DOI: 10.7860/JCDR/2020/45160.14140

Original Article

Public Health Section

Awareness towards COVID-19 among Medical Students: A Cross-sectional Questionnaire Based Study

AMBRISH MISHRA[1], DIVASHREE SHARMA[2], GAURAV DERASHRI[3], ANVITA MISHRA[4], GEETA MISHRA TRIPATHI[5]

ABSTRACT

Introduction: The coronavirus disease (COVID-19) pandemic has surfaced as a public health emergency and the world has witnessed the evolution of unprecedented measures for slowing down the disease progression and reducing the morbidity/mortality associated with the disease. In such scenario healthcare workers assume the most vital and the most vulnerable responsibilities.

Aim: To investigate the awareness of undergraduate students of pre-final and final year, interns and postgraduate students in Shyam Shah Medical College, Rewa, MP towards COVID-19 and the sources on which the respondents depend for acquiring information through a web based questionnaire.

Materials and Methods: This was a cross-sectional study, conducted from 25th April to 1st May 2020 based on a close-ended, time bound, online questionnaire containing 16 questions based on aetiology, mode of transmission, risk factors, signs, symptoms, treatment and prevention of COVID-19. It was administered to a total of 320 students of which final respondents were 183 (112 undergraduate students and 71 post graduate students and interns) as a Google form through a cross platform messaging application namely WhatsApp. Data about the information sources and the perceived reliability of the respondents on them was also obtained. The filled information was evaluated and the collected data was presented as frequencies and percentages. Awareness was graded as good when the respondents were able to answer more than 75% (>12) questions correctly, average when they answered >50% and ≤75% (9-12) answers correctly and poor when they could answer ≤50% (≤8) questions correctly. Continuous variables were presented as mean±SD. Student's Independent t-test was performed to compare the mean awareness level of both groups. A p-value of less than 0.05 was considered statistically significant.

Results: Out of a total of 320 students to whom the questionnaire was sent, 183 participated in the survey (response rate=57.1%). The study revealed a good awareness level of the respondents towards COVID-19 (mean score >12) in both the groups (undergraduate/postgraduate). The percentage of correct answers for entire study population for awareness related questions was 82.24%. The difference in awareness level between undergraduate students in comparison to interns and postgraduate students was found to be statistically significant ($p<0.001$). The respondents obtained maximum information from the official government websites (mean=3.6) and had maximum confidence on the same for the credibility of data (mean=3.9).

Conclusion: The awareness level of the students was found to be good. To cope up with this new emerging infectious disease, the health care workers must remain updated with all recent developments. Comprehensive educational programs focused on field epidemiology, infection control practice and public health are the need of the hour.

Keywords: Coronavirus disease, Health care preparedness, Health care workers, Information source, Personal protective equipment, Severe acute respiratory syndrome coronavirus-2

INTRODUCTION

Emerging infectious diseases pose a threat to global stability because little is known about their origin and the disease progression is unpredictable [1]. A cluster of cases presenting with symptoms of lower respiratory tract infections were reported in Wuhan in China's Hubei province in late 2019, and were categorised as "pneumonia of unknown aetiology" [2,3]. The disease was declared a Public Health Emergency of International Concern (PHEIC) on 30th January 2020 as it had rapidly spread to 18 countries [4]. On 11 February 2020, World Health Organisation (WHO) officially named it as the COVID-19 and the International Committee on Taxonomy of Viruses (ICTV) named the causative virus as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) [5]. It was declared a Pandemic on 11 March 2020 [6]. In past coronaviruses have been considered to be responsible for previous outbreaks of SARS-CoV and Middle East Respiratory Syndrome (MERS-CoV) in 2002 and 2012, respectively [7].

Coronavirus disease is an unconventional disease and extensive research for developing vaccines immunotherapeutics, and drugs to counter the disease is ongoing [8]. In the current scenario of an uncontrolled pandemic, medical postgraduate student interns and undergraduate students can play a pivotal role by contributing extensively to the care of patients [9]. They should be well-versed with infectious disease preparedness and response plan. Developing their comprehensive skills on clinical diagnosis and management of the disease as well as reinforcing the principles of surveillance and containment is the need of the hour. In agreement with the previous studies mentioned in literature, this study emphasises that health care workers represent the most vulnerable population group during this epidemic and enhancing their knowledge about the disease may positively influence their attitudes and practices for better management of the affected patients and inversely decrease the risk of infection due to occupational exposure [10,11]. With this background, the present study was conducted with an aim to assess the awareness of students of a medical college in Rewa, MP regarding COVID-19 and the sources from which they gathered their information about the disease.

