies revealed in some cases COVID-19 imitated the severity of SARS (Chen et al., 2020; Huang et al., 2020). These symptoms may vary from person to person depending upon the stability of immune system.

Corona viruses have generally known as non-lethal viruses with causing approximately 15% of common colds (de Wit, van Doremalen, Falzarano, & Munster, 2016). However in the ongoing century the world has encountered three fatal attacks from CoVs family, (SARS in 2003 and MERS in 2012) and novel COVID in 2019, which escalated globally and will be recorded in the human history (Catharine, Hilary, & Anthony, 2020).

From December 2019 COVID-19 spread so fast affecting more than 50 countries in the world establishing a public health emergency by WHO (Yi et al., 2020). On 26 February 2020 Pakistan reported first two cases of COVID-19, both cases with travel history from Iran to Sindh and Islamabad (Pakistan Today, 2020, April 1). Till date 31 March, 2020, 1865 COVID-19 confirmed cases with 25 deaths, 12 critical and 58 recovered (Government of Pakistan, 2020, April 1). Number of COVID infected patients start decreasing after the lock down on 23 march, 2020 and the Govt. of Pakistan have established quarantine facilities indifferent cities for the pilgrims returning from Iran.

The main reason for the increase in number of cases is because in the incubation time an infected person can transfer virus to many others while performing routine activities, therefore creating horrible increase in infection, which became difficult to control (Peiris, Yuen, Osterhaus, & Stöhr, 2003). It always takes time to develop the behavior of lay man for something new, but in case of epidemic it should be faster as compared to

anything else. A fast awareness disclosure, as well as the implementation of phenomenal health care measures are required as a COVID-19 prevention system (Wang, Horby, Hayden, & Gao, 2020) . According to the available resources Pakistan is facing a critical situation and emergency measures needed to be followed to overcome the challenge of national health crisis. WHO has expressed its fears as Pakistan is encountered a major COVID-19 threat. They stated clearly that if effective measurements are not taken, Pakistan might emerge as the next epicenter of this pandemic(Khan, Gilani, Raza, & Hussain, 2020).

COVID-19 is still spreading in Pakistan, and there is an urgent need to understand about the knowledge of a lay man, what they already know, their trust and hope that Pakistan will win the battle on the cost of low mortality rate, and what is the change in habits and practices of people during this pandemic period.

So, this study aims to evaluate the knowledge about the clinical symptoms, confidence and practices of people through already developed questionnaire (Zhong et al., 2020). It will help to understand what is still needed to make people aware and how we can change the habits to lower the risk of getting infection with COVID-2019. This study also provides a base to evaluate the effect of behavior on chances of getting COVID-19 infection.

## II. Material And Method

Survey was considered as best approach to obtain the aims of this study. A cross-sectional study was conducted from 21 March, 2020 three days before the lock down in Punjab. Because of the chances of lockdown implementation by Government, we developed an online Jot form to circulate via online app system. We tried to approach as many persons as we can, by using different sources, to involve more and more respondents. Relying upon the author’s network of people, friends and relatives throughout the country the online survey link was posted in different online application such as WhatsApp (the main) groups, Facebook, Instagram and We-chat groups. The form was posted and reposted again and again to get more and more participants for this study. All the general guidelines were provided on the top of the survey form.

We used previously developed survey form, with an ethical approval from the authors, with the minor changes in that questionnaire (Zhong et al., 2020), as describes in the figure 1.

**Fig 1. Questionnaire of clinical knowledge, confidence and practices**

Q. No	Part 1. Knowledge of Clinical Symptoms about COVID-19 ( True, False, I don't know)
1	The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia.
2	Unlike the common cold ,stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19
3	There is currently is no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection.
4	Not all persons with COVID-2019 will develop to severe cases. Only those who are old, have chronic illnesses, and are obese are more likely to be severe cases.
5	Contacting pets or wild animals would result in the infection by the COVID-19 virus.
6	COVID-19 positive persons without symptoms cannot transfer the virus to others.
7	The COVID-19 virus spreads via respiratory droplets of infected individuals.
8	Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus.
9	It is not necessary for children and young adults to follow precautionary measures to prevent the infection by the COVID-19 virus.
10	To prevent the infection by COVID-19, individuals should avoid going to crowded places such as Mosques, bus- stations and avoid taking public transportations.
11	Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.
12	People who have contact with COVID-19 infected person should be immediately isolated in a proper place. In general, the observation period is 14 days.
Part 2. Confidence towards COVID-19 situation. (Agree, Disagree, I don't know)	
1	Do you agree that COVID-19 will finally be successfully controlled?
2	Do you have confidence that Pakistan will win the battle against the COVID-19 soon?
Part 3. Change in Practices during COVID-19 situation. (Yes, No)	
1	In recent days, have you gone to any crowded place?
2	In recent days, have you worn a mask when leaving home?

