Research Article

APPRAISING AWARENESS ON COVID-19 AND ORAL HEALTH AMONGST NON-MEDICO AND MEDICO UNDERGRADUATE STUDENTS: A QUESTIONNAIRE STUDY

Pranshu Sachdeva, Rahul Bhagabati, Geetha Bhat, Takhellambam Binky Chanu, Kezevino Bizo and Pallavi

Jaipur Dental College Kukas Dhand Tehsil Amer Delhi Jaipur highway Pin code- 302028

A R T I C L E   I N F O

A B S T R A C T

Introduction: Coronavirus disease caused by SARS-COV2; a potentially fatal disease has become a global public health concern. As we know India is a densely populated country and the understanding of this novel disease is evolving it is important for the Indians to be aware of basic modes of prevention that can diminish the spread of the corona virus disease 2019 infection.

Aim: To compare and assess the awareness towards the spread and control of Covid-19 in a context of the health emergency.

Methodology: The questionnaire contained socio-demographic questions and 20 questions about definition, contagiousness, symptoms, incubation, source of infection, routes of transmission, treatment and infection control practices related to Covid 19. A questionnaire-based survey was made in an offline mode and distributed among 1000 undergraduate students to investigate their knowledge and awareness level about Covid-19.

Results: After evaluating all the responses gathered from the study population the knowledge scores were found to be significantly higher for the medical students compared with those of non-medical students.

Conclusion: From the present study, it can be concluded that awareness and knowledge regarding Covid-19 among medicos and non-medicos was good. Most of them were aware of the precautionary measures to be followed during the outbreak, but a small part of the study population requires education

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a major global concern. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spread began in late 2019. This virus, previously known as 2019-nCoV, was isolated in Wuhan, Hubei province, China, in December 2019. Similar to other zoonotically transferred diseases, as Middle East Respiratory Syndrome Coronavirus (MERS-CoV) and SARS-CoV, emerged in 2003 and in 2012, respectively, SARS-CoV-2 was probably hosted by bats and its transmission from other animals to humans has been well documented.

Special efforts and attention to protect or decrease transmission should be applied in populations with high susceptibilities, such as health-care providers and elderly people. The early death cases of COVID-19 outbreak occurred in the elderly due to a compromised immune system that allows for a rapid progression of viral infection. The public services and facilities should provide decontaminating reagents for cleaning hands on a routine basis. Physical contact with wet and contaminated objects should be dealt cautiously, especially agents such as fecal and urine samples that can potentially serve as an alternative route of transmission. Epidemiological changes in COVID-19 infection should be monitored, keeping in mind the potential routes of transmission and subclinical infection, along with the adaptation, evolution, and virus spread among humans and possible intermediate animals and reservoirs. There remains a considerable number of questions that need to be addressed.

Various bodies including the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) have issued advice on preventing further spread of COVID-19. They recommend avoiding travel to high-risk areas and contact with individuals who are symptomatic from regions with known COVID-19 outbreak. Use of personal protective equipment (PPE), such as face masks for people showing symptoms. It is also our responsibility to be aware of the signs and symptoms and to promptly address them. Most coronaviruses, including COVID-19, can be inactivated by alcohol-based hand sanitizers and disinfectants, such as bleach. Environmental disinfection using appropriate sanitizers is also recommended. The efficacy of face masks among healthy individuals is questionable, but masks can protect others, particularly health-care workers, from active symptomatic individuals with COVID-19. The combination of masks and hand hygiene, however, has been shown to reduce

*Corresponding author: **Pranshu Sachdeva**
Jaipur Dental College Kukas Dhand Tehsil Amer Delhi Jaipur highway Pin code- 302028

transmission of respiratory viruses. Face mask use should be recommended for infected persons, for uninfected persons who are caring for infected persons, and for those interacting in extensive crowded settings where widespread community transmission is possibly occurring.

SARS-CoV-2 has an estimated incubation period of 2 to 14 days (at 5 to 6 d on average). In potentially exposed persons, it is recommended to consider this time-lapse for quarantine and potential medical observation. As per World Bank, India only spends 1.28% of the gross domestic product on health facilities. This underdeveloped infrastructure of health could be catastrophic at times of health emergencies, such as COVID-19.