MATERIALS AND METHODS

A cross-sectional questionnaire based study was done in Shyam Shah Medical College Rewa, MP over a period of 7 days from 25th April to 1st May 2020. An online, close ended, structured questionnaire in English language containing questions pertaining

to awareness regarding COVID-19 and sources of gathering information about the disease and the participant's confidence on these sources was designed by the team of authors after a rigorous literature review. The questionnaire was an adapted version from the information for healthcare workers published by the US Centers for Disease Control and Prevention (CDC), the information released by WHO and ICMR [12,13]. Ethical clearance was obtained from the Institutional Committee. The questionnaire was tested for validity (I-CVI=0.8; S-CVI=0.9) and reliability (Cronbach's alpha=0.8) by means of a pilot study conducted in a small sample of the teaching faculty to assess the clarity, relevance, accessibility and time required to complete the survey.

It was then distributed to all the students of pre-final and final year MBBS course, interns and postgraduate students (Total=320) in the form of Google form (a cloud-based data management tool used for designing and developing web-based questionnaires) via a link that was shared through a cross platform messaging application namely whatsapp within their smart phones. The aim of the study was explained in a brief note and consent was obtained from the participants. The respondents' personal information was made anonymous and the confidentiality was maintained. They were requested to fill the desired information over a time period of 7 days beginning from 25th April 2020 after which the questionnaire was closed for any response. After the dispatch of the link of the questionnaire form, reminders in the form of whatsapp messages were sent thrice to the participants over a period of 7 days requesting their participation in the study. The questionnaire was locked after being opened and the participant had to finish the entire set of questions at one go.

Section 1 of the self administered questionnaire gathered Demographic data of the respondents like age, gender and the qualification. The section 2 measured the knowledge about the disease based on 16 questions pertaining to aetiology, clinical manifestation of the disease, risk groups, consequences, mode of transmission, prevention strategies and treatment of the disease. Awareness was assessed by giving 1 to correct answer and 0 to the wrong answer and to the unanswered question. The scale measured awareness from maximum 16 to minimum 0. Scores <9 (≤50%) were taken as poor, 9-12 (≥ 50% to ≤75%) as satisfactory and >12 (≥75%) as good awareness towards COVID-19. Section 3 contained the data about the amount of information procured from various sources regarding the disease as well as the confidence of the respondents on these sources on a likert scale of 1-5. This was adapted from a similar study by Brug J et al., on Severe Acute Respiratory Syndrome [14]. The results of medical undergraduate students of pre-final and final year were compiled together as Group A. Since interns and postgraduate students assume clinical responsibilities under supervision, their results were compiled together as Group B.

STATISTICAL ANALYSIS

Categorical variables were measured as percentages while continuous variables were expressed as mean±standard deviation using Microsoft Office Excel version 2010. Student's Independent t-test was used to compare mean awareness scores. A p-value of less than 0.05 was considered statistically significant.

RESULTS

The questionnaire was served to a total of 320 students of MBBS pre-final and final year, interns and postgraduate students and 183 individuals participated in this study (57.1% response rate). A total 112 undergraduate students (61.2% of the respondents) were categorised as Group A and 71 interns and postgraduate students (38.8% of the total respondents) constituted Group B. Hundred (54.6%) respondents were males and 83 (45.4%) were females. Majority of the participants (80.9%) belonged to 18-25 years age group and the rest to 26-35 years age group [Table/Fig-1].

COVID-19 is caused by a RNA virus was known to 88.4% participants in Group A and 92.9% participants in Group B. All the participants of both the groups (100%) were aware that outbreak started at Wuhan in China and the most common presenting symptoms are fever, dry cough and breathlessness. Majority of the respondents in Group A (95.5%) and all in Group B had an opinion that the disease is considered to be originated from wild bats [Table/Fig-2]. Both the groups presented with good awareness level towards COVID-19 and the average number of questions correctly answered by Group A were 12.31 and by Group B were 14.49. Awareness among interns and postgraduate students was found to be high in comparison to undergraduate students and the difference was statistically significant (p-value<0.001) [Table/Fig-3].

