



## Original Article

## Awareness about Knowledge, Attitudes, and Preventive Practices related to COVID-19 at a Public Sector University of Larkana

Saif Ullah<sup>1</sup>, Sineer Micah<sup>2</sup>, Raja<sup>2</sup> and Santosh Kumar<sup>3</sup><sup>1</sup>Benazir College of Nursing, Shaheed Mohtarma Benazir Bhutto Medical University, Larkana, Pakistan<sup>2</sup>Faculty of Nursing and Midwifery, Ziauddin University, Karachi, Pakistan<sup>3</sup>Jinnah Sindh Medical University, Institute of Nursing and Midwifery, Karachi, Pakistan

## ARTICLE INFO

## Key Words:

COVID-19, Perception, Knowledge, Attitude, Practice, Medical Faculty

## How to Cite:

Ullah, S., Micah, S., Raja, ., & Kumar, S. . (2023). The Awareness about Knowledge, Attitudes, and Preventive Practices related to COVID-19 at a Public Sector University of Larkana: Knowledge, Attitudes, and Preventive Practices related to COVID-19. *Pakistan Journal of Health Sciences*, 4(04). <https://doi.org/10.54393/pjhs.v4i04.698>

## \*Corresponding Author:

Saif Ullah  
Benazir College of Nursing, Shaheed Mohtarma Benazir Bhutto Medical University, Larkana, Pakistan  
[saifullahsoomro86@yahoo.com](mailto:saifullahsoomro86@yahoo.com)Received Date: 12<sup>th</sup> April, 2023Acceptance Date: 28<sup>th</sup> April, 2023Published Date: 30<sup>th</sup> April, 2023

## ABSTRACT

The existence of the COVID-19 lethal virus highlights the urgent need to create a comprehensive awareness campaign for implementing infection control methods to lower the disease prevalence of this rapidly spreading infection. **Objective:** To determine the level of awareness about knowledge, attitudes, and preventive practices related to COVID-19 among faculty members at a medical university in Larkana. **Methods:** A descriptive cross-sectional study was conducted on 284 participants of any age group and both genders by using a simple random sampling technique. Data analysis was performed by using the Statistical Package for Social Sciences. Categorical data were presented in the form of frequency and percentages, while, continuous data were shown in the median and interquartile range. **Results:** The results demonstrated that 66.2% were male, and almost half, 49.3% of the participant's age group was 31-40 years. 94% of the participants had good knowledge, 67% had a good attitude, and 88% had good preventive practices, 69% believed that lack of awareness could cause difficulty in halting the spread of COVID-19. Social media (61.6%) followed by friends and family (24.3%) were the first sources to learn about the disease. **Conclusions:** Most of the respondents had good knowledge, attitude, and practice of COVID-19. Social media and other online platforms were the participants' major information sources.

## INTRODUCTION

In December 2019, several unique coronavirus pneumonia cases were reported in Wuhan and soon spread quickly throughout the world. The disease was labeled Coronavirus disease 2019 (COVID-19). Earlier in 2020, World Health Organization (WHO) named this novel virus as "Severe Acute Respiratory Syndrome Coronavirus-2" (SARS-CoV-2) on February 11 [1]. It was crucial for the clinicians to recognize the typical clinical presentation of this new disease. It exhibits symptoms like abrupt onset of fever, dry cough, myalgia, fatigue, and dyspnea [2]. Some of the patients may develop multi-organ failure including ARDS, shock, kidney injury, liver dysfunction, cardiac injury, severe

metabolic acidosis, bleeding and coagulation dysfunction [3]. WHO has labeled it a public health emergency and called for coordinated action in order to halt its rapid spread [4]. The virus is believed to be highly contagious and spreads quickly through respiratory droplets from infected individuals, or contact with contaminated objects and surfaces, which raises the frequency of new cases and fatalities [5]. Elderly and those having any other chronic health conditions were shown to be more at risk for increasing severity [6]. Data from previous studies have shown that compared to Asian lineage avian influenza (H7N9), the middle east respiratory syndrome (MERS),