Hence, the people of India need to be aware of the basic modes of prevention and other necessary precautionary measures that can diminish the spread of the infection. Our present study was carried out among the undergraduate students to assess the awareness regarding spread and control of this novel malady.

General Clinical Features: Although SARS-CoV-2 spread can happen asymptomatically, clinical manifestations may vary from the presence of usual symptoms, as dry cough (59–82%), fever (83–98%), shortness of breath (19–55%) and muscular ache (11–44%), to atypical symptoms, such as conjunctivitis, sore throat, diarrhoea, vomiting, and fatigue. In about 80% of infected patients, mild respiratory infections have been reported, though about half will have pneumonia; another 15% of patients develop severe illness; 5% need critical care treatment. A small proportion of patients presented hemoptysis. Normal or lower white blood cell counts, thrombocytopenia, or lymphopenia, with the increased C-reactive protein level can be found in COVID-19 patients. Rarely, SARS-CoV-2 can lead to severe respiratory problems, kidney failure or death. Computed tomography in patients with pneumonia revealed ground-glass opacity and patchy shadows. Hypogeusia and hyposmia have been reported in 5.6% and 5.1% of patients, respectively. Complications may include respiratory distress syndrome, arrhythmia, and shock. These events, mainly associated with older age and the existence of underlying comorbidities, *i.e.*, hypertension, diabetes, and cardiovascular disease, were related with poorer prognosis. The mortality rate is approximately 5.4%

Diagnosis: Centre of Disease Control and Prevention (CDC) suggested to health care professionals to reach both the upper respiratory tract and lower respiratory tract when specimens are taken. Diagnosis of COVID-19 pneumonia can be based on a combination of epidemiologic information (*i.e.*, residence or travel experience in affected regions in the 14 days prior to symptom onset), clinical symptoms, computed tomography imaging findings, and laboratory tests. Reverse transcriptase-polymerase chain reaction (RT-PCR) tests are the main diagnostic standard. However, a single negative RT-PCR test result in potentially infected patients does not exclude COVID-19 infection. Serology tests may also be considered when RT-PCR is not available.

Treatment and Prevention: The current approach to COVID-19 is to control the infection source, also through the use of personal protection precaution to reduce the risk of transmission, and to provide early diagnosis, in order to isolate affected patients. Since there is currently no scientific evidence to recommend specific COVID-19 therapy, the

importance of supportive treatment has been emphasized. In China and Italy, Tocilizumab, a humanized anti-interleukin-6-receptor (IL-6R) monoclonal antibody, has been intravenous experimentally administered in patients with COVID-19 with encouraging results. WHO has issued recommendations for all healthcare professionals caring for patients with acute respiratory tract infections.

The use of standard precautions, including respiratory and eye protection, was recommended when treating patients with known or suspected COVID-19 pneumonia. However, the decision to remove precautions should be based not only on laboratory, radiological, and clinical evidence but also on the professional evaluation by specialized healthcare personnel.

COVID-19 and Risk to Health Care Workers

Unfortunately, Italy was distressed by a disruptive and rapid spread of COVID-19, also due to the relatively easy transmissibility. Current observations suggest that those who are in close contact with symptomatic and asymptomatic COVID-19 patients are the class with the highest diffusion of the contagion. It is not surprising that dental practitioners, due to the peculiarity of dental settings, seem to be exposed to a higher risk of contagion. Dental procedures potentially expose the professionals to contact with saliva, blood, contaminated instruments or surface, and to inhalation of droplets/aerosol from infected patients. Based on the above, recommended management protocols for dental practitioners, in terms of patient triage, patients' entrance into the practice, dental treatment, and after-treatment management have been reported.

Indeed, "have the benefit of the patient as their primary goal" it is the main indication of the ADA code for dentists. Recent evidence has suggested that preventive measures, such as preprocedural mouth rinses, considerably reduce the microorganism concentration in aerosol procedures.

Though the overall reduction in the time spent by patients, the protection of health care workers, and the search for asymptomatic SARS-CoV-2 positive patients are the main measures to reduce the risk of cross-infection, to date, the reduction of contagion risk during dental procedures remains a challenge for dentists. This questionnaire-based survey aimed to compare and assess the awareness towards the spread and control of Covid-19 in a context of the health emergency. This investigation was conducted according to information and guidelines provided by WHO and CDC.

