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Assessment of general awareness among Pakistani students regarding COVID-19 outbreak

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ABSTRACT

At the end of 2019, a novel infectious agent known as severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) originated from Hubei, China; from where it spread to other regions of the globe. In March 2020, World health organization (WHO) expressed fears that Pakistan might emerge as the next epicenter of corona virus infectious disease 2019 (COVID-19). Since proper preventive and curative measures are currently unavailable, only remedy is self-isolation which necessitates ample awareness among people. In this regard, Pakistan faces a unique challenge as it is a populous country with a record of contagious outbreaks in the past. Therefore, it is crucial to evaluate the general understanding regarding the cause, spread, control and psychological consequences of this pandemic in Pakistani population, especially in the youth that represents over 60% of the population. In this study, we have collected and analyzed responses related to awareness and attitude of students through a self-designed questionnaire. In total 1822 responses were collected and subjected to descriptive and frequency analysis. Outcomes of the survey suggest that majority of the respondents are well aware of the disease outbreak, complications and its mode of transmission. It is also evident from the obtained responses that youth of the country is willing to opt the precautionary measures and avoid mass gatherings.

1. Introduction

At some stage in epidemics and pandemics, a knowledge gap about the rising disease can cause confusion and panic among the community. Circulation of proper information can not only direct society through such events but can also boost epidemic preparedness that may occur at some stage in future. Negative attitudes and practices towards novel infectious diseases can intensify epidemics which may ultimately consequence in pandemics. Previously many studies have been conducted to access the Awareness, Attitude and practices towards different epidemics including swine influenza, Middle East Respiratory Syndrome (MERS) and Dengue fever (Alkot, Albouq, Shakuri, & Subahi, 2016; Nalongsack, Yoshida, Morita, Sosouphanh, & Sakamoto, 2009; Shilpa et al., 2020). These studies concluded that better awareness of the diseases together with positive attitude and practices towards them have played a role to halt the spread of the contributing viruses (see Figs. 1–7).

Initially, COVID-19 was identified as a cluster of pneumonia cases of unknown etiology from Wuhan 8th December 2019 (Deng & Peng, 2020). It has now been declared a pandemic, which has affected more than 200 countries and 8.9 million people globally. Preliminary investigation indicated that this infection is caused by a new strain of the coronaviruses i.e. severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) (Millán-Oñate et al., 2020; Zu et al., 2020). Infection spread to other nations is travel associated by infected individuals who were asymptomatic (Anzai et al., 2020; Phelan, Katz, & Gostin, 2020; Rocklöv, Sjödin, & Wilder-Smith, 2020). At present since no vaccine is available, coping strategies are limited to self-isolation. In this regard, Pakistan faces trouble due to poor screening capacity and consequential delay in implementing preventive measures, therefore, apprehension that Pakistan is emerging as the next epicenter of this pandemic is expressed (Dagia, 2020; Xinhua, 2020).

Awareness level and compliance of students can be vital in timely prevention and control of this public health crisis (Storr et al., 2017). As a result, the National Action Plan for COVID-19 has been proposed by the Ministry of Health Services, Regulation and Coordination, Government of Pakistan for infection control, and a media campaign for generating awareness has been initiated (Ministry of National Health

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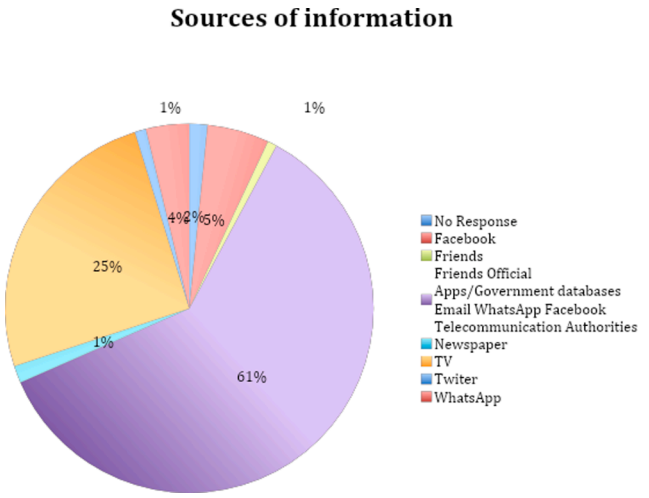

Fig. 1. Chart representing information sources regarding the disease. The pi chart represents percentages of information assessed sources. Majority of the respondents (61%) got information from different collective sources including friends, official apps, government databases, email, WhatsApp, Facebook and telecommunication authorities, followed by TV (25%).

