Knowledge, Attitude and Practice of Nursing Students towards COVID-19 Pandemic in Oman

Aisha Alshdefat[1], Jansirani Natarajan[2], Mickaël Antoine Joseph[3], Rasha Abu Baker[4], Mohammed Ghalib Qutishat[5]

[1]Lecturer (RN, MSN), Department of Maternal and Child Health, College of Nursing, Sultan Qaboos University, Muscat, Oman, [2]Lecturer (RN, MSN), Fundamental and Administration, College of Nursing, Sultan Qaboos University, Muscat, Oman, [3]Assistant Professor (PhD), Fundamental and Administration, College of Nursing, Sultan Qaboos University, Muscat, Oman, [4]Lecturer (RN, MSN), Department of Community and Mental Health, College of Nursing, Sultan Qaboos University, Muscat, Oman, [5]Lecturer (RN, MSN), Department of Community and Mental Health, College of Nursing, Sultan Qaboos University, Muscat, Oman

Abstract

Background: COVID-19 pandemic is a global emergency that requires the implementation of drastic measures to halt the disease's fast spread. Students commitment to preventive measures is impacted by their knowledge, attitudes, and practices toward the disease.

Method: We sought to determine the level of knowledge, attitudes, and practices regarding COVID-19 pandemic among Omani nursing students. A cross-sectional study was conducted at college of nursing, Sultan Qaboos University. A valid and reliable online survey was used to gather the data.

Conclusion: We found that 96.9% of nursing students have moderate to high level of knowledge about COVID-19. The majority of nursing students held optimistic attitudes about the successful control of COVID-19 (78.5%) and the ability of Oman to conquer the virus (75.5%). While 87.7% of nursing students stayed away from crowded places, only 47.9% wore a mask when leaving their homes. Predictors of good knowledge included being a clinical student, wearing a mask while leaving home, and having a positive attitude about controlling the pandemic ($p<0.001$). Predictors of good preventive practices included being a woman and having higher knowledge scores ($p=0.05$). Omani nursing students have satisfactory knowledge and held positive attitudes regarding COVID-19. However, they do not maintain adequate practice measures.

Keywords: *Attitude; Covid-19; knowledge; nursing; Oman; practice.*

Corresponding Author:
Mickael Antoine Joseph, Ph.D.
Assistant Professor of Anatomy, Physiology, and Pathophysiology, Fundamentals and Administration Department Office 2019, College of Nursing, Sultan Qaboos University, Al Khoud, 123, Muscat, Oman P.O. Box 66, Al-Khoud, Muscat 123, OMAN
Tel: +968-24-14-54-31
Mob: +968-71-17-89-86
Fax: +968-24-41-35-36
e-mail: mickaelj@squ.edu.om, mickaelantoinejoseph@gmail.com

Introduction

Coronaviruses (CoV) are a group of large, single-stranded RNA viruses, with six of which known to infect humans.[1] These viruses target the human respiratory system and cause symptoms that range from common cold-like cough and fever to severe respiratory problems.[2] To date, three pathogenic human CoV have been identified in which the infection caused life-threatening complications. The first outbreak took place in China in 2002, when many patients developed the severe acute respiratory syndrome (SARS)-CoV.[3] A decade later, the second CoV hit Saudi Arabia and the Gulf region.[4] The majority of the infected individuals were from the Middle East, and Oman saw 24 cases

and suffered the loss of seven people.[5,6] The first case of the third pathogenic type of CoV appeared in Wuhan Province, China, in late December 2019 and referred to as a"novel coronavirus" (COVID-19) by the World Health Organization (WHO).[7,8] On January 30, 2020, the WHO declared COVID-19 as a public health emergency of international concern[9] and then, on March 11, 2020, a global pandemic.[10]

Since the outbreak, many countries throughout the world have taken extreme measures in response to COVID-19 by banning travel from and to the countries, suspending schools and universities, working from homes, social distancing,mask requirements and much more.[11] A worldwide call has been made to suspend all mass gatherings and many countries have positively responded.[12] Studies from China have shown that social distancing, quarantine, and isolation of sick people can control the spread of the disease.[13] Moreover, hygiene etiquette has been globally recommended.[14]

