Research Article

Practices of General Public Towards Personal Protective Measures During the Coronavirus Pandemic

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Abstract

Background: Pakistan is in the midst of the corona pandemic. In the absence of definite treatment or vaccines, the outcome of this pandemic depends highly on the public's behavior.

Objective: To assess awareness and practices of Pakistani public towards personal protective measures during the Coronavirus Pandemic.

Methods: A cross-sectional online survey was distributed through email and social media platforms to the members of the public. Convenience sampling was employed. The questionnaire recorded the participant's demographic details and contained questions that assessed awareness and practice of preventive measures. Data analysis was done on IBM SPSS 20 and presented in frequency and percentages. Chi square test was done to find associations between variables. P-values less than 0.05 were considered statistically significant.

Results: We received responses from 418 Pakistanis of varying socioeconomic backgrounds. Majority of the Pakistanis followed the WHO's guidelines for hand hygiene. About 2.4% of the respondents reported that a member of their household had been diagnosed with COVID-19 while only 4.3% had gotten themselves tested for COVID-19. Uncertainty about the effectiveness of saline against coronavirus was prevalent in our region (33.7%). Statistically significant association was found between different age groups and misconception about rinsing nose with saline (p=0.036). Practice of self-isolation showed significant association with gender and age groups (p= 0.047, 0.01).

Conclusion: Majority of the public showed adherence to the WHO health recommendations for COVID-19. Nevertheless, educating the public about COVID-19 prevention efforts will improve community participation during the ongoing pandemic.

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Introduction

Corona Virus Disease (Covid-19) is a respiratory disease caused by the severe acute respiratory syndrome coronavirus 2(SARS CoV 2).[1] It can be transmitted by contact with an infected person or from contaminated surfaces.[2] The presentation of the disease varies in patients, but the commonly reported symptoms are fever, dry cough, and fatigue.[1] Some patients experience severe respiratory symptoms and die because of respiratory complications.[3] Currently, there's no standard treatment for Covid-19. The

WHO officially declared it a pandemic on March 11, 2020.[4] Covid-19 has become a global health crisis, with over 200 countries being affected by it.[5] Global public health organizations such as WHO and CDC have issued guidelines for Covid-19 prevention. In Pakistan, the first case of Covid-19 was reported from Karachi on February 26' 2020.[6] National lockdown was announced in the mid of March but the number of cases kept increasing.[7] One explanation could be public's poor compliance to recommended measures. Studies done on Covid-19 in Pakistan have not focused enough on the practice of protective measures.[8-10] The aim of this study was to assess the awareness and practice of protective measures of COVID-19 in the general population of Pakistan. In this study, we surveyed the general public to note their compliance to the Covid-19 guidelines issued by the WHO and the CDC. The findings of this study will help us understand the behavior of our public during a pandemic. This information will be of use to health authorities for policy planning during infection outbreaks.

Methods

This study was approved by the Institutional Review Board of CMH Medical College and Institute of Dentistry [Reference Number 52/ERC/CMHLMC]. This cross-sectional study was conducted from 18th May to 27th May 2020. The survey was created on Google forms and its link was distributed through social media platforms to members of the public. The survey was designed to prevent multiple submissions. We used non-probability convenience sampling to gather information from the public. The inclusion criteria for this study were: 1. Age 14 and above and 2. Having permanent residence in Pakistan. The exclusion criteria was age below 14 years. We used OpenEpi, an open source sample size calculator, for calculating the recommended sample size. The required sample size was 385 (95% CI, 5% Margin of error). The equation used for sample size calculation was n = [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1) +p*(1-p)]. The survey questionnaire had three sections. The first section recorded demographic details of the respondents (questions 1 to 9). Question 10 and 11 were about diagnosis of COVID-19 in the family and COVID-19 testing respectively. The second section contained seven statements with a True/False/Don't know response format. These statements were regarding recommended preventive measures and assessed their awareness on the proper application of these measures. The third section had eleven questions regarding practice of these measures with either a 4-point Likert scale response option or a yes / no response option. The details of the study and a statement regarding voluntary participation and confidentiality were given in the beginning of the survey.

