Public knowledge, attitudes, and practices toward COVID-19: An online cross-sectional study in the Union territory of Jammu and Kashmir

Chandani Gupta[1], Riya Gupta[2], Rashmi Kumari[3], Rajiv Kumar Gupta[3], Preeti Bhagat[3], Mehak T Mir[3], Heena Nazir[3], Sunil Kumar Raina[4]

[1]Department of Community Medicine, ASCOMS Jammu, J&K, [2]Department of Opthalmology, [3]Department of Community Medicine, GMC Jammu, J&K, [4]Department of Community Medicine, RP Govt. Medical College Tanda, Kangra, Himachal Pradesh, India

ABSTRACT

Background: COVID-19, since its emergence, has become a global health problem with countries adopting unprecedented measures to control the spread of this pandemic. Adherence of the populations to control measures is affected by their knowledge, attitude, and practices (KAP) towards the disease. It was with this aim that the present study was conducted among the residents of UT of J&K to assess their KAP toward COVID-19. **Methodology:** A cross-sectional online survey of 464 J&K residents was conducted between 1st May and 10th May 2020. Survey Monkey tool was used to develop a link and KAP questionnaire was used for data collection. The survey instrument consisted of demographic characteristics, 11 items on knowledge, 5 items on attitudes, and 7 items on practices. Data collected was represented in descriptive statistics, and one-way analysis of variance was the test of significance. **Results:** Mean knowledge, attitude, and practice scores were 7.69 ± 0.74, 4.70 ± 0.57, and 4.32 ± 0.68, respectively, among the respondents. Majority (99%) knew the sign and symptoms, mode of transmission of the disease and avoided attending large gatherings. Use of mask was almost universal and about 38% were taking supplements like vitamins or herbal medicines. Good knowledge, positive attitude, and appropriate practices among the respondents about COVID-19 suggest that community based health education programs play a key role in containment and mitigation of this disease. **Conclusion:** Sustained messaging and updates from the national and local health authorities on COVID-19 to the public are likely to help control the transmission of the disease.

Keywords: Attitude, COVID-19, knowledge, practices

Introduction

COVID-19 which emerged from Wuhan city of China in December last year has rapidly spread across the world in a short span of few months.[1] On 9 January 2020, the novel coronavirus SARS-CoV-2 was officially identified as the cause of the COVID-19 and it was declared as pandemic on 11 March 2020 by World Health Organization (WHO).[2]

The disease is characterized by rapid transmission and its main clinical symptoms include fever, dry cough, fatigue, myalgia, and dyspnea. Severe cases usually need Intensive Care Unit admission and resultant high mortality.[3]

With no vaccines or drugs to combat the infection/disease, quarantine, patient isolation, travel restrictions, and contact tracing remain the only means of limiting transmission. That is

Access this article online

Quick Response Code:

Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_1332_20

How to cite this article: Gupta C, Gupta R, Kumari R, Gupta RK, Bhagat P, Mir MT, *et al.* Public knowledge, attitudes, and practices toward COVID-19: An online cross-sectional study in the Union territory of Jammu and Kashmir. J Family Med Prim Care 2021;10:1155-60.

why, people's adherence to the control measures is essential and is largely affected by their knowledge, attitudes, and practices (KAP) toward COVID-19.[4,5] Studies show that level of knowledge and attitudes toward infectious diseases is associated with level of panic emotion among the population, which can further complicate attempts to prevent the spread of the disease.[6,7]

It was in this context that the current study was planned to assess KAP about COVID-19 in residents of UT of Jammu and Kashmir.

Materials and Methods

This study was designed as a cross-sectional web-based survey conducted in the month of May 2020. The surveymonkey application tool was used to create survey questionnaire and the link and generate a quick response (QR) code.[8] The link was then forwarded to the various respondents via various online/social media platforms which included WhatsApp, Facebook messenger, and e-mail.

Persons aged 18 years or more living in UT of Jammu and Kashmir were eligible to participate in the study. After clicking on the link to the survey, a brief introduction of purpose of the survey was provided and anonymity of the respondents was ensured. Then each respondent was asked if they were willing to participate in the survey and all the participants who gave the consent by clicking on 'yes' started the survey. The study was approved by the institutional ethics committee vide reference no:ASCOMS/IEC/RP&T/2020/367 dated 25/07/2020.

