ORIGINAL ARTICLE

Knowledge, attitude, and practice of medical and non-medical professionals of Peshawar towards the COVID-19 pandemic: an online survey

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ABSTRACT

Introduction: The coronavirus later named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), caused an illness known as COVID-19. This study was carried out to determine the KAP of medical and non-medical professionals of Peshawar towards COVID19.

Objective: To assess the knowledge, attitude, and practice of selected medical and non-medical professionals about coping with the COVID-19 pandemic through an online survey.

Materials & Methods: This cross-sectional online survey took place from March 1 to April 30, 2020 using purposive sampling due to COVID-19 pandemic-related constraints against a community-based survey. A questionnaire for recording knowledge, attitude and practice about COVID-19 pandemic was generated with the help of literature search and uploaded through google forms. Responses were collected in excel spreadsheets which were later converted to SPSS version 23 for descriptive statistical analysis. Chi Square test was used for comparison between medical and non-medical professionals keeping p ≤0.05 significant.

Results: A total of 366 participants responded to the online survey. The ratio of medical to non-medical professionals being 1.16:1. It was observed that majority of respondents had adequate knowledge regarding the current pandemic and no significant difference was seen between the two professionals (p<0.001). Both the professionals had a positive attitude with no difference (p<0.05). In practice, visiting marketplaces (p=0.754) showed significant difference in the practice however all the other practice measures did not show significance (p<0.05) and were being practiced by both the professionals.

Conclusion: There is no significant difference in the knowledge, attitude or practice of medical and non-medical professionals towards the current pandemic of COVID-19.

Keywords: COVID-19; Pandemic; Coronavirus; SARS virus.

INTRODUCTION

The coronavirus also named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), caused an illness known as COVID-19. COVID-19 initially presented with fever, malaise and respiratory symptoms.[1] The disease emerged initially in Wuhan, China in second week of November, 2019 and rapidly spread to 213 countries.[2] The virus causing this has a large family of single-stranded RNA viruses further divided into four genera: alpha-, beta-, gamma- and delta. A wide range of animals and humans get infected by this virus causing respiratory, enteric, and hepatic diseases.[3] In humans, however it causes mainly respiratory tract infections similar to viral-pneumonia with nausea, vomiting, diarrhea and conjunctivitis in one third of the patients.[4] The patients infected by it presented with viral pneumonia like symptoms rapidly progressing and leading to fibrosis of lungs.[5] Old age and patients with illnesses like hypertension, cardiac disease, lung disease, cancer and diabetes have been identified as potential risk factors for severe disease and mortality.[6,7] Till date, seven human coronaviruses have been identified these include the alpha (NL63 and 229E), beta (OC43 and HKU1), Middle East respiratory syndrome (MERS), severe acute respiratory syndrome (SARS) and SARS-CoV-2, which caused COVID-19.[8,9] Interestingly nucleic acid sequence of COVID-19 is different from known human coronavirus species, which are similar to some of the beta coronaviruses identified in bats and thus therefore little was known about its pathogenicity and treatment options.[10,11]

On 16th March 2020 first 15 cases of COVID-19 appeared in Khyber Pakhtunkhwa province of Pakistan. As of 10th June 2020, Pakistan has recorded more than 1,13,702 positive cases involving 2255 deaths.[12] A majority of these cases were traced back to travellers from Iran.[3] All around the world various strategies were adopted to limit the spread of this virus as human-to-human transfer was rapid with its pathogenesis and treatment plan yet to be known.[13] In addition to misbelief, a lot of misleading information on internet about the situation caused people to respond rather differently.