Services, 2020). Furthermore, to bring about a comprehensive policy, teams from multi-disciplinary backgrounds are engaged including key frontlines to ensure their effective functioning (Park et al., 2015). On their recommendations, the government has imposed a complete lock-down and all of the educational activities are shifted to online using distance learning systems.

Keeping in view, significance of awareness we aimed at evaluating level of awareness among students in Pakistan regarding cause, spread and cure of COVID-19. Another aspect of this study was to identify the key causes and manifestations of the current preventive measure in terms of the psychological well-being of the students. For this, we have applied Descriptive and Frequency Analysis on data collected through an online medium by a self-designed questionnaire. A total of 1822 individuals responded to the questionnaire among which include almost an equal representation of both undergraduate (49.56%) and post-graduate (50.43%) students with the majority (95.05%) belonging to the <25–40 years age group. The questionnaire addressed the level of basic information regarding the cause, spread, cure and prevention of this disease among students, in an attempt to provide directions for awareness campaigns at different levels in Pakistan and provide a model for similar outbreaks in the future. It also highlights key psychological complications risen due to this outbreak and its consequences.

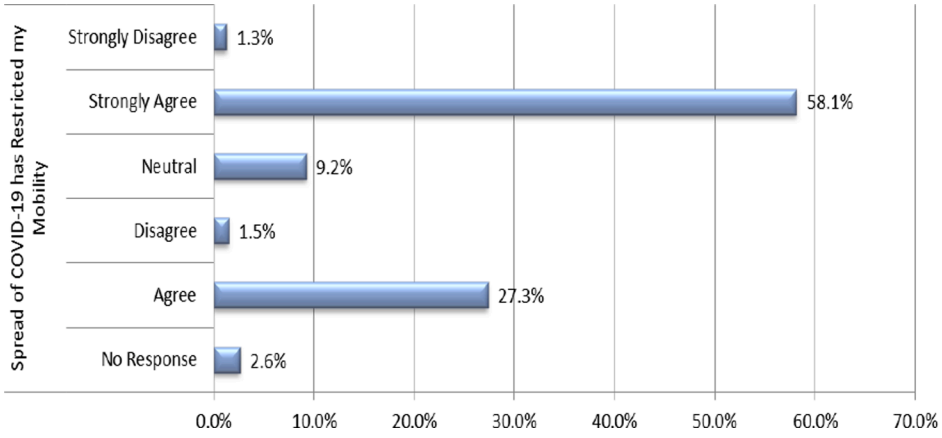

Fig. 2. Effect of COVID-19 outbreak on respondents' mobility. The bar graph shows the restricted mobility due to COVID-19 among surveyed students. 58.1% of the respondents strongly agree and 27.3% agree to the statement that their mobility has been restricted by COVID-19. However in total 2.8% of students disagreed or strongly disagreed with this statement.

