



Research Article

Covid-19: From Pandemic to Epidemic an Ostrich Syndrome Causing Desensitization among Urban and Suburban Masses

Bushra Naz¹, Muhammad Kashif Fida², Muhammad Zohaib Khan³, Azkaa Safdar⁴, Muhammad Aqeel Asghar⁵

¹Principal Clinical Psychologist, Department of Mental Health, Pakistan Society for Planned Parenthood (PSPP), Lahore, Pakistan; ²Organizational Psychologist/Head Organizational Development, Chair Center for Assessment, Research and Employees' Evaluation (CARE), Lahore, Pakistan; ³PhD Scholar, Department of Psychology, GC University, Lahore, Pakistan; ⁴Department of Psychology, GC University, Lahore, Pakistan; ⁵Department of Psychology, GC University, Lahore, Pakistan.

Abstract

Background: After declaration of the Covid-19 as pandemic by WHO, like every country of the world Pakistan also took exceptional precautionary measure to control the spread and transmission of this virus. These measures included strict lockdowns, shutting down educational institutions, markets, shopping malls, airports and masjids. The study primarily aimed to assess the individuals' knowledge, attitude, behavioral practices to prevent coronavirus and its psychological impacts on their mental health but later researcher also conducted another post study. Factually, the economic crisis, holy month of Ramadan and Eid-ul-Fitar forced the authorities soften the lockdown. Consequently, after this relaxation, the patients of Covid-19 as well as the death rates increased exponentially in Punjab.

Methods: A non-equivalent quasi-experimental research designed was used to conduct pre and post study. An online survey having standardized questions about the peoples' knowledge regarding Covid-19, attitudes, their behavioral practices to prevent it and in what manner covid effected their mental health was conducted. Moreover, it also includes the information for demographics of sample. The link was sent to the participants through email, WhatsApp, Social media, Twitter, Facebook and LinkedIn. Similarly, same procedure was followed in post-study, with the same participants, but after a gap of three weeks.

Results: Data was analyzed by SPSS and t-test was applied to draw comparisons among the responses of pre and post study. Results revealed that peoples' knowledge and attitude towards Covid-19 remained same in both studies, however, their behavioral practices to prevent Covid-19 and psychological impacts on their mental health (i.e., stress, depression, fear) greatly reduced in post study as compared to the pre-study.

Conclusion: The authorities should initiate the health education programs to improve the knowledge, attitude and behavioral practices regarding Covid-19 and to combat its psychological impact on mental health. Besides, it is highly recommended that authorities should take bold steps to enforce formal, or smart lockdown to take control over the situation or else get ready to filled up the graveyards. The situation can also be controlled by enforcing precautionary measures and re-inviting awareness.

Corresponding Author | Dr. Muhammad Kashif Fida, Organizational Psychologist/Head Organizational Development, Chair Center for Assessment, Research and Employees' Evaluation (CARE), Lahore, Pakistan, **Email:** kashifida@gmail.com

Key Words: COVID-19, precautionary measures, lockdown, pandemic, Ostrich Syndrome.

Introduction

Corona Virus Disease 2019 (Covid-19) is a global situation responsible for thousands of merciless deaths. Along with obvious physical symptoms, it also has significant psychological ramifications. The virus transmits through person-to-person via close contact, thus, resulting in the exponentially escalated rates of disease transmission.¹ It has clenched the world in its ruthless hold and changed the social, economic and interpersonal framework in a lasting way. Many economically stable countries have come to the brink of recession. Humans are devoid of social interaction due to self-isolation.² Educational institutes have halted their operation. Offices are only operating in their essential capacity, and industry is facing terrible lockdown. Lastly, for the first time in history, even the religious places are no longer functional. Furthermore, health authorities make mandatory self-quarantine and isolation for the infected persons. All these factors have contributed to the wide-spread of panic, anxiety and fear.^{3,4}

It was first experienced in Wuhan city of China and reported to the World Health Organization (WHO) on December 31, 2019. Later in January, the WHO declared this COVID-19 a global health emergency due to the incredible rising ratio of reported cases. On March 11, 2020, Covid-19 was officially declared a global pandemic by WHO.^{5,6}