severe acute respiratory syndrome (SARS), and the total case fatality rate for COVID-19 is lower and ranges from two and five percent globally [7]. Dealing with the pandemic has become a key issue and challenge due to scant knowledge about the epidemiological evidence of the disease, such as transmission dynamics, epidemic doubling time, and reproductive frequency [8]. All the health care agencies including WHO have taken specific initiatives to protect the communities and healthcare professionals during the outbreak time and asked for transparent sharing of knowledge and provided support on the ground. It was intended that highly contagious and virulent variants needed to shift from purely therapeutic to preventive practices by the public. This required educating, engaging, and motivating the people to actively participate for better preparedness in dealing with the pandemic, ultimately reducing the overall population's vulnerability. Recent studies have shown that individual behaviors can dramatically reduce COVID-19 morbidity and mortality when individuals engage in preventive behaviors, such as personal hygiene practices and maintaining social distance [8]. Furthermore, harmful behaviors, false beliefs, and misconceptions may worsen its disastrous effects. Evidence from earlier epidemics, MERS and SARS, has demonstrated that evaluation of knowledge, attitudes, and practice aids in the identification of misconceptions, restrictions of misleading information, and disinformation connected to epidemics and also aids in the development of effective methods to minimize its harmful impacts. By gaining more knowledge about the disease transmission, raising awareness of preventive practices, dispelling misconceptions and misinformation, and cultivating good attitudes toward adopting healthy hygiene measures can all lead to the successful implementation of preventive measures that may help to lessen the harmful consequence of lethal viruses [9]. Hence, this study was conducted to determine the level of awareness about knowledge, attitudes, and preventive practices related to COVID-19 among faculty members at a medical university in Larkana.

## METHODS

This cross-sectional study was carried out at Shaheed Mohtarma Benazir Bhutto Medical University (SMBBMU), Larkana, Sindh, Pakistan. The target population was faculty working in SMBBMU, Larkana. The study duration was five months from December 2021 to April 2022 after approval of Ethical Review Committee (ERC). The sample size was determined by using OpenEpi software based on the proportion formula with a 95% confidence interval by taken 50.2% [10], based on 1000 population. A simple random sampling technique was used to recruit the participants in the study. All the teaching faculty of entire

departments, of any age group and both genders, working in the SMBBMU Larkana were included in the study. While, non-teaching staff, assistants, and those not willing to take part in the study were excluded from the study. An adopted, validated and self-administered questionnaire was used for data collection, comprised of 05 sections such as Demographic, Knowledge, Perception Attitude, and Practice [10]. The cutoff scoring for knowledge was 1 to 6 as "Poor Knowledge", 7 to 10 as "Moderate Knowledge" while 11 to 14 as "Good Knowledge"; for attitude, the benchmark was 1 to 4 "Not Good" whereas 5 to 7 as "Good" attitude; while for practice, the cutoff score of 1 to 11 as "Not Good" and 12 to 18 were considered as "Good" practice. Data analysis was performed by using the SPSS version 23.0. Normality of continuous variables was evaluated by using histogram and Shapiro Wilk test. Median and interquartile range (IQR) were calculated and displayed for non-normal distributed variables. Data were also analyzed in frequency and percentages for all qualitative variables.

## RESULTS

Table 1 represents the awareness and source of information on COVID-19 among study participants. When faculty members were asked about the outbreak of COVID-19, 260 (91.5%) responded positively that they have ever heard about the COVID-19 outbreak. Whereas 24 (8.5%) were unaware of it. Participants were asked about where they have heard about COVID-19 for the first time. 175 (61.6%) responded that they had come to know from social media, Facebook, Twitter, Instagram, newspapers, etc. followed by friends, relatives, family, or neighbors (24.3%), while 35 (12.3%) were known through the television and radio services.