The data after lockdowns showed surprising results with over 20,000 cases reported in the three weeks before lockdown was lifted and almost more than double that figure reported in the next three weeks.[14] Evidently not much attention was given to precautionary measures and public places still remained crowded with people rushing to public transportation to travel back to their hometowns, thus increasing the risk of infection to other parts of the country resulting in rapid increase in number of cases and corresponding deaths.[15,16] This reaction to lockdown followed by semi lockdown however was not unexpected.[17] Countries like UK, Italy, Australia, India showed significant decrease in number of cases after lockdown which was not the same for Pakistan.[21,22] This raises queries regarding the level of knowledge, attitude and practice toward COVID-19 among resident of Peshawar. The knowledge, attitudes and practices (KAP) about any disease plays an essential role in determining a society's misconceptions, their behaviour and approach towards that disease. Considering the many misconceptions and lacks in practice, it is necessary to assess the KAP towards COVID-19 among the residents of Peshawar as it is the capital of KP which is the most strongly hit province in entire country. This study would thus aim to determine the KAP of medical and non-medical professionals of Peshawar towards COVID19. The results of this study are thus important to inform authorities about future efforts with pandemic control measures.

MATERIALS & METHODS

Participants

This cross-sectional survey took place from March 1 to April 30, 2020 using purposive sampling technique. Due to the ongoing pandemic (COVID-19), community-based sampling survey could not be conducted hence the option of google forms to collect the data online was sorted.

WHO sample predictor was used to calculate the sample size which gave a minimum sample of 354. The questionnaire was uploaded on Google Forms and its linked shared with on social platforms, mainly WhatsApp and Facebook.

Measures

The online questionnaire was divided into two parts: a) Demographic data b) Knowledge, Attitude and Practice (KAP). Demographic variables included gender, age, marital status, education, type of education, occupation, type of current residence and address.

The KAP contained 31 questions. Ten (10) questions (K1-K10) on knowledge about clinical presentations, transmission routes, prevention and control of COVID-19. These questions were provided with three options: true, false, I don't know.

Attitude towards COVID-19 was measured by nine (9) questions (A1-A9) about the general perspective, agreement on the final control and the confidence in winning the battle against COVID-19. These questions were answered on Agree / Disagree basis with an additional "I don't know" option.

Practices in terms of prevention was measured by twelve (12) questions (P1-P12). The questions were answered as Yes or No.

Statistical analysis

All the data were collected by Google Forms and a Microsoft Excel file was generated. The file was converted to SPSS version 25. Qualitative and quantitative data analysis was done for different variables. The data analyzed were based on the type of education (medical or non-medical) under the knowledge, attitude and practice headings. The Chi Square test was used for the comparison of variables amongst the medical and non-medical professionals keeping $p \leq 0.05$ as significant.

RESULTS

A total of 364 participants responded to the online survey, comprising 196(53.8%) medical and 168(46.2%) non-medical professionals (ratio of 1.17:1); among the participants, there were 173(47.3%) males and 191(52.7%) females.

The majority of participants (219, 60.16%) were in the age group of 19-29 years, followed by the 30-49 years age group (106, 29.12%), with only 39 (10.71%) being of ages 50 years or above.

Most of the medical professionals had a Bachelor's degree (77.0%) while non-medical professionals showed the majority having passed Intermediate (35.7%) followed by Bachelor's (33.3%); PhD scholars were less popular in both the professionals, medical being 2.0% and non-medical 0.6%.

Table 1 shows the basic demographics of the KAP participants.

Table 1: Demographics of KAP Participant

Characteristics		Medical (n=196) f (%)	Non-medical (n=168) f (%)
Gender	Male	90 (45.9)	83 (49.4)
	Female	106 (54.1)	85 (50.6)
Age (Years)	19 – 29	166 (84.7)	53 (31.5)
	30 – 49	24 (12.2)	82 (48.8)
	50+	06 (3.1)	33 (19.6)
Level of Education	Matric	-	06 (3.6)
	Intermediate	21 (10.7)	60 (35.7)
	Bachelor	151 (77.0)	56 (33.3)
	Masters	20 (10.2)	45 (26.8)
	PhD	04 (2.0)	01 (0.6)

Table 2 represents the knowledge of both professionals towards the COVID-19 pandemic.