The Virology of Covid-19 gives different assumptions based on its structure and appearance. It is also observed that COVID-19 is the same subgenus as SARS (Severe Acute Respiratory Syndrome) virus. It uses the Angiotensin-converting enzyme-2 (ACE2) receptor to enter into the cell.⁷ Taxonomically, it belongs to a family of large single-stranded RNA viruses called 'Coronaviridae'. They have a lipid envelope studded with club-shaped spike proteins, and can infect birds and many mammals including humans.⁸ It represents mild to severe respiratory illness that is caused by a coronavirus (Severe acute respiratory syndrome coronavirus 2 of the genus Beta-corona-virus). This virus transmitted chiefly by contact with infectious material (such as respiratory droplets) or with objects or surfaces contam-

inated by the causative virus. It is characterized especially by fever, cough and shortness of breath and may progress to pneumonia and respiratory failure.^{9,10,11}

The following figure represents symptoms with their chances of occurrence¹²:

Symptom	Range of Occurrence
1. Fever	83–99%
2. Cough	59–82%
3. Loss of appetite	40–84%
4. Fatigue	44–70%
5. Shortness of breath	31–40%
6. Coughing up sputum	28–33%
7. Muscle aches and pains	11–35%

As now 4178,156 positive cases and 286353 death have been reported worldwide while the USA, Italy, Spain, Russia and UK. In Pakistan first two cases were reported on February, 20,2020.¹³ Afterwards, the Covid-19 has been reported and widely spread throughout the Pakistan and its various provinces. In Pakistan 32673 positive cases of covid-19 were reported with 618 deaths in different provinces such as Punjab 11,869, Sindh 12, 610, Baluchistan 2061, KPK 4875, Gilgit Baltistan 457, Islamabad capital territory 716 and Azad Jammu Kashmir 86.¹⁴

At the very initial stage, the Covid-19 was considered merely a pandemic with buildout in China only. However, shortly afterwards WHO declared Covid-19 a global pandemic due to its swift widespread in most of the countries.^{15,16}

In Pakistan where the main source of knowledge and information is electronic and social media, people had the same perception about Covid-19. However, few were interested in adopting prescribed precautionary measures. This unwillingness resulted in the rapid increase of coronavirus cases in Pakistan. The public health organizations presumed complete lockdown as a strategy to handle this situation. Initially, all small and large businesses, other sectors, and inter and intra-city transportation were put on complete lockdown for the period of three weeks. Amid the unrelenting increase in coronavirus cases, this

lockdown was later extended. This strict lockdown, continuous increase in positive coronavirus cases, and increasing death toll made people grasp the severity of the epidemic, and instilled the feelings of anxiety and fear. Then people started taking the government issued SOPs seriously and started following the precautionary measures set by ministry of health under the guidelines of WHO. Recommendations of social distancing, wearing a mask, and frequent hand-washing were being taken seriously, and the restrictions on gathering, and handshaking were being followed.¹⁷

It was confirmed that Covid-19 brought up threats, worries, and psychological impact on an individual's mental health which were at the peak in the beginning of the holy month of Ramadan.¹⁸ Particularly, the life-threatening nature of Covid-19 heightened the fear associated with it. Meanwhile, all the Muslim world was celebrating Ramadan by fasting and conducting religious practices. Mentioned researches were carried out at the beginning of Ramadan where people were occupied with fasting, prayers, recitation of the Holy Quran and offering "Salah Tara-weeh" in a controlled environment as per SOPs by the authorities. Moreover, in the later part of Ramadan, the preparation of Eid-ul-Fitar usually begins. Its preparation involves buying new clothes, shoes, accessories, and an extensive shopping beyond the limits of age, gender and socio-economic status. After 15th Ramadan, crowded situations were expected in markets, and shopping malls, people were already getting antsy. The judiciary added fuel to the already lit fire and took a suo-motu action to remove the lockdown despite the worsening pandemic situation. This decision forced the government to remove all kinds of restrictions on shops, markets and shopping malls immediately, and allowed public to shop while following certain set precautionary measures. After this decision, masses of people came out to shop for Eid, and precautions and safety measures against the Covid-19 were completely overlooked. This attitude of people intrigued the researchers and questions started emerging, which led to the conduction of current study. Initially, this study was designed to be conducted at the initial stages of Covid-19 pandemic in Pakistan, that is during April and the