**Table 1:** Awareness and Source of Information on COVID-19 among Study Participants

Questions	Frequency (%)
<b>Have you heard about COVID-19?</b>	
No	24 (8.5)
Yes	260 (91.5)
<b>How did you first become aware about COVID19?</b>	
Family/ Relative/ Friends/ Neighbours	69 (24.3)
Social Media/ Face book/ Twitter/ Instagram/ Newspaper etc.	175 (61.6)
Television/ Radios	35 (12.3)
Others	5 (1.8)

Table 2 reveals the participants' responses to the knowledge statements against COVID-19 with their correct and incorrect frequencies and proportions. Majority of the respondents replied correctly in all statements. A higher proportion of incorrect responses were noted in statement-10 (39.8%) followed by statement-2 (25.4%) and statement-1 (22.2%).

**Table 2:** The Participants' responses to the Knowledge statements towards COVID-19

Statement(s)	Correct n (%)	Incorrect n (%)
Is COVID-19 viral disease?	221 (77.8)	63 (22.2)
Is COVID-19 an illness that is carried through water?	212 (74.6)	72 (25.4)
COVID-19 can be spread by direct contact with an infected person.	260 (91.5)	24 (8.5)
Do you know incubation period of COVID19?	262 (92.3)	22 (7.7)
COVID-19 symptoms include shortness of breath, coughing, and fever.	276 (97.2)	08 (2.8)
Other symptoms of COVID-19 may include diarrhea, sore throats, and muscle ache.	275 (96.8)	09 (3.2)
Individuals who have underlying chronic conditions are more likely to get sick.	278 (97.9)	06 (2.1)
Does washing your hands with soap and water assist to stop the spread of COVID-19?	278 (97.9)	06 (2.1)
A good COVID-19 preventative method is to use a face mask.	275 (96.8)	09 (3.2)
Is there now a treatment for COVID-19?	171 (60.2)	113 (39.8)
Is there a COVID-19 vaccination that is now effective?	267 (94.0)	17 (6.0)
COVID-19 is a potentially fatal illness or condition.	272 (95.8)	12 (4.2)
1st case of COVID-19 was recorded at China	276 (97.2)	08 (2.8)
What do you think except Pakistan, rest of countries also suffered from COVID19	268 (94.4)	16 (5.6)

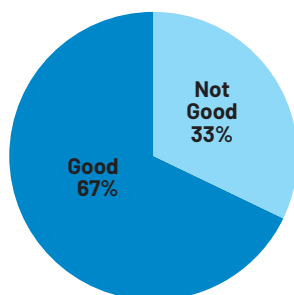
Table 3 demonstrated the knowledge score ranking of the study participants towards COVID-19. The median (IQR) knowledge of the respondents was 13 (2). 94% (n=267) had good knowledge of COVID-19, on the other hand, only 1.4% (n=4) had poor knowledge about this outbreak.

**Table 3:** Knowledge level of the Participants towards COVID-19

Knowledge level	Median (IQR)/ Frequency (%)
Knowledge Score	13 (2)
Poor Knowledge	4 (1.4)
Moderate Knowledge	13 (4.6)

Figure 1 exhibited the attitude of the subjects towards COVID-19. Two-thirds (67%) of the respondents had a good attitude toward COVID-19, whereas 33% had not a good attitude regarding this viral disease. The median (IQR) score was 5(1).

**Attitude towards COVID-19**

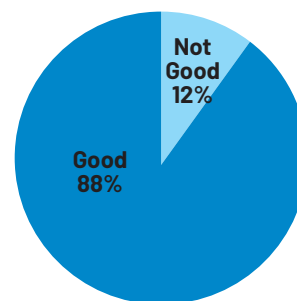


**Figure 1:** Attitude toward COVID-19

Figure 2 displayed the level of preventive practices of the respondents against COVID-19. Most of the study subjects

(88%) had good preventive practices against the new viral infection, whereas 12% did not have good practices for its prevention. The median (IQR) practice score was 15 (2.25).