It was observed that for all ten items, the knowledge of medical professionals was significantly better than the non-medical professionals (p<0.001 or p=0.001). Comparing the three categories of responses (total 3640 responses), medical professionals had 1638 (45.0%) correct responses, whereas non-medical professionals had 866 (23.80%) correct responses; similarly, medical professionals had 202 (05.55%) wrong responses, while the non-medical professionals had 516 (14.17%) wrong responses; for the 'I don't know' responses, medical professionals scored 120 (03.30%) and non-medical professionals scored 298 (08.18%).

Table 2: Knowledge of Medical and Non-medical Professionals towards the COVID-19 Pandemic

#	Questions	Medical (n=196) f (%)			Non-medical (n=168) f (%)			p value
		True	False	IDK	True	False	IDK	
1	The main clinical symptoms of COVID-19 are fever, dry cough, difficulty breathing and muscle pain.	**184 (93.9)**	8 (4.1)	4 (2.0)	**99 (58.9)**	52 (31.0)	17 (10.1)	<0.001
2	Unlike the common cold, runny nose, and sneezing are less common in persons infected with the COVID-19 virus.	**139 (70.9)**	42 (21.4)	15 (7.7)	**71 (42.3)**	64 (38.1)	33 (19.6)	<0.001
3	There is currently no effective cure for COVID-19, but early supportive treatment can help most patients recover from the infection.	**173 (88.3)**	12 (6.1)	11 (5.6)	**94 (56.0)**	45 (26.8)	29 (17.3)	<0.001
4	Not all persons with COVID-19 will develop severe disease or having co-morbidities are more likely to develop complications.	**165 (84.2)**	21 (10.7)	10 (5.1)	**72 (42.9)**	51 (30.4)	45 (26.8)	<0.001
5	A person must be febrile to transmit COVID-19 to other individuals.	45 (23.0)	**118 (60.2)**	33 (16.8)	65 (38.7)	**69 (41.1)**	34 (20.2)	0.001
6	The COVID-19 virus spreads via respiratory droplets of infected individuals.	**176 (89.8)**	13 (6.6)	07 (3.6)	**100 (59.5)**	33 (19.6)	35 (20.8)	<0.001
7	The virus enters human body from eyes, nose and mouth.	**168 (85.7)**	15 (7.7)	13 (6.6)	**88 (52.4)**	48 (28.6)	32 (19.0)	<0.001
8	It is not necessary for children and young adults to take measures to prevent the infection as COVID-19 doesn't affect them.	19 (9.7)	**168 (85.7)**	09 (4.6)	54 (32.1)	**89 (53.0)**	25 (14.9)	<0.001
9	To prevent the infection by COVID-19, individuals should avoid going to crowded places.	**175 (89.3)**	12 (6.1)	09 (4.6)	**98 (58.3)**	47 (28.0)	23 (13.7)	<0.001
10	Isolation of people for a period of 14 days who are infected with the COVID-19 virus is effective to reduce the spread of virus.	**172 (87.8)**	15 (7.7)	09 (4.6)	**86 (51.2)**	57 (33.9)	25 (14.9)	<0.001

IDK = I don't know. Bold highlighted figures represent the maximum responses in the two groups

Table 3 shows the attitude of medical and non-medical professionals towards the COVID-19 pandemic. The vast majority of medical respondents held a positive attitude towards COVID-19; 83.7% believe that taking precautionary measures such as wearing masks and gloves can be save them from getting infected and 81.6% believe that the imposition of a lockdown and quarantine is necessary to reduce the spread of this pandemic. On the contrary, only 58% of the non-medical individuals believe that protective measures (masks, gloves) and a lockdown could keep check on the spread of COVID-19 (p<0.001). Both believed that COVID-19 could be life threatening (p=0.002). Non-medical professionals (53.0%) and Medical Professionals (56.1%) believe that COVID-19 will be successfully controlled (p=0.008). The satisfaction of treatment protocols also showed a positive attitude with 61.2% and 50.0% agreeing, medical and non-medical respectively (p=0.001).