Data analysis was done on IBM SPSS version 20. All categorical variables were expressed as frequencies and percentages. Chi square test was done to find associations between variables. P-values less than 0.05 were considered statistically significant.

Results

We received a total of 418 responses. The demographic features of the respondents are described in

Table 1: *Demographic Characteristics of Participants*

Characteristics		No. & Percentage
Sex	Males	177 (42.3%)
	Females	241 (57.7%)
Socioeconomic status	Lower class	1 (0.2%)
	Lower middle class	16 (3.8%)
	Middle class	195 (46.7)
	Upper middle	186 (44.5%)
	Upper class	20 (4.8%)
Employment status	Full time employment	55 (13.2%)
	Part-time employment	8 (1.9%)
	Self employed	17 (4.1%)
	Freelance/Contractor	6 (1.4%)
	Unemployed	23 (5.5%)
	Retired	5 (1.2%)
	I'm a student	293 (70.1%)
	Others	11 (2.6%)
Educational attainment	No formal schooling	3 (0.7%)
	Primary education	1 (0.2%)
	Secondary education	9 (2.2%)
	Intermediate	209 (50%)
	Bachelors	128 (30.6%)
	Masters	55 (13.2%)
	Doctorate	13 (3.1%)
Province	Punjab	376 (90%)
	Sindh	9 (2.2%)
	KPK	3 (0.7%)
	Balochistan	2 (0.4%)
	Federal Capital	13 (3.1%)
	Others*	15 (3.5%)

* include Gilgit Baltistan, Azad Jammu and Kashmir

table-1. The majority respondents (76.3%) were in the 18-25 years age range. We received responses from different cities of Pakistan. Majority lived in urban areas (90.2%). Only 2.4% of the respondents reported that a member of their household had been diagnosed with Covid-19. While 4.3% of the respondents had been tested for COVID-19.

Table 2: *Awareness Assessment of Participants*

	Statement	True	False	Don't know
1.	The blue side of the mask is the front and should face away from you, while the white side touches your face. (True)**	294 (70.3%)	63 (15.1%)	61 (14.6%)
2.	The proper way to remove the mask is to pull it from the front. (False)	59 (14.1%)	331 (74.4%)	48 (11.5%)
3.	The side of the mask which has a stiff bendable edge is the top part. (True)	294 (70.3%)	33 (7.9%)	91 (21.8%)
4.	Regularly rinsing your nose with saline/saltwater will protect you from coronavirus. (False) †	129 (30.9%)	148 (35.4%)	141(33.7 %)
5.	Self-isolation is a measure takenby those who exhibit Covid 19 symptoms. (True)	356 (85.2%)	51 (12.2%)	11 (2.6%)
6.	Soap and water can be used to clean and disinfect surfaces contaminated with Coronavirus. (True)	321 (76.8%)	75 (17.9%)	22 (5.3%)
7.	The virus can live on surfaces for several hours to days. (True)	347 (83%)	41 (9.8%)	30 (7.2%)

(**): significant association with gender; p< 0.05
(†): significant association with age groups; p< 0.05

Responses regarding awareness of preventive measures are shown in table-2. Statement 1 showed significant association with gender (X2(2) =7.45, p= .024) while statement 2 and 4 showed an association with age groups (X2(12) =20.4, p= 0.058) and (X2(12) =22.1, p= .036) respectively.