**Practice Level**



**Figure 2:** Level of Practice of the Participants against the COVID-19

Table 4 displayed the assessment of the attitude of the study sample about the COVID-19 outbreaks. 14.4% of the subjects thought that COVID-19 is not a serious disease. Two-thirds (68%) did not agree that it can be treated at home without concerning a doctor. The majority of the respondents agreed use of a face mask (93.7%) and following sneezing etiquette (88.7%) are important preventive strategies. As for as availability of a vaccine for this novel virus, 93.7% replied positively. 205 (72.2%) believed that health education has nothing to do with the prevention of disease. Moreover, 229 (80.6%) thought that dealing with a COVID-19 positive case did not put you at risk of infection.

**Table 4:** Assessment of the Attitude towards COVID-19

Statement(s)	Yes f (%)	No f (%)
COVID-19 is NOT a serious illness / disease	41(14.4)	243(85.6)
Is it possible to treat it at home without consulting a doctor?	91(32.0)	193(68.0)
Is corona vaccine available?	266(93.7)	18(6.3)
Is it crucial to wear a face mask as a preventative measure?	266(93.7)	18(6.3)
Is it necessary to follow a proper etiquette when sneezing or coughing?	252(88.7)	32(11.3)
Disease prevention has nothing to do with health education.	205(72.2)	79(27.8)
The risk of contracting COVID-19 does not increase when handling a patient of COVID-19.	229(80.6)	55(19.4)

Table 5 exhibits the Participants' responses to the Practice statements against COVID-19. In response to "When I sneeze or cough, I use a tissue to cover my mouth and nose" 113 (39.8%) replied, "Sometimes" followed by "Always" 109 (38.4%). A few 5 (1.8%) never covered their nose or mouth at the time of sneezing or coughing. More than half 160 (56.3%) always discard used tissues in the trash bin accompanied by sometimes 75 (25.4%). Only 3 (1.1%) replied never to throw the used tissue in the trash bin. When asked if tissue is in not available, he/ she coughs or sneezes into his/ her upper sleeves. 55.6% answered Always, followed by

sometimes (27.5%), rarely (10.9%), and Never (6.0%). A similar pattern of practice was observed in the practice of avoiding touching face with hands, use of soap and water to wash hands after coughing, sneezing, or touching contaminated objects, and use of face masks in crowds and when visiting healthcare settings.

**Table 5:** The Participants' responses to the Practice statements against COVID-19

Statement(s)	Never f (%)	Rarely f (%)	Sometimes f (%)	Always f (%)
When I sneeze or cough, I use a tissue to cover my mouth and nose.	5 (1.8)	57 (20.1)	113 (39.8)	109 (38.4)
I throw the used tissue in the trash bin	3 (1.1)	46 (16.2)	75 (26.4)	160 (56.3)
If there isn't a tissue around, I sneeze or cough into my upper sleeve	17 (6.0)	31 (10.9)	78 (27.5)	158 (55.6)
I swiftly wash my hands with soap and water after coughing or sneezing or touching contaminated objects such as a tissue	9 (3.2)	16 (5.6)	72 (25.4)	187 (65.8)
I try to avoid using contaminated hands to touching my face including mouth, nose or eyes.	4 (1.4)	29 (10.2)	71 (25.0)	180 (63.4)
I use a face mask in crowds and when I visit healthcare settings now a days	6 (2.1)	19 (6.7)	55 (19.4)	204 (71.8)

## DISCUSSION

COVID-19 is a dynamic and newly emerged viral pandemic, which completely changed the health sector worldwide. Due to the unavailability of prior knowledge, it was a difficult time to handle. Healthcare professionals have played their role in dealing with and helping at every stage and personified a culture of care and empathy when the country's health system is under extensive burden from COVID-19. In the current study, 91.5% have heard about COVID-19. Social media, Facebook, Twitter, Instagram, Newspaper, etc. have found the common source of getting the first news about the outbreak (61.6%) followed by friends, relatives, family or neighbors (24.3%). Similarly, a research study revealed that the public's understanding of the pandemic was significantly influenced by the media, particularly social media platforms. One of the main things that caught the public's interest was reporting on the fatalities and mortality rates from various parts of the world [11]. The median (IQR) score was 13 (2) in this study. Most of the participants had good knowledge, while 1.4% had poor knowledge of the disease. Though the figures are very low, however, at this stage for participants, it is a matter of concern as faculty members had a greater responsibility on their shoulders to bear a double burden in training and supervision of professionals and emphasis their role in the preventive and curative sector. Attitudes have played a central role in the explanation of behaviour