Study instrument

The survey instrument was developed from already available literature on KAP toward COVID-19.[3,9-11] The questionnaire consisted of four main themes: 1) demographics, with surveyed participants' sociodemographic information, including gender, age, state of residence, education and employment status; 2) knowledge about COVID-19; 3) attitudes toward COVID-19; and 4) practices relevant to COVID-19.

Knowledge section had 11 questions (K1-K11), attitude section had 5 questions (A1-A5), and practice section had 7 questions (P1-P7).

Statistical analysis

For this study, the collected data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 26. Descriptive analysis focused on proportions and one-way analysis of variance (ANOVA) was utilized to determine the differences between groups for selected demographic variables. The statistical significance level was set at $P < 0.05$.

Results

A total of 464 participants constituted the study population. 61.42% of the study population comprised of males and only

one participant belonged to other gender category. Almost half (48%) of the participants were aged less than 30 years, followed by the age group of 31–45 years (39.6%). Majority of participants (53.8%) were educated up to 12th class. As far as occupation was concerned, almost equal proportion of the subjects belonged to student category and service class (24.35% and 24.78%, respectively).

As apparent from the Table 1, all the participants had heard about COVID-19. The source of information for majority of participants was media (62.28%). Nearly, 59% of them self-rated their knowledge level related to corona virus as good, whereas 19.61% reported it to be very good. Over 95% of the participants correctly answered as virus to be the cause of COVID-19. More than 99% were aware of correct signs and symptoms of the disease, modes of transmission and precautions related to COVID-19. Nearly, 20% were either not sure or believed that consumption of dairy/meat/animal contact could transmit COVID-19. The mean knowledge score was 7.69 ± 0.74. Data presented in Table 2 reveal that the participants in the age group of 46–60 years had significantly higher knowledge about the COVID-19 as compared to other age groups and the association was found to be statistically significant. Similarly with regard to the gender, females had significantly more knowledge about COVID-19 as compared to males. Association of education and occupation was also found to be statistically significant with the knowledge score of participants ($P < 0.05$). As seen in the Table 3, majority of the participants seemed to have an overall positive attitude toward various aspects of COVID-19. More than 95% of all of the participants in the present study were of the opinion that health education can help to prevent COVID-19, early detection can improve treatment outcome and believed nationwide lockdown to be a good step. Only about 17% were either not sure or felt unlikely of COVID-19 being successfully controlled. The mean attitude score was 4.70 ± 0.57. Table 4 shows that a statistically significant difference was seen for education and occupation with regards to the attitude score. However, attitude toward COVID-19 had no significant differences across age and gender. Table 5 depicts various practices of participants related to COVID-19. Nearly, 98% of the participants reported that they were avoiding going to any crowded places lately and wore a mask while going out.

About 98% reported to be paying more attention to their personal hygiene as a preventive measure from COVID-19. While only 38% reported to be taking a vitamin supplement/any traditional or herbal medicine for prevention from COVID-19. Nearly, 85% reported that they cover their mouth while coughing or sneezing. About 88% reported to either always or usually avoiding touching their eyes, nose, and mouth with unwashed hands. Mean score for practice was 4.32 ± 0.68. On analysis, it was found that practices related to COVID-19 were found to be significantly associated with the educational status and the occupation of the participants ($p < 0.05$) as shown in Table 6.

Table 1: Knowledge of participants regarding COVID-19 (*n*=464)			
Questions	**Response**	**Number**	**Percentage**
Have you heard of COVID-19.	Yes	464	100.00
	No	0	0.00
What is your source of information about COVID-19?	Media	289	62.28
	Social media	96	20.69
	Health officials	67	14.44
	Friends/neighbors/relatives	9	1.94
	Other (Internet)	3	0.65
How would you rate your knowledge level on novel corona virus?	Very poor	2	0.43
	Poor	1	0.22
	Average	97	20.91
	Good	273	58.84
	Very good	91	19.61
What is the cause of COVID-19?	Bacteria	2	0.43
	Virus	441	95.04
	Fungus	0	0.00
	Immunodeficiency	4	0.86
	Parasite	2	0.43
	Not sure	15	3.23