MATERIALS AND METHODS

Study Participants: The target population selected was full-time undergraduate students. Both preclinical and clinical Students of all the specialties in Maharaj Vinayak Global University were included in the study.

Data collection: A questionnaire-based survey was conducted during the second week of June 2020 through a questionnaire form. The data collection process was designed and executed using printout of the questionnaire. The questionnaire having both open & close-ended questions were pre-designed and pre-validated by professionals in the field. The questionnaire was circulated among students presented in the campus. It contains socio-demographic details such as name, age, gender, year and specialty of the study and next section contains twenty questions to check the awareness and knowledge of the

students on coronavirus. The questions were focused on the basics of coronavirus such as basic knowledge, mode of transmission and treatment. In informed consent, it is mentioned that the student's identity not revealed and kept confidential. They were asked to tick the appropriate option. Completed data collected, entered in excel sheet and the results were analysed with the proper statistical method.

The questionnaire is formed on the basis of knowledge/awareness and it contains 20 questions about definition, contagiousness, symptoms, incubation, source of infection, route of transmission, treatment and infection control practices related to Covid-19. The questionnaire base survey was made in an offline mode and distributed among 500 undergraduate students to investigate their knowledge and awareness level about Covid-19.

Inclusion Criteria

- Undergraduate students aged 18-25.
- First group will be made up of medical students (medical, dental, nursing, pharmacy, physiotherapy)

Exclusion Criteria

- Patients with metabolic or systemic conditions
- Patients those are previously/currently diagnosed with Covid-19.

Questionnaire

1. What do you identify with the name SARS- CoV2?
   Severe acute respiratory syndrome
   South Asian respiratory syndrome
2. What do you identify with the term Covid-19?
   Chinese originated virus in December 2019
   Corona 19
3. Whom do you rely on information regarding Covid-19?
   Health magazine
   News channels
   Internet
   Multimedia advertisement
   All of them
4. Is Covid-19 a contagious/deadly disease?
   Yes
   No
5. Are you aware how the infection spreads?
   Yes
   No
6. How many days it will require to show the symptoms in a Covid-19 infected patient from the day of contracting the virus?
   24 hours
   3-7 days
   14 days
7. Have you ever heard of MERS?
   Yes
   No
8. What is the possible source of Covid-19?
   Human
   Rat
   Fly
   Bat
9. How would you proceed in case you are suspecting any of the symptoms of Covid-19?
   Home isolation
   Self-treatment
   Consult with a physician
10. What all precautionary measures you can take to reduce the spread of Covid- 19?
    Wash your hands with alcohol-based disinfectant
    Cover nose and mouth when sneezing or coughing
    Avoid social contact
    All the above
11. Do you avoid visiting hospitals or laboratories for testing from the fear of suspicion of getting infected or testing positive?
    Yes
    No
12. Do you wash your hands regular after coming from a public place such as hospital/ college/ market?
    Yes
    No
13. Are you aware of the steps of hand washing recommended by WHO?
    Yes
    No
14. Did you take the vaccine against Covid-19?
    Yes
    No
    Partially vaccinated
15. Do you think that 1 st dose is sufficient for protection against Covid-19?
    Yes
    No
16. Which vaccine would you prefer against Covid-19?
    Covisheild
    Covaxin
    Sputnik
    No preference
17. How can patients currently be treated?
    Specific drugs (Ramdesevir, Fabiflu)
    Supportive medical care
    Symptomatic drugs (Antipyretic/Analgesic/ Antiemetic)
    Vaccination
    No treatment
    I don't know.
18. In the context of exposure to the risk of contagion for medical doctors, dentists and other health professionals, which of the following statements do you agree with?
    Dentists are more exposed to the risk of infection than other health professional
    Dentists are less exposed to the risk of infection than other health professionals
    Dentists are equally exposed to the risk of infection than other health professionals
    I don't know
19. Are diabetic patients more prone to Covid 19?
    Yes
    No
20. Is there any association between oral health and severity of Covid 19 complications?
    Yes
    No

RESULTS

All the collected data was tabulated in MS- Excel. Data analysis was done by using SPSS (Statistical Packages for Social Sciences) version 24.0 (IBM Corp, 32 Armonk, N.Y, and USA). Descriptive statistics were described in terms of frequency and percentages. In order to show association between dependent and independent variables Chi- square test was employed. It was observed that $p < 0.5$ was significant.