Table 3: Attitude of Medical and Non-medical Professionals towards the COVID-19 Pandemic

#	Questions	Medical (n=196) f (%)			Non-medical (n=168) f (%)			p-value
		Agree	Disagree	IDK	Agree	Disagree	IDK	
1	Do you believe COVID-19 is life threatening?	**157 (80.1)**	25 (12.8)	14 (7.1)	**107 (63.7)**	38 (22.6)	23 (13.7)	0.002
2	Do you agree that COVID-19 will be successfully controlled?	**110 (56.1)**	42 (21.4)	44 (22.4)	**89 (53.0)**	57 (33.9)	22 (13.1)	0.008
3	Do you believe PPE (mask, gloves and gown) can save you from getting infected by COVID-19 virus?	**164 (83.7)**	23 (11.7)	9 (4.6)	**98 (58.3)**	60 (35.7)	10 (6.0)	<0.001
4	Do you believe that the virus is just propaganda and that it is nothing to be afraid of?	31 (15.8)	**149 (76.0)**	16 (8.2)	71 (42.3)	**84 (50.0)**	13 (7.7)	<0.001
5	Do you believe that only certain people, e.g. people who engage in certain activities or people of a certain race can be affected?	33 (16.8)	**154 (78.5)**	9 (4.6)	**83 (49.4)**	75 (44.6)	10 (6.0)	<0.001
6	Do you worry about getting the infection?	**160 (81.6)**	28 (14.3)	8 (4.1)	**108 (64.3)**	45 (26.8)	15 (8.9)	0.001
7	Do you believe a lock down and quarantine is necessary do reduce the spread?	**171 (87.2)**	18 (9.2)	7 (3.6)	**97 (57.7)**	55 (32.7)	16 (9.5)	<0.001
8	Do you believe use of sanitizers and disinfectants can decrease the possibility of getting infected?	**168 (85.7)**	20 (10.2)	8 (4.1)	**113 (67.3)**	46 (27.4)	9 (5.4)	<0.001
9	Do you think the treatment protocol given by health centers actually work?	**120 (61.2)**	33 (16.8)	43 (21.9)	**84 (50.0)**	56 (33.3)	28 (16.7)	0.001

PPE = Personal Protective Equipment, IDK = I don't know. Bold highlighted figures represent the maximum responses in the two groups

Table 4 depicts the practices of medical and non-medical professionals towards the pandemic, again showing significant differences for almost all the items between the two groups. When asked about visiting crowded places both the professionals showed a somewhat similar response and no significant difference was found in them (p=0.754). All the other questions regarding practice showed that both professionals were practicing what is required of them and following protocols (p<0.05 in all other questions).

Table 4: Practice of Medical and Non-medical Professionals towards the COVID-19 Pandemic (n=364).

#	Questions	Medical (n=196) f (%)		Non-medical (n=168) f (%)		p value
		Yes	**No**	**Yes**	**No**	
1	In recent days, have you gone to any crowded place?	60 (30.6)	**136 (69.4)**	54 (32.1)	**114 (67.9)**	0.754
2	In recent days, have you been traveling or going out of home?	85 (43.4)	**111 (56.6)**	**91 (54.2)**	77 (45.8)	0.040
3	In recent days, have you worn a mask when leaving home?	**160 (81.6)**	36 (18.4)	**85 (50.6)**	83 (49.4)	<0.001
4	Have you distanced yourself from the elderly for their health and yours?	**127 (64.8)**	69 (35.2)	**88 (52.4)**	80 (47.6)	0.016
5	Are you keeping a safe distance from somebody who has flu like symptoms in your family?	**152 (77.6)**	44 (22.4)	**91 (54.2)**	77 (45.8)	<0.001
6	Are you encouraging your family and relatives to practice wearing masks and gloves?	**164 (83.7)**	32 (16.3)	**94 (56.0)**	74 (44.0)	<0.001
7	Are you helping others understand the severity of this disease and educating them?	**160 (81.6)**	36 (18.4)	82 (48.8)	**86 (51.2)**	<0.001
8	Are you washing hands frequently, especially after touching objects in common use?	**163 (83.2)**	33 (16.8)	**90 (53.6)**	78 (46.4)	<0.001
9	Are you taking care to not touch your face, eyes and nose?	**143 (73.0)**	53 (27.0)	**85 (50.6)**	83 (49.4)	<0.001
10	Do you disinfect the items after use e.g. door-knobs, handles, tables?	**121 (61.7)**	75 (38.3)	81 (48.2)	**87 (51.8)**	0.010
11	Do you apply the treatment guidelines given by health centers?	**145 (74.0)**	51 (26.0)	73 (43.5)	**95 (56.6)**	<0.001
12	A hospital should be visited regularly to save oneself from infection?	42 (21.4)	**154 (78.6)**	61 (36.3)	**107 (63.7)**	0.002