The first positive COVID-19 case in Oman was reported on February 24, 2020. The numbers remained low for the first few weeks, which was likely due to the extreme measures that have been taken by the Supreme COVID-19 Committee to enact a pseudo-complete lockdown of the country with the suspension of schools and universities, the closure of all non-essential shops, and urging citizens and residents to remain confined at home. Following the recommendations of the government and Sultan Qaboos University (SQU), the College of Nursing closed its doors and students were sent to the safety of their homes.

To date, there is no vaccine to prevent COVID-19 infection and no cure currently available to treat it.[15] Therefore, it is of paramount importance that Omani students have extensive knowledge about the preventive measures (social distancing, hand hygiene, coughing etiquette, avoiding crowded places, and wearing a face mask when going outside of the house) as applying the aforementioned techniques constitutes the first line of defense against infection.[16]

To assist in the eradication of COVID-19 in Oman, it is crucial to investigate the level of nursing students' awareness of COVID-19 at this critical period. Students commitment to preventive measures is impacted by their knowledge, attitudes, and practices (KAP) towards the disease. In this study, we assessed the KAP of nursing students at SQU toward COVID-19.

Method

This cross-sectional descriptive study was conducted during the month of May 2020 among nursing students at SQU. An online survey was created using Google Forms and sent to undergraduate bachelor students to explore and describe the KAP toward COVID-19.

Slovin's formula gave a total sample size of 222. Overall 163 responses were received, amounting to a 73.4% response rate. Systematic random proportionate sampling was used to recruit nursing students who are enrolled in the undergraduate nursing program for Spring 2020 both male and female and over 18 years old.

The survey had two sections. The first section comprised questions about demographic variables like age, gender, academic level, and cumulative grade point average (cGPA). The second section consisted of the standardized questionnaire developed by Zhong et al., 2020 which had 12 questions for testing the KAP of the participants. The survey questions were about clinical presentations (four items), transmission routes (three items), and prevention and control (five items) of COVID-19. The responses had three options: "True", "False", and "I don't know". A correct answer was assigned one point and "false" or "I don't know" responses were assigned zero points. The total knowledge score ranged from 0 to 12, with a higher score denoting a better knowledge of COVID-19. The Cronbach's alpha coefficient of the knowledge questionnaire was 0.71, indicating acceptable internal consistency and reliability.[17] Four questions measured students' attitudes towards COVID-19 and practices to control the spread of the disease. Permission to use the KAP survey was obtained from the author.

Participants were informed that their participation is voluntary and were guaranteed about the privacy and confidentiality of all information provided, which was used for research purposes only.

The collected data was then checked for missing values and accuracy by two investigators before conducting an analysis using Statistical Package for Social Science (SPSS-Version.23) software. Descriptive statistics, including frequencies, percentages, means, and standard deviations were used to describe nursing students' KAP towards COVID-19. A T-test and Chi-square analysis were used to identify the association between the KAP of nursing students and their demographic characteristics. A multiple logistic

regression analysis was used to predict the factors affecting the KAP toward COVID-19. Statistical significance was kept at p<.05 for all the tests.

Results

A total of 163 nursing students participated in the survey. Most of the participants were female (67.5%) and were in the age group between 18 to 27 years (93.9%). Out of the total, 36.2% never had a clinical course (first and second years) while 63.8% were clinical students (third, fourth, and fifth years). A little less than half of the participants (46.6 %) had a cGPA of "B" ranging between 2.7 to 3.69. The baseline characteristics of nursing students are presented in Table 1.

The majority of the participants (60.7%) had a high level of knowledge (9-12 score). The overall knowledge related to COVID-19 is reported in Table 2.