Variable	Category	N (%)
Age (in years)	18-25	148 (80.9%)
	26-35	35 (19.1%)
Gender	Male	100 (54.6%)
	Female	83 (45.4%)
Education	Undergraduate	112 (61.2%)
	Interns+Postgraduates	71 (38.8%)

[Table/Fig-1]: Demographic characteristics of the respondents (N=183).

S. No.	Questionnaire items	Group A (N=112)		Group B (N=71)	
		Correct answer n (%)	Incorrect answer n (%)	Correct answer n (%)	Incorrect answer n (%)
1.	The causative agent for COVID-19 is a RNA virus.	99 (88.4)	13 (11.6)	66 (92.9)	5 (7.1)
2.	The infection is thought to be originated from bats.	107 (95.5)	5 (4.5)	71 (100)	0 (0)
3.	The first outbreak of the disease was reported in Wuhan, China.	112 (100)	0 (0)	71 (100)	0 (0)
4.	The mode of transmission of the disease is by droplet spread.	97 (86.6)	15 (13.4)	70 (98.5)	1 (1.5)
5.	An asymptomatic person infected with COVID-19 does not spread the disease.	105 (93.7)	7 (6.3)	71 (100)	0 (0)
6.	Fever, dry Cough, breathlessness is the hallmark signs and symptoms.	112 (100)	0 (0)	71 (100)	0 (0)
7.	The incubation period (range) for COVID-19 is 2-14 days.	105 (93.8)	7 (6.2)	69 (97.1)	2 (2.9)
8.	Co-morbidities (Diabetes, hypertension, COPD, renal disease, cancer etc.,) worsen the prognosis in an individual.	35 (31.3)	77 (68.7)	55 (77.5)	16 (22.5)
9.	Flu vaccine is also effective against coronavirus.	107 (95.5)	5 (4.5)	71 (100)	0 (0)
10.	Hydroxychloroquine has been recommended by MoHFW for prophylaxis in healthcare workers.	49 (43.8)	63 (56.2)	45 (63.3)	26 (36.7)
11.	Intake of hydroxychloroquine is associated with the risk of cardiac adverse effects leading to ECG changes.	60 (53.6)	52 (46.4)	50 (70.4)	21 (29.6)
12.	The risk of QT prolongation increases when azithromycin is taken along with hydroxychloroquine.	91 (81.2)	21 (18.8)	68 (95.7)	3 (4.3)
13.	PPE gears can be reused after proper decontamination.	61 (54.5)	51 (45.5)	60 (84.5)	11 (15.5)
14.	Hydrogen Peroxide Vapour (HPV) Generator can effectively decontaiminate N 95 respirators.	25 (22.4)	87 (77.6)	51 (71.8)	20 (28.2)
15.	Wearing a cloth mask in public places is made mandatory for general public by the government.	102 (91.1)	10 (8.9)	69 (97.1)	2 (2.9)
16.	Washing hand with soap and water for atleast 20 seconds can help in prevention of transmission of disease.	112 (100)	0 (0)	71 (100)	0 (0)

[Table/Fig-2]: Group wise distribution of percentage of correct responses of the participants for questions related to awareness about the disease.
COVID-19: CoronaVirus disease-2019; RNA: Ribo nucleic acid; COPD: Chronic obstructive pulmonary disease; MoHFW: Ministry of health and family welfare; ECG: Electrocardiography; PPE: Personal protective equipment; N-95: Non-oil 95% masks

Variable	Group A (N=112)	Group B (N=71)
Mean number of questions correctly answered	12.312	14.492
Standard Deviation	1.395	1.032

[Table/Fig-3]: Comparative evaluation of average awareness scores of both the groups by Student's t-test.
Test Statistics t=11.3421 , p-value<0.001

The difference in awareness of both the groups was found to be extremely statistically significant (two-tailed p-value was found to be less than 0.001).

