

COVID-19 Awareness among Healthcare Workers - A Questionnaire Based Survey

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ABSTRACT

INTRODUCTION : The aim of the present study is to determine the knowledge of healthcare workers on COVID-19

MATERIALS AND METHODS: Self designed questionnaire was prepared to collect information pertaining to the study. The questionnaire consists of different types of basic multiple choice questions which were used to determine awareness. It was distributed to healthcare workers of different practicing age groups.

RESULTS: Healthcare professionals and students showed adequate, satisfactory awareness of COVID-19 in the healthcare setting with an overall percentage of 76.5% correct answers.

CONCLUSION: Although theoretically participants' awareness was satisfactory, practically this study shows that periodic educational interventions and infection control training practices for COVID-19 among all healthcare professionals should be conducted.

Key Words: Healthcare workers; students; awareness; knowledge;

INTRODUCTION

The entire world's attention was caught by an ongoing outbreak of infection by Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-CoV-2), known as COVID-19. On Dec 31, 2019 the first infected case of coronavirus was reported in Wuhan, China, in which the infections spread across China and to other parts of the world within a few weeks [(1)].

The novel coronavirus outbreak was declared a public health emergency of international concern, by the World Health Organization (WHO) on January 30, 2020 [(2), (3)]. This has been the 6th declaration of its kind in WHO history. Alarmingly, during the first week of March 2020, surprising numbers of several new cases were reported globally and the COVID-19 outbreak situation was declared as a "pandemic" on March 11, by the WHO [(4)]. This viral outbreak has spread to more than 200 countries around the world, territories or areas beyond China [(2)]. This SARS-CoV-2 is a novel strain of the coronavirus family and it has not been previously identified in humans [(5)]. The disease has a potential public health threat which is very high and the disease spreads through person-to-person contact. It has been estimated that COVID-19 could cost the globe more than ten trillion dollars, although there is considerable uncertainty existing concerning the transmission of the virus [(6)].

According to the World Health Organization (WHO), this pandemic has said to have affected more than 9 million people and caused more than 0.46 million confirmed deaths all over the world [(7)]. As of June 3rd, 2020, the virus has affected over 2,30,000 healthcare workers (HCWs), more than 600 nurses died globally[(8)]. The HCWs help to control the outbreak but it has become a critical issue due to the fact they are at a risk of infection in the epidemic chain. Hence, all possible actions must be carried out in order to control the spread of infection to HCWs. This could be done first by identifying the risk factors that cause the infection and then taking required actions to reduce these risks.

Overcrowding, absence of isolation room facilities and environmental contamination are methods in which the transmission is associated with. Moreover, this could also be due to the fact that some HCWs have inadequate awareness when it comes to infection prevention

practices [(9)]. Awareness and knowledge of a disease may influence HCWs' practices and attitudes, while incorrect practices and attitudes have a direct increase in the risk of infection [(10)]. Understanding HCWs' awareness and possible risk factors helps to predict the outcomes of planned behaviour. Thus, this study aimed to determine the knowledge of healthcare workers on COVID-19. If the HCWs awareness regarding the virus can be determined in early stages, then this information can guide them toward relevant training and policies during the outbreak and help HCWs in prioritizing protection and avoiding occupational exposure. Our institution is passionate about high quality evidence based research and has excelled in various fields ((11–21)

MATERIALS AND METHODS

Self-designed questionnaire with 10 questions was prepared to collect the information pertaining to the study. The questionnaire consists of different types of basic multiple choice questions which were used to determine awareness. It was distributed to healthcare workers of different practicing age groups. A total of 102 questionnaires were distributed. The questionnaire consisted of the following questions.

1. The virus causing the COVID-19 infection is called:
 - A. SARS
 - B. 2(SARS-CoV-2)
 - C. 2019-nCoV
 - D. Both B&C
2. Is this COVID-19 disease contagious?
 - A. Yes
 - B. No
3. What is the incubation period of COVID-19?
 - A. 2-14 days
 - B. 10-14 days
 - C. 5-14 days
4. The main mode of transmission of virus from person to person is via?
 - A. Respiratory droplets
 - B. Spread from contact with contaminated surfaces or objects

5. Which of the following is considered as “close contact”?
 - A. Being within approximately 10 feet (3 meters) of a patient with COVID-19 for a prolonged period of time
 - B. Being within approximately 6 feet (2 meters) of a patient with COVID-19 for a prolonged period of time
 - C. Having direct contact with infectious secretions (sputum, serum, blood) from a patient with COVID-19
 - D. Both B & C

6. A recommended infection prevention and control measure is to perform aerosol-generating procedures, including collection of diagnostic respiratory specimens, in an AIIR (Airborne Infection Isolation Room).
 - A. True
 - B. False

7. Preferred method of hand hygiene for visibly soiled hands is:
 - A. Hand rub with soap and water for at least 10 seconds
 - B. Hand rub with soap and water for at least 20 seconds
 - C. Use of alcohol based sanitizer with at least 60 % alcohol

8. Use of face masks is not essential in which of the following groups?
 - A. People who are well, to protect themselves from COVID-19 infection
 - B. Being in close contact of a person suspected of or known to have COVID-19 infection
 - C. Healthcare professionals