There were 12 questions implemented to assess the knowledge of nursing students regarding COVID-19. The mean scores of the participants are presented in Table 2. Most of the nursing students reported accurate information about the clinical presentation (M=3.24,SD±.902) and transmission routes (M=2.16,SD±.711), whereas the lowest mean scores were reported for prevention and control aspects (M=3.25,SD±.876). Total knowledge scores of the nursing students on COVID-19 was (M=8.64,SD±1.731), suggesting an overall 72% of correct responses by the participants.

In the self-reported "attitudes toward the pandemic" portion of the survey, the majority of nursing students (75.5%) agreed that they have confidence in Oman winning the battle against COVID-19 as a country. Most of them (78.5%) also agreed that the pandemic will be successfully controlled. Regarding the practice related to the prevention of the spread of infection, 52.1% have not been wearing a mask when leaving their homes. The majority of the participants (87.7%) did not go to crowded places in recent days. Attitudes and practices of Omani nursing students towards COVID-19 are presented in Figure 1.

Knowledge on COVID-19 of nursing students significantly differed across the age groups and year of study as presented in Table 3. Students belonging to higher age and higher academic level (year of study) had better knowledge scores about COVID-19.

The results of binary logistic regression analysis of the factors affecting the knowledge of nursing students are presented in Table 4. The model was statistically significant, χ^2 = 34.523,df=8, N=163,p<.001. Being a clinical student, wearing a mask while leaving home, and having a positive attitude about controlling the pandemic are two predictors of having good knowledge about COVID-19.

Results of the binary logistic regression analysis of the factors affecting the practice of wearing a mask when leaving home by the nursing students are presented in Table 4. The model was statistically significant, χ2=23.930,df=8,N=163,p=.002. The practice of wearing a mask when going out differed across gender and levels of knowledge about COVID-19. Being a female and having higher knowledge scores predicted better practice of wearing a mask when leaving home

Discussion

In this study we sought to determine the level of KAP toward COVID-19 pandemic among Omani nursing students at SQU. In this studied population consisting mainly of women and clinical nursing students, we found that almost 9 out of 10 have a moderate to high level of knowledge about COVID-19 and an overall 72% of correct responses, showing that most students are well informed about the virus.

Nursing students also had a positive attitude towards the pandemic where almost 8 out of 10 had confidence that Oman will win the battle against COVID-19 and believed that the virus will be successfully controlled. Opposite to this optimistic attitude, Omani nursing students had lower preventive practices toward the virus. While the majority stayed away from crowded places, only less than half of the nursing students wore a mask when leaving their homes. We have also found associations between higher age groups and academic levels with better knowledge. Furthermore, gender and high knowledge scores influenced nursing students' practices regarding COVID-19.

During the MERS epidemic, Omani respondents showed a better level of knowledge about the infection and reported higher compliance with preventive measures than participants from Saudi Arabia, Qatar, Bahrain, United Arab Emirates, and Kuwait.[18] However, with COVID-19, when compared with other studies, Omani nursing students showed a lower level of knowledge about the virus. Studies from Jordan, Malaysia, China, Pakistan, and Saudi Arabia reported better knowledge

toward COVID-19.[17,19-23] However, not all these studies used the same questionnaire, which does not allow for the precise comparison of the knowledge level among the different populations. Nonetheless, we were expecting to find a higher level of knowledge in our study, especially since our students are majoring in nursing and should have better information about the pandemic. However, this moderate to high level of knowledge could be due to the fact that around 35% of the participants are in their first and second year of study and haven't had any formal clinical training yet. The significant positive association between level of knowledge and nursing students who have been previously enrolled in clinical courses (and are older) supports this speculation. Another possible explanation of this result is the low number of positive COVID-19 cases in the Sultanate at the time of conducting the study. By May 1, 2020, the numbers of COVID-19 positive cases were 2,447.[24] This number has increased by 17 times during the past two months, reaching 41,194 positive cases by July 1,2020.[25] This study was conducted in May 2020 when the virus had not spread much within Oman, which could explain the lower level of familiarity.