first week of May 2020. However, looking at the scope of the research, especially the impact of religious practices on judgment and immediate fluctuation of people's reaction towards pandemic, it was decided to conduct another study (post-study). Therefore, this research was conducted to compare and contrast the people's knowledge, attitude, behavioral practices of prevention and the psychological impacts of Covid-19 situation on their mental health at the beginning of pandemic and impact of Eid celebration practices, leading to the transformation of the covid-19 from pandemic to the epidemic in the province of Punjab.

Objectives of the Research

It is a pre and post research based on quasi-research design. It aimed to investigate the following research objectives:

- Compare and contrast the pre- and post-study responses of the participants based on knowledge, attitude, behavioral practices and psychological impact of the covid-19.
 - o To assess the individual's knowledge about the Covid-19
 - o To measure the attitude of participants' towards Covid 19
 - o To measure the adopted behavioral practices to prevent Covid-19
 - o To measure the psychological impact (i.e., stress, depression, fear) on the mental health of participants

Methods

Research Design

A pre and post research design was applied to conduct this research. It was a non-equivalent control group research design, a sub-type of quasi-experimental design. By definition quasi-experiment; is a social experiment based on the current and past situation with an exception of manipulation and the degree of control. The non-equivalent control group design also known as pre and post-test group design having an existing group of participants for the comparison group.¹⁹

The threat of ‘practice effect’ was handled by providing significant time laps among pre- and post-study. Further, alteration in the order of questions was made in the research instruments while conducting the post-study. The situation was naturally promising to conduct this study as pre and post research.

In order to conduct the study, the situation, time, month, and Eid-ul-Fitar were significant events. So, pre-study was planned to be conducted in the beginning of Covid-19 during the first week of April 2020. The next conjoined study (post-study) was conducted from the mid of Ramadan till after the festival of Eid (started mid of May, till the first week of June 2020).

Table 1: *Description of Non-Equivalent Quasi Experimental Research Design*

Legends	Variables	Explanation
Independent Variable	Covid -19 situation	Naturally occurring pandemic
Dependent Variable	O ₁ = Knowledge about the covid-19 O ₂ = Attitude about the covid-19 O ₃ = Behavioral practices to prevent covid-19 O ₄ = Psychological impact on mental health	Participant's
Pre – Post study	Pre study (n1=210) Post Study (n2=152)	First Week of April to 14 th April 2020 Last Week of May to 7 th of June 2020
Random Assignments	Not Applicable	
Control Group	Not Applicable	

Participants and Data Collection

This study included a total of $N = 362$ participants including $n1 = 210$ in pre-study and $n2 = 152$ in post-study. It is important here to mention that the sample of pre-study and post-study was the same and has been contacted after the prescribed time for data collection to observe the impact of study variables.

In order to comply with the lockdown measures, set by the authorities, the data was collected using online tools. For the very purpose, an online plat-form was used to upload the questionnaire. This on-line platform has several components including; brief introduction of the research, consent form with a digital signature, instructions, demographic sheet and self-explanatory questions provided with five-point options to select the responses. An online link was developed and emailed to the potential participants. The list of participants was developed by contacting various offices, banks, organizations and universities that were operative during the pandemic. Afterward, the snowball technique was

followed to maximize the number of participations in the study. The primary sample was urged to refer the link of this study to the other potential participants. Moreover, social media, WhatsApp, Twitter, Facebook and Li-nkedIn were used to spread the study link. Resea-rchers extracted the 233 questionnaires through an online source, out of which 210 were found suitable and complete and were included in the final analysis of the pre-study.