9. Clinical management includes prompt implementation of recommended infection prevention and control measures and supportive management of complications. No specific treatment for COVID-19 is currently available.
 - A. True
 - B. False

10. What personal protective equipment should be worn by individuals transporting patients who are confirmed with or under investigation for COVID-19 within a healthcare facility?
- A. Gloves
 - B. Gown
 - C. Eye protection
 - D. Respirator – N95 mask
 - E. All of the above

RESULTS

The following results were obtained from the study. When questioned about the virus causing the COVID-19 infection, 5.2% answered (A) SARS, 22.4% answered (B) 2(SARS-CoV-2), 22.4% answered (C) 2019-nCoV while 50% answered (D) Both B&C [Figure 1]. When questioned is this COVID-19 disease contagious, 98.3% said Yes and 1.7% said No [Figure 2]. When questioned about the incubation period of COVID-19, 44.8% answered 2-14 days, 41.4% answered 10-14 days while 13.8% answered 5-14 days [Figure 3]. When questioned about the main mode of transmission of virus from person to person, 77.6% answered respiratory droplets and 22.4% answered spread from contact with contaminated surfaces or objects [Figure 4]. When questioned which of the following is considered as “close contact”, 1.7% answered(A) Being within approximately 10 feet (3 meters) of a patient with COVID-19 for a prolonged period of time, 12.1% answered (B) Being within approximately 6 feet (2 meters) of a patient with COVID-19 for a prolonged period of time, 22.4% (C) Having direct contact with infectious secretions (sputum, serum, blood) from a patient with COVID-19 , while 63.8% answered (D) Both B & C [Figure 5]. “A recommended infection prevention and control measure is to perform aerosol-generating procedures, including collection of diagnostic respiratory specimens, in an AIIR (Airborne Infection Isolation Room)”, 82.8% answered this statement is true, while 17.2% answered this statement is false [Figure 6]. When questioned about the preferred method of hand hygiene for visibly soiled hands, 10.3% answered hand rub with soap and water for at least 10 seconds, 63.8% answered hand rub with soap and water for at least 20 seconds, 25.9% answered use of alcohol based sanitizer with at least 60 % alcohol [Figure 7]. When questioned use of face masks is not essential in which of the following groups, 93.1% answered people who are well, to protect themselves from COVID-19 infection, 1.7% answered being in close contact of a person suspected of a or known to have COVID-19 infection, 5.2% answered healthcare professionals [Figure 8]. “Clinical management includes prompt implementation of recommended infection prevention and control measures and supportive management of complications. No specific treatment for COVID-19 is currently available”, 98.3% answered True for this statement and 1.7% answered False for this statement. When questioned what personal protective equipment should be worn by individuals transporting patients who are confirmed with or under

investigation for COVID-19 within a healthcare facility, 3.4% answered Eye protection, 1.8% answered Respirator – N95 mask, while 94.8% answered All of the above.

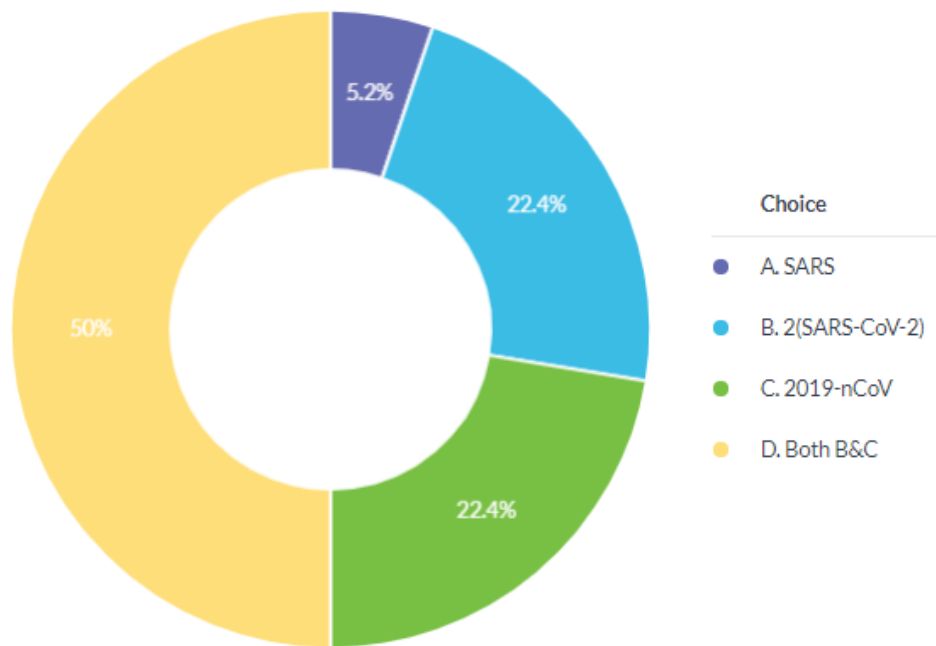


Figure 1 This pie chart shows the percentage of each participant for the question-virus causing the COVID-19 infection? 5.2% answered (A)SARS, 22.4% answered (B)2(SARS-CoV-2), 22.4% answered (C)2019-nCoV while 50% answered (D)Both B&C