Table 1 Distribution of Knowledge regarding Covid-19 amongst Non-Medico and Medico Undergraduate Students

Knowledge	Medico		Non-Medico		χ2	p-value
	F	**P**	**F**	**P**		
What do you identify with the name SARS- CoV2?						
Severe acute respiratory syndrome	337	67.4	76	15.2	280.99	<0.0001*
South Asian respiratory syndrome	163	32.6	424	84.8		
What do you identify with the term Covid-19?						
Chinese originated virus in December 2019	287	57.4	10	2	367.49	<0.0001*
Corona 19	213	42.6	490	98		
Is Covid-19 a contagious disease?						
Yes	458	91.6	470	94	2.16	0.14
No	42	8.4	30	6		
What is the possible source of origin of Covid-19?						
Human	109	21.8	32	6.4	149.67	<0.0001*
Rat	17	3.4	75	15		
Fly	44	8.8	19	3.8		
Bat	330	66	74	14.8		
Do you think that 1st dose is sufficient for protection against Covid-19?						
Yes	119	23.8	117	23.4	0.02	0.88
No	381	76.2	383	76.6		
In the context of exposure to the risk of contagion for medical doctors, dentists and other health professionals, who of the following statements do you, agree with?						
Dentists are more exposed to the risk of infection than other health professionals	246	49.2	16	3.2	612.46	<0.0001*
Dentists are less exposed to the risk of infection than other health professionals	47	9.4	24	4.8		
Dentists are equally exposed to the risk of infection than other health professionals	196	39.2	77	15.4		
I don't know	11	2.2	383	76.6		
Are diabetic patients more prone to covid 19?						
Yes	123	24.6	91	18.2	15.50	0.0004*
No	9	1.8	29	5.8		
Maybe	368	73.6	380	76		
I don't know	NA	NA	NA	NA		
Is there any association between oral health and severity of Covid 19 complications?						
Yes	307	61.4	113	22.6	171.01	<0.0001*
No	19	3.8	41	8.2		
Maybe	154	30.8	346	69.2		
I don't know	NA	NA	NA	NA		

*Significant when p<0.05, F-frequency, P-percentage

Table 2 Distribution of Awareness amongst Non-Medico and Medico Undergraduate Students

Awareness	Medico		Non-Medico		χ2	p-value
	F	**P**	**F**	**P**		
Whom do you rely on information regarding Covid-19?						
Health magazine	99	19.8	2	0.4		
News channels	31	6.2	5	1		
Internet	110	22	13	2.6	291.49	<0.0001
Multimedia	48	9.6	20	4		
Advertisement	212	42.4	460	92		
All of them	NA	NA	NA	NA		
Are you aware about how the infection spreads?						
Yes	396	79.2	488	97.6	82.54	<0.0001
No	104	20.8	12	2.4		
How many days does it require to show the symptoms in a Covid-19 infected patient from the day of contracting the virus?						
24 hours	101	20.2	17	3.4		
3-7 days	282	56.4	22	4.4	486.9	<0.0001
14 days	117	23.4	461	92.2		
Have you ever heard of MERS?						
Yes	286	57.2	21	4.2	330	<0.0001
No	214	42.8	479	95.8		
How would you proceed in case you are suspecting any of the symptoms of Covid-19?						
Home isolation	355	71	452	90.4		
Self-treatment	21	4.2	13	2.6	63.36	<0.0001
Consult with a physician	124	24.8	35	7		
.						
Yes	210	42	321	64.2	29.53	<0.0001
No	240	48	179	35.8		
Do you wash your hands after coming from a public place such as hospital/college /market?						
Yes	338	67.6	358	71.6	1.89	0.17
No	162	32.4	142	28.4		
Are you aware of the steps of hand washing recommended by WHO?						
Yes	352	70.4	96	19.2	265.01	<0.0001
No	148	29.6	404	80.8		
Did you take the vaccine against Covid-19?						
Yes	230	46	109	21.8		
No	92	18.4	36	7.2	126.47	<0.0001
Partially vaccinated	178	35.6	355	71		