During the second phase of the data collection for post-study, the same 210 participants were approached via their inbox. An online link for the research survey instruments was sent to the participants and requested them to attempt the survey. Data collection during post-study was relatively challenging as during the first two weeks only 86 participants attempted the survey. Researchers followed up with the remaining participants for data collection. Finally, the collected sample for the post-study comprised of 187 questionnaires among them 152 were found complete in all respects, making 72.38% of the study

1 sample. Demographics of pre- and post-study are given as under:

Table 2: Demographic Characteristics of Pre-Study and Post-Study Sample (N= 362)

Variables	Pre -Study (n1 = 210)		Post-Study (n2 =152)	
Age <i>M(SD)</i>	28.24 (7.55)		28.02 (7.32)	
	<i>f</i>	Percentage %	<i>f</i>	Percentage %
Gender				
Male	82	39	62	40.8
Female	128	61	90	59.2
Living Background of the Population				
Urban	106	50.5	73	48
Suburban	104	49.5	79	52
Marital Status				
Married	112	53.3	80	52.6
Unmarried	98	46.7	72	47.4
Education				
Intermediate	16	7.6	12	7.9
Bachelors	58	27.6	42	27.6
Masters	109	51.9	78	51.3
PhD	07	3.3	05	3.3
Professional Diploma	20	9.5	15	9.9

*Note: n1= Sample of the Pre-Study, n2= Sample of the Post-Study

Research Instruments

Researchers constructed the research instruments including both close and open-ended questions about the knowledge of the covid-19 (12-Item, Likert rating scale ranging from 0= *Don't know* to 3 = *True*), the attitude of the people in the current scenario (4-Item, Likert rating scale ranging from 0 = *Not sure* to 3 = *Yes*), their behavioral practices to prevent coronavirus (6-Item, Likert rating scale ranging from 0 = *Not sure* to 2= *Yes*, items 4 and 7 are open-ended), and psychological impacts of the covid-19 (i.e., stress,

depression, fear) (9-Item, Likert rating scale ranging from 0= *Prefer not to say* to 3= *Yes*, items 4 and 5 are open-ended) on their mental health. When assessing the validity of the issue, the assessments of three field experts validated that the research instruments are properly constructed and truly representing the variables. Furthermore, in order to verify the reliability of the questionnaires, the internal consistency coefficients estimate Cronbach's Alpha (α) was calculated on the basis of the scores obtained by the participants in the administered questionnaire. The scales have demonstrated excellent internal consistency.

Table 3: Reliability of the Research Instrument on Pre-Post Studies and Total Sample

Research Instruments	α		
	n1 = 210	n2 = 152	N = 362
Knowledge about the Covid-19	0.50	0.51	0.72
Attitude of the People in the Current Scenario	0.60	0.55	0.60
Behavioral Practices to Prevent Covid-19	0.50	0.70	0.60
Psychological Impacts of the Covid-19	0.70	0.65	0.70
Stress	0.81	0.65	0.75
Depression	0.73	0.50	0.65
Fear	0.60	0.60	0.61

*Note: α = Alpha Reliability, Covid-19= Corona Virus Disease 2019, n1= Sample of the Pre-Study, n2= Sample of the Post-Study, N= Total Sample Size

Table 3 indicated the reliability analyses of the research instruments on the sample of pre-study, post-study and the total sample. Results showed that all the research instruments are valid and reliable having acceptable Cronbach's alpha (α) coefficient estimates. Moreover, the reliability of the research instruments also established by the *t*-test analysis of the data.

Data Analysis

The data was analyzed using SPSS-23. The descriptive statistics were conducted to demonstrate the characteristics of the demographic variables of the population. Moreover, two reliability analyses were conducted to explore the reliability of instruments used; Cronbach alpha and test-re-test. In addition to that independent sample, a *t*-test was used for the co-

mparisons between the results of the pre and post studies.

Ethical Considerations

All the participants of the research voluntarily gave their informed consent to participate in this study. They were informed and briefed about the purpose, their role as participants, and the significance of the research. They were also informed that there would be no harm to them (physical or psychological) in any way whatsoever. The anonymity and confidentiality of the participants' information were ensured by the research team. Lastly, it was informed that the obtained data will be used to published the results without disclosing their identity.

