

# Knowledge, Attitude and Practice towards COVID-19 among Pakistan University Students

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Despite the availability of a large amount of information pertinent to COVID-19, a lot of violation of SOPs and available guidelines have not been practiced yet in Pakistan to control the spread of this virus. Therefore, there is a need to recognise the reasons that can improve practices of taking safety measures. For this reason, this study is conducted with a purpose to explain the key role of attitude towards practicing safety measures regarding COVID-19 among Pakistani Universities students. To examine the key role towards practicing safety measures, 359 valid responses were analysed via PROCESS macro. The results indicated that a positive and significant relationship exists between COVID-19 knowledge and COVID-19 practices. However, the direct effect shown by the results of COVID-19 knowledge on COVID-19 practice is significant in the presence of attitude towards COVID-19 as a mediator. Indicating that right attitude regarding disease awareness is predisposed by consistent knowledge on COVID-19, and right attitude towards the prevention of COVID-19 will lead to appropriate COVID-19 preventive practices.

**Keywords:** *COVID-19 Knowledge, COVID-19 Practices, COVID-19 Attitude, COVID-19*

## INTRODUCTION

The novel Coronavirus Disease or COVID-19 was first reported in December 2019 in Wuhan, Hubei Province, China, as a novel respiratory ailment. Since then, it has spread to over 209 countries (Waris, Atta, Ali, Asmat, & Baset, 2020) and affected areas are increasing rapidly. Due to its rapid spread, the World Health Organization (WHO) stated it as a global pandemic on 12<sup>th</sup> March 2020 (WHO, 2020). Just like the rest of the world, Pakistan was also affected

by this outbreak and the first two cases were officially reported on 26<sup>th</sup> Feb 2020. According to WHO as on June 17, 2020, there were 154,760 active cases and 2,975 deaths have been reported. Until today, no country has been fully vaccinated, consequently, the protective step of extreme serious intervention has been used to control the spread of COVID-19. To control the rapid proliferation of this contagious disease people's knowledge of basic hygiene principles and ways of virus transmission along with necessary measures to curtail the virus is of utmost importance (Erfani, Shahriarirad, Ranjbar, Mirahmadizadeh, & Moghadami, 2020). So far, however, the knowledge on COVID-19 is inconsistent (knowledge on the causes and transmission sources of COVID-19) for example, "what are the common symptoms of COVID-19?", "Can you have COVID-19 without a fever?", "Can you transmit COVID-19 after symptom resolutions?", "What are the mild symptoms of COVID-19?", "Can I catch COVID-19 while swimming in a pool?", "Can flies transmit COVID-19?", "Do weather and climate determine where COVID-19 occurs?", "How long will COVID-19 live on surface or in the air?", inconsistent answers to all these questions creates a lack of practices among individuals leading to extreme violation of COVID-19 related SOPs. To control the spread of the epidemic to save millions of people, multi-faceted policies of wearing mask, washing hands, sanitising hands, maintaining social distancing and isolation in case of diagnoses have been implemented. Numerous nations through the globe tried to take different measures such as countrywide lockdowns, going into isolation or quarantine and preferment of actions for public health including hand washing, respiratory protocol, and social isolation. Similarly, Pakistan regulatory authorities have made enormous efforts to educate the people through social and print media, but the knowledge imparted through these sources is inconsistent thereby creating lack of practice among people related to guidelines of wearing masks, self-isolation and frequently sanitising and washing hands. Thus, to adjust the behavioural practices, which is predisposed by knowledge and attitude of the public (Banik et al., 2021; AAlrasheedy et al., 2021; Al-Hanawi et al., 2020), this paper seeks to examine the key role of "attitude" towards practicing safety measures regarding COVID-19 among Pakistani Universities students. Additionally, extensive studies have been carried out on COVID-19, no single study exists which adequately covers how behavioural practices prevent the spread of COVID-19 (KAP perspective).

