Available online at www.sciencerepository.org

Science Repository

Research Article

COVID-19 Infection – Awareness and Practices of Cancer Patients and Their Attendants: An Experience from Pakistan

Afshan Asghar Rasheed[1*], Babar Malik[2], Narjis Muzaffar[3], Aneeta Vallecha[5], Sara Sattar[4], Noor-ul-Ain[6] and Najeeb Naimatullah[3]

[1]*Assistant Professor, Medical Oncology, Department of Oncology, Sindh Institute of Urology and Transplantation, Karachi, Pakistan*
[2]*Senior Lecturer, Department of Oncology, Sindh Institute of Urology and Transplantation, Karachi, Pakistan*
[3]*Professor, Department of Oncology, Sindh Institute of Urology and Transplantation, Karachi, Pakistan*
[4]*Lecturer, Department of Oncology, Sindh Institute of Urology and Transplantation, Karachi, Pakistan*
[5]*Radiation Technologist, Department of Oncology, Sindh Institute of Urology and Transplantation, Karachi, Pakistan*
[6]*Department of Oncology, Sindh Institute of Urology and Transplantation, Karachi, Pakistan*

ARTICLE INFO

Article history:
Received: 15 June, 2021
Accepted: 26 June, 2021
Published: 13 July, 2021

Keywords:
Cancer patients
health awareness
under-developed countries

ABSTRACT

Introduction: Cancer patients are prone to infections, including COVID-19 because they are immune-comprised secondary to cancer itself as well as due to their treatment. As a principal health care provider, it is imperative that their awareness and practices should be assessed and rectified in a timely manner.

Methodology & Results: This is a cross sectional and prospective study, performed in the Oncology OPD of SIUT, Pakistan. Total 306 participants were included. Average percentage of awareness was 39.4% vs 36.6% were found to be low, but patient (72.7%) showed more careful behaviour then their care taker (61.5%). In query related to use of face mask every time while being outside the house, 14.4% vs 23.8% did not practice it. For hand hygiene, 93.4% vs 49.1% were following these measures. Reasons for not following these precautions were: i) lack of information, 63% vs 37% ii) this virus is not lethal, 37% vs 63%.

Conclusion: Awareness and practical implementation of knowledge is not according to international guidelines and there is a dire need to have a proper awareness campaign for the masses to improve the acceptability of Corona virus as a major health risk concern.

Introduction

Coronavirus (COVID-19) has been declared as a pandemic by WHO [1]. This virus is transmitted from human to human and causes severe respiratory symptoms that can lead to death [2]. COVID-19 has caused life-changing experiences in life of the common person. Every industry has been badly affected and general population had to make adjustments in their lifestyles in order to cope with financial constraints due to this pandemic. One such sector which remains largely unexplored belonged to cancer patients and their care givers attitude towards the COVID-19 in this pandemic. This study highlights the gap that exists between perception of our patient population and accepted international guidelines. TV, social media, print media etc. have been used by the Government in order to create and enforce the internationally recommended preventive measures. The major impediment to the seamless distribution of information due to low literacy rate in Pakistan as projected by UNESCO is 59%. It becomes more challenging for any administration to completely implement the WHO recommendation when it comes to curtailing the spread of virus amongst the masses. The pandemic and post pandemic transmission will depend on seasonal variation and degree of herd immunity achieved [3]. In one article, a mathematical model was used to estimate mortality in Pakistan secondary to COVID-19; it was calculated as 2% [4].

Certain risk factors for severe symptoms have been proposed, these are elderly, people with co-morbidities and decreased immunity. In one study, cancer patients are at two fold-increased risk of complication from SARS-CoV-2 then general population. In recently published meta-

[*]*Correspondence to: Afshan Asghar Rasheed, FCPS Medicine, FCPS Medical Oncology, Assistant Professor, Medical Oncology, Department of Oncology, Sindh Institute of Urology and Transplantation, Karachi, Pakistan; E-mail: drafshanrasheed@yahoo.com*

http://dx.doi.org/10.31487/j.COR.2021.07.03

analysis, prevalence of cancer in patients with COVID-19 is 9% [5]. A small case series showed that cancer patients infected with this virus had worse outcomes then without cancer [1]. Mortality rate in one case series from China is 5.6% among cancer patients vs 2.3% in the general population [6]. It is difficult to treat cancer patient in this pandemic, currently due to limited data and no international guidelines. There is no published data about awareness and practices of cancer patients and their attendants regarding this virus. In this survey, we will assess awareness and practice of cancer patients and their attendants. Simultaneously, we observe their practices during the interview. By this survey, we can improve care of our patients by educating and improving their knowledge.