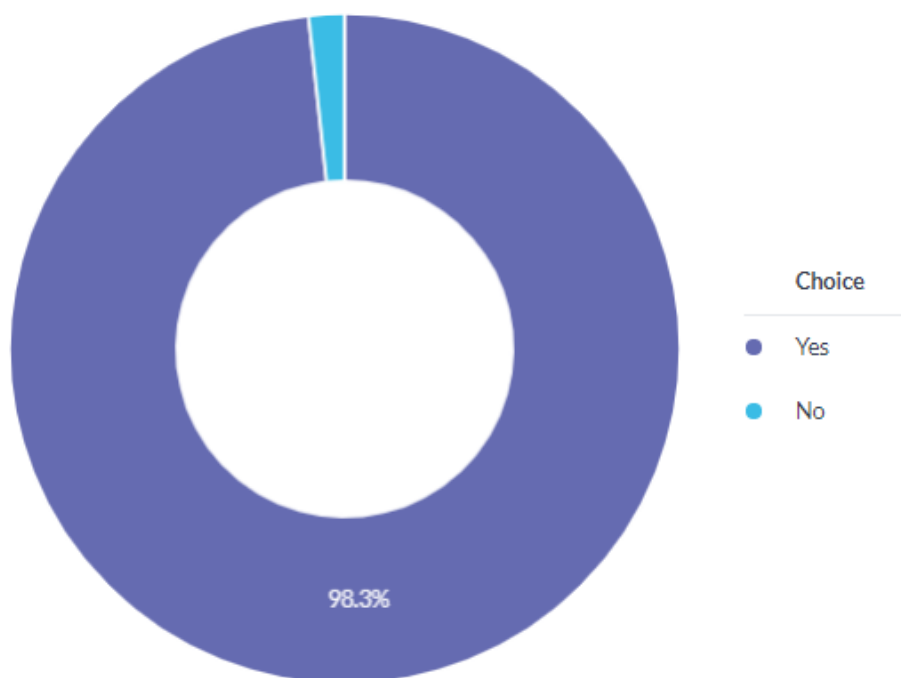


Figure 2 This pie chart shows the percentage of each participant for the question-is this COVID-19 disease contagious? 98.3% said Yes and 1.7% said No.

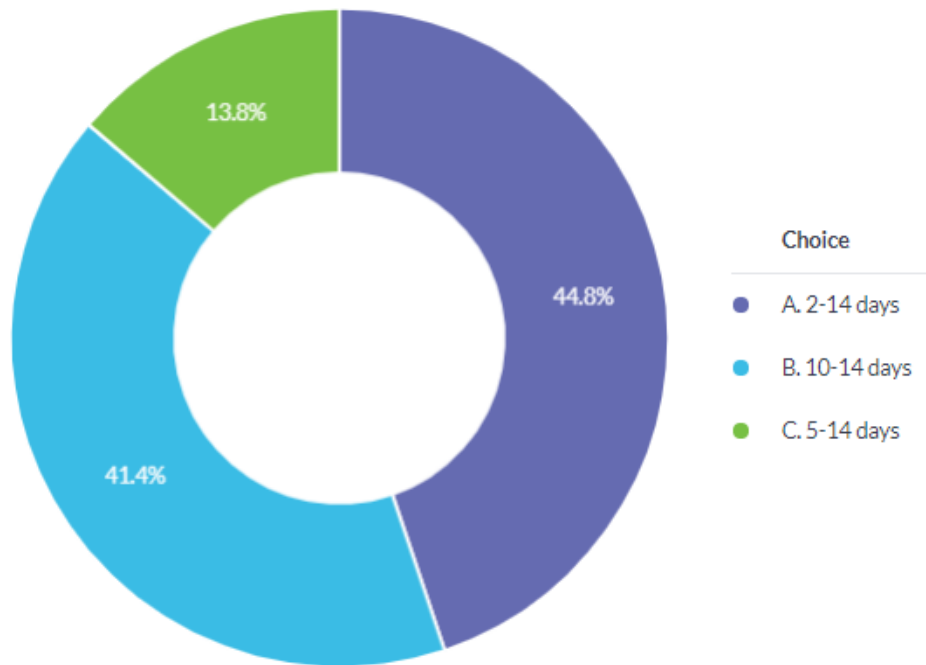


Figure 3 This pie chart shows the percentage of each participant for the question-incubation period of COVID-19? 44.8% answered 2-14 days, 41.4% answered 10-14 days while 13.8% answered 5-14 days.