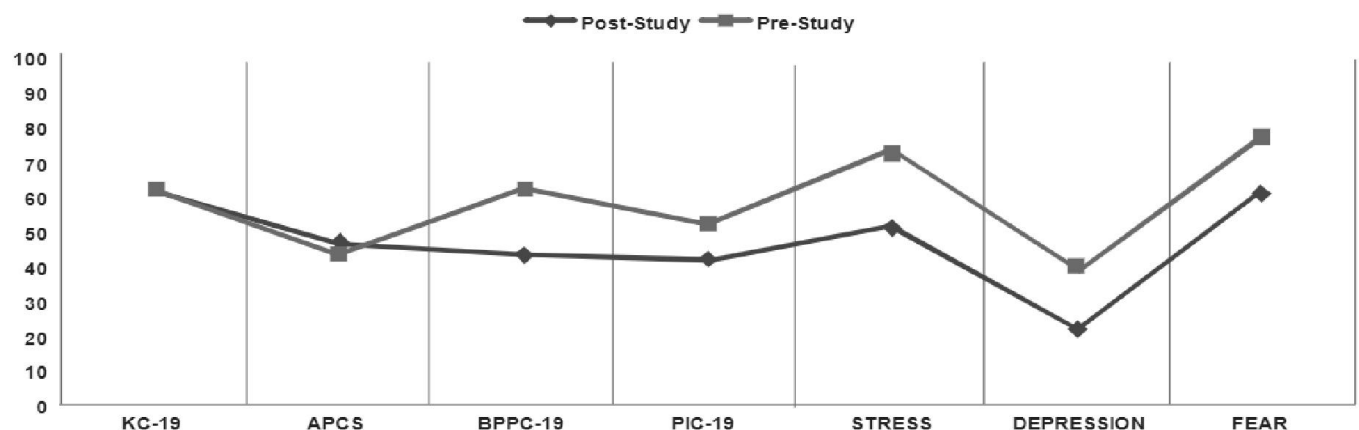
Results

Table 4: Mean Differences in Study Variables between Pre and Post Study (N=352)

Variable	Pre-Study (n1 = 210)		Post-Study (n2 = 152)		<i>t</i> (350)	<i>p</i>	95 % CI		Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			<i>LL</i>	<i>UL</i>	
Knowledge about the Covid-19	74.310	16.22	73.88	15.02	0.25	0.80(<i>ns</i>)	-2.87	3.71	0.027
Attitude of the People in the Current Scenario	60.41	14.36	62.07	18.97	-0.94	0.34(<i>ns</i>)	-5.10	1.78	0.098
Behavioral Practices to Prevent Covid-19	74.59	10.62	59.56	21.04	8.89	0.01	11.70	18.34	0.901
Psychological Impacts of the Covid-19	66.13	7.87	58.66	15.49	6.00	0.04	5.02	9.92	0.608
Stress	83.17	11.97	65.74	21.52	9.82	0.03	13.93	20.91	1.001
Depression	55.36	12.56	42.67	14.56	8.86	0.02	9.87	15.50	0.933
Fear	86.03	11.20	73.37	9.41	11.32	0.01	10.45	14.85	1.223

Note: ** $p < .01$, * $p < .05$; CI = Confidence Interval, LL = Lower Limit, UL = Upper Limit, Covid-19= Corona Virus Disease 2019, n1= Sample of the Pre-Study, n2= Sample of the Post-Study, N= Total Sample Size.

The Graphical Representation of the Pre and Post Study Results



**Note: KC-19 = Knowledge about the Covid-19, APCS = Attitude of the People in the Current Scenario, BPPC-19 = Behavioral Practices to Prevent Covid-19, PIC-19 = Psychological Impacts of the Covid-19*