Methodology

Study design of this study is cross sectional, prospective. Data was recorded on a predesigned performa. Prior to study approval was obtained from Ethical Review Committee, with a letter reference number Ref. SIUT-ERC-2020/PA-212. Oncology patients and their attendants, who presented to outpatient clinics with age of more than 18 years, were eligible for this study. Doctors who did oncology OPD were trained for data collection. We followed all precautions for COVID-19 as advised by WHO during data collection. Questionnaire was filled in outpatient clinics at the Sindh Institute of Urology and Transplantation (SIUT) Hospital, Karachi (Pakistan) from April 2020 to July 2020. Proforma is structured in the segments of a brief preface, purpose, procedure of data collection, voluntary nature of participation and maintaining confidentiality. Performa and consent forms were translated in English and Urdu languages. Performa was divided into 3 parts: i) demographics ii) awareness, practices of patients & available attendants and iii) observation by person who took the interview. Performa took 20-30 minutes to be filled. During this time period, interviewer marked these observations or when patients were waiting for their turn in waiting areas.

Statistical Package for Social Sciences (SPSS) version 20 has been used to perform statistical analysis which will be reported as mean ± standard deviation for continuous variables and proportions and percentages for categorical data. Chi-square test was employed to find differences in awareness and practices of participants. Comparison of 5 standard precautions were made between the participants. We also compared any differences in these variables among gender of patients. Comparative analysis of interviewer vs participant's practices was calculated, p-value of less than 0.05 was considered as significant in all tests. Due to the lock down, we assumed that expected target population of cancer patients in 4 months would be approximately 100 patients with their attendants. Assuming the proportion of awareness is unknown in 50% of cancer patients & their attendants with margin of error 5% and 95% confidence level. N of 100 patients was calculated as appropriate size for this study, though we interviewed more patients in order to give statically significant values to the findings.

Results

Demographic Data

Total numbers of participants included in this study are 306. Among them male participants are: 156(51%) and female participants are 150(49%). Patients who received chemotherapy constituted about 208(70%) of the patient population. Awareness of patients/attendants and practices of patient/attendant with comparison is described in tabular form. (Tables 1 & 2). Observation by interviewer for facemask and social distancing is described in (Table 3). Few results that have not been mentioned in tables are as follows:

Table 1: Awareness of patients and attendants.

	Patient	**Attendant**	**p-value**
1. Which people are affected more with this infection?			
☐ Aged	22(7.2%)	176(57.5%)	<0.001
☐ Comorbid	113(36.9%)	25(8.2%)	
☐ Cancer patient	35(11.5%)	13(4.2%)	
☐ Combination of above	136(44.4%)	92(30.1%)	
2. Can this infection be lethal?			
☐ Yes	181(59.2%)	148(48.4%)	0.007
☐ No	80(26.1%)	128(41.8%	
☐ Do not know	45(14.7%)	30(9.8%)	
3. Is there any treatment for this virus?			
☐ Yes	165(53.9%)	161(52.6%)	0.746
☐ No	73(23.9%)	125(40.9%)	
☐ Do not know	68(22.9%)	20(6.5%)	
4. Do you think, this infection has less severity in warm countries like Pakistan?			
☐ Yes	144(47.1%)	109(35.6%)	0.004
☐ No	86(28.1%)	149(48.7%)	
☐ Do not know	76(24.8%)	48(15.7%)	
5. Is it possible, people without symptoms can spread this infection?			
☐ Yes	95(31%)	107(35%)	
☐ No	43(14.1%)	158(51.6%)	0.302
☐ Do not know	168(54.9%)	41(13.4%)	