Question	No. of participants (%)		
	True	**False**	**Not Sure**
The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, myalgia, difficulty breathing?	461 (99.35)	0 (0.00)	3 (0.65)
The disease can be transmitted directly through cough, contact with infected individuals (e.g., handshaking, hugging), contact with infected surfaces?	462 (99.57)	0 (0.00)	2 (0.43)
The disease can be transmitted directly through the consumption of dairy and meat or contact with an animal.	16 (3.45)	376 (81.03)	72 (15.52)
The disease is more dangerous in people with weakened immune systems, in people with diseases like cancer, diabetes, and chronic respiratory diseases in pregnant women and old individuals?	456 (98.28)	3 (0.65)	5 (1.08)
COVID-19 can be avoided by proper precautions like avoiding large gatherings, hand hygiene, etc.?	460 (99.14)	0 (0.00)	4 (0.86)
Isolation and treatment of people who are infected with the COVID-19 are effective ways to reduce the spread of the virus?	445 (99.91)	5 (1.08)	14 (3.02)
People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days?	455 (98.06)	4 (0.86)	5 (1.08)

Table 2: Knowledge score of participants toward COVID-19 (*n*=464)				
Demographic variables		**No. of participants (%)**	**Knowledge score (mean±SD)**	***F***	***P***
Age (years)	<30	226 (48.71)	7.64±0.87	2.99	0.031
	31-45	184 (39.66)	7.53±0.75		
	46-60	46 (9.91)	7.91±0.28		
	>60	8 (1.72)	7.63±0.52		
Gender	Male	285 (61.42)	7.63±0.76	7.56	0.001
	Female	178 (38.36)	7.92±0.82		
	Others	1 (0.22)	8.00±0.00		
Education	Primary	14 (3.02)	7.49±0.82	2.80	0.039
	10th	25 (5.39)	7.89±0.39		
	12th	250 (53.88)	7.78±0.73		
	Graduate & above	175 (37.72)	7.59±0.90		
Occupation	Student	113 (24.35)	7.83±0.49	6.68	0.0002
	Service class	115 (24.78)	7.90±0.36		
	House maker	33 (7.11)	7.47±0.87		
	Business	203 (43.75)	7.64±0.79		

Table 3: Attitude of participants toward COVID-19

Question	Response of participants		
	Agree No. (%)	Disagree No. (%)	Not sure No. (%)
Do you think that health education can help to prevent COVID-19?	449 (96.7%)	5 (1.07%)	10 (2.15%)
Do you think that Early detection of COVID-19 can improve the treatment and outcome?	442 (95.2%)	4 (0.86%)	18 (3.87%)
Do you think that COVID-19 disease results in death in all cases?	9 (1.93%)	441 (95.04%)	14 (3.01%)
Do you think that nationwide lockdown is a good step taken by authorities to prevent the further spread of disease?	449 (96.7%)	7 (1.50%)	8 (1.72%)
Do you think that COVID-19 will finally be successfully controlled?	375 (80.81%)	27 (5.81%)	62 (13.36%)

Table 4: Attitude score of participants toward COVID-19 (*n*=464)

Demographic variables		No. of participants (%)	Attitude score±SD	F	P
Age (years)	18-30	226 (48.71)	4.62±0.67	0.96	0.413
	31-45	184 (39.66)	4.66±0.61		
	46-60	46 (9.91)	4.74±0.57		
	>60	8 (1.72)	4.38±0.52		
Gender	Male	285 (61.42)	4.62±0.63	0.64	0.527
	Female	178 (38.36)	4.68±0.65		
	Others	1 (0.22)	5.00±0.00		
Education	Primary	14 (3.02)	4.20±0.70	2.63	0.049
	10th	25 (5.39)	4.63±0.46		
	12th	250 (53.88)	4.67±0.60		
	Graduate & above	175 (37.72)	4.64±0.70		
Occupation	Student	113 (24.35)	4.66±0.53	3.97	0.008
	Service class	115 (24.78)	4.85±0.50		
	House maker	33 (7.11)	4.55±0.66		
	Business	203 (43.75)	4.67±0.59		