Group A reflected that their source of maximum information was official government websites (mean=3.6). They had maximum confidence in the information procured through official government websites and through teachers (mean=3.6), for reliability. Group B also received maximum amount of information from official government websites (mean=3.7). Group B had maximum confidence in the information obtained from official government websites (mean=4.7). Overall, analysis revealed that the study population relied mainly on government official websites for amount of information received (mean=3.6) and maximum confidence (mean=3.9) regarding validity of the information [Table/Fig-4,5].

Information source	Amount of information (Mean, Confidence Interval 95%)		Confidence in the information (Mean, Confidence Interval 95%)	
	Group A	Group B	Group A	Group B
Newspapers and television	3.2 (2.98-3.41)	1.9 (1.58-2.21)	3.1 (2.89-3.30)	1.6 (1.33-1.86)
Official government websites	3.6 (3.39-3.80)	3.7 (3.44-3.99)	3.6 (3.42-3.77)	4.7 (4.51-4.88)
Webinars	2.8 (2.58-3.01)	1.8 (1.48-2.11)	3 (2.81-3.18)	4 (3.72-4.27)
Teachers	3.1 (2.89-3.30)	3 (2.68-3.31)	3.6 (3.41-3.78)	3.9 (3.65-4.14)
Peer group	2.9 (2.70-3.09)	2.3 (2.04-2.55)	2.9 (2.69-3.10)	2.4 (2.13-2.66)

[Table/Fig-4]: Group wise distribution of information sources for COVID-19 along with confidence in these sources.

Information source	Amount of information (Mean, Confidence Interval 95%)	Confidence in the information (Mean, Confidence Interval 95%)
Newspapers and television	2.9 (2.7-3.09)	2.7 (2.52-2.87)
Official government websites	3.6 (3.42-3.77)	3.9 (3.75-4.04)
Webinars	2.5 (2.32-2.67)	3.2 (2.02-3.37)
Teachers	3 (2.82-3.17)	3.6 (3.45-3.74)
Peer group	2.7 (2.54-2.86)	2.7 (2.53-2.86)

[Table/Fig-5]: Information sources for COVID-19 along with confidence in these sources in the total study population.

DISCUSSION

COVID-19 caused by SARS-CoV-2 is the third major coronavirus outbreak over the past 20 years [15]. The fact that causative agent of this disease is a RNA virus was correctly answered by 90.16% respondents which were higher than that reported by Olaimat AN et al., where one-third of the respondents (34.6%) believed that genetic material of the virus was DNA [16]. SARS-CoV-2 is primarily transmitted from person-to-person by droplet spread was known to 91.26% of the study population which was better than the study by Modi PD et al., who reported that 56.7% medical post-graduates residents, fellows, faculty and 70.2% medical students answered it correctly [10]. This virus has also been detected in the samples of stool, gastrointestinal tract, urine, tears and conjunctival secretions of the infected individual [17]. Virus shedding by asymptomatic and pauci symptomatic patients poses a big challenge in restricting the spread of the disease and up to 12% of transmission occurs before an index case presents with symptoms [18]. Majority of respondents (96.17%) were well-versed with this fact.

The typical presenting symptoms are severe acute respiratory illness with fever, dry cough and shortness of breath [19]. Gastrointestinal symptoms have been reported in 2-40% of patients, olfactory disorders in 53% and ocular manifestations in 32% of patients [6]. The patients can also present with anxiety, delirium, agitation, fatigue, muscle aches, and headache [20].

The mean incubation period of SARS-CoV-2 is estimated to be 6.4 days, and a median incubation period of 5.0 days (CI, 4.4 to 5.6 days) with a range of 2-14 days [21-23]. The question on incubation period was answered correctly by 95.08% respondents which was similar to other studies [16,24]. Elderly and those with co-morbidities have escalated risks of progressing rapidly into acute respiratory distress syndrome, septic shock, metabolic acidosis, and coagulation dysfunctions [4]. This was known to 49.18% participants in this study which was less than that reported by Olaimat AN et al., who found that 94.9% students were aware that elderly and 81.0% were aware that immune-compromised persons (81.0%) are at higher risk to develop severe cases of COVID-19 [16].