Which vaccine would you prefer against Covid-19?						
Covisheild	232	46.4	414	82.8		
Covaxin	112	22.4	27	5.4	170.65	<0.0001
Sputnik	94	18.8	11	2.2		
No preference	62	12.4	48	9.6		
How can patients currently be treated?						
Specific drugs (Ramedesevir, Fabiflu)	70	14	45	9		
Supportive medical care	146	29.2	30	6		
Symptomatic Drugs (Antipyretic/Analgesic/Antiemetic)	103	20.6	14	2.8	344.5	<0.0001
Vaccination	90	18	371	74.2		
No treatment	13	2.6	12	2.4		
I don't know	78	15.6	28	5.6		
Are diabetic patients more prone to covid 19?						
Yes	123	24.6	91	18.2		
No	9	1.8	29	5.8	15.5	0.0004
Maybe	368	73.6	380	76		
I don't know	NA	NA	NA	NA		
Is there any association between oral health and severity of Covid 19 complications?						
Yes	307	61.4	113	22.6		
No	19	3.8	41	8.2	171.07	<0.0001
Maybe	154	30.8	346	69.2		
I don't know	NA	NA	NA	NA		

*Significant when p<0.05, F-frequency, P-percentage
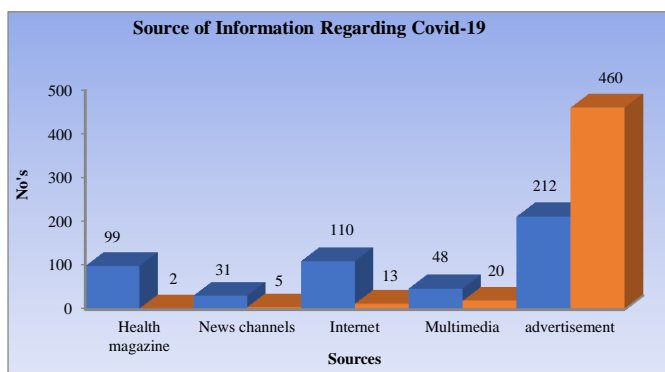
Figure 1 Source of information regarding Covid-19
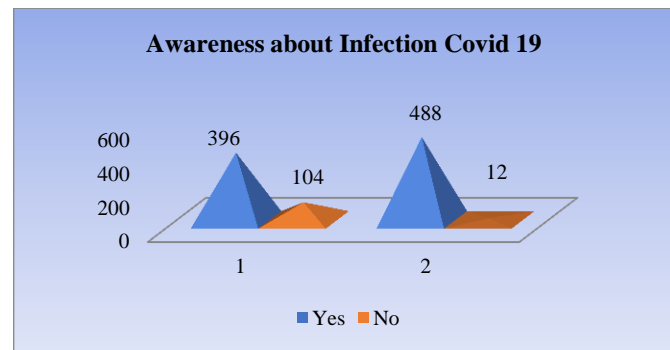
Figure 2 Awareness of Covid-19 Infection
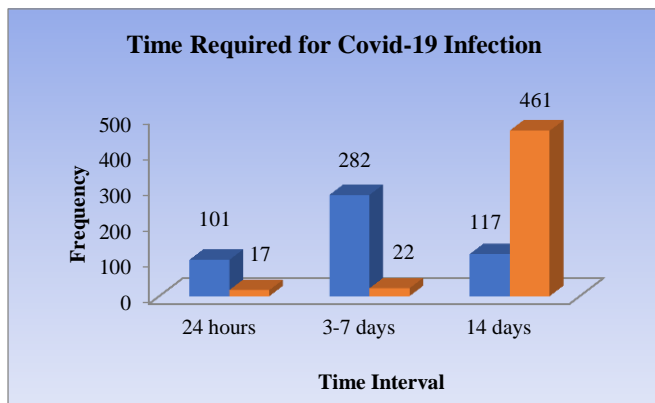
Figure 3 Responses of Participants Regarding Time Requirement for Covid-19 Infection
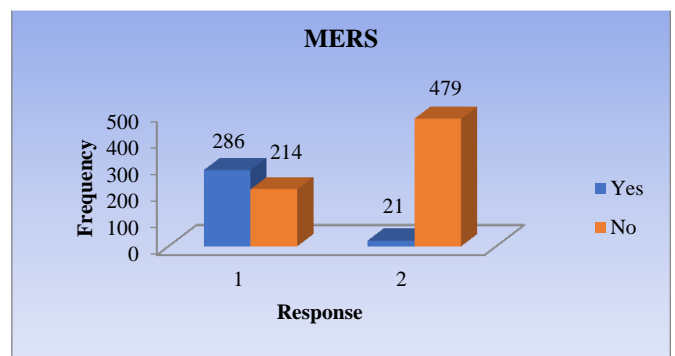
Figure 4 Responses of Participants Regarding MERS
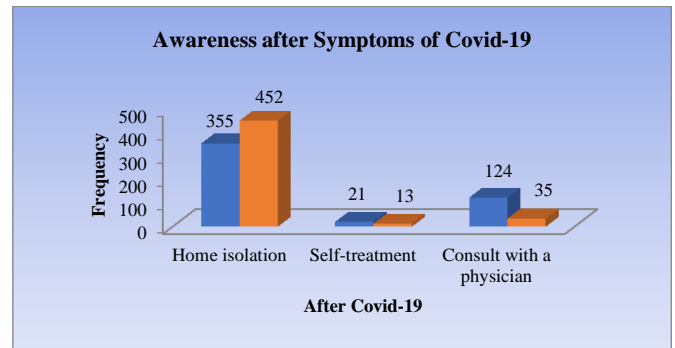
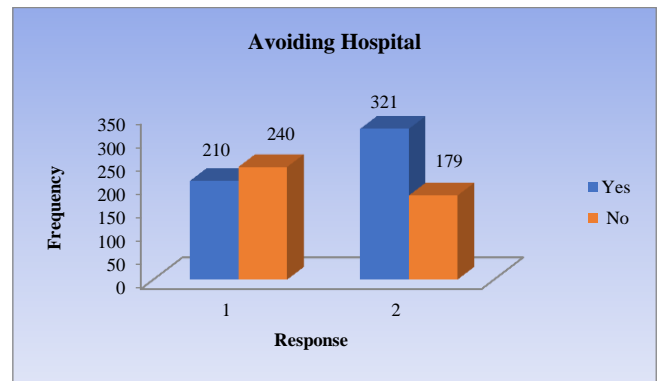**Figure 5** Awareness after Symptoms of Covid-19.