In order to explore the differences in variables during the pre and post-study, a t-test has been conducted. Results showed significant mean differences in respondents' pre and poststudy responses on 'practices to prevent covid-19' ($t = 8.89, p < .01$). Detailed observations of results revealed that these practices were high in the beginning, however, it significantly dropped down near the momentous events of Eid-ul-Fitar and continued declining subsequently. Psychological impacts on mental health were also examined in pre and poststudy of the covid-19 during the mentioned period. Results showed that pre and poststudy differences in the psychological impact on individuals' mental health were significantly high ($t = 6.00, p < .004$). The direction of the results showed that in the prestudy when the lockdown was strictly implemented by the government and pandemic was new, it significantly affected the mental health of the participants. On the contrary, responses of poststudy explored that the overall psychological impact on individuals' mental health has markedly dropped comparatively ($p < 0.01$). These differences spread over all the three variables of mental health including participants' level of stress ($t = 9.83, p < .03$), depression ($t = 8.86, p < .02$) and fear to Covid-19 ($t = 11.32, p < .01$). Moreover, results showed no significant mean differences (pre & Post-study) in respondents' knowledge on covid-19 ($t = 0.25, p = ns$) as well as their attitude toward it ($t = -0.94, p = ns$).

The effect size of the results was measured by calculating the values of Cohen's d . It also endorsed the above results. The effect size and comparison between the results of the pre-post studies in terms of behavioral practices to prevent covid-19 $d = 0.90$ and psychological impacts $d = 0.60$ (i.e., stress $d = 1.00$, depress $d = 0.93$ and fear $d = 1.22$) were significantly high in pre-study than post-study.

Discussion

This study aimed to explore the impact of pandemic Covid-19 on participants' knowledge, attitude, behavioral practice, and their mental health in a pre

and post study i.e. when the pandemic was gaining rapid momentum, vs after a prolonged period of lockdown.

Results showed no difference between pre and post study regarding the knowledge that the people have on Covid-19. Pandemic became precarious during the last week of March when the number of infected patients and death tolls multiplied in number.²⁰ Due to uncertainty and apprehension around coronavirus and its rapid progression, print media, electronic media as well as social media became a huge source of information regarding this virus. Anything related to Covid-19 became highly sought-after news and massive information was available highlighting its origin, causes, symptoms, precautions and scientific investigations. People looking to soothe their worries, turned to these sources and collected the information to guard themselves against this pandemic. Post study depicts that the knowledge people have regarding coronavirus is at the same level as before. Individuals are still actively seeking information from various resources. They like to keep updated on the latest information, and happenings regarding the coronavirus. It can be said that knowing gives them a sense of preparation and peace of mind, or it can also be that it has just become a new norm to gather information regarding the pandemic to discuss it in various settings.

Significant differences were found when psychological impact between pre and post studies were investigated. We specifically investigated three factors, stress, depression and fear that were most prevalent regarding coronavirus. This knowledge has built up a positive attitude to fight against the situation and urged them to follow precautionary measures. However, the uncertainty of livelihood, economic recession, insufficient supplies and social restrictions evoked a high level of stress, anxieties and fear among masses. Add to it, forced isolation, increased number of sufferers as well as high rates of deaths spread hopelessness and depression. Above all, restriction to perform religious practices like five prayers in the mosque, Salat-e-Taraweeh, spiritual gatherings,