6. Can this virus infect young people and kids also?			
☐ Yes	179(58.5%)	127(41.5%)	
☐ No	81(26.5%)	76(24.8%)	<0.001
☐ Do not know	46(15%)	103(33.7%)	
7. Will you continue these measures after lockdown also?			
☐ Yes	191(62.4%)	114(37.2%)	<0.001
☐ No	21(6.9%)	153(50%)	
☐ Do not know	94(30.7%)	39(12.7%)	
8. If yes, for how long these precautionary measures will be practiced?			
☐ Will continue up to 3-4 months even after lockdown	n-191 24(12.6%)	n-192 31(16.1%)	<0.001
☐ Will continue as long as doctor says	82(42.9%)	24(12.5%)	
☐ Will continue forever	69(36.1%)	0	
☐ Do not know	16(8.4%)	59(30.7%)	
9. Even with mask, should maintain social distancing?			
☐ Yes	132(43.1%)	96(31.3%)	0.003
☐ No	116(37.9%)	175(57.2%)	
☐ Do not know	58(18.9%)	35(11.5%)	
10. Do you know about quarantine?			
☐ Yes	106(34.6%)	149(48.7%)	<0.001
☐ No	200(65.3%)	157(51.3%)	
11. Do you know the symptoms of this infection?			
☐ Fever	133(43.5%)	118(38.8%)	
☐ Cough	66(21.6%)	72(23.6%)	
☐ Shortness of breath	8(2.6%)	8(2.6%)	0.690
☐ All of these	99(32.3%)	107(34.9%)	
12. Do you think precautionary measures should be practiced for which people?			
☐ Symptomatic	290(95%)	216(70.6%)	
☐ Asymptomatic	3(0.9%)	78(25.5%)	<0.001
☐ Both	13(4.1%)	12(3.9%)	
13. If your family member is infected by this virus, what precautions you should be taking?			
☐ Social distancing	85(27.8%)	139(45.4%)	<0.001
☐ Do not look after this person	135(44.1%)	85(27.8%)	
☐ Do not know	86(28.1%)	82(26.8%)	

Table 2: Practices of patients and attendants.

	Patient	**Attendant**	**p-value**
1. Do you wear face mask every time outside house?			
☐ Yes	262(85.6%)	233(76.1%)	0.03
☐ No	44(14.4%)	73(23.8%)	
2. Do you wear face mask when come to hospital?			
☐ Yes	197(64.4%)	193(63.1%)	0.737
☐ No	109(35.6%)	113(36.9%)	
3. Do you remain away at least 2 meters from people?			
☐ Yes	284(92.8%)	156(50%)	<0.001
☐ No	22(7.2%)	150(49%)	
4. Do you avoid hand-shake?			
☐ Yes	226 (73.8%)	228 (74.5%)	0.853
☐ No	80(26.1%)	78(25.5%)	
5. Do you hand wash frequently or use sanitizer?			
☐ Yes	286(93.4%)	150(49.1%)	
☐ No	20(6.5%)	156(50.9%)	<0.001
6. Do you sneeze or cough on your elbow or use new tissue paper?			
☐ Yes	217(71%)	189(62%)	
☐ No	89(29%)	117(39%)	0.017

7. Do you know hands are washed from front, back and in spaces between finger thumbs for 20 sec with soap?			
☐ Yes	170(55.5%)	171(56%)	0.935
☐ No	136(44.4%)	135(44%)	
8. If you are not practicing these measures, what is the reason?			
☐ Lack of information	194(63%)	113(37%)	<0.001
☐ You think this virus is not lethal	112(37%)	193(63%)	
9. Do your family members wash hands before coming in contact with you?			
☐ Yes	225(73.5%)	No need for attendants to analyse	
☐ No	81(26.5%)		

Table 3: Observations by person who filled proformas.

	Patient	Attend	P-value	M:F	P-value
1. During interview, patient and attendant is wearing mask properly?					
☐ Yes	172(56.2%)	132(43%)	0.001	M: 98(57%) F: 74(43%)	0.067
☐ No	134, 43.8%	174(57%)		M: 60(45%) F: 74(55%)	0.227
2. Are they practicing physical distancing?					
☐ Yes	59(19.3%)	34(11.1%)	0.005	M: 32(54%) F:27(46%)	0.515
☐ No	247(80.7%)	272(88.9%)		M:124(50.2%) F:123(49.8%)	0.949

I Information Source

The major source of information was through television: 92(30%) vs 146(47.7%). Whereas social media was used for information in 52(17%) vs 37(12%) population. In patients, female gender - 50(33.3%) acquired knowledge more through TV than male counterpart - 42(26.9%). Other sources of information in both groups were: friends and combination of TV and social media.

II Awareness and Practices of Patients According to Age

We have divided patients into 4 age groups i.e., i) 18-39 years ii) 40-59 iii) 60-70 and iv) >70. Total number of respondents in each group is: 69(22.5%), 144(47%), 75(24.5%) and 18(6%) respectively. In awareness segment of proforma, group 4 had least knowledge then other groups. Average percentages for 10 questions in awareness portion among all cluster are: 39.7%, 38.6%,38% and 29.4% respectively. Similarly, lower frequency of 3 practices was observed i.e., cough/sneeze habits, avoid hand-shake and proper hand washing in all groups. About cough etiquettes, group 4 behaved better than other (78% vs 65%).