### 2.1. Study Design

The survey questionnaire was divided into four parts, first part consisted of questions, related to demographic data or personal information, Second part was consisted of 12 questions, to evaluate peoples knowledge about the clinical symptoms of disease, third part was consisted of 2 questions related to confidence and hope that their country will finally win the battle, and the last part also consisted of 2 questions about the change in habits and practices. All the questions provided were close ended, and participant were asked to choose from given responses.

Our demographic data consisted of Area (Urban Vs Rural), Age (15-30 Years Vs 30-60 Years), Gender (Male Vs Female), Qualification (Graduation or Above Vs High School to Under-graduation). For the knowledge based questions, People’s score for right answer was counted and scored out of 12. The higher score

denoting the better knowledge. Confidence was evaluated by two questions, that COVID-19 situation will finally be controlled and to show the confidence that Pakistan will win the battle against COVID-19 by being agree, disagree and not sure with the statement. Fourth part evaluated the practices by saying yes or no, that people avoid going to the crowded places and wearing masks to go outside.

## **2.2. Statistical Analysis**

According to all the demographic characteristics, the frequencies of correct answers for the clinical knowledge based part was counted.

Independent sample t-test, and one way (ANOVA) was performed. Multinomial Logistic regression Analysis, as well as Binary logistic regression analysis was applied where appropriate. All the data were analyzed by using Statistical Package for the Social Sciences (SPSS) version 20.0. And the results were considered significant at the level of  $p < 0.05$ .

### **Ethical Approval**

Ethical approval is not applicable for a survey study, based on questionnaire as the participants willingly filled the questionnaire. However all the survey manipulations were undertaken in compliance with the laboratory guidelines.

## **III. Results**

### **3.1 Clinical Knowledge based part of the Questionnaire**

Total 660 participants have completed the survey. 412 (62%) were from province Punjab and 248 (38%) were from the other parts of the country. No COVID-19 positive person have participated in the survey. Considering the total sample size the frequency of male was 366 (55.5%) while females were 294 (44.5 %). Other demographic data like age and qualification was also divided into sub groups, there were 471 (71.36%) participants between the age group fifteen to thirty years, while 189 (28.63%) belongs to the age group thirty to fifty years. Similarly 303 (45.9%) graduates or above, 357 (54.1%) high school to undergraduates have participated in the survey.

Average score of the 12 questions from clinical knowledge based part was 10.02, (SD: 1.23), suggest that overall  $(10.02/12*100)$  83.5% of correct rate to this knowledges test. Frequency of correct answer for each question is described in table 1 (a).

Knowledge score significantly differed between all the demographic variables. The results of the first demographic character i-e "place of residence" was significantly different between Urban and rural areas of Pakistan. The mean knowledge score for Urban areas (M=10.47) while for rural areas (M=9.28). Similarly the clinical knowledge score for other demographic characteristics showed significant difference between the groups. Such as Gender (Male Vs Female), age groups (15-30Y Vs 30-60Y), education variable (Graduation or above Vs High School to Under-graduation) as shown in table 1 (b).

### **3.2 Confidence-based part of the Questionnaire**

There were two question, asking for peoples trust towards COVID-19. For the first question overall 92% people were agreed that the situation of COVID-19 will be controlled soon, 2.7% disagreed and 4.7% said that they don't know if it will be controlled or not. In case of question two, overall 97.7% were agreed that the disease situation will be controlled soon in Pakistan, no one disagreed, and only 2.3% participants responded that they don't know if it will be controlled soon in Pakistan. Frequency and percentage of being agree, disagree and don't know is presented in the table 2.

The results of multiple linear regression analysis showed that there is a significant difference between demographic characteristics. For the final control of COVID-19 situation odds ratio of disagree Vs agree for place of residence as (OR=5.63,  $p < 0.005$ ), similarly the results of disagree Vs agree for the Knowledge score is statistically significant (OR=3.883,  $p < 0.001$ ). The results of Don't Know Vs Agree showed that there is significant difference among age groups (OR=5.5,  $p < 0.05$ )

About the final control of COVID-19 in Pakistan there was a significant difference observed for disagree Vs agree, between place of residence (OR=5.08,  $p < 0.001$ ).