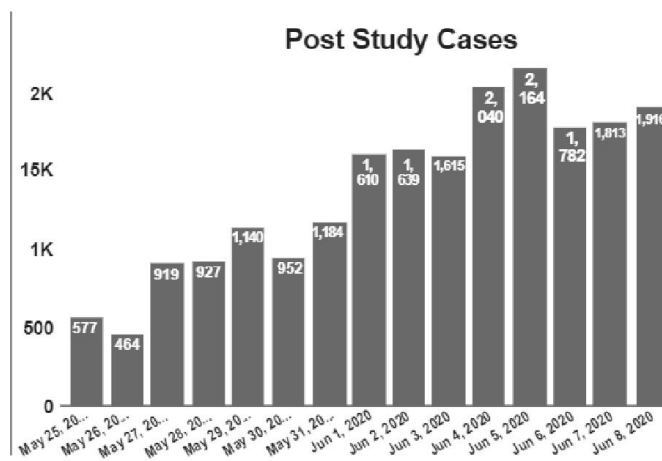
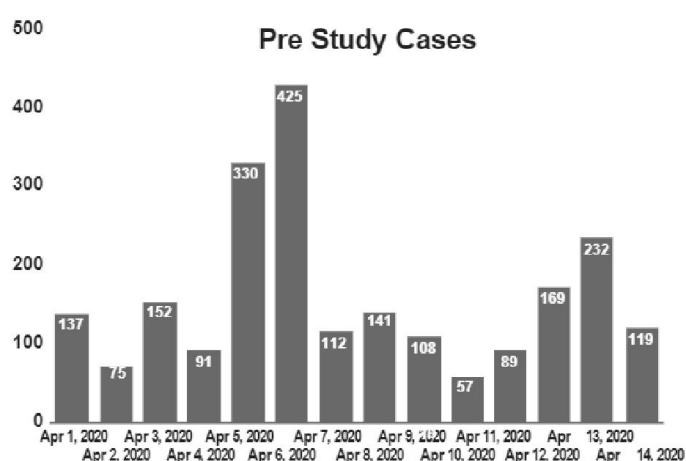
preaching and banning on Aitakaf during the holy month of Ramadan catalyzed the stress, anxiety, fear and depression among masses. Moreover, the general public started hoarding the groceries and necessary goods including stock of medicine, hand sanitizers, tis-sue papers and masks to overcome the expected lock-down, it created a panic situation among masses. However, as the lockdown progressed and prolonged, these feelings were overridden by boredom, tedious-ness, and monotony. Participants reported less stress, fear and/or depression symptoms. They had become desensitized to the phenomena of coronavirus that was still wreaking havoc upon Pakistan.

Marked difference was shown in pre and post study regarding the behavioral practices that people adopted due to the pandemic. In the beginning, covid-19 was an unprecedented situation and this type of apprehension had never been felt before. Therefore, people were willing to follow any and all guidelines that made them feel safe. So, when government provided them with SOPs, they followed them strictly, and maintained proper social distancing. They suspended their social gatherings altogether, and sides-tepped the person with flu-like symptoms. Frequent handwashing, using hand-sanitizers, and wearing face masks became a new normal. They were particular about not touching their faces, and limited their unnecessary interaction with animals. Special precautions were taken for performing essential outdoor

tasks or traveling. Post study showed a marked decreased intensity in the preventive behavioral practices. Near the end of Ramadan, for Eid shopping, judiciary ordered the removal of lockdown and opened markets. People, frustrated with being cooped up for so long, and eager for Eid shopping, threw caution to the wind and burst out in mobs. It was disconcerting to observe people knowingly ignore the behavioral practices of caution. Although they were well aware of all the risks, they were taking they acted like an Ostrich with head in the sand when seeing the danger thus sprouting an 'Ostrich Syndrome', a kind of systematic destination of precautionary behavior due to heavy fear.

Ignoring the behavioral practices and precautions to prevent Covid-19 results in its rapid spread in Punjab and death rate also increased. During the first two weeks of April 2020, when the pre-study was conducted the total confirmed patients of the covid-19 were 2237 and these were rapidly multiplying day by day. However, during the last week of May to the first week of June 2020, when the post-study was conducted and lockdown was softened, 18826 numbers of active Covid-19 patients were reported in Punjab alone.¹⁴

Screen Plot. The screen plot represented the difference between Pre-Study Cases (2237) and Post-Study Cases (18826) on a daily basis of Covid-19.¹⁴



On the basis of the mentioned statistics, it can be observed that the number of patients in Punjab increased as compared to the time period of pre-study and leading it towards an epidemic.