## **REVIEW OF LITERATURE**

### **KNOWLEDGE AND COVID-19 PRACTICES**

Various researches have been carried out around the world to apprehend the knowledge concerning symptoms and treatment of COVID-19. Most of the studies conducted had health care workers or medical professionals as the focus group (Bhagavathula, et al, 2020). Research has shown that people are aware of the COVID-19 symptoms (Ahmed et al, 2020; Nemati, Ebrahimi, Nemati, 2020; Giao et al, 2020; Zhong et al, 2020). However, a study conducted in Jordan concluded that dentists did not have the knowledge of how to prevent this virus through

disinfection (Khader et al, 2020). Another study reported lack of knowledge about COVID-19 in health care workers through a web-based survey (Bhagavathula et al, 2020). Furthermore, a study conducted in India indicated a modest knowledge level about COVID-19 (Roy et al, 2020). As the countries around the world are experiencing rapid increase in cases there is a need to share rationale knowledge about the virus (Kushalkumar et al, 2020). Similarly, Al-Hanawi et al. (2020) highlighted that “despite the unprecedented national measures in combating the outbreak, the success or failure of these efforts is largely dependent on public behavior”. In line with the same argument, we suggest that behavioral practices are predisposed by rationale knowledge and attitude. Thus, it has been hypothesised that attitude mediates the relationship between COVID-19 consistent knowledge and COVID-19 safety practices.

### **ATTITUDE AND COVID-19**

Attitude has a positive impact on COVID-19 practices (AAlrasheedy et al., 2021; Khader et al, 2020; Shi et al, 2020; Dost et al, 2020; Wolf et al, 2020). Mere knowledge about the symptoms and treatment of COVID-19 is ineffective unless right attitude regarding disease awareness is there. Governments of many countries have implemented strict lockdowns in their countries to prevent the spread but if the people of that country were not having the right attitude towards the prevention of COVID-19, lockdown would be useless (Azlan et al., 2020). Moreover, another study evidenced that right attitude would lead to right COVID-19 prevention practices (Haque et al., 2020).

### **KNOWLEDGE, ATTITUDE AND PRACTICE**

According to Knowledge Attitude and Practice theory, knowledge about a phenomenon leads to an attitude which results in different practices. The deadly pandemic of COVID-19 has compelled the population around the world to know, perceive and act accordingly. Studies have been conducted showing relation between knowledge, attitude and practice in Saudi Arabia (AAlrasheedy et al., 2021; Al-Hanawi et al., 2020) , in China in different professions (Yue et al, 2020; Zhong et al, 2020; Zhou et al, 2020) , Bangladesh (Banik et al., 2021; Rana et al, 2020), Uganda ( Olum et al, 2020), Egypt ( Wahed et al, 2020) and (Abdelhafiz et al, 2020), Ethiopia Akalu, Ayelign, & Molla, 2020), US ( Wolf et al, 2020) and ( Alubuio et al, 2020) , Italy ( Rico et al, 2020), Turkey (Yıldırım & Güler, 2020), Indonesia ( Sari et al, 2020), Saudia Arabia (Al-Hanawi et al, 2020), Germany ( Zipprich et al, 2020), Vietnam (Huynh et al, 2020), Nepal (Piryani & Sunny, 2020), Pakistan (Alwani et al, 2020), Iran (Huynh et al, 2020). Furthermore, research has been conducted in most of the countries whether developing or developed to see and analyse the knowledge, attitude and practices of the population. Additionally, various practices have been identified through the studies which are carried out by most of the respondents like wearing masks, washing of hands, disinfecting, staying at home (Rana et al, 2020; Gharpure et al, 2020). Review of the literature has identified that research carried out previously emphasised that knowledge about COVID-19 symptoms, spread and

treatment results in certain attitudes which leads towards various practices to reduce the influence of the virus. In the present study COVID-19 attitude has been taken as a mediator to see its impact on the direct relation of COVID-19 knowledge and COVID-19 practices, since no single study exists which adequately covered this phenomenon.