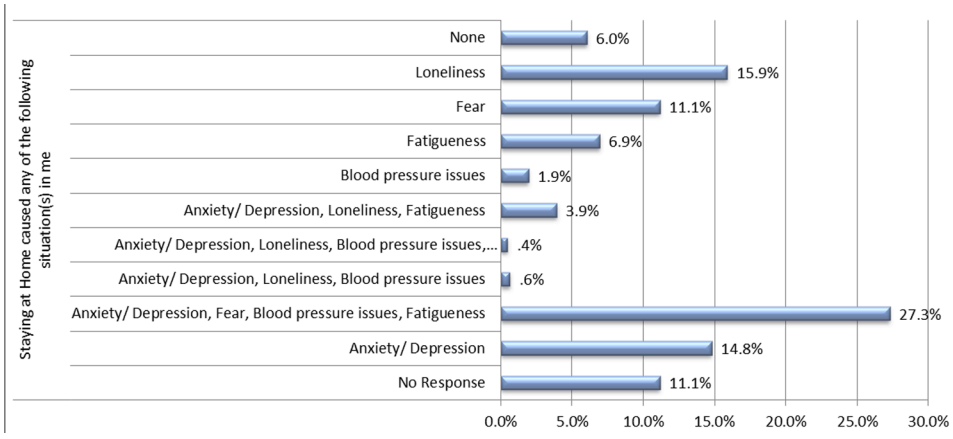

Fig. 3. Psychological condition of respondents while staying at home during the COVID-19 outbreak. The bar chart represents percentages of the respondent's conditions during their stay at home at the time of COVID-19 pandemic. Collectively anxiety, fear, depression, blood pressure issues and fatigue were expressed by 27.3% of the respondents. 15.9% felt loneliness and 11.1% expressed fear during their stay at home.

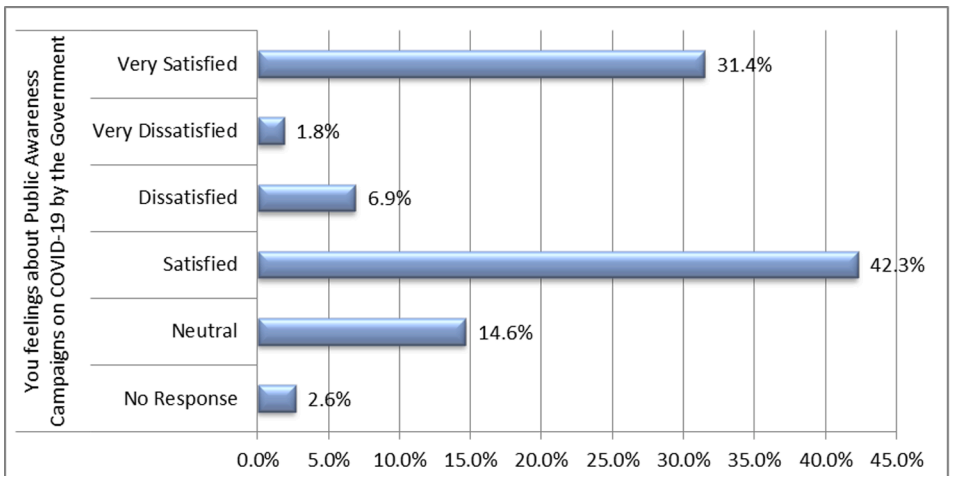

Fig. 4. Level of satisfaction towards Public Awareness Campaigns on COVID-19 by the Government. The bar graph represents percentages of respondents towards public awareness campaigns set by the government. Overall 73.7% of the students were satisfied or very satisfied with the government awareness programs in COVID-19 pandemic, however 8.7% were either dissatisfied or very dissatisfied towards government plans.

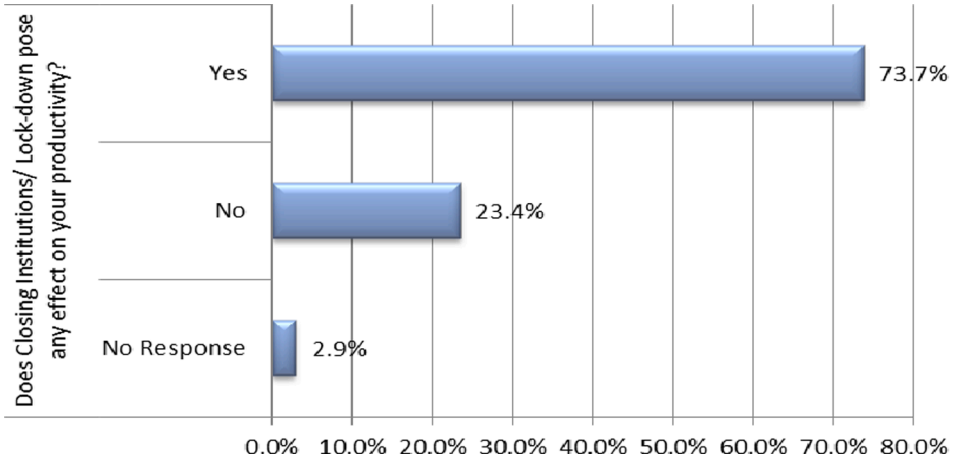

Fig. 5. Effect of lock down on productivity. The bar graph represents percentages of respondent's productivity during lockdown. 73.7% of the respondents said that their productivity has been affected by lockdown while 23.4% negate this statement.