III Differences in Awareness and Practices of Patients According to Gender

Male patients had more awareness regarding the guidelines provided by health regulatory bodies. Knowledge about susceptible population was more in male gender, M:F- 87(64%): 49(36%) (P-0.001). Greater percentage of male patients knew that there is no specific treatment for this virus to date, M: 47(64.4%) vs F: 26(35.6%) (p-0.014). Even with mask, have to maintain recommended distance, M: 79(59.8%) vs F: 53(40.1%) (p-0.024). Awareness about quarantine protocol was: M: 66(62.3%) vs F: 40(37.7%) (p-0.012). More male respondents replied that combination of symptoms may be different ways of presentation of virus 66(66.7%) vs 33(33.3%) (p-0.001). There is no statically significant difference in practices of male and female gender (p>0.05).

IV Important Steps Following Pattern between Patient and Attendant

Our data reflects that trend of following the standard guidelines during COVID-19 time frame is virtually nonexistent among patients and attendants. We compared practices of respondents for 5 standard precautions that should be followed by everyone. These five basic SOP are: i) face mask, ii) social distancing, iii) avoidance of hand-shake, iv) use of sanitizer and v) sneeze or cough on elbow/use of new tissue paper. All 5 steps were followed by 143(47.4%) patients vs 23(7.5%) attendants (p-<0.001).

V Interviewer Observation

Two main steps were observed i.e., wearing of facemask properly and social distancing; these steps were further compared with their claimed practices also (Table 4). When results were compared with declared practices of participants, we found a significant difference between claimed practices of patients-262(85.6%) vs observation 172(56.2%) (p-<0.001). Disparity was observed between verbal communication and practical application with attendants. Attendant positive reply for same question was 233(76.1%) but observations were not similar i.e., only 32(43%) were practicing that precaution (p-<0.001). Although 284(92.8%) of patients declared proper practices of social distancing, however 59(19.3%) patients were observed to follow social distancing by interviewer (<0.001). On the other hand, 156(50%) attendants reported to maintain recommended distance but observation by interviewer showed only just 34(11.1%) were practicing that (<0.001).

Table 4: Comparison of patient practices vs interviewer observations.

	Patient	Interviewer	P-value	Attendant	interviewer	P-value
1. Did wear face mask properly?						
☐ Yes	262(85.6%)	172(56.2%)	<0.001	233(76.1%)	132(43%)	<0.001
☐ No	44(14.4%)	134(43.8%)		73(23.8%)	174(57%)	
2. Did they practice physical distancing?						
☐ Yes	284(92.8%)	59(19.3%)	<0.001	156(50%)	34(11.1%)	<0.001
☐ No	22(7.2%)	247(80.7%)		150(49%)	272(88.9%)	

Discussion

This is the 1st study from Pakistan that includes cancer patients along with their care taker. It has been postulated that this virus will remain for years, so we have to learn to live with it by changing our lifestyle. Self-awareness about diseases can help us fight against it in a better way. Average percentage of awareness in patients (39.4%) vs attendants (36.6%) were found to be low, but patient (72.7%) showed more careful behaviour then their care taker (61.5%). Maintenance of hand hygiene was only witnessed in 49.1% attendants in comparison to 93.4% patients (p-<0.001). This is comparable to Mahmood S *et al.* study in which 40% of the survey participants (general population) washed their hands regularly [5]. Another important practice is to wash hand before coming in contact with susceptible person, like cancer patients. In reply to this question, 225(73.5%) declared that their attendants follow this step.

Older person needs strict precautions then others in general but in our study, elderly were least knowledgeable and maintained highly negative behaviour which was confirmed by Interviewer also. This is in contrast to studies that showed younger age group is associated with poorer practices. In this study, people more than 70 years constituted only 6% of the data strata; this may not be a proper representation of general population of this age group. Other demographics like according to gender, there is no statically significant difference between all parameters, but male patients were in general were more aware and observed practices better then female counterpart.