### **3.3 Practices-based part of the Questionnaire**

There were two questions to evaluate the practices of participants during the health emergency situation of COVID-19 in Pakistan. For the first question overall 80% participants answered "no" for going to the crowded places in recent days. And for the second question overall 83% person participants answered "yes" for wearing masks while going outside. Frequency of both the questions between the demographic variables is given in the table 4. Still there is a considerable population going to the crowded places and not wearing masks while going outside, and this behavior was similar to the previous studies where male gender and people residing in rural areas showed the risk taking habits (Cobey, Laan, Stulp, Buunk, & Pollet, 2013; Pawlowski,

Atwal, & Dunbar, 2008). However these two practices varies significantly among different demographic characteristics.

Binary logistic regression analysis showed that Urban Vs Rural areas (OR=0.314, P<0.05), Age Group: 15-30Y Vs 30-60Y (OR=0.54, p<0.05) and Total Knowledge Score (OR=1.404, p<0.05) related significantly for going to the crowded places. Similarly, Age Group: 15-30Y Vs 30-60Y (OR=0.217, p<0.05) and Total Knowledge Score (OR=0.505, p<0.05) were linked significantly for wearing mask while going outside in recent days as described in table 5.

#### **IV. Discussion**

This survey was conducted to evaluate clinical knowledge, confidence and practices of Pakistani residents. On the basis of study we have found an overall 84% correct clinical knowledge score which was much satisfactory, as the survey was conducted during the early rise of COVID-19 in Pakistan and such high awareness score was not expected. This high percentage of knowledge score was may be because people were guided by media when the disease started early in China and also start following precautionary measures and are well aware about the COVID-19. Similar results for COVID-19 knowledge were found in a survey conducted in Malaysia, Correct knowledge score was observed to be 80.5% on an average (Mohamad, Azlan, Hamzah, Tham, & Ayub, 2020).

Majority of the participants showed positive attitude towards final control of COVID-19 situation some of them disagreed and fewer participants were not sure. Similarly about Pakistan's winning the battle almost all the participants 98 % showed hope and others were not sure. Similarly about 96% of the participants were agreed that Malaysia will win the battle against COVID-19 (Mohamad et al., 2020). About 80% of the participants have changed their habits avoiding the crowded places and wearing mask. But here we found a considerable difference of practices between males and females. Also the ratio of going outside was higher for males.

A similar study was conducted in China and they reported higher clinical knowledge score of 90%. (Zhong et al., 2020). This higher knowledge score suggest that chinses residents were already familiar with the symptoms because China combat one of the CoV-SARS in 2003. The symptoms and precautions of COVID-19 were somewhat similar with SARS-2003, so people use their previous knowledge. Furthermore Motta Zanin et al. (2020) conducted a similar survey in Italy, to evaluate the public perception of health risk. They found that the in accordance with the situation of Italy, higher uncertainty was perceived by people, which concludes that the batter awareness to this hazardous situation is the only solution(Motta Zanin, Gentile, Parisi, & Spasiano, 2020).However this is first survey to our best knowledge in Pakistan to evaluate the awareness level of Pakistani residents, which can help to follow precautionary measures, as if no or less precautions the chances of getting COVID-19 infection will be high (Mortazavi SA et al., 2020).However the results of this study are quite contradictory with the survey conducted by Khan et al. 2020, they evaluated the preparedness of health professionals for COVID-19 situation in Pakistan and found that the front line workers are not well prepared for the critically escalating situation (Khan, Khan, Maqsood, Hussain, & Zeeshan, 2020). Although the above study explained the behavior of health professionals, but the need of understanding the situation is same for all the above discussed surveys. Awareness campaigns and programs through all media sources can help to control the situation.

#### **V. Limitations**

The strength of this study based on the fact that it was conducted during the start infection time of COVID-19 in Pakistan and it is very important to evaluate people's knowledge and behavior towards it. However there are a few limitations, first is that the sample size was small, secondly because the survey was conducted via online application system and so there might be a possibility that it is biased and underprivileged population were not able to participate in this study. Thirdly, the survey was based on the close ended questions and it might restrict the response of the participants.

Moreover, there is a possibility of fake response,as participants might have the knowledge of the disease but there is a contradiction in applying that knowledge practically. So, these limitations may be reason to generalize the results.