and actions. The majority (67%) of the study subjects had a good attitude towards this novel viral disease. Most of the respondents believed that it is a serious disease (85.6%). This proportion was found in line with the previously conducted study in Punjab, Pakistan [12] with other studies conducted in the U.S. and Canada [13]. However, slightly higher than the study conducted in Qatar [14]. On the other side, a smaller amount (14.4%) of participants did not think the disease was serious, which offers additional difficulty for policymakers to restrict the spread and increase awareness about the disease. In this study, a large number of respondents considered face masks as a preventive strategy (93.7%) and follow coughing or sneezing etiquettes (88.7%). Surprisingly, about three-fourths of the study participants agreed that managing a COVID-19 patient does not put you at danger of contracting the infection and that health education has nothing to do with disease prevention. While, it is documentary evidence that there is a need for specialized health education for raising awareness, changing attitudes, and promoting the use of suggested precautions to stop the spread of COVID-19 [15]. Knowledge and attitude of an individual have a direct relationship with his behaviour and became more favorable towards preventive practices when became more knowledgeable of the disease [16]. In the present study, 88% of the participants had good preventive practices against the coronavirus infection. A positive response to the statements regarding practice against COVID-19 was observed among the faculty members. A large number of respondents were always practicing preventive measures to break the chain of infection and prevent its spread. The findings are different from a previously conducted study in the Pakistani context [12]. Similar to our study results, participants in previous studies showed a variety of behaviour, including wearing masks, maintaining social distance, practicing personal hygiene, and washing their hands to prevent the spread of the disease and to protect themselves [13, 14]. Those who are not practicing preventive actions, endangering their lives as well as of others. Fears have been spread around the world due to COVID-19's deadly and unpredictable character. The findings of this study reported fear of COVID-19 in 70.4% of participants. The main cause of such fear is considering this novel disease highly contagious (35.6%) and had no cure (20.4%). Moreover, only two participants had afraid due to the unavailability of the preventive method. This could be a campaign run by the government and WHO on electronic and social media about the preventive measures updated from time to time. Most of the faculty members viewed a lack of awareness about the disease as the main hurdle in controlling its spread. It is thought about social media that it overestimates everything and creates a panic

situation [17]. The participants from the current study agreed with this statement and were concurrent with earlier studies [12]. According to a prior study, the fear and panic brought on by the distribution of the COVID-19 pandemic's information are disseminated on social media more swiftly than the virus itself [18]. The previous study reveals that in the crucial time of the COVID-19 pandemic when social life and interaction almost ceased, social media was utilized to spread opinions on distant learning, health care, and other topics. this platform can be a useful tool for governments and professionals to stop the spread of this disease and even other problems of the same kind in the future [19]. More than half of the study subjects believed that COVID -19 could not be brought under control in 2021 and did not believe that no food can effectively prevent or cure this disease and agrees with the report from WHO, however, a healthy diet can provide a robust immune system that can combat any viral attack and reducing chances of other comorbid [20]. The use of balanced diet consisted unprocessed food such as fruits, vegetables, whole grains, and nuts is of vital importance containing all essential nutrients [21]. According to the report, individuals are becoming increasingly interested in healthy eating practices and diets that include supplemental ingredients like vitamins and medicinal plants [22]. Since COVID-19 has latent symptoms, it is difficult to determine who may be infected. As the virus is very contagious, it can be shed off during breathing, coughing, sneezing, laughing etc. Those who are suspected to have the infection should be kept quarantined until not confirmed by testing. It works well to keep the public safe. To halt the spread of infectious diseases, governments impose quarantines. Individuals or groups who have been exposed to the disease but show no symptoms are placed in quarantines, so they don't unintentionally infect anyone [23]. The study findings are in agreement with these reports as the majority of the study participants (82.7%) agreed with quarantining suspected individuals. 80.3% of the study subjects thought that thermal screening at sea or air ports can stop the spread of COVID-19 while nearly half believed that it is safe to go a country with reported COVID-19. Table 4 displayed the assessment of the attitude of the study sample about the COVID - 19 outbreaks. 14.4 % of the subjects thought that COVID - 19 is not a serious disease. Two-thirds (68%) did not agree that it can be treated at home without concerning a doctor. The majority of the respondents agreed use of a face mask (93.7%) and following sneezing etiquette (88.7%) are important preventive strategies. As for as availability of a vaccine for this novel virus, 93.7% replied positively. 205 (72.2%) believed that health education has nothing to do with the prevention of disease. Moreover, 229 (80.6%)