The Indian Council of Medical Research (ICMR) approved the empiric use of hydroxychloroquine for prophylaxis of SARS-Cov-2 infection for asymptomatic health care workers involved in care of suspected or confirmed cases of COVID-19 and asymptomatic household contacts of laboratory confirmed cases [25,26]. Concurrent administration of azithromycin may prolong QTc interval and predispose to tachyarrhythmias and sudden cardiac death [25,27]. Electrocardiography is essential prior to starting these drugs as both tend to prolong QTc.

To address the worldwide shortage of PPE, guidelines for conserving single-use PPE through extended use and reuse in the face of shortages so as to ensure continued availability have been issued by regulatory authorities and institutions [28,29]. A response rate of 57.1% was reported in this study which was comparatively high in comparison with other studies in literature which reported a response rate of 35.1% and 33.6%, respectively [10,30]. The low response rate can be attributed to the emerging reluctance in participation of web based surveys perhaps due to survey fatigue [31].

The overall percentage of correct answers in this study for awareness related questions was 82.24%. This finding was consistent with a similar study conducted on 2,083 undergraduate or postgraduate students from different Jordanian universities which reported an average knowledge score of 80.1% and a highest mean knowledge score of 82.8% for students who majored in medical science, for questions pertaining to viral sources, incubation period, mortality rate, transmission, symptoms and complications of COVID-19 [16]. Average percentage of correct answers in the present study was greater for interns and postgraduates (90.58%) in comparison with under graduates (76.95%). This finding was consistent with other studies which have emphasised the relationship of knowledge with the experience [32]. However, it was in contrast with a study, which reported a greater number of correctly answered questions by medical undergraduates (74.1%) in comparison with postgraduates (72.1%) [10].

Majority of the participants depended on official government website for procuring the maximum amount of information and they believed that the information that is being dissipated through these websites was reliable. This was in accordance with the study by Parikh PA et al., that reported that 71% healthcare professionals depended on websites for seeking information [24]. Hence, these websites should be continuously updated with authentic data. In an another study performed on pre-natal and post-natal Chinese women, it was revealed that the three major sources of obtaining information about COVID-19 were doctors, nurses/midwives, and

the television, (mean reliance scores: 4.22, 4.15, 4.14, respectively) and they placed a high level of confidence in these sources. (mean confidence scores 4.22, 4.14, 4.14, respectively) [33]. Hence, it was suggested that healthcare professionals remain well-versed with the latest information and guidelines. Open forum discussions, webinars led by healthcare professionals, especially COVID-19 experts, can serve as credible information sources for the general public rather than the information procured through social media platforms. Limaye RJ et al., has emphasised that social media platforms facilitate the dissemination of misinformation about COVID-19 which can prove to be fatal and its elimination is a great public health challenge [34]. In the study done by Sharma A et al., common source of information about COVID-19 was the internet, social media and television followed by newspaper, government sources and radio [35] but in present study, most of the information was obtained through newspaper and government official sites followed by other sources. Training sessions focused on latest clinical practice guidelines, standard operating procedures and emergency response plan of the institute were conducted by the institute for all healthcare professionals including interns and postgraduate students. It is believed that this would have further enhanced their preparedness.

Limitation(s)

The low sample size and low response rate (57.1%) despite multiple reminders which is not ideal to represent the awareness level of all medical students and interns. The findings presented in this study were self-reported and partly dependent on the participants' honesty and recall ability; thus, they may be subject to recall bias.

CONCLUSION(S)

Health care workers at all hierarchical levels must have an unhindered access to the authentic information about the current scenario of the disease, updates in Standard Operating Procedures and the supply of personal protective equipment. The awareness of the study population reflects their state of well preparedness for their utilisation in community education, screening, and treating the disease and safeguarding themselves and others amidst their duties but the results cannot be generalised because the sample size was low which can be attributed to a drawback in attitude for online surveys.