Although nursing students avoided crowded places, few upheld the good preventive practices of wearing a mask when leaving the house. This result is alarming,as one can expect nursing students to have satisfactory preventive practices regarding the virus. These results are similar to those observed in a Pakistani study where university students and employees showed inadequate preventive measures to COVID-19.[23] We believe that this is mainly due to the population demographics where 93.9% of the students are younger than 27 years old. Older adults have better knowledge and practice than younger people and this is possibly due to the fact that older adults are more afraid of transmission and complications of COVID-19.[20,26] However, if this is the case, nursing students should know better than by having low compliance with safety measures, they become a danger to older people who might develop more complications from the coronavirus.[27] A more likely reason for not wearing masks in public is the conflicting and contradictory advice given by the international authorities regarding both the coronavirus and face masks during the early stages of the pandemic. The WHO's recommendations on wearing face masks in public seemed inconsistent at first.[28,29] The interim guidance that the WHO published at the end of March 2020 generated some confusion among the public and this could explain why half of our nursing studentsopted not to use this type of preventive measure.

In this study, we also found a high level of positive attitudes toward COVID-19. This optimistic view of the pandemic was also observed in studies conducted in Saudi Arabia, Malaysia, and China.[17,20,30] All these authors gave credit to their governments by acting in a swift manner and taking stringent measures to mitigate the impact of COVID-19. We also believe that the prompt response of the Omani government and the supreme COVID-19 committee in undertaking necessary measures to tackle and limit the spread of the virus might have contributed to these optimistic views.

Moreover, some demographics like being a woman and having higher knowledge scores predicted a better practice of wearing a mask when leaving home. Gender played a significant role in predicting a better practice among nursing students where men were less inclined to wear mask when leaving the house than women. This is congruent with previous studies from China and India showing that females have a better practice scores.[17,31] These results are very important for the Omani government and SQU in particular,allowing them to identify target groups for health-promotion activities. We should have more emphasis on the importance of wearing face masks when going out in public. At the time of writing this article, the Omani Supreme Committee for dealing with COVID-19 had already made it mandatory to wear a face mask in public. Moreover, health-related advertisements and online activities should be carried out to enhance knowledge, practice, and attitudes toward this pandemic.

The major limitation of this study is the small sample size, which is limited to nursing students enrolled at one major university in Oman. This small number of nursing students does not represent the whole Omani population, thus preventing us from generalizing the results.

Table 1: Demographic characteristics of the nursing students involved in this study (n=163)

Demographics	n (%)
Gender	
Male	53 (32.5)
Female	110 (67.5)
Age	
18 – 22	75 (46.0)
23 – 27	78 (47.9)
28 – 32	10 (6.1)
Academic Level	
First year	56 (34.4)
Second year	3 (1.8)
Thirdyear	23 (14.1)
Fourthyear	41 (25.2)
Fifthyear	40 (24.5)
cGPA	
A (3.7 – 4)	26 (16.0)
B (2.7 – 3.69)	76 (46.6)
C (1.7 – 2.69)	44 (27.0)
D (1 – 1.69)	17 (10.4)

cGPA: cumulative grade point average

Table 2. Level of knowledge of Omani nursing students about COVID-19 (n = 163)

Level of knowledge	n	%	
High knowledge	99	60.7	
Moderate knowledge	59	36.2	
Low knowledge	5	3.1	
Various aspects of COVID-19 knowledge	**Number of items**	**Mean**	**SD**
Clinical presentations	4	3.24	.902
Transmission routes	3	2.16	.711
Prevention and control	5	3.25	.876
Total knowledge scores	12	8.64	1.731

SD: standard deviation

Table 3. Association between knowledge about COVID-19 and demographic characteristics among Omani nursing students (n=163)

Demographics	n	Mean	SD	t/F	df	Sig. (2-tailed)
Gender						
Male	53	8.47	1.928	-.882	161	.379
Female	110	8.73	1.631			