Table-3 shows responses of the participants regarding practice of protective measures. Chi square test of independence showed a strong relationship between gender and frequency of wearing a face covering in public (X2(4) =18.27, p= .001). Adoption of face covering measure was seen more among females (78%) than males (59%). The habit of reusing surgical masks was also associated with gender (X2(3) = 13.36, p= .004) and more males (15.3%) reported

Table 3: *Comparison of Predictive Values (Bishop Score vs. Cervical Length)*

Questions	Response	Frequency (%)
1. Do you wash your hands with soap and water for at least 20 seconds immediatel when you return from a public place?	Every time	246 (58.9%)
	Most times	113 (27%)
	Sometimes	30 (7.2%)
	Not sure	4 (1%)
	No, it usually takes less than 20 seconds	25 (6%)
2. Do you wash your hands after handlingitems that may have been touched by other people (e.g. banknotes, coins, grocery, packages, mail etc.)	Always	215 (51.4%)
	Often	128 (30.6%)
	Sometimes	47 (11.2%)
	Rarely	18 (4.3%)
	No	10 (2.4%)
3. How often do you use a hand sanitizer to clean your hands after touching items or surfaces touched by other people e.g. door handles, shopping carts, keyboard etc.	Always	134 (32.1%)
	Often	154 (36.8%)
	Sometimes	72 (17.2%)
	Rarely	34 (8.1%)
	Never	24 (5.7%)
4. Do you wear a mask or a face covering (such as a scarf or a bandana) when you go out to a public place? *	Always	296 (70.8%)
	Often	85 (20.3%)
	Sometimes	18 (4.3%)
	Rarely	15 (3.6%)
	Never	4 (1%)
5. Have you ever reused your surgical face masks? *	Always	49 (11.7%)
	Sometimes	197 (47.1%)
	Never	106 (25.4%)
	Use reusable face masks instead	66 (15.8%)
6. Do you wear rubber gloves while out in public?	Always	57 (13.6%)
	Only when I go out for shopping	81 (19.4%)
	Sometimes	89 (21.3%)
	Never	191 (45.7%)
7. Do you have a habit of touching your face with unwashed hands? †	Yes	215 (51.4%)
	No	203 (48.6%)
8. Do you maintain a distance of at least 1 meter between yourself and others when you are in a public space?	Always	222 (53.1%)
	Sometimes	176 (42.1%)
	No	20 (4.8%)
9. Have you practiced self-isolation or self -quarantine in the past month? ** †	Yes	266 (63.6%)
	No	152 (36.4%)
10. Do you think lockdown was an effective measure to control the infection spread?	Yes	384 (91.9%)
	No	34 (8.1%)
11. Are you following the guidelines issued by the WHO regarding Covid-19?	Yes	388 (92.8%)
	No	30 (7.2%)

(*) Significant association with gender; (*) =p<0.01, (**) =p<0.05
(†) Significant association with age groups; (†) =p<0.01

reusing surgical face masks than females (9%). There was a significate association between age groups and habit of touching face with unwashed hands (X2(6) =18.3, p= .005). Chi square test showed that practice of self-isolation/self-quarantine was associated with gender (X2(1) =3.93, p= .047) and age groups (X2(6) =22.5, p= .001).