Bold highlighted figures represent the maximum responses in the two groups

DISCUSSION

An overall correct rate of 83.58% for Medical and 51.56% for Non-Medical professionals on the knowledge questionnaire indicates that whilst most of the respondents belonging to the medical profession are knowledgeable about COVID-19, only half of the Non-medical professionals have proper knowledge about this pandemic. A study done in Henan, China showed 89% of healthcare workers had sufficient knowledge regarding COVID-19. Another study done as an online survey in Pakistan also demonstrated a similar trend (above 90% had sufficient knowledge regarding COVID-19).[18,19]

Regarding the attitude, a majority of both medical and non-medical professionals realize the threat COVID-19 poses towards human life, and while 81.6% of the medical professionals are worried about contracting this infection, 35% of the non-medical respondents do not feel worried of getting infected. Similar results were seen in Henan, China where 85% of healthcare workers were afraid of contracting COVID-19 at work. A study done by M Saqlain et al, also showed the majority of healthcare workers (97.80%), afraid of getting infected in the line of duty.[18,20]

Majority of healthcare workers in a survey done in Uganda were optimistic that this pandemic will eventually be controlled and were hopeful of encouraging results by the treatment protocols.[21] This was the perspective of the majority of medical and non-medical professionals. Having said that, only 56% of the medical professionals were optimistic about the control of this epidemic and 38.8% were not satisfied with the approach that health centers have taken towards COVID-19. In a study done in Pakistan, slightly lower number of healthcare workers (49.43%) were dissatisfied by the current approach of healthcare system towards handling this pandemic.[20] During this survey, it was also found out that 42% of the non-medical professionals believe that COVID-19 is just a propaganda and nothing to be afraid of whereas 76% medical professionals disagree to this idea.

In two Pakistan based surveys, conducted by Saqlain M et al, and Khan S et al, it was demonstrated that more than 70% of the medical professionals were practicing preventive measures in the workplace as well as outside workplace, markets and home. The study conducted on Ugandan medical professionals also showed a similar picture with 68% of Ugandan Healthcare workers practicing these measures.[20,22]

In summary, this study suggests that medical and non-medical professionals have good knowledge, positive attitudes, and proper practices towards COVID-19. In addition, good COVID-19 knowledge is associated with positive attitudes and proper practices towards COVID-19, suggesting that health education programs focused at improving COVID-19 knowledge are helpful for encouraging positive attitude and maintaining safe practices.

CONCLUSION

While the KAP of medical professionals about the COVID-19 pandemic was satisfactory, that of the non-medical

professionals remains short of expectations as the government and public media have been actively providing relevant information about the pandemic.

RECOMMENDATIONS

Awareness of vulnerable populations towards COVID-19 deserves special attention and research towards making it better because it would help in control of the pandemic more quickly. Due to the limitation in representativeness of the sample, more studies are warranted to investigate the level of COVID-19 awareness among non-medical professionals and non-professionals in the remote areas.

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