#### **VI. Preliminary Future Insight**

Although the survey was conducted in the early rise of COVID-19 in Pakistan, butthe current situation promoted a new debate about the future impact of COVID-19 and all the preventive measures adopted for COVID-19. This pandemic emerged as a stressful and a traumatic situation that required individuals to understand the new situation and choose appropriate coping actions. It was noteworthy that the public perception and understanding of biological risk plays a key role in response to health emergencies, affecting risk management and risk communication strategies (Slovic, 2000). Therefore, the public perception of health risks

can influence markets, public policies, and individual behaviors (Krewski, Slovic, Bartlett, Flynn, & Mertz, 1995).

The effect of different preventive measures or stressors that are associated with COVID-19, such as quarantine, working from home, social distancing, washing hands, wearing mask will guide the behaviors in a different way. Based upon the current scenario, social distancing is the main solution to control the spread of infection, and it is reported that there will be a considerable change in intrapersonal behavior, when the country will come out of this pandemic (Motta Zanin et al., 2020). Looking into the near future, the COVID-19 situation is supposed to take several months, but public health interventions needed to follow till we get back to a normal life.

Currently there is no vaccine available for this respiratory syndrome, multiple trials and treatments are under consideration to develop vaccine, but the results are still awaiting (Zhou, Zhang, & Qu, 2020). Moreover time is required to test and approve the vaccine after development (Khanna, Cicinelli, Gilbert, Honavar, & Murthy, 2020).

## VII. Conclusion

In short study concluded that the most of the educated people of Pakistan are well aware, except the ones who don't have internet access and living in rural areas. This study specifies the need of awareness among the less-educated as well as rural population and make them understand "what is the meaning of health emergency". Furthermore, this work provided the preliminary insight, according to which, based on the preventive measure applied strictly, there will be a considerable change in the cultural behavior.

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**Table 1 (a). Pandemic rise of COVID-19: Questionnaire of Knowledge, Confidence and Practice.**

Frequency and Percentage of correct answer from each clinical knowledge based question.

Question #	1	2	3	4	5	6	7	8	9	10	11	12
Frequency	615	423	408	429	617	482	601	647	571	582	631	596
Percentage	93.2	64.1	61.8	65	93.5	73	91.1	98	86.5	88.2	95.6	90.3

**Table 1. (b) COVID-19 Clinical Knowledge Score with the reference of Demographic Characteristics.**

The means are statistically significant if  $p \leq 0.05$

Demographic Characteristics	Frequency of participants	Knowledge Mean $\pm$ SD	Score	One Way ANOVA
<b>Place of Residence</b>	Urban Areas	412 (62.42%)	10.47 $\pm$ 0.79	F(1,658)=181, $p < 0.001$
	Rural Areas	248 (37.57%)	9.28 $\pm$ 1.46	
<b>Gender</b>	Male	366 (55.5%)	10.53 $\pm$ 0.82	F(1,658)=173, $p < 0.001$
	Female	294 (44.5%)	9.39 $\pm$ 1.36	
<b>Age Groups</b>	15-30	471 (71.36%)	10.36 $\pm$ 0.81	F(1,658)=187, $p < 0.001$
	30-60	189 (28.63%)	9.18 $\pm$ 1.64	
<b>Qualification</b>	Graduation or Above	303 (45.9%)	10.64 $\pm$ 0.86	F(1,658)=176, $p < 0.001$
	High school to Under-Graduation	357 (54.1%)	9.50 $\pm$ 1.26	

**Table 2. COVID-19: Confidence of winning the battle against the Disease with reference of Demographic Characteristics.**

Q No.1. Will the COVID-19 situation be controlled finally?

Demographic Characteristics	Agree	Disagree	I don't know.	
<b>Place of Residence</b>	Urban Areas	373 (90.5%)	16 (3.9%)	23 (5.6%)
	Rural Areas	238 (96%)	2 (0.8%)	8 (3.2%)
<b>Gender</b>	Male	237 (89.3%)	16(4.4%)	23 (6.3%)
	Female	284 (96.6%)	2 (0.7%)	8 (2.7%)
<b>Age Groups</b>	15-30	425 (90%)	18 (3.8%)	(5.9%)
	30-60	186 (98.4%)	No	3 (1.6%)

<b>Qualification</b>	Graduation or Above	268 (88.4%)	15 (5%)	20 (6.6%)
	High school to Under-Graduation	343 (96.1%)	3 (0.8%)	11 (3.1%)