Risk factors and associated complications of COVID-19 are coming to light and there is a general consensus among peers about the management guidelines pertaining to patient population. COVID-19 has generally presented in a manner which suggest that vulnerable population is primarily at risk such as patients with malignancy, elderly, co-morbidities and obesity are more likely to become critically ill from this disease [6]. Awareness about these symptoms needs proper projection among susceptible population. In studies from other Islamic countries, 83.1-94% participants (general population) had positive attitudes for controlling of this disease [7-9]. This was different in developing countries, like Ethiopia where only 47.3% adopted safe practices [10, 11]. In our study, 70% decided to avoid hand-shake in comparison to other study from Saudi Arabian (88%) [12, 13].

It is an essential part of management of this infection, to keep people/patients in isolation if they have symptoms similar to COVID-19. Clinical presentation is variable from asymptomatic to severe disease. It can involve any organ of the body. Do our patients know these symptoms? We checked their knowledge about symptoms. Fewer people knew that this infection could present in different ways, 32.3% vs 34.9% knew that fever, cough, shortness of breaths were the main symptoms. This awareness level is different from study of other countries of Asia [12, 13]. After knowing the symptoms of this infection, the first step should be to get screening COVID-19 testing immediately and should isolate oneself. Among all participants, 34.6% vs 48.7% acquainted with quarantine. This information was observed in lower frequency as major population that present for treatment belonged to lower socioeconomic strata of the society and low qualification level [14].

Studies suggest that 40-50% of asymptomatic people can spread this infection and due to this strict safety precautions should be followed when interacting with people outside their immediate family [7, 8]. In our study only a small minority of patients/attendants were aware of the above fact. This is different from another study reported from Pakistan, in which 56% of the general population had this awareness [15]. Another step to protect ourselves is to maintain good social distancing even with a mask. Risk of transfer of infection goes down considerably with this practice. In our study more patients than their attendants followed this practice as mentioned in studies of general population (p=0.003) [16]. When asked what precautions they would be taking if a family member becomes infected with this infection, 44.1% vs 27.8% replied that they would not take part in care of this person. About 27.8% vs 45.4% said they would maintain a distance of at least 2 meters from the patient. More patients than their attendants were aware that nursing of infected patients was perilous to them (44.1% vs 27.8%). Patients' attendants should have been educated about the need for following strict precautions when taking care of their patient. Their careless behaviour as recorded by the interviewer showed that only 19.3% vs 11.1% of the attendants kept a distance of at least two meters from others. This is in contradiction to attendants claims about when asked about social distancing in the questionnaire.

It is being postulated that in the winter season it will be difficult to differentiate between symptoms of this novel corona virus from other common cold and seasonal flu viruses. In the summer months in Pakistan this year as flu like symptoms were absent it was easy to recognize symptoms clinically that was later confirmed by the PCR test for COVID-19. When asked about seasonal variations (47.1% vs 35.6%) thought the novel COVID-19 infection was more common in the winter months (p-0.004). This is important as the first wave was tolerated well and the mortality from COVID-19 was less than was predicted. People were also asked about what precautions they would be taking during the winter months and for how long would they continue to wear the mask and social distancing. More patients wanted to continue as long as their doctor advised than attendants i.e., 42.9% vs 12.5% and even some patients (36.1%) desired to continue these forever while none of the attendants wanted to continue after lockdown finishes (p-<0.001).

A significant number of patients (44.4%) vs attendants (30%) were aware that susceptibility of this viral infections to vulnerable population. More attendants were cognizant of the fact that no specific treatment of this virus is available so far i.e., 40.9% (attendant) vs 23.9% (patients). Good percentage knew that this infection can be more lethal in cancer patients (59.2% vs 48.2%). In spite of knowing lethal nature of virus, there is so much contradiction in terms of following strict precautions, 63% vs 37% replied that lack of information is the reason for not practicing strict measures ($p<0.001$). All these replies were verified by the practical application of information by the observer. It was observed that male patients depicted more responsibility in terms of following the SOP at the time of interview (56.2% vs 43%).

To our knowledge, this is the 1st study of its kind that compares awareness and practices of cancer patients with their care takers. Strength of this study pertains to direct observation of interviewer of patient and attendant practices. We were not able to compare level of awareness and practices of participants according to their monthly income and education level. Though, patient population belong to lower socioeconomic class group that visit for treatment. People belonging to these strata are more likely to be less educated as well as less likely to be updated with new information and more likely to have false believes. This may be the weakness of this study.