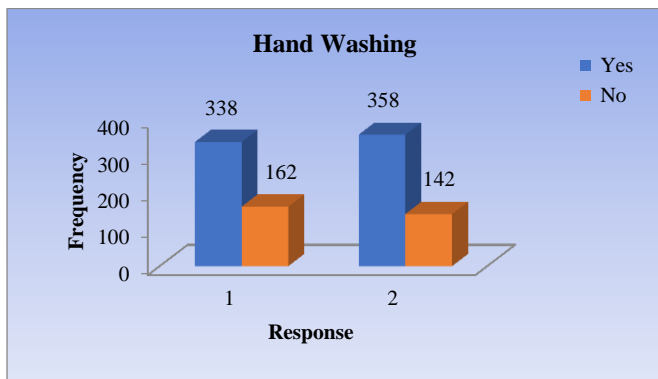**Figure 6** Avoiding of Hospital after Symptoms of Covid-19
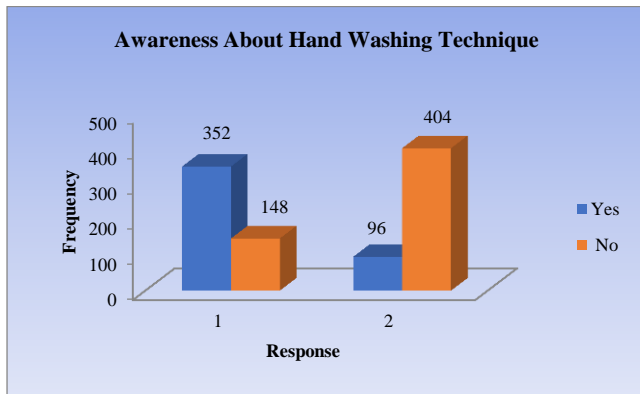
Figure 7 Awareness of Hand Washing