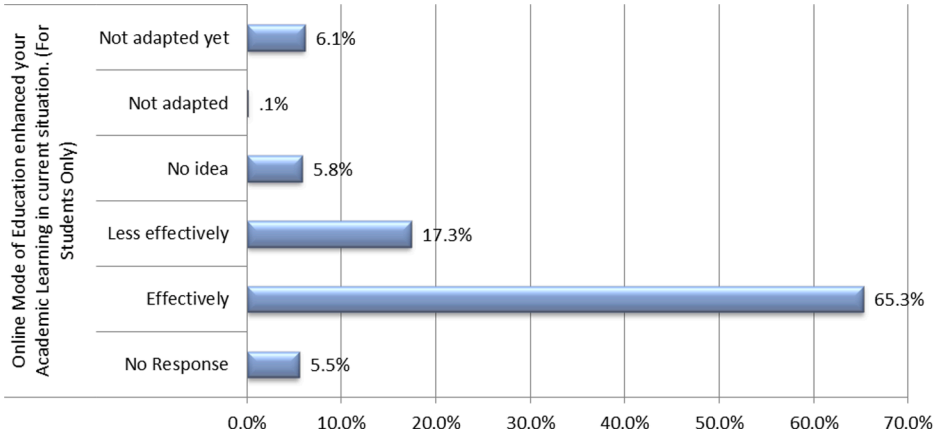

Fig. 6. Academic learning through online mode of education during COVID-19 pandemic. The bar graph represents percentages of respondents towards online mode of education during COVID-19 pandemic. It is evident from the bar graph that an overwhelming majority of the students (65.3%) said that online mode of education is effectively operating in their institute, for 17.3% it is less effective and a minor (0.1%) said that it is not adopted yet.

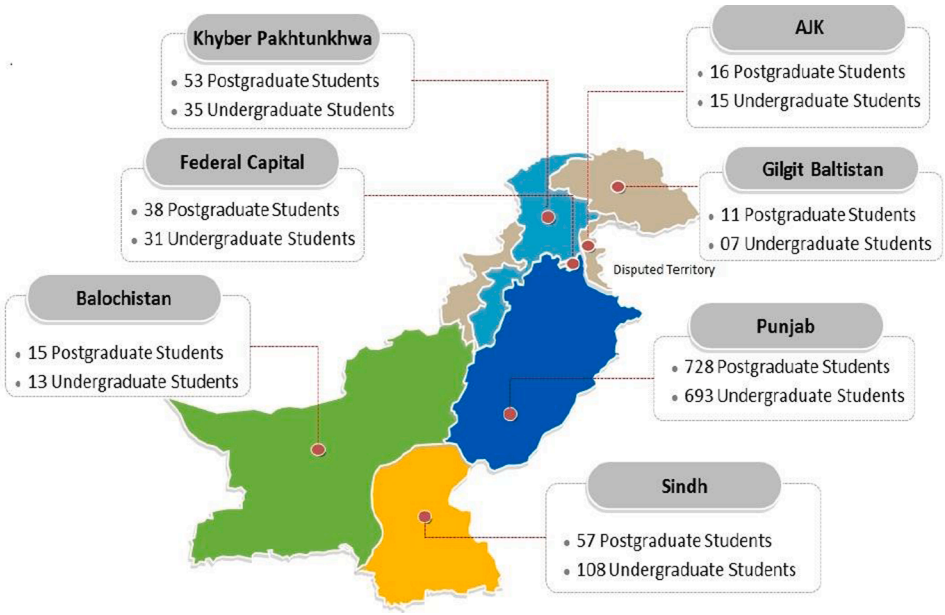

Fig. 7. Study sites in Pakistan. The map represents the different study sites across Pakistan. In this study we gathered responses from six regions of the country including Khyber Pakhtunkhwa, Federal Capital, Baluchistan, Azad Jammu & Kashmir, Gilgit-Baltistan, Punjab and Sindh. Majority of the responses (1421) obtained from Punjab province comprising 728 postgraduate and 693 undergraduate students. Least responses were obtained from Gilgit-Baltistan with 11 postgraduate and 7 undergraduate students.