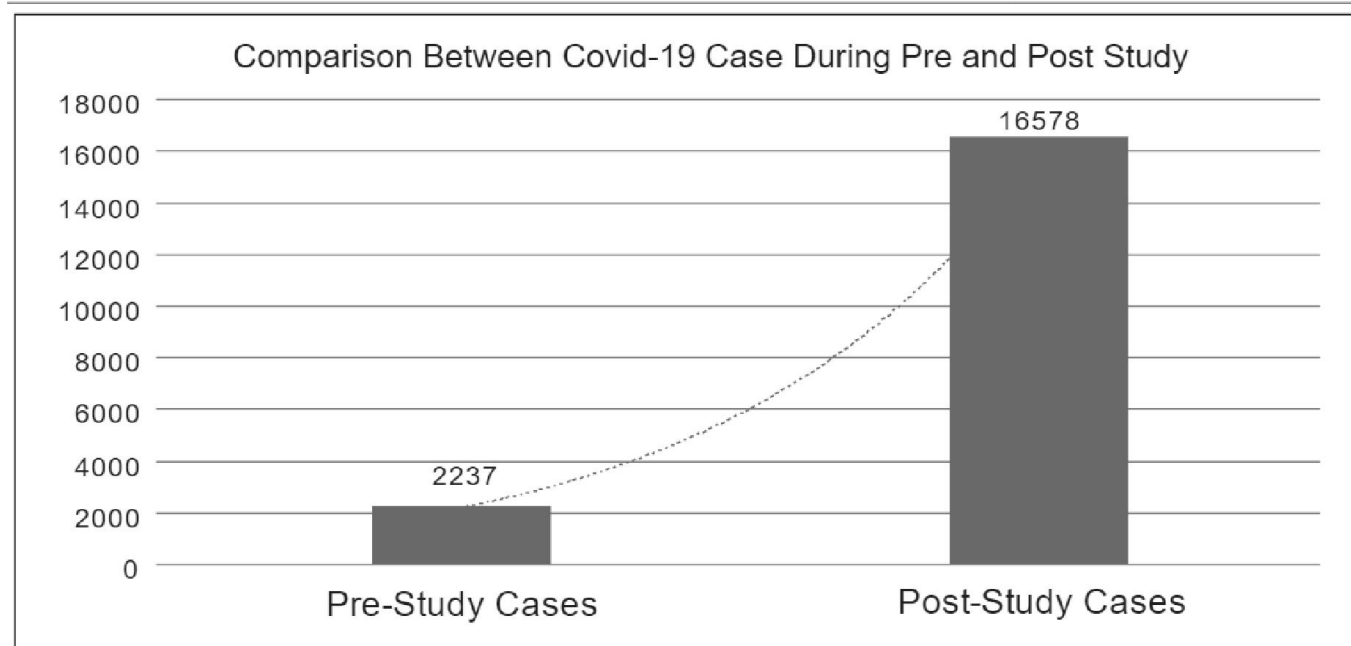


Figure 1: Showing the differences between active Covid-19 patients with respect to the time gap.

Furthermore, the graph clearly illustrates the difference between the number of Covid-19 patients during the period of pre- and post-study. The situation became worse due to the above-mentioned circumstances during the gap period.¹⁴

Conclusion

In conclusion, Covid-19 is a relatively new virus that has had everlasting effects within a short time since it was first spread in December 2019. The covid-19 crisis has spread all around the world rapidly, governments of the highly affected countries as well as less affected ones are adopting precautionary measures to combat the disease or control the outbreak of the virus. It has become a clinical as well as a psychological threat to the general population, healthcare workers, daily wage employees, businessmen, and every human being all around the world. Moreover, this pandemic affected the world's economy and changed several concepts of business, employment, learning and education. The existing research provided the comprehensive examination of the people's knowledge about covid-19, their attitudes toward it, adopted behavioral practices to combat the virus and psychological impacts on their mental health during pre and post studies. The findings of the research sugges-

ted that in pre and post studies people have acceptable equal knowledge and attitude towards covid-19, however, the level of their adopted behavioral practices and psychological impacts on their mental health declined due to the ostrich syndrome. Consequently, this pandemic became an epidemic that causes a huge number of covid-19 positive patients and reported high deaths. It is highly recommended that authorities should take bold steps to enforce formal, or smart lockdown to take control over the situation or else ready to fill up the graveyards. It could also be controlled by enforcing precautionary measures and re-inviting awareness.

Ethical Statement

All the ethical considerations were followed. The informed consent was taken from the participants while data collection. The basic information regarding research procedure was also provided to the participants and their consent of participation voluntarily was obtained. They were also told that their participation was voluntary and without any monetary gains. The confidentiality of the information and the privacy of the demographic variables were also maintained.

Declaration Section**Consent to participate**

An informed consent was obtained from all participants. They participated voluntarily in this study.

Consent for publication

Consent approved by the authors.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors are well informed and declared no competing interests.

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