Table 5: Practices of participants toward COVID-19

Question	Response of participants			
	Yes No.(%)		No No.(%)	
Have you gone to any crowded place recently?	10 (2.15%)		454 (97.84%)	
Did you wear a mask while leaving the home recently?	457 (98.49%)		7 (1.50%)	
Do you pay more attention to personal hygiene as a protective measure against COVID-19?	456 (98.27%)		8 (1.72%)	
Do you take any vitamin supplements, any traditional/herbal medicine to prevent?	177 (38.14%)		287 (61.85%)	
	Always	Usually	Rarely	Never
Do you cover your mouth while coughing or sneezing?	395 (85.12%)	62 (13.36%)	4 (0.86%)	3 (0.64%)
Do you avoid touching your eyes, nose, and mouth with unwashed hands?	234 (50.43%)	177 (38.14%)	44 (9.48%)	9 (1.93%)

Discussion

COVID-19, a relatively new viral disease, is causing catastrophic effects across the world. To reduce infection rates and spread of disease, preventive measures play a key role. It is important to study the KAPs of the population since public adherence to preventive and control measures is reflected by their KAP.

In the current study, the mean knowledge score among the respondents was 7.69 ± 0.74 and this correct knowledge is related to characteristics of the sample with majority having graduate and postgraduate degrees. It could also be due to responses being taken in the middle of outbreak when lot of information about pandemic is available on electronic and print media. The results are in agreement with those reported by other authors.[1,8-11] Zhong *et al.*[11] from China and Al-Hanawi *et al.*[12] from Saudi Arabia also reported knowledge results consistent with the results of the current study. However, Haque *et al.*[13] from Bangladesh reported contrasting results. Previous studies from different parts of the world have identified good knowledge in infection control as a predictor of good practice,[14,15] and also highlighted that major gaps in disease knowledge could result in uncertainties and nonstringent control measures.[3] Higher score were found in participants in the age group of 46–60 years and in female gender and these findings are in consonance with those reported by Arina *et al.*[10]

Most of the participants had optimistic attitude in the fight against the infection. This attitude could have attributed to good practices like majority of the respondents not visiting crowded places, wearing masks whenever they go out of levels of positive

Table 6: Practice score of participants toward COVID-19 (*n*=464)				
Characteristics		No. of participants (%)	Practice score±SD	F	P
Age (years)	<30	226 (48.71)	4.22±0.60	0.98	0.400
	31-45	184 (39.66)	4.29±0.68		
	46-60	46 (9.91)	4.33±0.70		
	>60	8 (1.72)	4.00±1.31		
Gender	Male	285 (61.42)	4.27±0.67	0.28	0.759
	Female	178 (38.36)	4.23±0.64		
	Others	1 (0.22)	4.00±0.00		
Education	Primary	14 (3.02)	3.79±0.70	6.59	0.0002
	10th	25 (5.39)	4.00±0.58		
	12th	250 (53.88)	4.21±0.68		
	Graduate & above	175 (37.72)	4.39±0.61		
Employment status	Student	113 (24.35)	4.19±0.58	12.49	0.0001
	Service class	115 (24.78)	4.64±0.58		
	House maker	33 (7.11)	4.18±0.81		
	Business	203 (43.75)	4.23±0.71		

attitudes were also detected in the KAP studies conducted elsewhere.[3,9-11,16] In contrast, attitude and practices which were not impressive were reported by Haque *et al.*[13] In India, the swift action taken by the government in enforcing lockdown may have also contributed to these positive attitudes. Positive attitudes were higher among those working in the health sector. This may be due to their direct involvement in containment and mitigation of the virus. High levels of knowledge usually translate into good and safe practices which were amply reflected in the practices of the respondents. Primary care physicians will play a significant role in providing social support to populations across geographies during this epidemic. As the tertiary care settings come under strain to mitigate the major impact of COVID-19, primary care physicians will be required to ensure effective provision of necessary health care services for other ailments like HIV/AIDS, tuberculosis, diabetes mellitus, etc., as also in strengthening the home base management of COVID-19 cases.[17]

Limitations

Convenience sampling method using KAP instrument may limit its large-scale usefulness. As this study used self-reported data, it is possible that participants may have answered attitude and practice questions positively based on what they perceive to be expected of them. However, the study is able to provide an insight into human response to COVID-19 pandemic, a key to deal with the pandemic on a long-term basis.