Table 1
Demographic distribution of respondents.

Characteristics		n	%
Age	<25	959	52.63447
	25–40	773	42.42591
	41–60	81	4.445664
	>60	9	0.493963
	Total	1822	100
Gender	Female	744	40.83425
	Male	1075	59.0011
	Other	3	0.164654
	Total	1822	100
Education	Postgraduate	919	50.43908
	Undergraduate	903	49.56092
	Total	1822	100

2. Methods

2.1. Data collection

Participants from different educational levels from different parts of the country were selected for this survey based study. At the time of study Pakistan was facing the looming threat of COVID-19 and the information about basic knowledge and attitude towards COVID-19 was collected by a self-administered questionnaire that has been distributed among students of Virtual University of Pakistan via their online portal as well as to the students from various other institutions of Pakistan using other quick sources of communication including academic and research social media groups. Questionnaire was designed to evaluate the awareness about basic knowledge and attitude of the students towards COVID-19 pandemic in the country. A question about Assessed sources of information has also been asked. As partial lockdown has been implemented in the country, students were asked how they have been affected in terms of mobility and productivity in this situation. Queries have also been addressed to check the level of stress and anxiety, level of satisfaction towards government awareness campaigns and effectiveness of online mode of education in the current scenario. Single response from each participant was accepted for this study in which data from undergraduate and postgraduate students was considered.

2.2. Statistical analysis

All the data obtained were analyzed statistically by computer software SPSS version 21. Results were presented in a number of participants (n) and percentage. The Pearson chi-square test of association is used to check the association between categorical variables. P value $\leq$ 0.05 was determined significant.

3. Results

3.1. Demographic characteristics

Demographic characteristics of the respondents are shown in Table 1. Out of total 1822 participants 959 (52,63%) were below 25 years of age, 773 (42.42%) were aged between 25 and 40 years and 81 (4.44%) were at the age of 41–60 and only fey respondents 9 (0.4%) were above 60 years of age. More than half of the respondents were male 1075 (59.00%) and 744 (40.83%) were females. While estimating the level of education almost equal number of students participated in the survey with 903 (49.56%) from undergraduate and 919 (50.43%) from postgraduate level.

3.2. Basic knowledge about COVID-19

Responses to basic knowledge of COVID-19 have been presented in Table 2. Overall a vast majority (1665, 91.38%) of the respondents have heard about COVID-19 and said that it is a viral disease however few (110, 6,04%) were of the view that it is a bacterial disease. 871 (47.80%) of the participants of the study have related COVID-19, to the bat origin, 624 (34.25%) were not sure and 110 (6.04%) considered it as a biological weapon. When asked about the common signs and symptoms of COVID-19, an overall 1673 (86.33%) students were aware of the popular signs and symptoms of this disease. In a query of possible complications of COVID-19, 1551 (85.13%) reported lung problems however 11.58% also considered heart and renal problems as its complication. 1541 (84.58%) students knew that there is no vaccine available for COVID-19. In the questionnaire respondents were asked about the possible ways of getting infected with COVID-19, 76.73% reported direct contact with infected people, cough droplets, hand shaking, hospitals and public gatherings can possibly spread the COVID-19.

Table 2
Basic knowledge about COVID-19 among Pakistani students.