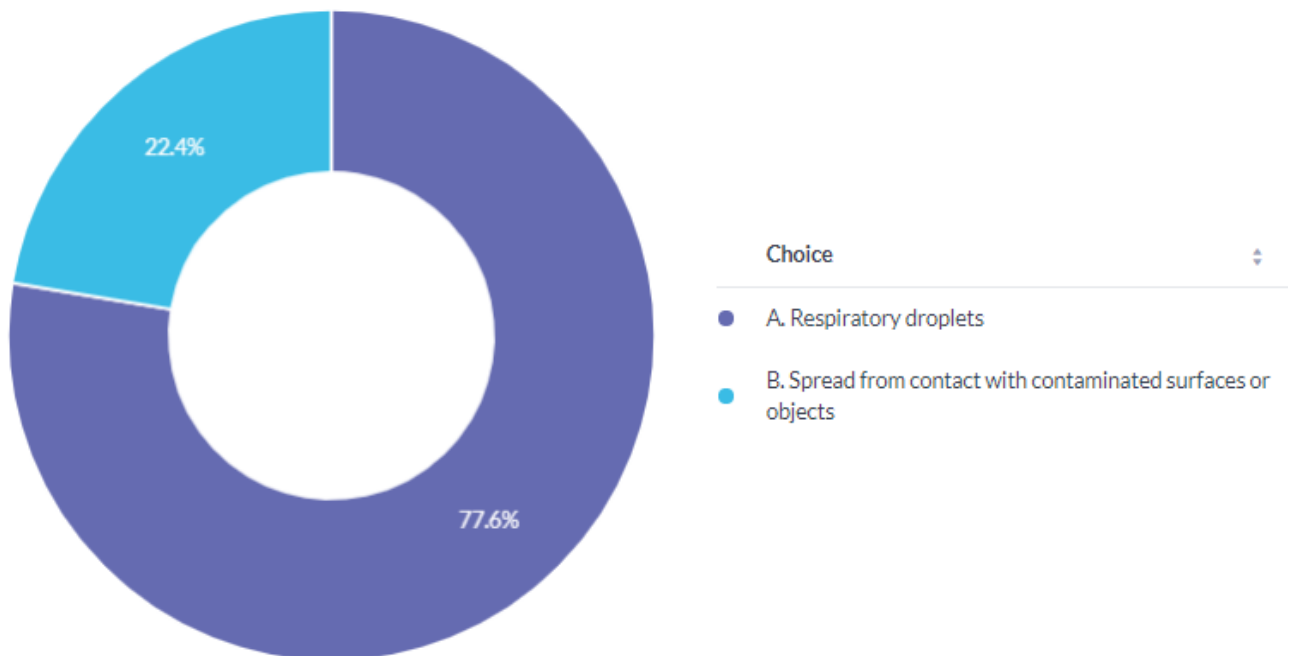


Figure 4 This pie chart shows the percentage of each participant for the question-main mode of transmission of virus from person to person is? 77.6% answered respiratory droplets and 22.4% answered spread from contact with contaminated surfaces or objects.

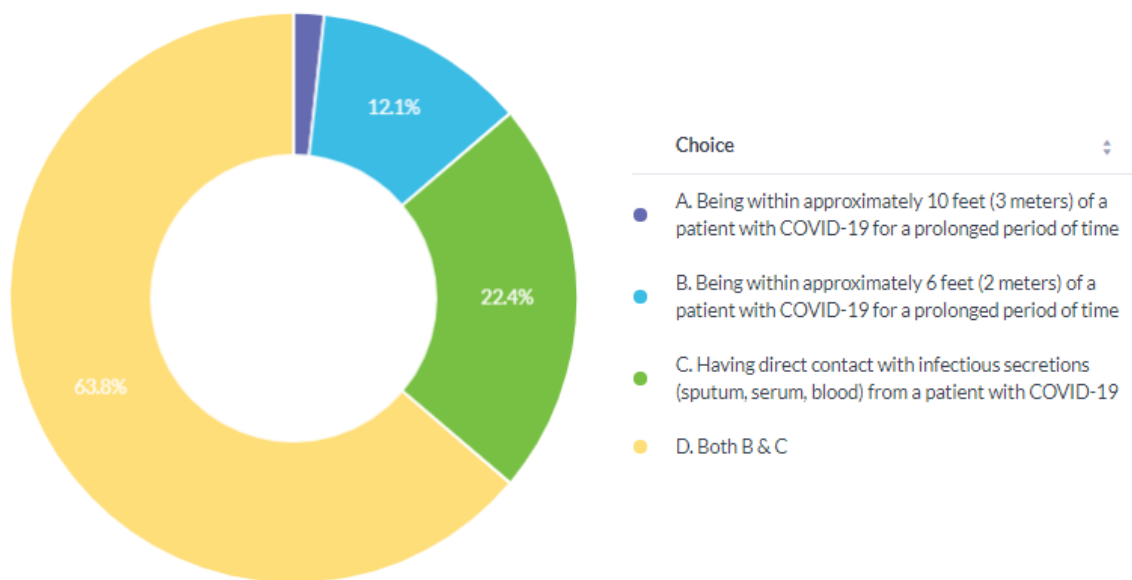


Figure 5 This pie chart shows the percentage of each participant for the question-which of the following is considered as “close contact”, 1.7% answered(A) Being within approximately 10 feet (3 meters) of a patient with COVID-19 for a prolonged period of time, 12.1% answered (B) Being within approximately 6 feet (2 meters) of a patient with COVID-19 for a prolonged period of time, 22.4% (C) Having direct contact with infectious secretions (sputum, serum, blood) from a patient with COVID-19 , while 63.8% answered (D) Both B & C