Conclusion

Adequate KAPs are considered initial stepping stone of any health activity to be implemented. As we continue to see an upsurge in cases, primary care physicians will be required to play a role in managing COVID-19 in community-based settings and ensuring regular supply of essential primary care services.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Raina SK, Kumar R, Bhota S, Gupta G, Kumar D, Chauhan R, *et al.* Does temperature and humidity influence the spread of COVID-19?: A preliminary report. J Family Med Prim Care 2020;9:1811-4.
2. WHO Director-General's opening remarks at the media briefing on COVID-19-11 March 2020. Available from: www.who.int. [Last accessed on 2020 Sep 19].
3. Huang C, Wang Y, Li X, Ren L, Zhao Z, Hu Y, *et al.* Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 2020. doi: 10.1016/S0140-6736 (20) 30183-5.
4. Ajilore K, Atakiti I, Onyenankey K. College students' knowledge, attitudes and adherence to public service announcements on Ebola in Nigeria: Suggestions for improving future Ebola prevention education programmes. Health Educ J 2017;76:64.
5. Tachfouti N, Slama K, Berraho M, Nejjari C. The impact of knowledge and attitudes on adherence to tuberculosis treatment: A case-control study in a Moroccan region. Pan Afr Med J 2012;12:52.
6. Person B, Sy F, Holton K, Govert B, Liang A, National center for inectious diseases SCOT. Fear and stigma: The epidemic within the SARS outbreak. Emerg Infect Dis 2004;10:358-63.
7. Tao N. An analysis on reasons of SARS-induced psychological panic among students. J Anhui Institute Educ 2003;21:78-9.
8. WWW.SURVEYMONKEY.COM. Available from: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjR6KWGqPTpAhXJbn0KHVnMBt8QFjAAegQICxAC&url=https%3A%2F%2Fwww.surveymonkey.com%2F&usg=AOvVaw30ECe9ilVVVACdwCs-nI6T.
9. Sima R, Ibrahim M, Byanaku A. Knowledge, attitudes, and practices (KAP) towards COVID-19: A quick online cross-sectional survey among Tanzanian residents. 2020. Doi: 10.1101/2020.04.26.20080820.
10. Azlan AA, Hamzah MR, Sern TJ, Ayub SH, Mohamad E. Public knowledge, attitudes and practices towards

COVID-19: A cross-sectional study in Malaysia. PLoS One 2020;15:e0233668.

11. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, *et al.* Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: A quick online cross-sectional survey. Int J Biol Sci 2020;16:1745-52.

12. Al-Hanawi MK, Angawi K, Alshareef N, Qattan AMN, Helmy HZ, Abudawood Y, *et al.* Knowledge, attitude and practice toward COVID-19 among the public in the Kingdom of Saudi Arabia: A cross-sectional study. Front Public Health 2020;8:217. doi: 10.3389/fpubh. 2020.00217.

13. Erfani A, Shahriarirad R, Ranjbar K, Mirahmadizadeh A, Moghadami M. Knowledge, Attitude and practice toward the novel coronavirus (COVID-19) outbreak: A population-based survey in Iran. Bull World Health Organ. 2020. doi: http://dx.doi.org/10.2471/BLT.20.256651.

14. Haque T, Hussain KM, Bhuiyan MMR, Ananna SA, Chowdhary SH, Islam MR, *et al.* Knowledge, attitude and practices (KAP) towards COVID-19 and assessment of risk of infection by SARS-CoV-2 among the Bangladeshi population : An online cross-sectional survey. Epidemiol Infect Dis. doi: 10.21203/rs. 3.rs-24562/v1

15. Chen S, Qiu Z, Xu L, Chen J, Lin Y, Yang Y, *et al.* People groups' responses to SARS in the community. Chinese Rural Health Serv Admin 2003;23:15.

16. Pawlowski B, Atwal R, Dunbar R. Sex differences in everyday risk-taking behavior in humans. Evol Psychol 2008;6:29-42.

17. Kumar D, Raina SK, Chauhan R, Kumar P, Sharma S. Drawing inference from nationwide lockdown as a response towards novel Coronavirus19 (CoVID19) epidemic in India. J Family Med Prim Care 2020; 9:4507-11.