## THEORETICAL FRAMEWORK

In 1960, KAP (Knowledge, Attitude and Practice) theory was developed by Western scholars to study health behaviour changes. The theory proposed that human behaviour encompasses three succeeding processes: first to acquire knowledge, second to generate attitudes and third to form behaviours (Ross & Smith, 1969). In light of KAP theory, the spread of COVID-19 would certainly be affected by the behavioural practices of the individuals, which are preceded by the existed knowledge and information pertinent to action.



Figure 1: Theoretical Framework

## METHODOLOGY

### RESEARCH DESIGN

Design of the study is hypothesis testing and data has been collected at one point of time in a non-contrived environment with minimal researchers interference. A self-administered questionnaire rated on a Likert scale was used to collect the data and the unit of analysis was individuals. Further, web based administered questionnaire surveys from the university students from different cities of Pakistan were used to collect the data. Using convenient sampling technique questionnaires were distributed to 500 participants out of them only 356 responses were received, having a response rate around 71.5%.

### MEASUREMENT

*COVID-19 Knowledge (KCOVID)*, *COVID-19 Attitude (ATCOVID)* and *COVID-19 Practices (COVIDP)* were measured with the help of a scale developed by the World Health Organization and later used by (Erfani, Shahriarirad, Ranjbar, Mirahmadizadeh, & Moghadami, 2020). The scale of *COVID-19 Knowledge (KCOVID)* is comprised of 22 items, designed to ascertain the knowledge of the university students regarding COVID-19. The questions mainly focused on characteristics, symptoms, prevention, and control of the disease. All the items were designed

on a 5 Point Likert Scale (1= strongly disagree to 5= strongly agree). A high score represents or confirms that the participants have significant knowledge about COVID-19. In addition to this, the scale of *COVID-19 Attitude (ATCOVID)* is comprised of 15 items, designed to ascertain the attitude of the university students regarding COVID-19. The questions mainly focused on the way of action performed by the youth towards COVID-19. All the items were designed on a 5 point Likert Scale (1= strongly disagree to 5= strongly agree). A higher score represents or confirms that the respondents have a positive attitude towards COVID-19. Lastly, scale of *COVID-19 Practices (COVIDP)* is comprised of 11 items, designed to ascertain the practices of university students regarding COVID-19. The questions mainly focused on the act of rehearsing a precautionary behaviour towards the COVID-19 pandemic repeatedly. All the items were designed on a 5 Point Likert Scale (1= strongly disagree to 5= strongly agree). A higher score signifies or endorses that the participants positively rehearse a precautionary behaviour towards the COVID-19 pandemic.

## DATA COLLECTION

Online data was collected through a web-based survey. A link was shared with the university students so that the participants could easily see and respond to the questionnaire.

## RESULTS AND ANALYSIS

The results and analysis were performed using PROCESS macros

**Table I** Mediation Analysis

<i>Outcome variable: Attitude towards COVID</i>						
	<i>B</i>	<i>SE</i>	<i>T</i>	<i>P</i>	<i>LLCI</i>	<i>ULCI</i>
Constant	2.231	0.128	17.332	0.001	1.978	2.484
KCOVID	0.404	0.032	12.374	0.001	0.339	0.468
<b>Direct Effect (COVID Knowledge and Practice towards COVID)</b>						
	<b>B</b>	<b>SE</b>	<b>T</b>	<b>P</b>	<b>LLCI</b>	<b>ULCI</b>
Constant	2.028	0.206	9.830	0.001	1.622	2.433
KCOVID	0.697	0.052	13.32	0.001	0.594	0.800
<b>Outcome variable: Practice towards COVID</b>						
	<b>B</b>	<b>SE</b>	<b>T</b>	<b>P</b>	<b>LLCI</b>	<b>ULCI</b>
Constant	1.216	0.273	4.446	0.001	0.678	1.754
KCOVID	0.550	0.061	9.008	0.001	0.430	0.670
ATCOVID	0.363	0.083	4.378	0.000	0.200	0.527