Discussion

Current studies in Pakistan suggest that public and healthcare professionals are knowledgeable and have the right attitude towards COVID-19.[8-10] This study highlighted the protective measures that were most commonly adopted by our general public during the Corona pandemic. To our knowledge, this is the first study that observes the behavior of the Pakistani population during an ongoing pandemic. Our study represented different age groups, but the majority of our respondents were young adults. We received more responses from the females than males. We surveyed people from different cities of Pakistan, and the majority of the responses came from Punjab. Currently in Pakistan, Punjab is one of the provinces with the highest reported cases of Coronavirus.[11] Only few respondents (4.3%) have gotten themselves tested for COVID-19. It was also observed that very few people reported incidence of COVID-19 in their household. Questions in the second section of the questionnaire assessed people's awareness about proper application of personal protective measures. Majority of our respondents answered correctly on the statements regarding proper usage of face masks. Statement one, which showed association with gender, assessed the respondent's knowledge of the correct side of the surgical masks. A higher number of female participants answered correctly in statement one. Chi-square test showed association between age groups and awareness about the correct method of removing face masks after its use. We observed that older participants were more aware about the correct method. A statement regarding the effectiveness of saline against Coronavirus received mixed answers. Although the majority answered correctly, we observed that 30.9% of the respondents believed that rinsing nose with saline was an effective method to prevent coronavirus infection, while 33.7% were unsure about it. This observation is supported by findings of another research that studied perception about Covid-19 preventive measures in Pakistani public.[10] The statement also showed strong association with age groups. The majority of our respondents knew that Coronavirus has a variable survival time on different surfaces and that soap and water can be used to disinfect surfaces contaminated with the virus. We have studies that acknowledge the importance of surface disinfection in limiting infection spread.[12] Our respondents reported good hand hygiene. Majority followed the guidelines issued by the WHO regarding hand hygiene. Results of a multi-country study showed that frequent hand washing and use of hand sanitizer was the most common protective measure adopted by public during a pandemic.[13] This finding was also observed in our study, where the majority reported washing their hands after returning from a public place or after handling frequently touched objects. However, a few respondents admitted that it takes them less than twenty seconds to wash their hands. Previous research showed that 99.4% of Pakistanis believe that handwashing is an excellent way to prevent infection spread.[10] WHO recommends frequent hand washing for at least twenty seconds with proper technique.[14] Regarding face covering, the majority reported wearing face masks in public. Public approval of facemasks is high not just in Pakistan but in other countries as well.[12] Our findings showed significant association between adoption of face covering measures and gender. The percentage of females that wore face covering while going out were higher. A worrisome finding in our study was that a significant proportion of our respondents admitted to reusing surgical masks meant for single use. Chi-square test of significance revealed that reuse of surgical masks was more common in males than in females. The WHO's view on the use of face masks by healthy individuals is that it is unnecessary; however, the CDC recommends the use of face-covering for the general public.[15] There are studies that prove the efficacy of face masks in reducing aerosol transmission of viruses.[16] It was also observed that a significant proportion of our respondents reported wearing disposable gloves while going out in public. The WHO recommends the use of gloves only to those who deal with sick patients and not to healthy members of the community. Wearing gloves can give people a false sense of safety and become a source of self-infection or infection transmission if other hygiene measures are not followed properly. Our findings revealed that almost half of our

population has a habit of touching their face with unwashed hands. The face touching habit showed association with age groups and was more common in participants belonging in the age category of 26-35 years (59.4%). Physical distancing was also widely practiced by the public. In a recent study, the adoption of social distancing behavior was linked to the situational awareness of the public.[17] Public awareness and knowledge on Covid-19 was reported as satisfactory by one Pakistani study.[10] The practice of self-isolation and self-quarantine showed significant association with gender and age groups. Female participants (67%) and respondents belonging in the age category of 18-25 years (69%) showed more compliance. A similar observation was found in a previous study.[9] Regarding the lockdown, most people believed that it was an effective way of limiting infection spread. Majority of our respondents reported that they followed the guidelines issued by the WHO on Covid-19.

Findings of this study suggests that some health recommendations were more likely to be adopted by the public than others. Hand hygiene was the most common preventive measure adopted by people. One of the limitations of this study is that the sample was not nationally representative, and we surveyed only those who had access to the internet. Therefore, the results of this survey cannot be generalized for the Pakistani population. Moreover, the responses of the public were self-reported and may differ from their actual behavior. One of the strengths of this study is that the information from the public was collected during an ongoing pandemic, so the participants did not have to recall their behavior. Future studies should investigate factors that influence the practice and adoption of protective measures by the general public.

Conclusion

Our study observed public compliance to the WHO safety guidelines during the coronavirus pandemic. Our findings showed that most people practiced social distancing measures and had good hand hygiene habits. Misuse of facemasks was seen in a fair proportion of people. This study does not investigate the effectiveness of these protective measures and only reports the protective behaviors adopted by the public. Future studies are needed on the effectiveness of these protective behaviors in improving community health during a pandemic.

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