REFERENCES

[1] Morens DM, Fauci AS. Emerging infectious diseases: Threats to human health and global stability. PLoS Pathog. 2013;9(7):e1003467.
[2] Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med. 2020;382(8):727-33.
[3] van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson B N, et al. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. N Engl J Med. 2020;382(16):1564-67.
[4] Guo YR, Cao QD, Hong ZS, Tan YY, Chen SD, Jin HJ, et al. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak - an update on the status. Mil Med Res. 2020;7(1):11. doi: 10.1186/s40779-020-00240-0.
[5] Sun P, Lu X, Xu C, Sun W, Pan B. Understanding of COVID-19 based on current evidence. J Med Virol. 2020;92(6):548-51. doi: 10.1136/bmj.m1470.
[6] Vetter P, Vu DL, L'Huillier AG, Schibler M, Kaiser L, Jacquerioz F. Clinical features of covid-19. BMJ. 2020;369:m1470.
[7] Guarner J. Three Emerging Coronaviruses in Two Decades. Am J Clin Pathol. 2020;153(4):420-21.
[8] Dhama K, Sharun K, Tiwari R, Dadar M, Malik YS, Singh KP, et al. COVID-19, an emerging coronavirus infection: Advances and prospects in designing and developing vaccines, immunotherapeutics, and therapeutics. Hum Vaccin Immunother. 2020;16(6):1232-38.
[9] Ahmed H, Allaf M, Elghazaly H. COVID-19 and medical education. Lancet Infect Dis. 2020;20(7):777-78.
[10] Modi PD, Nair G, Uppe A, Modi J, Tuppekar B, Gharpure AS, et al. COVID-19 awareness among healthcare students and professionals in Mumbai metropolitan region: A questionnaire-based survey. Cureus. 2020;12(4):e7514. Published 2020 Apr 2. doi:10.7759/cureus.7514.
[11] Zhang M, Zhou M, Tang F, Wang Y, Nie H, Zhang L, et al. Knowledge, attitude, and practice regarding COVID-19 among healthcare workers in Henan, China. J Hosp Infect. 2020;105(2):183-87.
[12] Information for healthcare professionals. (2020). Accessed: July 6, 2020: https://www.cdc.gov/coronavirus/2019-ncov/hcp/index.html.
[13] Q&As on COVID-19 and related health topics, (2020). Accessed: July 6, 2020. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub.
[14] Brug J, Aro AR, Oenema A, de Zwart O, Richardus JH, Bishop GD. SARS risk perception, knowledge, precautions, and information sources, the Netherlands. Emerg Infect Dis. 2004;10(8):1486-89.
[15] Docea AO, Tsatsakis A, Albulescu D, Cristea O, Zlatian O, Vinceti M, et al. A new threat from an old enemy: Re-emergence of coronavirus (Review). Int J Mol Med. 2020;45(6):1631-43.
[16] Olaimat AN, Aolymat I, Shahbaz HM, Holley RA. Knowledge and Information Sources about COVID-19 among University Students in Jordan: A cross-sectional study. Front Public Health. 2020;8:254. doi: 10.3389/fpubh.2020.0025417.
[17] Ong SWX, Tan YK, Chia PY, Lee TH, Ng OT, Wong MSY, et al. Air, surface environmental, and personal protective equipment contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) from a symptomatic patient. JAMA. 2020;323(16):1610-12.
[18] Wei WE, Li Z, Chiew CJ, Yong SE, Toh MP, Lee VJ. Presymptomatic transmission of SARS-CoV-2 - Singapore, January 23-March 16, 2020. MMWR Morb Mortal Wkly Rep. 2020;69(14):411-15.z.
[19] Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. JAMA. 2020;323(11):1061-69.
[20] National Institute for Health and Care Excellence (NICE) in collaboration with NHS England and NHS Improvement. Managing COVID-19 symptoms (including at the end of life) in the community: Summary of NICE guidelines. BMJ. 2020;369:m1461.
[21] Li H, Liu SM, Yu XH, Tang SL, Tang CK. Coronavirus disease 2019 (COVID-19): Current status and future perspectives. Int J Antimicrob Agents. 2020;55(5):105951.
[22] Lauer SA, Grantz KH, Bi Q, Jones FK, Zheng Q, Meredith HR, et al. The Incubation Period of Coronavirus Disease 2019 (COVID-19) from publicly reported confirmed cases: Estimation and application. Ann Intern Med. 2020;172(9):577-82.