*Source: Author's Calculation*

*Outcome variable: COVID Practices, \*\*P<0.05, KCOVID is COVID Knowledge, ATCOVID is COVID attitude,*

The findings of this study show that 100 points increase in COVID-19 knowledge brings approximately 40 points increase in Attitude towards COVID-19. Furthermore, the t-statistics greater than 1.96 further elaborate the H<sub>1</sub> i.e. COVID-19 Knowledge brings a positive change in Attitude towards COVID-19. In addition to this, the nonexistence of zero value between the lower and upper limit further explains that the results are significant at a 95% level of significance.

The findings of the direct effect of COVID-19 Knowledge on COVID-19 Practice shows that 100 points increase in COVID-19 Knowledge brings approximately 69 points increase in Practice towards COVID-19. Therefore H<sub>2</sub> i.e. COVID-19 Knowledge brings a positive change in Practices towards COVID-19 has been supported. In addition to this, the non-existence of zero value between the lower and upper limit further explains that the results are significant at a 95% level of significance.

The findings further showed that when attitude towards Coronavirus is present between the association of Knowledge of COVID-19 and Practice towards COVID-19 the direct effect is minimised to 55 points from 69 points hence showing an existence of partial mediation. Furthermore, the t-statistics greater than 1.96 further elaborate the H<sub>3</sub> i.e. the positive effect of COVID-19 Knowledge on Practice towards COVID-19 is decreased in the presence attitude towards COVID. In addition to this, the non-existence of zero value between the lower and upper limit further explains that the results are significant at 95% level of significance.

**Table II In direct effect of X on Y (COVID Knowledge and Attitude towards COVID)**

	Effect	BootSE	BootLLCI	Boot ULCI
ATCOVID	0.146	0.047	0.0581	0.2435

Source: Authors' calculations, \*\*P<0.05, ATCOVID is COVID attitude,

Lastly, the results of the direct effect shows that partial mediation of Attitude towards COVID-19 exists in between Knowledge of COVID-19 and Practices towards COVID-19 hence verifying the H<sub>4</sub> i.e. Attitude towards COVID-19 mediates the association of Knowledge of COVID-19 and Practice towards COVID-19. In addition to this, the nonexistence of zero value between the lower and upper limit further explains that the results are significant at 95% level of significance.