Demographics	n	Mean	SD	t/F	df	Sig. (2-tailed)
Age groups						
18-22	75	8.35	1.728	5.551	1,160	0.020*
23-27	78	8.79	1.738			
28-32	10	9.70	1.160			
Academic Level						
First year	56	8.11	1.626	5.257	1,159	0.023*
Second year	3	8.33	3.055			
Thirdyear	23	8.74	1.573			
Fourthyear	41	8.66	1.892			
Fifthyear	40	9.35	1.494			
cGPA						
A (3.7 – 4)	26	8.35	2.077	0.104	3,159	0.748
B (2.7 – 3.69)	76	8.62	1.781			
C (1.7 – 2.69)	44	8.95	1.462			
D (1 – 1.69)	17	8.41	1.583			

cGPA: cumulative grade point average; df: degree of freedom; SD: standard deviation
*: Significant at level of P < 0.05

Table 4: Results of multiple logistic regression analysis on factors associated with COVID-19 knowledge and practice of wearing a mask when leaving home

Variables	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. for EXP (B)	
							Lower	Upper
Knowledge								
Gender (male vs female)	.627	.663	.896	1	.344	1.873	.511	6.862
Age (18-22 years vs 23 years and above)	.471	.590	.635	1	.425	1.601	.503	5.092
Academic level (non-clinical vs clinical)	1.767*	.611	8.376	1	.004	5.855	1.769	19.377
cGPA (moderate vs good)	.683	.60	1.253	1	.263	1.980	.599	6.549
P1(no vs yes)	1.705	.719	5.628	1	.018	5.504	1.345	22.520
P2(no vs yes)	.952	.592	2.588	1	.108	2.592	.812	8.272
A1(no vs yes)	-.587	.580	1.027	1	.311	.556	.178	1.731
A2 (no vs yes)	-1.839***	.577	10.146	1	.001	.159	.051	.493
Practice of wearing a mask when leaving home								
Gender (male vs female)	-1.627**	.568	8.205	1	.004	.197	.065	.598
Age (18-22 years vs 23 years and above)	.180	.582	.095	1	.758	1.197	.382	3.746
Academic level (non-clinical vs clinical)	-1.263	.674	3.511	1	.061	.283	.075	1.060
cGPA (moderate vs good)	-.035	.590	.004	1	.953	.966	.304	3.070
P2(no vs yes)	1.046	.592	3.123	1	.077	2.845	.892	9.072
A1(no vs yes)	-.654	.473	1.915	1	.166	.520	.206	1.313
A2(no vs yes)	.358	.572	.392	1	.531	1.430	.466	4.388
Knowledge (poor vs good)	1.565*	.750	4.358	1	.037	4.782	1.100	20.778

A: attitude; B: coefficient of the constant; cGPA: cumulative grade point average; C.I.: confidence interval; df: degree of freedom; EXP (B): exponentiation of the B coefficient; P: practice; S.E.: standard error; Wald: Wald chi-square test, *P<0.05, **P<0.01, ***P<0.001