thought that dealing with a COVID - 19 positive case did not put you at risk of infection.

## CONCLUSIONS

The results of the current study showed that most of the respondents had good knowledge of COVID-19, had a positive attitude, and used preventive practices adequately. Lack of awareness was found to be a major barrier to controlling the spread of disease. Social media and other online platforms were the major source of information for the participants.

## Conflicts of Interest

The authors declare no conflict of interest.

## Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

## REFERENCES

- [1] World Health Organization. Naming the coronavirus disease (COVID-19) and the virus that causes it. 2020. [Last cited: 7th Jan 2023]. Available at: [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-\(covid-2019\)-and-the-virus-that-causes-it](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it).
- [2] Alimohamadi Y, Sepandi M, Taghdir M, Hosamirudsari H. Determine the most common clinical symptoms in COVID-19 patients: a systematic review and meta-analysis. *Journal of Preventive Medicine and Hygiene*. 2020 Sep; 61(3): E304. doi: 10.15167/2421-4248/jpmh2020.61.3.1530.
- [3] Yang X, Yu Y, Xu J, Shu H, Liu H, Wu Y, et al. Clinical course and outcomes of critically ill patients with SARS-CoV-2 pneumonia in Wuhan, China: a single-centered, retrospective, observational study. *The Lancet Respiratory Medicine*. 2020 May; 8(5): 475-81. doi: 10.1016/S2213-2600(20)30079-5.
- [4] World Health Organization. COVID-19 Public Health Emergency of International Concern (PHEIC) Global research and innovation forum. 2020. [Last cited: 7th Jan 2023]. Available at: [https://www.who.int/publications/m/item/covid-19-public-health-emergency-of-international-concern-\(pheic\)-global-research-and-innovation-forum](https://www.who.int/publications/m/item/covid-19-public-health-emergency-of-international-concern-(pheic)-global-research-and-innovation-forum).
- [5] Buitrago-Garcia D, Egli-Gany D, Counotte MJ, Hossmann S, Imeri H, Ipekci AM, et al. Occurrence and transmission potential of asymptomatic and presymptomatic SARS-CoV-2 infections: A living systematic review and meta-analysis. *PLoS Medicine*. 2020 Sep; 17(9): e1003346. doi: 10.1371/journal.pmed.1003987.