Question	Response	n	%
What is COVID-19	No Response	5	0.27
	Bacterial Disease	110	6.04
	No Idea	42	2.31
	Viral Disease	1665	91.38
Your opinion on the possible origin of COVID-19?	No Response	40	2.20
	Bat	871	47.80
	Bat & Snake	13	0.71
	Biological Weapon	110	6.04
	Not Sure	624	34.25
	Pet Animals	80	4.39
	Snake	61	3.35
	Others	23	1.26
What are the common symptoms of COVID-19?	No Response	7	0.38
	Cough	39	2.14
	Fever, Cough, Flue, Shortness of Breath	766	42.04
	Fever, Headache, Cough, Flue, Shortness of Breath	807	44.29
	Flue	39	2.14
	Shortness of Breath	164	9.00
What are the Possible complications of COVID-19?	No Response	29	1.59
	Heart Problem	31	1.70
	Heart Problem, Lungs Problem, Renal Problem	114	6.26
	Lungs Problem	1551	85.13
	Renal Problem	97	5.32
Is there any vaccine available for the cure of COVID-19?	No Response	10	0.55
	Don't know	206	11.31
	No	1541	84.58
	Yes	65	3.57
What are the possible ways that you may get infected with COVID-19?	No Response	10	0.55
	Cough Droplets	35	1.92
	Cough Droplets, Hand Shaking, Through Air	27	1.48
	Direct Contact with infected person	173	9.50
	Direct Contact with infected person, Cough Droplets, Hand Shaking, Hospitals, Public Gathering	1398	76.73
	Hand Shaking	40	2.20
	Public Gathering	115	6.31
	Quarantine Areas	24	1.32

3.3. Attitude towards COVID-19

Attitude responses of students towards COVID-19 are shown in Table 3. It is clear from the responses 1561 (85.68%) of students were in favor of the common practices from handwashing, hand sanitizing to extensive measures of social distancing and self-quarantine to contain COVID-19. 1753 (96.21%) of the students showed their willingness to avoid public events like religious gatherings, musical festivals and sport activities to curb the spread of COVID-19. When asked about personal hygiene an hourly hand washing practice was reported by 52.20% of the students while 37.38% practiced it before eating or when they come back from outside. The opinion of students was taken about wearing a mask, an overall 82.38% of respondents considered it necessary to avoid COVID-19 infection.

3.4. Pearson Chi-square test

The difference obtained by the Pearson Chi-square test is shown in Table 4. Chi-square and significant values are presented for each response in attitude and overall knowledge domains. Demographic characteristics including age, gender and overall students (undergraduate and Postgraduate) significantly or insignificantly correlated with basic knowledge and attitude based questions.

Table 3
Attitude of respondents towards COVID-19.

Question	Response	n	%
What are the method(s) that could be useful in preventing COVID-19?	No Response	16	0.88
	Hand Sanitizing/Washing	55	3.02
	Hand Sanitizing/Washing, Disinfection, Social Distancing, Self Quarantine	1561	85.68
	Self-Quarantine	80	4.39
	Social Distancing	84	4.61
	Wearing Masks	26	1.43
Public events; like religious gatherings, musical festivals or sport should be avoided these days	No Response	35	1.92
	No	34	1.87
	Yes	1753	96.21
How often do youdisinfect/ wash hands in a day?	No Response	23	1.26
	After every hour	951	52.20
	After every hour, As and when I come back from outside, Before eating	1	0.05
	As and when I come back from outside	681	37.38
	As and when I come back from outside, Before eating	2	0.11
	Before eating	106	5.82
	Rarely	58	3.18
Wearing masks is compulsory to avoid COVID-19	No Response	31	1.70
	Agree	488	26.78
	Disagree	77	4.23
	Neutral	200	10.98
	Strongly Agree	1013	55.60
	Strongly Disagree	13	0.71

4. Discussion

Through a self-designed questionnaire, data regarding the awareness pertaining to the origin, symptoms, spread, control, and prevention of COVID-19, and the psychological impacts of this outbreak was collected in this study. It is important to consider that the highest number of responses were received by students falling in the age group of <25–40 years, belonging to undergraduate and postgraduate study level. Results indicate a high level of right awareness among students, especially regarding the symptoms (86.33%), health complications due to the infection (85.13%), the routes of transmission (76.73%) and preventive strategies (84.58–96.21% of the novel corona virus. Interestingly, the source of information for the respondents regarding COVID-19 is predominantly modern media (61%).

It is key to understand that the outbreak itself, and the consequential lock-down, has caused great psychological impact on the students. 58.1% of students strongly claim that the spread of COVID-19 has reduced their mobility. Due to this and/or other factors, 27.3% claim to face anxiety/depression, fear, blood pressure issues, and fatigue all together, whereas except 6% the rest face these issues either individually or in different combinations. The vast number of respondents (73.7%) also claim their productivity has reduced, however, a sizeable proportion (65.3%) of them have indicated online mode of education have effectively helped them cope with their educational pursuits.