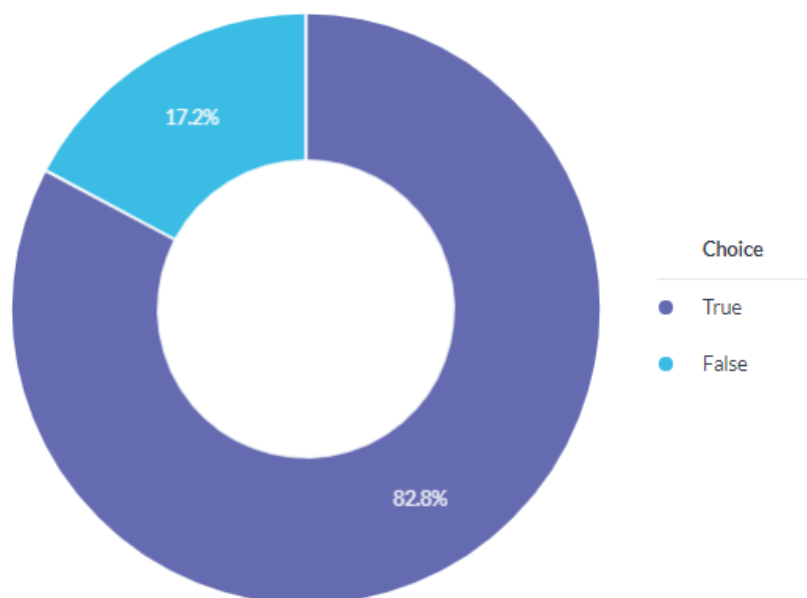


Figure 6 This pie chart shows the percentage of each participant for the statement “A recommended infection prevention and control measure is to perform aerosol-generating procedures, including collection of diagnostic respiratory specimens, in an AIIR (Airborne Infection Isolation Room)”, 82.8% answered this statement is true, while 17.2% answered this statement is false.

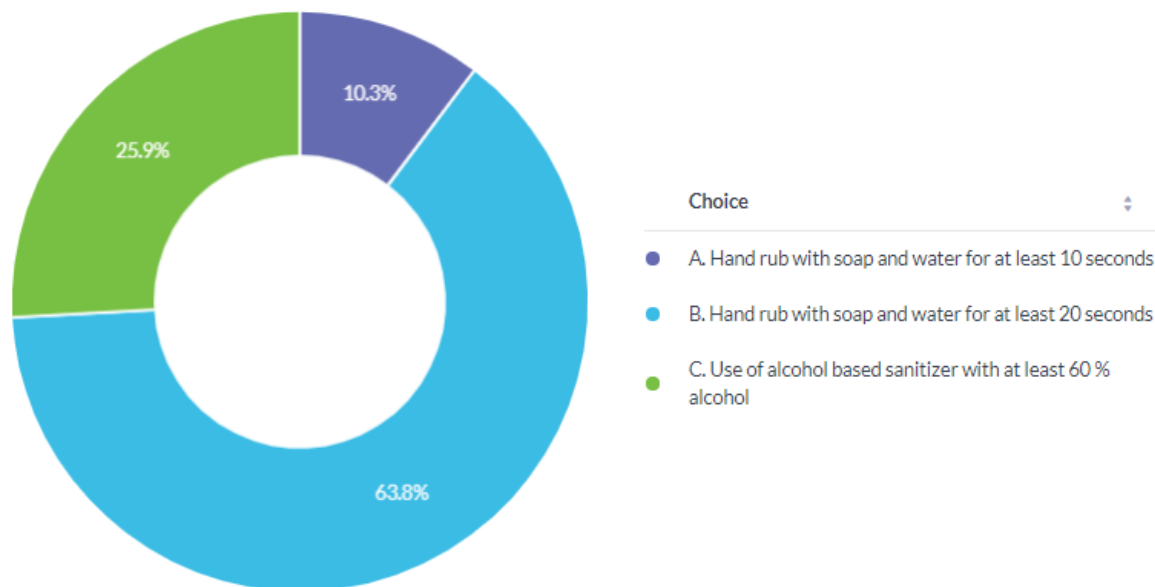


Figure 7 This pie chart shows the percentage of each participant for the question-preferred method of hand hygiene for visibly soiled hands? 10.3% answered hand rub with soap and water for at least 10 seconds, 63.8% answered hand rub with soap and water for at least 20 seconds, 25.9% answered use of alcohol based sanitizer with at least 60 % alcohol