- [6] Di Martino D, Chiaffarino F, Patanè L, Prefumo F, Vergani P, Ornaghi S, et al. Assessing risk factors for severe forms of COVID-19 in a pregnant population: A clinical series from Lombardy, Italy. *International Journal of Gynaecology and Obstetrics*. 2021 Feb; 152(2): 275-7. doi: 10.1002/ijgo.13435.
- [7] Team E. The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19)—China, 2020. *China CDC Weekly*. 2020 Feb; 2(8): 113. doi: 10.46234/ccdcw2020.032.
- [8] Lee M, Kang BA, You M. Knowledge, attitudes, and practices (KAP) toward COVID-19: a cross-sectional study in South Korea. *BMC Public Health*. 2021 Dec; 21: 1-10. doi: 10.1186/s12889-021-10285-y.
- [9] Alkot M, Albouq MA, Shakuri MA, Subahi MS. Knowledge, attitude, and practice toward MERS-CoV among primary health-care workers in Makkah Al-Mukarramah: an intervention study. *International Journal of Medical Science and Public Health*. 2016 May; 5(5): 952-60. doi: 10.5455/ijmsph.2016.10022016362.
- [10] 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 & Therapy Perspectives*. 2020 Jul; 36: 319-25. doi: 10.1007/s40267-020-00737-7.
- [11] Olum R, Chekwech G, Wekha G, Nassozi DR, Bongomin F. Coronavirus disease-2019: knowledge, attitude, and practices of health care workers at Makerere University Teaching Hospitals, Uganda. *Frontiers in Public Health*. 2020 Apr; 8: 181. doi: 10.3389/fpubh.2020.00181.
- [12] Salman M, Mustafa Z, Asif N, Zaidi HA, Shehzadi N, Khan TM, et al. Knowledge, attitude and preventive practices related to COVID-19 among health professionals of Punjab province of Pakistan. *The Journal of Infection in Developing Countries*. 2020 Jul; 14(07): 707-12. doi: 10.3855/jidc.12878.
- [13] Leigh JP, Fiest K, Brundin-Mather R, Plotnikoff K, Soo A, Sypes EE, et al. A national cross-sectional survey of public perceptions of the COVID-19 pandemic: Self-reported beliefs, knowledge, and behaviors. *PLoS One*. 2020 Oct; 15(10): e0241259. doi: 10.1371/journal.pone.0241259.
- [14] Abdelrahman M. Personality traits, risk perception, and protective behaviors of Arab residents of Qatar during the COVID-19 pandemic. *International Journal of Mental Health and Addiction*. 2022 Feb; 20(1): 237-48. doi: 10.1007/s11469-020-00352-7.
- [15] Wang H, Liao R, Chen X, Yu J, Zhu T, Liao Q, et al. How to improve the COVID-19 health education strategy in impoverished regions: a pilot study. *Infectious Diseases of Poverty*. 2022 Mar; 11(1): 38. doi: 10.1186/s40249-022-00963-3.
- [16] Dayal B and Singh N. Association between knowledge, attitude and practice on cardiovascular disease among early adults of Lucknow city. *Al Ameen Journal of Medical Sciences*. 2018; 11(1): 59-65.
- [17] Lelisho ME, Pandey D, Alemu BD, Pandey BK, Tareke SA. The negative impact of social media during COVID-19 pandemic. *Trends in Psychology*. 2023 Mar; 31(1): 123-42. doi: 10.1007/s43076-022-00192-5.
- [18] Ahmad AR and Murad HR. The impact of social media on panic during the COVID-19 pandemic in Iraqi Kurdistan: online questionnaire study. *Journal of Medical Internet Research*. 2020 May; 22(5): e19556. doi: 10.2196/19556.
- [19] Ong EK, Lim CH, Wong AJ. The role of social media during the COVID-19 pandemic. *Annals of the Academy of Medicine, Singapore*. 2020 Jun; 49(6): 408-10. doi: 10.47102/Annals-acadmedsg.202080.
- [20] World Health Organization. #HealthyAtHome: Healthy Diet. 2020. [Last cited: 7<sup>th</sup> Jan 2023]. Available at: <https://www.who.int/campaigns/connecting-the-world-to-combat-coronavirus/healthyathome/healthyathome---healthy-diet>.
- [21] World Health Organization. Nutrition advice for adults during the COVID-19 outbreak. 2020. [Last cited: 7<sup>th</sup> Jan 2023]. Available at: <http://www.emro.who.int/nutrition/news/nutrition-advice-for-adults-during-the-covid-19-outbreak.html>
- [22] Abazid H, Basheti IA, Al-Jomaa EE, Abazid A, Kloub WM. Public knowledge, beliefs, psychological responses, and behavioural changes during the outbreak of COVID-19 in the Middle East. *Pharmacy Practice (Granada)*. 2021 Jun; 19(2): 1-8. doi: 10.18549/pharmpract.2021.2.2306.
- [23] Centers for Disease Control and Prevention. What We Know About Quarantine and Isolation. 2022. [Last cited: 7<sup>th</sup> Jan 2023]. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/quarantine-isolation-background.html>.