Figure 8 Awareness of Hand Washing
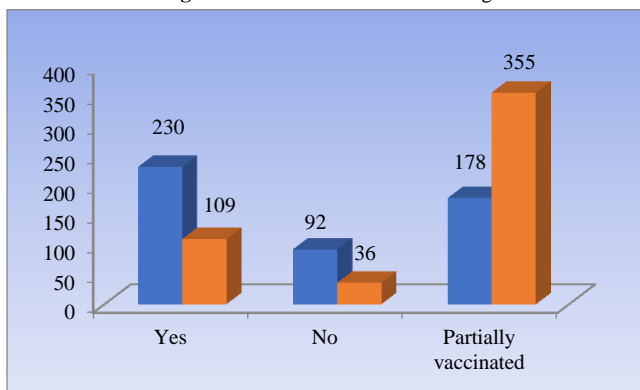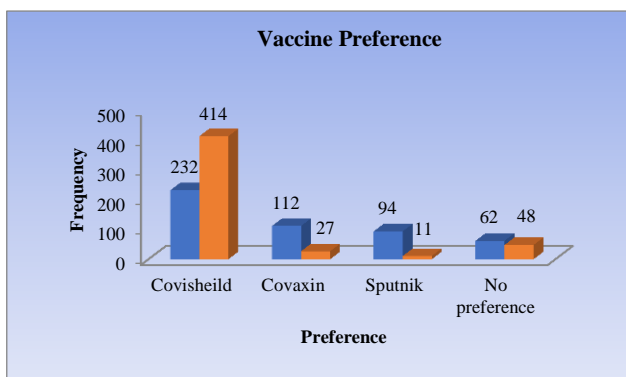

Figure 9 Vaccination Status

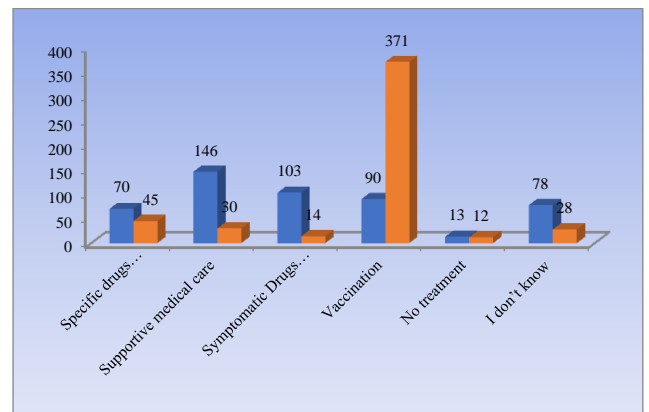
Figure 10 Vaccination Preference

Figure 11 Awareness of Covid-19 Treatment

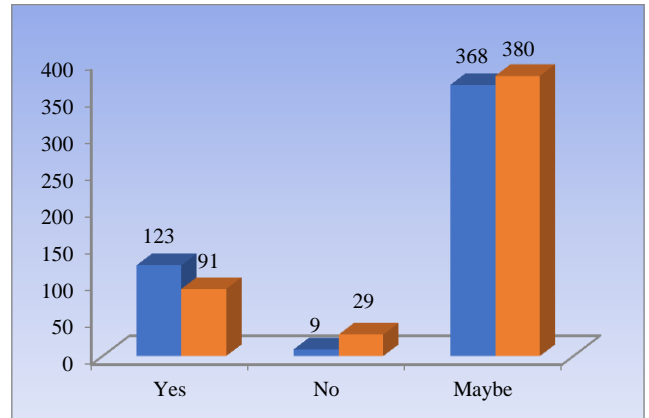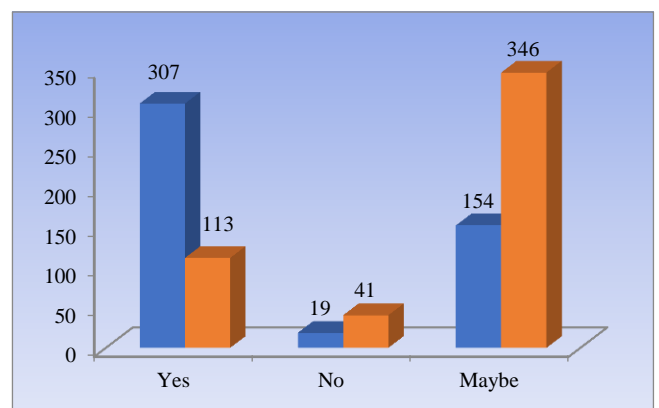**Figure 12** Awareness of association of Diabetes with Covid-19