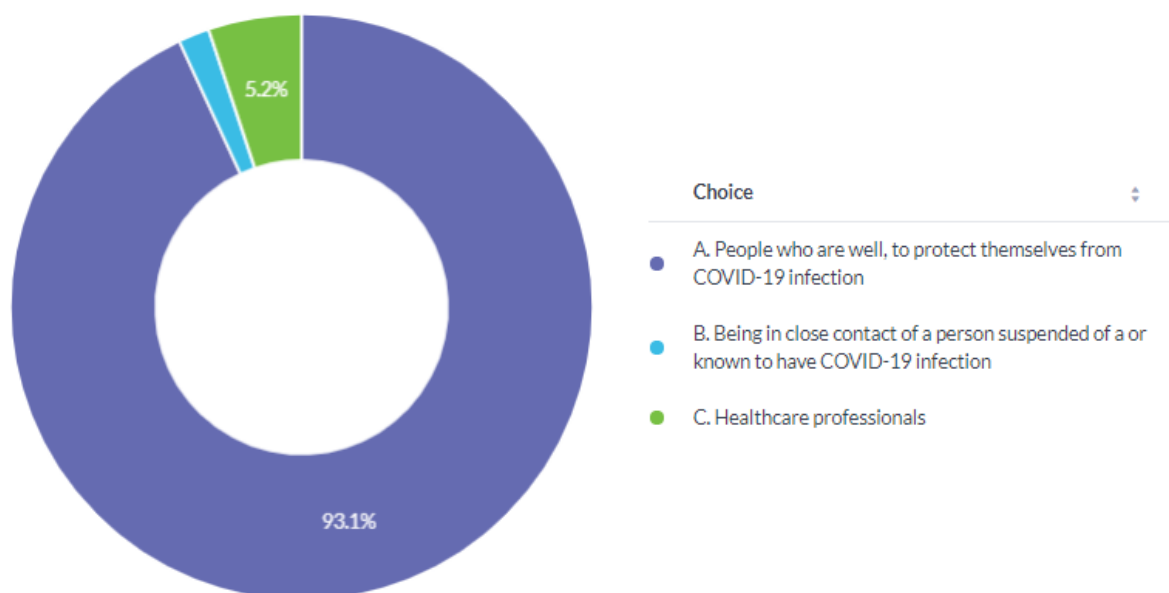


Figure 8 This pie chart shows the percentage of each participant for the question-use of face masks is not essential in which of the following groups, 93.1% answered people who are well, to protect themselves from COVID-19 infection, 1.7% answered being in close contact of a person suspended of a or known to have COVID-19 infection, 5.2% answered healthcare professionals.

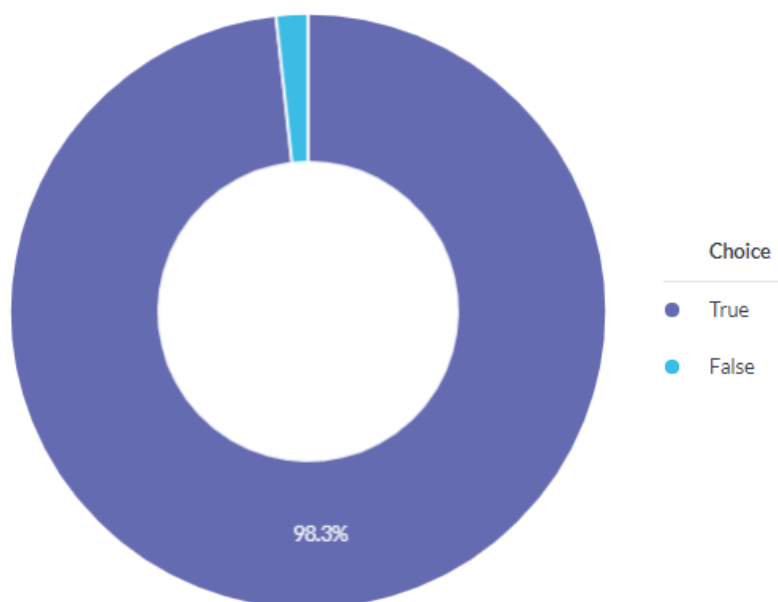


Figure 9 This pie chart shows the percentage of each participant for the statement “Clinical management includes prompt implementation of recommended infection prevention and control measures and supportive management of complications. No specific treatment for COVID-19 is currently available”. 98.3% answered True for this statement and 1.7% answered False for this statement.

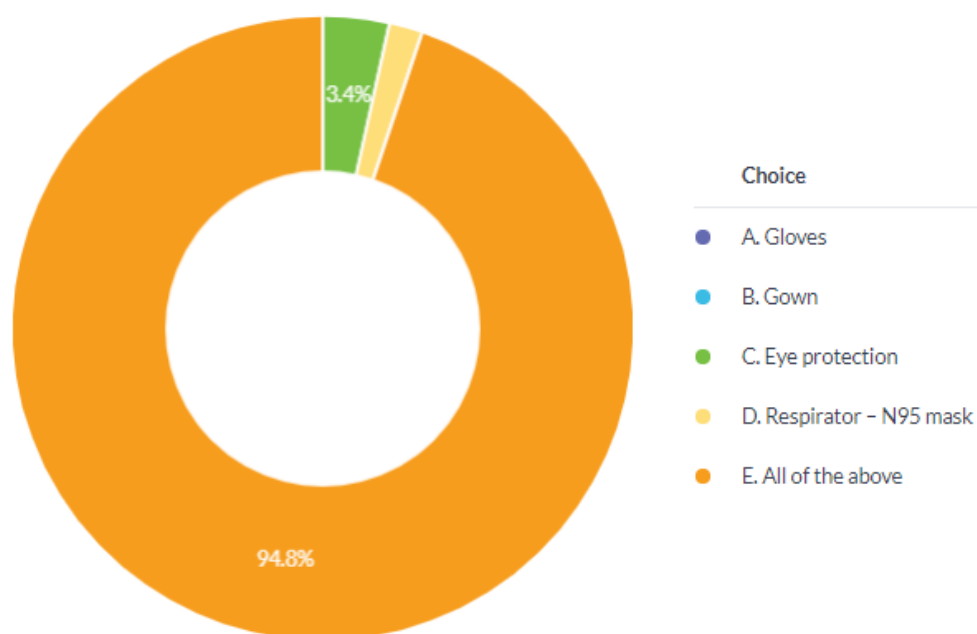


Figure 10 This pie chart shows the percentage of each participant for the question-When questioned what personal protective equipment should be worn by individuals transporting patients who are confirmed with or under investigation for COVID-19 within a healthcare facility, 3.4% answered Eye protection, 1.8% answered Respirator – N95 mask, while 94.8% answered All of the above.