[23] Backer JA, Klinkenberg D, Wallinga J. Incubation period of 2019 novel coronavirus (2019-nCoV) infections among travellers from Wuhan, China, 20-28 January 2020. Euro Surveill. 2020;25(5):2000062.
[24] Parikh PA, Shah BV, Phatak AG, Vadnerkar AC, Uttekar S, Thacker N, et al. COVID-19 Pandemic: Knowledge and Perceptions of the Public and Healthcare Professionals. Cureus. 2020;12(5):e8144.
[25] Sahu KK, Mishra AK, Lal A, Sahu SA. India Fights Back: COVID-19 Pandemic. Heart Lung. 2020;S0147-9563(20)30148-5.
[26] Recommendations for empiric use of hydroxychloroquine for prophylaxis of SARS CoV-2 infection. https://www.mohfw.gov.in/pdf/AdvisoryontheuseofHydroxychloroquinasprophylaxisforSARSCoV2infection.pdf.
[27] Felsenstein S, Herbert JA, McNamara PS, Hedrich CM. COVID-19: Immunology and treatment options. Clin Immunol. 2020;215:108448.
[28] Rimmer A. Covid-19: Third of surgeons do not have adequate PPE, royal college warns. BMJ. 2020;369:m1492.
[29] Public Health England. Considerations for acute personal protective equipment (PPE) shortages. 17 Apr 2020. https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/managing-shortages-in-personal-protective-equipment-ppe.
[30] Kinariwala N, Samaranayake L, Perera I, Patel Z. Knowledge, awareness and perceptions of Coronavirus Disease 2019 (COVID-19) in a Cohort of Indian Dental Professionals: A questionnaire-based study. Preprints.org; 2020. DOI: 10.20944/preprints202005.0442.v1.
[31] Wyatt JC. When to use web-based surveys. J Am Med Inform Assoc. 2000;7(4):426-29. doi:10.1136/jamia.2000.0070426.
[32] Aldohyan M, Al-Rawashdeh N, Sakr FM, Rahman S, Alfarhan AI, Salam M. The perceived effectiveness of MERS-CoV educational programs and knowledge transfer among primary healthcare workers: a cross-sectional survey. BMC Infect Dis. 2019;19(1):273. https://doi.org/10.1186/s12879-019-38982.
[33] Lee TY, Zhong Y, Zhou J, He X, Kong R, Ji J. The outbreak of coronavirus disease in China: Risk perceptions, knowledge, and information sources among prenatal and postnatal women [published online ahead of print, 2020 May 29]. Women Birth. 2020;S1871-5192(20)30249-3. doi:10.1016/j.wombi.2020.05.010.
[34] Limaye RJ, Sauer M, Ali J, Bernstein J, Wahl B, Barnhill A, et al. Building trust while influencing online COVID-19 content in the social media world [published online ahead of print, 2020 Apr 21]. Lancet Digit Health. 2020;2(6):e277-78. doi:10.1016/S2589-7500(20)30084-4.
[35] Sharma A, Aswal MR, Gupta R. Assessment of knowledge, attitude and practice regarding COVID-19 pandemic among health care professionals: A cross-sectional study. J Clin Diagn Res.. 2020;14(9):OC05-OC10.

PARTICULARS OF CONTRIBUTORS:
1. Associate Professor, Department of Community Medicine, Shyam Shah Medical College, Rewa, Madhya Pradesh, India.
2. Assistant Professor, Department of Dentistry, Shyam Shah Medical College, Rewa, Madhya Pradesh, India.
3. Postgraduate Student, Department of Community Medicine, Shyam Shah Medical College, Rewa, Madhya Pradesh, India.
4. Postgraduate Student, Department of Community Medicine, Shyam Shah Medical College, Rewa, Madhya Pradesh, India.
5. Professor, Department of Dentistry, Shyam Shah Medical College, Rewa, Madhya Pradesh, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Divashree Sharma,
F-7/2, New Doctors Colony, Arjun Nagar, Rewa, Madhya Pradesh, India.
E-mail: divashri.19.sharma@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: May 23, 2020
- Manual Googling: Aug 20, 2020
- iThenticate Software: Sep 28, 2020 (1%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **May 22, 2020**
Date of Peer Review: **Jun 26, 2020**
Date of Acceptance: **Aug 24, 2020**
Date of Publishing: **Oct 01, 2020**