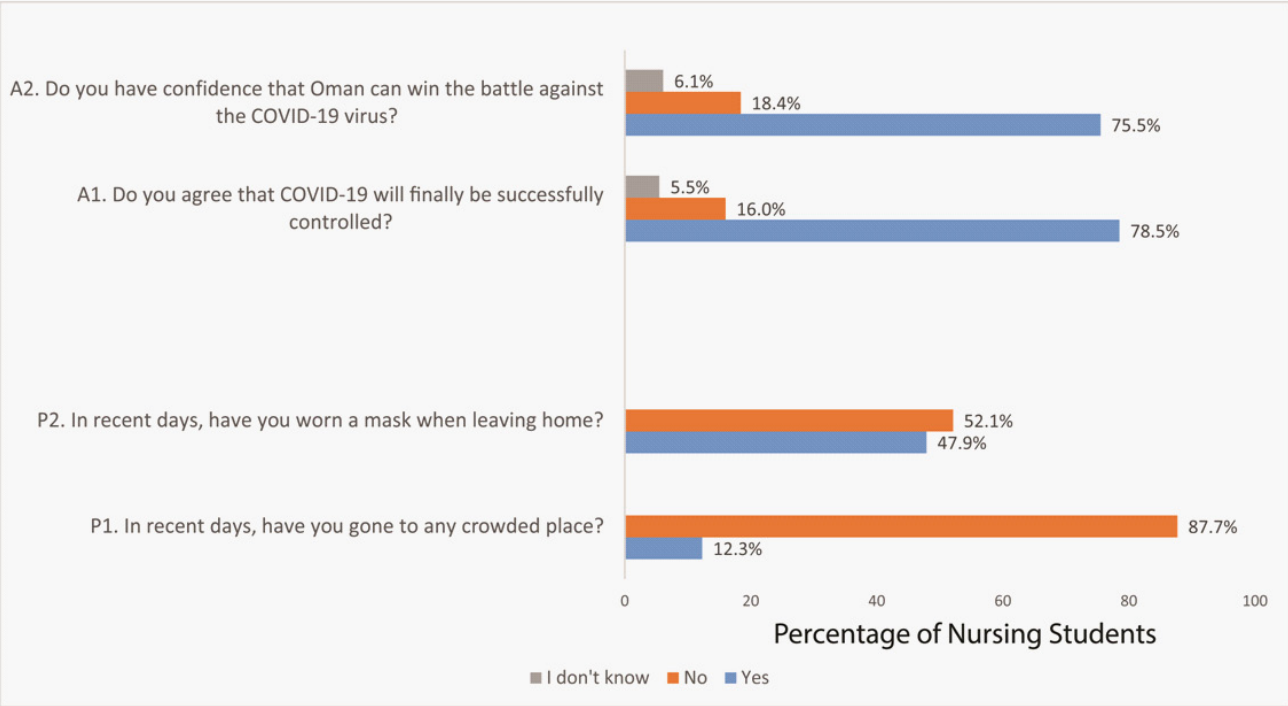

Figure 1. Attitudes (A1 & 2) and practices (P1 & 2) of Omani nursing students towards COVID-19 (N=163)

Conclusion

Our study revealed that Omani nursing students at SQU had a good level of knowledge and a very positive attitude toward the COVID-19 pandemic. This result highlights the efforts of the Omani government in enhancing public knowledge about the virus and promoting a safe environment for Omani citizens and residents. On the other hand, nursing students have shown a moderate performance in preventive behaviors, most notably, not wearing masks when going outside. We should keep in mind that our survey was distributed during the early stages of the pandemic in Oman and the knowledge, practices, and attitudes of our nursing students are expected to have ameliorated over time.

Ethical Clearance: Ethical approval was obtained from the College of Nursing Research and Ethics Committee.

Source of Funding: No funding was obtained for this study.

Conflict of Interest: Nil

References

1. Shereen MA, Khan S, Kazmi A, Bashir N, Siddique R. COVID-19 infection: origin, transmission, and characteristics of human coronaviruses. J Adv Res. 2020;24:91-98.
2. Van der Hoek L, Pyrc K, Jebbink MF, Vermeulen-Oost W, Berkhout RJM, Wolthers KC, et al. Identification of a new human coronavirus. Nat Med.2004;10(4):368-73.
3. Stadler K, Masignani V, Eickmann M, Becker S, Abrignani S, Klenk H-D, et al. SARS — beginning to understand a new virus. Nat Rev Microbiol.2003;1(3):209-18.
4. Aleanizy FS, Mohmed N, Alqahtani FY, El Hadi Mohamed RA.Outbreak of Middle East respiratory syndrome coronavirus in Saudi Arabia: a retrospective study. BMC Infect Dis. 2017;17(1):23.
5. Al Awaidy ST, Khamis F. Middle East Respiratory Syndrome Coronavirus in Oman: Current Situation and Going Forward. Oman Med J.2019;34(3):181-3.
6. WHO.Middle East respiratory syndrome coronavirus– Oman 2019
7. Zhou P, Yang X-L, Wang X-G, Hu B, Zhang L, Zhang W, et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature. 2020;579(7798):270-3.
8. WHO.Naming the coronavirus disease (COVID-19) and the virus that causes it 2020