DISCUSSION

The COVID-19 disease has had a cascading effect worldwide since its initial outbreak in China in December 2019. Identifying and isolating the suspected case is the most vital step in controlling the spread of COVID-19. In our study more than half of the participants were aware of the definition of a “close contact”. The US Centers for Disease Control (CDC) defines it as: “being within approximately 6 feet (2 meters) of a COVID-19 case for a prolonged period of time or having direct contact with infectious secretions of a COVID-19 case. More than 50% of the participants were aware of all the answers. These participants are actively involved in managing patients, hence there are high chances of them having patient contact at any point in the healthcare set up and carry the risk of contracting and spreading the virus.

To prevent the spread of infection, correct hand hygiene practices play an important role. “Five Moments of hand hygiene” by WHO defines the key moments when healthcare workers must carry out hand hygiene [(22)]. The two very basic methods of cleaning hands are hand washing and hand rubbing. Alcohol based hand rub (ABHR) is recommended by CDC most of the time [(23)]. The question in our questionnaire focussed on the recommended hand hygiene technique for visibly soiled hands which is washing hands with soap and water for at least 20 seconds with the entire process lasting upto 40-60 seconds [(24)]

Awareness was high among the participants about the use of personal protective equipment (PPE) for COVID-19 cases. The CDC has given Interim Infection Prevention and Control Recommendations for suspected or confirmed coronavirus disease in healthcare set up for PPE [(25)]. Face mask or N95 respirator should be worn when visiting the patient room. When performing aerosol generating procedure N95 respirator is preferred over face mask.

Used masks should be properly disposed. A clean gown along with a disposable face shield or goggles, clean non sterile gloves are recommended when visiting the patient room area. If shortage occurs gowns should be prioritized for aerosol generating procedures. The correct sequence “donning and doffing” should also be known. The sequence of donning a face mask is securing elastic bands or ties in the middle of the head or neck, fitting of the flexible band to the bridge of the nose, fit snug to face and below the chin, fit check respirator mask [(26)]

More than 90% of the respondents answered that the use of a facemask is not essential for people who are well and not in contact with a suspected or infected COVID-19 patient.

Isolation of patient and aerosol performing procedures should be done in the Airborne Infection Isolation Room (AIIR) which are kept under negative pressure. Suspected or confirmed patients should not be kept in a room with an exhaust that recirculates air within the hospital building. Air from these rooms should be filtered through a high-efficiency particulate air (HEPA) filter directly before recirculation. More than 80% of responders were aware of this concept.

This current situation expects several strategies to be implemented to prevent the risk of infection among populations. Drugs such as antimalarials and antivirals are being under trial. It has been shown in in-vitro drug testing that antimalarial hydroxychloroquine to possess antiviral activity against SARS-CoV-2 and could be used as chemoprophylaxis for healthcare workers. Clinical trials for the treatment of COVID-19 pneumonia with hydroxychloroquine are going on and the results will be monitored closely [(27)]

The main drawback of this study is that most participants are from urban areas which truly do not represent the healthcare professionals of the entire state and country.

CONCLUSION

Healthcare professionals and students showed adequate, satisfactory awareness of COVID-19 in the healthcare setting with an overall percentage of 76.5% correct answers. Although theoretically participants' awareness was satisfactory, practically this study shows that periodic educational interventions and infection control training practices for COVID-19 among all healthcare professionals should be conducted. Webinars for educational interventions for all healthcare students and professionals which includes administrative staff, nursing and paramedical sub-groups as this could be helpful to create more awareness.

REFERENCE

1. Maj Dr Ebenezer Kwakye. DECODING 2019 NOVEL CORONAVIRUS: Outbreak: Conspiracies: Impact. Blue Rose Publishers; 2020. 374 p.
2. World Health Organization. WHO Global Report on Traditional and Complementary Medicine 2019. World Health Organization; 2019. 226 p.
3. Tripathi R, Alqahtani SS, Albarraq AA, Meraya AM, Tripathi P, Banji D, et al. Awareness and Preparedness of COVID-19 Outbreak Among Healthcare Workers and Other Residents of South-West Saudi Arabia: A Cross-Sectional Survey. *Frontiers in Public Health*. 2020;8:482.
4. Cucinotta D, Vanelli M. WHO Declares COVID-19 a Pandemic. *Acta Biomed*. 2020 Mar 19;91(1):157–60.
5. NOVEL CORONAVIRUS (COVID-19) OUTBREAK- RATIONING OF ABSOLUTE SCARCE HEALTH CARE RESOURCES FOR THE PANDEMIC- A REVIEW [Internet]. Vol. 7, *Journal of critical reviews*. 2020. Available from: <http://dx.doi.org/10.31838/jcr.07.10.29>
6. Ahmed F, Ahmed N 'eem, Pissarides C, Stiglitz J. Why inequality could spread COVID-19. *Lancet Public Health*. 2020 May;5(5):e240.
7. Jebril N. World Health Organization declared a pandemic public health menace: A systematic review of the coronavirus disease 2019 "COVID-19", up to 26th March 2020.