Conclusion

Comparison between practices of cancer patients and care giver attendants depict that cancer patients' population shows greater percentage of compliance towards following the guidelines. There is however still room for improvement exists in following these practices. Non pharmaceutical interventions remain the best preventive tool still effective COVID-19 vaccine is easily accessible to developing countries. Our goal should be to achieve 100% compliance in wearing proper face masks, social distancing and hand hygiene. Attendants should also follow safety guidelines before they provide support to our vulnerable populations. This survey can help us in making changes and formulate our health awareness programmes according to requirements of our population.

Abbreviation

SIUT: Sindh Institute of Urology and Transplantation
OPD: Out Patient Department
COVID-19: Coronavirus Disease 2019

References

1. Al Shamsi HO, Alhazzani W, Alhuraiji A, Coomes EA, Chemaly RF et al. (2020) A Practical Approach to the Management of Cancer Patients During the Novel Coronavirus Disease 2019 (COVID-19) Pandemic: An International Collaborative Group. *Oncologist* 25: e936-e945. [Crossref]
2. Holshue ML, DeBolt C, Lindquist S, Lofy KH, Wiesman J et al. (2020) First Case of 2019 Novel Coronavirus in the United States. *N Engl J Med* 382: 929-936. [Crossref]
3. Merow C, Urban MC (2020) Seasonality and uncertainty in global COVID-19 growth rates. *Proc Natl Acad Sci U S A* 117: 27456-27464. [Crossref]
4. World Health Organization (2020) Pakistan: COVID-19-Situation update Updates: Ministry of National Health Services Regulations and Coordination Dashboard.
5. Mahmood S, Hussain T, Mahmood F, Ahmad M, Majeed A et al. (2020) Attitude, Perception, and Knowledge of COVID-19 Among General Public in Pakistan. *Front Public Health* 8: 602434. [Crossref]
6. Al Hanawi MK, Angawi K, Alshareef N, Qattan AMN, Helmy HZ et al. (2020) Knowledge, Attitude and Practice Toward COVID-19 Among the Public in the Kingdom of Saudi Arabia: A Cross-Sectional Study. *Front Public Health* 8: 217. [Crossref]
7. Gandhi RT, Lynch JB, Del Rio C (2020) Mild or Moderate Covid-19. *N Engl J Med* 383: 1757-1766. [Crossref]
8. Zhan M, Qin Y, Xue X, Zhu S (2020) Death from Covid-19 of 23 Health Care Workers in China. *N Engl J Med* 382: 2267-2268. [Crossref]
9. Azlan AA, Hamzah MR, Sern TJ, Ayub SH, Mohamad E (2020) Public knowledge, attitudes and practices towards COVID-19: A cross-sectional study in Malaysia. *PLoS One* 15: e0233668. [Crossref]
10. Saqlain M, Munir MM, Rehman SU, Gulzar A, Naz S et al. (2020) Knowledge, attitude, practice and perceived barriers among healthcare workers regarding COVID-19: a cross-sectional survey from Pakistan. *J Hosp Infect* 105: 419-423. [Crossref]
11. Akalu Y, Ayelign B, Molla MD (2020) Knowledge, Attitude and Practice Towards COVID-19 Among Chronic Disease Patients at Addis Zemen Hospital, Northwest Ethiopia. *Infect Drug Resist* 13: 1949-1960. [Crossref]
12. Alotaibi N, Almutairi S, Alotaibi M, Alotaibi MM, Alsufian T (2020) The Extent of Commitment of Saudis During Holy Ramadan to Social Distancing Measures Required for the Prevention of Transmission of COVID-19. *J Community Health* 1-10. [Crossref]
13. Fillmore NR, La J, Szalat RE, Tuck DP, Nguyen V et al. (2021) Prevalence and Outcome of COVID-19 Infection in Cancer Patients: A National Veterans Affairs Study. *J Natl Cancer Inst* 113: 691-698. [Crossref]
14. Ali MY, Bhatti R (2020) COVID-19 (Coronavirus) Pandemic: Information Sources Channels for the Public Health Awareness. *Asia Pac J Public Health* 32: 168-169. [Crossref]
15. Mubeen SM, Kamal S, Kamal S, Balkhi F (2020) Knowledge and awareness regarding spread and prevention of COVID-19 among the young adults of Karachi. *J Pak Med Assoc* 70: S169-S174. [Crossref]
16. Ferdous MZ, Islam MS, Sikder MT, Mosaddek ASM, Zegarra Valdivia JA et al. (2020) Knowledge, attitude, and practice regarding COVID-19 outbreak in Bangladesh: An online-based cross-sectional study. *PLoS One* 15: e0239254. [Crossref]