According to our results, the percentage incidence of new cases reported per day have reduced since the first few cases and the launch of the National Action Plan in Pakistan. However, this factor is dependent on the fact that there are limited screening facilities available in the country. On one hand, sharing of border and vast trade relations with China where COVID-19 initiated and Iran which has a high number of infected individuals, and lack of ample medical facilities and health awareness in Pakistan on the other hand, the country is in a unique situation (Khan et al., 2020). In view of the lack of appropriate prevention and control policies at educational and medical organizations, effective awareness campaigns at both national and community level

Table 4
Results of pearson chi-square test applied on collected data.

Questions	Test	Age	Gender	Status (Only For Students)
You got the initial Information about COVID-19 through	Chi-square	17.636	13.773	4.237
	Sig.	0.672	0.467	0.752
What is COVID-19	Chi-square	54.360	5.338	10.968
	Sig.	0.000*	0.501	0.012*
Your opinion on the possible origin of COVID-19?	Chi-square	19.252	19.463	5.131
	Sig.	0.569	0.148	0.644
What are the common symptoms of COVID-19?	Chi-square	41.016	17.224	11.614
	Sig.	0.000*	0.07	0.040*
What are the possible complications of COVID-19?	Chi-square	18.142	8.840	11.654
	Sig.	0.111	0.356	0.020*
Is there any vaccine available for the cure of COVID-19?	Chi-square	49.801	26.790	4.329
	Sig.	0.000*	0.000*	0.228
What are the possible ways that you may get Infected with COVID-19?	Chi-square	45.712	23.391	13.518
	Sig.	0.001*	0.054	0.060
What are the method(s) that could be useful in preventing COVID-19?	Chi-square	34.672	32.432	2.093
	Sig.	0.003*	0.000*	0.836
Public events; like religious gatherings musical festivals or sport should be Avoided these days	Chi-square	6.230	2.366	8.039
	Sig.	0.398	0.669	0.018*
How often do you disinfect/ wash Hands in a day?	Chi-square	40.398	98.667	6.554
	Sig.	0.002*	0.000*	0.364
Wearing masks is compulsory to avoid COVID-19	Chi-square	41.064	15.344	3.830
	Sig.	0.000*	0.12	0.574
Spread of COVID-19 has restricted my mobility	Chi-square	92.757	10.044	15.407
	Sig.	0.000*	0.437	0.009*
Staying at home caused any of the following situation(s) in me	Chi-square	59.027	45.544	11.098
	Sig.	0.001*	0.001*	0.350

Questionnaire: https://docs.google.com/forms/d/e/1FAIpQLSd9358lTWQ0PbxokHvumMPbuJzeZbvZafhvCAH7LZMdiV_p-g/viewfor.

were launched under the National Action Plan for COVID-19 proposed by the Ministry of Health Services, Regulation and Coordination, Government of Pakistan (Ministry of National Health Services, 2020), majority of the population is satisfied. This study conducted almost a month after the first reported COVID-19 case in Pakistan aimed at evaluating the general awareness of students regarding this pandemic and their stance on the psychological effects of this outbreak. Results reported also have an outcome of assessing effectiveness of the National Action Plan and could be used as a pointer for further course of action. We can claim that apart from the obvious incidence of infections and death cases, the outbreak has caused a broader and far reaching impact on our students and educational system. In this situation, students who have had the facility of online learning have helped them to tackle their educational challenges caused by this outbreak. Therefore, based on these results enhancement of such systems is recommended. We also indicate the psychological impact caused by the outbreak which calls out for appropriate therapeutic and counseling measures to be taken at policy level.

5. Conclusion

Deeming public awareness to be crucial in preventing the spread of COVID-19, which otherwise lacks effective treatment and preventive measures, vast public awareness campaigns are key in the fight against it. The results of our study revealed a satisfactory level of awareness and positive attitude of students towards COVID-19 precautionary practices. Public awareness campaigns under the National Action Plan for COVID-19 of the Pakistani government have led to significant awareness of students in Pakistan. Despite these findings, our study found that productivity of the majority of the students has been affected by the lockdown implementation in the country. And anxiety, fear, depression, blood pressure issues and fatigue were expressed by respondents during their stay at home.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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