Available at SSRN 3566298 [Internet]. 2020; Available from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3566298

8. Over 230,000 health workers infected with virus: Study [Internet]. [cited 2020 Oct 13]. Available from: <https://www.aa.com.tr/en/europe/over-230-000-health-workers-infected-with-virus-study/1863982>
9. Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. *JAMA*. 2020 Apr 7;323(13):1239–42.
10. McEachan R, Taylor N, Harrison R, Lawton R, Gardner P, Conner M. Meta-Analysis of the Reasoned Action Approach (RAA) to Understanding Health Behaviors. *Ann Behav Med*. 2016 Aug;50(4):592–612.
11. Vijayashree Priyadharsini J. In silico validation of the non-antibiotic drugs acetaminophen and ibuprofen as antibacterial agents against red complex pathogens. *J Periodontol*. 2019 Dec;90(12):1441–8.
12. Pc J, Marimuthu T, Devadoss P. Prevalence and measurement of anterior loop of the mandibular canal using CBCT: A cross sectional study. *Clin Implant Dent Relat Res* [Internet]. 2018; Available from: <https://europepmc.org/article/med/29624863>
13. Ramesh A, Varghese S, Jayakumar ND, Malaiappan S. Comparative estimation of sulfiredoxin levels between chronic periodontitis and healthy patients - A case-control study. *J Periodontol*. 2018 Oct;89(10):1241–8.
14. Ramadurai N, Gurunathan D, Samuel AV, Subramanian E, Rodrigues SJL. Effectiveness of 2% Articaine as an anesthetic agent in children: randomized controlled trial. *Clin Oral Investig*. 2019 Sep;23(9):3543–50.
15. Sridharan G, Ramani P, Patankar S, Vijayaraghavan R. Evaluation of salivary metabolomics in oral leukoplakia and oral squamous cell carcinoma. *J Oral Pathol Med*. 2019 Apr;48(4):299–306.
16. Ezhilarasan D, Apoorva VS, Ashok Vardhan N. Syzygium cumini extract induced reactive oxygen species-mediated apoptosis in human oral squamous carcinoma cells. *J Oral Pathol Med*. 2019 Feb;48(2):115–21.
17. Mathew MG, Samuel SR, Soni AJ, Roopa KB. Evaluation of adhesion of *Streptococcus mutans*, plaque accumulation on zirconia and stainless steel crowns, and surrounding gingival inflammation in primary molars: Randomized controlled trial. *Clin Oral Investig*. 2020;1–6.
18. Samuel SR. Can 5-year-olds sensibly self-report the impact of developmental enamel

defects on their quality of life? *Int J Paediatr Dent.* 2021 Mar;31(2):285–6.

19. R H, Hannah R, Ramani P, Ramanathan A, R JM, Gheena S, et al. CYP2 C9 polymorphism among patients with oral squamous cell carcinoma and its role in altering the metabolism of benzo[a]pyrene [Internet]. Vol. 130, *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology.* 2020. p. 306–12. Available from: <http://dx.doi.org/10.1016/j.oooo.2020.06.021>

20. Chandrasekar R, Chandrasekhar S, Sundari KKS, Ravi P. Development and validation of a formula for objective assessment of cervical vertebral bone age. *Prog Orthod.* 2020 Oct 12;21(1):38.

21. Vijayashree Priyadharsini J, Smiline Girija AS, Paramasivam A. In silico analysis of virulence genes in an emerging dental pathogen *A. baumannii* and related species. *Arch Oral Biol.* 2018 Oct;94:93–8.

22. Modi PD, Kumar P, Solanki R, Modi J, Chandramani S, Gill N. Hand hygiene practices among indian medical undergraduates: a questionnaire-based survey. *Cureus [Internet].* 2017;9(7). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/pmc5595270/>

23. Osha. *Guidance On Preparing Workplaces For COVID-19.* Claitor's Publishing Division; 2020. 36 p.

24. World Health Organization. *WHO Guidelines on Hand Hygiene in Health Care: First Global Patient Safety Challenge : Clean Care is Safer Care.* World Health Organization, Patient Safety; 2009. 262 p.

25. Organization WH, Others. Laboratory testing for coronavirus disease 2019 (COVID-19) in suspected human cases: interim guidance, 2 March 2020 [Internet]. World Health Organization; 2020. Available from: <https://apps.who.int/iris/bitstream/handle/10665/331329/WHO-COVID-19-laboratory-2020.4-eng.pdf>

26. Roux CL, Le Roux C, Dramowski A. Personal protective equipment (PPE) in a pandemic: Approaches to PPE preservation for South African healthcare facilities [Internet]. Vol. 110, *South African Medical Journal.* 2020. Available from: <http://dx.doi.org/10.7196/samj.2020.v110i6.14831>

27. Mitjà O, Clotet B. Use of antiviral drugs to reduce COVID-19 transmission. *Lancet Glob Health.* 2020 May;8(5):e639–40.