Figure 13 Awareness of association between oral health and severity of Covid 19

DISCUSSION

There was a sudden outbreak at the beginning of Dec 2019 in Wuhan City, due to an infection with the severe acute respiratory syndrome; many patients were admitted to hospitals with an initial diagnosis of pneumonia of an unknown etiology, later on, identified as Coronavirus 2(SARS-CoV-2). World Health Organization (WHO) raised its pandemic alert on March 11, 2020. It is an emerging communicable disease; even the experts have inadequate knowledge about the virus in terms of its source, precise duration of incubation, severity, and what makes it quite easily transmissible. Many researchers are finding a way to get rid of this SARS-CoV2 by sharing the entire genome of the organism.

A questionnaire-based study was carried out among the students of the Maharaj Vinayak Global University, Jaipur,

Rajasthan in India with healthcare professionals in various specialties. The questionnaire was divided into various categories with basic knowledge, awareness and treatment of Covid-19.

A careful analysis of the participants responses showed (Table no.1) that despite almost all the medico's participants (94%) and non-medicos (91.6%) knew that Covid-19 is a contagious disease and about 67.4% of medico's respondents and 15.2% of non-medicos knew the definition of Sars-CoV2, only slightly more than half of them knew 57.2% medicos and 2% non-medicos about Covid 19 definition. On the other hand, 66% of medicos and 14.8% of non-medicos knew the source of origin of Covid-19.

In general, 76.2% of medicos and 76.6% of non-medicos think that 1st dose of vaccination is not sufficient for protection against Covid-19. And when risk perception toward healthcare personnel has been quantified, we found that only 49.2% of medicos and 3.2% of non-medicos assumed that dentists are more exposed to the risk of infection than other health professionals.

These findings also revealed respondents' knowledge of association between oral health and severity of Covid-19 as almost more than half medico respondents 61.4% and non-medicos 22.6% were aware of this association. And lastly this response also confirmed that medicos (24.6%) and non-medicos (18.6%) have knowledge about diabetic patients more prone to Covid 19.

Acknowledgements

CONCLUSION

From the present study, it can be concluded that awareness and knowledge regarding Covid-19 among medicos and non-medicos was good. Most of them were aware of the precautionary measures to be followed during the outbreak but a small part of the study population requires education.

Reference

1. Are dental students aware of and knowledgeable about COVID-19? A questionnaire-based Investigation. B. Francesco, B. Catarina, F. Leonzio, G. Amerigo. The Open Dentistry Journal, Oct 2020, Vol 14.
2. Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. Int J Antimicrob Agents 2020; 55(3)
3. World Health Organization 2020. Coronavirus disease 2019 (COVID 19). Weekly Epidemiological Update. 2020
4. Huang C, Wang Y, Li X *et al*. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 2020; 395 (10223): 497-576.
5. Del Rio C, Malani PN. Novel Coronavirus-important information for clinicians. JAMA 2019; 2020 (Feb); 5.
6. Sharda AJ, Shetty S. A comparative study of oral health knowledge, attitude and behavior of non-medical, paramedical and medical students in Udaipur city, Rajasthan, India. Int J Dent Hygiene 8, 2010; 101-109.
7. Al Shehri AM. A lesson learned from Middle East respiratory syndrome (MERS) in Saudi Arabia. Med Teach., 2015; 37 Suppl 1: S88-S93.
8. Parikh P A, Shah B, Phatak A G, *et al*. (May 15, 2020) COVID-19 Pandemic: Knowledge and Perceptions of the Public and Healthcare Professionals. Cureus, 12(5): e8144

****