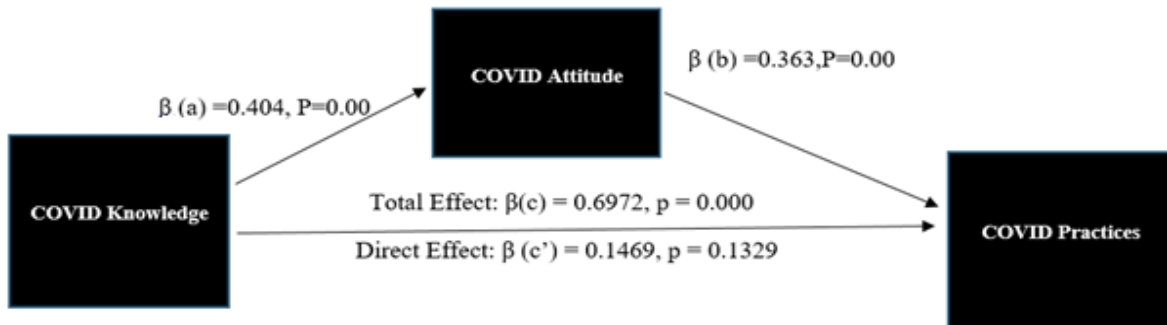


Figure 2: Summary of Mediation Analysis

## DISCUSSION

### COVID-19 KNOWLEDGE AND ATTITUDE TOWARDS COVID

COVID-19 knowledge was observed to be positively related with Attitude towards COVID-19, which reinforced the anticipated study hypothesis. According to a study conducted recently by Zhong et al (2020) in China reported a negative relationship between COVID-19 Knowledge and COVID-19 Attitude. However, a study conducted to see the response from health care workers in Egypt reported a positive association (Wahed et al., 2020). Another study conducted by Puspitasari et al. (2020) in Italy reported a positive relationship between COVID-19 Knowledge and Attitude towards COVID-19. One more study performed on health care workers in Ho Chi Minh City also evidenced that most of the healthcare workers had good knowledge and hence positive attitude toward COVID-19 (Huynh, 2020). Additional study conducted in India affirmed that the respondents having a good level of knowledge about the COVID-19 infection and having required knowledge about its prevention facilitated a positive attitude towards readiness to obey guidelines on quarantine and social distancing developed by the government.

### COVID-19 KNOWLEDGE AND PRACTICE TOWARDS COVID-19

COVID-19 knowledge is studied to be positively associated with Practice towards COVID-19, which reinforced the anticipated study hypothesis. Accordingly, a recent study conducted on chronic disease patients at Addis Zemen Hospital, Northwest Ethiopia affirmed that prevalence of poor knowledge is a major cause of poor practice related to COVID-19 (Akalu, Ayelign and Molla, 2020). A study conducted on healthcare workers regarding COVID-19 in Pakistan reported health care workers have good knowledge, but there are areas in specific aspects of knowledge and practice that deserve consideration (Saqlain, 2020). An epidemiological survey in North-Central Nigeria also evidenced that even if the participants have adequate knowledge and attitudes towards COVID-19, community-based health campaigns are necessary to hold positive attitudes and practice along with appropriate intervention measures devoid of misconceptions are required (Reuben et al., 2020).

## **COVID-19 KNOWLEDGE, COVID-19 ATTITUDE AND COVID-19 PRACTICE**

COVID-19 Attitude was observed to be mediating between COVID-19 Knowledge and Practice towards COVID-19, which also supported the proposed study hypothesis. A study conducted on Chinese residents during the quick rise period of the COVID-19 pandemic emphasised that health education programs meant to improve COVID-19 knowledge are helpful for Chinese residents to hold positive attitudes and sustain suitable practices (Zhong et al., 2020). Another study conducted on Tanzanian residents suggested that appropriate knowledge and positive attitudes promotes the suitable practices towards COVID-19 (Byanaku and Ibrahim, 2020). In addition, a study conducted in Nepal also supported the proposed hypotheses of the study that COVID-19 Attitude has some sort of positive association between COVID-19 Knowledge and in turns Practice towards COVID-19.

## **CONCLUSION**

The purpose of this research was to determine the association of COVID-19 Knowledge, COVID-19 Attitude and COVID-19 Practices along with measuring the mediating role of Attitude towards COVID-19 in the relationship between COVID-19 Knowledge and COVID-19 Practices among university students of Pakistan. The findings of this research showed that COVID-19 Knowledge has a positive association with COVID-19 Attitude and COVID-19 Practices. The findings also showed that Attitude towards COVID-19 mediates the relationship between COVID-19 Knowledge and COVID-19 Practices. Suggesting that attitude is positively affected by adequate knowledge on COVID-19, which in turn leads to safety practices toward COVID-19. The results of this study also suggest that consistent knowledge on COVID-19 (knowing the exact causes and transmission sources of COVID-19) be shared by all social and print media for good practices toward COVID-19. On the other hand inconsistent knowledge on the causes and transmission sources of COVID-19 negatively affect students attitude, which creates a lack of practices among them and leading to extreme violation of COVID-19 related SOPs. To conclude with, regulatory authorities need to educate people via consistent knowledge of COVID-19, this will lead to right attitude regarding disease awareness and will positively affect appropriate preventive practices toward COVID-19. Right attitude towards the prevention of COVID-19 will lead to right COVID-19 prevention practices.



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