**Q No.2. Confidence that Pakistan will win the battle against COVID-19?**

<b>Demographic Characteristics</b>		<b>Agree</b>	<b>Disagree</b>	<b>I don't know.</b>
<b>Place of Residence</b>	Urban Areas	400 (97.1%)	No	12(2.9%)
	Rural Areas	245(98.8%)	No	3(1.2%)
<b>Gender</b>	Male	354(96.7%)	No	12(3.3%)
	Female	291(99.0%0	No	3(1.0%)
<b>Age Groups</b>	15-30	458(97.2%)	No	13(2.8%)
	30-60	187(98.9%)	No	2(1.1%)
<b>Qualification</b>	Graduation or Above	292(96.4%)	No	11(3.6%)
	High school to Under-Graduation	353(98.9%)	No	4(1.1%)

**Note:** Table demonstrates the frequency, and percentage of response.



**Table 3. Results of Multinomial logistic regression Analysis for the Confidence about to the COVID-19**

**Q#1. Do you have confidence that COVID-19 situation will be controlled finally?**

Variables	Odds Ratio (OR)	P Value
<b><u>Disagree with final success Vs Agree</u></b>		
Place of residence ( Urban Vs rural)	5.63	<0.05
Total Knowledge Score	3.883	<0.001
<b><u>Don't know about final success Vs Agree</u></b>		
Total Knowledge Score	1.160	0.465
Age Group (15Y to 30Y Vs 30-60Y)	5.547	.021

Note: The .reference category is “agree”.

**Q#1. Do you think that Pakistan will win the battle against COVID-19 soon?**

**Don't know about final success Vs Agree**

Place of residence ( Urban Vs rural)	5.08	<0.001
Total Knowledge Score	1.145	0.604

Note: (i) The reference category is “agree”. (ii) Because no participant disagreed, so there are no results of OR for “Disagree Vs Agree”

**Table 4. COVID-19: Practices, towards the Disease with reference of Demographic Characteristics.**

**Q1: Have you gone to the crowded places in recent days?**

Demographic Characteristics	Yes	No
	Urban Area	119(28.9%)
Rural Areas	13(5.2%)	235(94.8%)
Male	108(29.5%)	258(70.5%)
Female	24(8.2%)	270(91.8%)
15-30	125(26.5%)	346(73.5%)
30-60	7(3.7)	182 (96.3%)
Graduation or Above	83(27.4%)	220(72.6%)
High school to Under-Graduation	49(13.7%)	308(86.3%)

**Q2: About wearing mask while going outside?**

Demographic Characteristics	Yes	No
Urban Areas	309 (75%)	103 (25%)
Rural Areas	240 (96.8%)	8 (3.2%)

<b>Gender</b>	Male	267 (73%)	99 (27%)
	Female	282 (95.9%)	12 (4.1%)
<b>Age Groups</b>	15-30	364 (77.3%)	107 (22.7%)
	30-60	185 (97.9%)	4 (2.1%)
<b>Qualification</b>	Graduation or Above	204 (67.3%)	99 (32.7%)
	High school to Under-Graduation	345 (96.6%)	12 (3.4%)

**Table 5. Results of Binary logistic regression Analysis for the Practices related to the COVID-19**

**Q#1. Have you gone to the crowded places in recent days?**

<b>Variables</b>	<b>Odds Ratio (OR)</b>	<b>P Value</b>
<b>Place of residence ( Urban Vs rural)</b>	0.314	<0.05
<b>Gender (Male Vs Female)</b>	0.478	0.087
<b>Age Group (15Y to 30Y Vs 30-60Y)</b>	0.254	<0.05
<b>Education ( Graduation or above Vs High School to Graduation)</b>	1.420	0.239
<b>Total Knowledge Score</b>	1.404	<0.05

Note: Probability was calculated as a membership of No.

**Q#1. About wearing mask while going outside in recent days?**

<b>Place of residence ( Urban Vs rural)</b>	0.941	0.934
<b>Gender (Male Vs Female)</b>	1538	0.997
<b>Age Group (15Y to 30Y Vs 30-60Y)</b>	0.217	<0.05
<b>Education ( Graduation or above Vs High School to Graduation)</b>	0.000	0.997
<b>Total Knowledge Score</b>	0.505	<0.001

Note: Predicted probability is for membership of Yes.

Zaigui Wang, et. al. "A Cross Sectional Survey: Evaluation of COVID-19 awareness level among Pakistani residents and Preliminary Future Insight." *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 9(4), 2020, pp. 10-18.