9. WHO. Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV). 2020.
10. Cucinotta D, Vanelli M. WHO Declares COVID-19 a Pandemic. Acta Biomed. 2020;91(1):157.
11. Fong MW, Gao H, Wong JY, Xiao J, Shiu EY, Ryu S, et al. Nonpharmaceutical measures for pandemic influenza in nonhealthcare settings—social distancing measures. Emerg Infect Dis. 2020;26(5):976.
12. Memish ZA, Ahmed QA, Schlagenhauf P, Doumbia S, Khan A. No time for dilemma: mass gatherings must be suspended. Lancet. 2020;395(10231):1191-2.
13. Anderson RM, Heesterbeek H, Klinkenberg D, Hollingsworth TD. How will country-based mitigation measures influence the course of the COVID-19 epidemic? Lancet. 2020;395(10228):931-4.
14. World Health O. Rational use of personal protective equipment for coronavirus disease: interim guidance, Geneva: World Health Organization; 2020
15. Zhu F-C, Li Y-H, Guan X-H, Hou L-H, Wang W-J, Li J-X, et al. Safety, tolerability, and immunogenicity of a recombinant adenovirus type-5 vectored COVID-19 vaccine: a dose-escalation, open-label, non-randomised, first-in-human trial. Lancet. 2020; 395(10240):1845-1854.
16. Belingheri M, Paladino ME, Riva MA.COVID-19: Health prevention and control in non-healthcare settings. Occup Med.2020;70(2):82-83.
17. Zhong B-L, Luo W, Li H-M, Zhang Q-Q, Liu X-G, Li W-T, 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(10):1745-52.
18. Alqahtani AS, Rashid H, Basyouni MH, Alhawassi TM, Bin Dhim NF. Public response to MERS-CoV in the Middle East: iPhone survey in six countries. JInfect Public Health. 2017;10(5):534-40.
19. Peng Y, Pei C, Zheng Y, Wang J, Zhang K, Zheng Z, et al. Knowledge, attitude and practice associated with COVID-19 among university students: a cross-sectional survey in China. 2020.
20. 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(5):e0233668.
21. White MS, Omer M, Mohammad GN. Knowledge, attitude and practice on prevention of airborne and droplet infections during the outbreak of corona virus among the College Students in University of Bisha, Saudi Arabia. International Journal of Contemporary Research and Review. 2020;11(04):20773–6-6.
22. Alzoubi H, Alnawaiseh N, Al-Mnayyis A, Lubad M, Aqel A, Al-Shagahin H. COVID-19-knowledge, attitude and practice among medical and non-medical University Students in Jordan. J Pure Appl Microbiol. 2020;14:17-24.
23. Salman M, Mustafa ZU, Asif N, Zaidi HA, Hussain K, Shehzadi N, et al. Knowledge, attitude and preventive practices related to COVID-19: a cross-sectional study in two Pakistani university populations. Drugs Ther Perspect. 2020;1-7.
24. MOH.MOH Statement No.(64) May 01,2020
25. MOH.MOH Statement No.(125)2020
26. Cao J, Hu X, Cheng W, Yu L, Tu W-J, Liu Q. Clinical features and short-term outcomes of 18 patients with corona virus disease 2019 in intensive care unit. Intensive Care Med.
27. Ruan Q, Yang K, Wang W, Jiang L, Song J. Clinical predictors of mortality due to COVID-19 based on an analysis of data of 150 patients from Wuhan, China. Intensive Care Med.2020;46(5):846-8.
28. Chan A-y, Leung C, Lam T, Cheng K. To wear or not to wear: WHO's confusing guidance on masks in the covid-19 pandemic. BMJ Blog. 2020.
29. Feng S, Shen C, Xia N, Song W, Fan M, Cowling BJ. Rational use of face masks in the COVID-19 pandemic. Lancet Respir Med. 2020;8(5):434-6.
30. 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).
31. Maheshwari S, Gupta P, Sinha R, Rawat P. Knowledge, attitude, and practice towards coronavirus disease 2019 (COVID-19) among medical students: A cross-sectional study. J Acute Dis. 2020;9(3):100-4.