EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH
www.ejpmr.com

AWARENESS ON NOVEL CORONAVIRUS (COVID-19) AMONG HEALTH CARE PROVIDERS IN SOUTHERN PART OF INDIA

Dr. Venkata Rama Rao Nallani*[1], Prof. Rama Rao Nadendla[2] and Kavuri Naga Swathi Sree[3]

[1]Associate Professor & HOD, Department of Pharmacy Practice, Chalapathi Institute of Pharmaceutical Sciences, Chalapathi nagar, Lam, Guntur-522034.
[2]Principal, Chalapathi Institute of Pharmaceutical Sciences. Chalapathi nagar, Lam, Guntur-522034.
[3]Dcotor of Pharmacy, Department of Pharmacy Practice, Chalapathi Institute of Pharmaceutical Sciences, Chalapathi nagar, Lam, Guntur-522034.

*Corresponding Author: Dr. Venkata Rama Rao Nallani
Associate Professor & HOD, Department of Pharmacy Practice, Chalapathi Institute of Pharmaceutical Sciences, Chalapathi nagar, Lam, Guntur-522034.

ABSTRACT
Background: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). World Health Organization (WHO) formally named the disease as "COVID-19" and declared it as health emergency due to its continues spread globally. It has become a major cause of concern for health care professionals all over the world. **Aim/objectives:** Aim and objective of the study to assess the awareness regarding COVID-19 among health care providers in southern part of India. **Materials and methods:** A cross sectional online based survey conducted during the month of April due to strict lockdown effect. A designed and validated questionnaire was administered to participants through online mode. Data was collected and tabulated. Knowledge score was calculated among health care providers. **Results:** A total of 1422 sample were responded to online questionnaire. The respond rate of participants to survey questionnaire was about 96.5%. Regarding profession of subjects most of the subjects were pharmacy back ground which were 36% of B.Pharmacy, 12.4% of Pharm.D and 19.4% of M.Pharmacy graduates. Doctors, nurses, pharmacists and other healthcare professionals were few with 5.6%, 5.0%, 6.1% and 14.9% respectively. Regarding symptoms, transmission of virus and preventive methods most of the health care providers (HCP) have adequate knowledge with percentage of 96% 76% and 93% respectively. Participants have altered knowledge about history of corona isolation (48%), facts about spread (74%), structure of virus (95%), diagnosis (62%), common disinfectant usage in India (74%), incubation period (89%), family of virus (84%) and latin name of virus (56%). **Conclusion:** The knowledge score of individuals was calculated and categorized into low knowledge (1%), moderate knowledge (39%) and high knowledge (60%). Overall results of the study shows that almost more than half of the health care providers have adequate knowledge regarding COVID-19 transmission, symptoms, preventive measures but moderate knowledge regarding history and few diagnosis techniques of corona virus. Additional education intervention and campaigns are required for health care providers to avail them with the knowledge regarding all aspects of COVID-19.

KEYWORDS: Corona virus, Knowledge, Health care providers, Awareness, Southern India.

INTRODUCTION
Coronavirus disease is an infectious disease emerged in 2019 which is caused by novel corona virus. Coronaviruses are a large group of viruses. Research has shown that the virus is transmitted through birds and mammals in earlier days. Recent evidence shows that humans being are vulnerable to infection and transmission of the virus.[1] World Health Organization (WHO) formally named the disease as "COVID-19". It was firstly identified in late December 2019 in Wuhan, Republic of China, and then had spread globally.[2] Present epidemiological data reported that on January 13th 2020, the first lab-confirmed "COVID-19" was found in Thailand globally and within the month of January only, the other "COVID-19" cases from Wuhan were spread to Japan and Republic of Korea.[3] On March 11th 2020, the WHO declared the novel coronavirus outbreak as a global pandemic viral infection as the number of cases of COVID-19 outside China has increased 13-fold, and the number of affected countries became tripled. After declaring the COVID-19 is pandemic, on 13th March, there were 118 infected countries.[4] By the middle of May month total conformed cases were around 4.44 millions, recovered cases 1.59 millions, deceased ones were 302 thousand.

Previously, the severe acute respiratory syndrome-coronavirus (SARS-CoV) and the Middle East respiratory syndrome-coronavirus (MERS-CoV) have been known to affect humans. Outbreaks of respiratory

disease caused by these viruses seem to have originated in animals before moving into other hosts like humans. The coronaviruses have become the major pathogens of emerging respiratory disease outbreaks. They are large family of single-stranded RNA viruses, which can cause illness ranging from a common cold to severe symptoms like MERS and SARS.[5] The clinical symptoms of COVID-19 include fever, which is the most common symptom, cough, fatigue, malaise, and shortness of breath. Due to its high transmission capability day by day the incidence of corona increasing, which may be coupled with morbidity and mortality. The elderly and patients with comorbidities are more likely to be infected and are prone to severe complications like acute respiratory distress syndrome (ARDS) and cytokine storm.[6]

The highest burden of confirmed cases and mortality outside China followed by the United States of America, Italy, Spain, Germany and Iran. Outbreak potential of COVID-19 in India also high due to being a neighboring country of China and establishing cross-border trade and migrant workers not only with China but also with other outbreak countries like Thailand, Malaysia and Singapore, etc.[7] The total conformed cases in India by the middle of may month were approximately 81,970, recovered case 27,920 and deaths 2,649.

The community's knowledge on the etiological agent, epidemiological parameters like incubation period, mode of transmission, signs and symptoms and preventive measures are essential in prevention of COVID-19. People should be aware on the history of COVID-19, the risk factors and Host's protective behaviours such as wearing masks, hand hygiene and social distancing. Till the moment, there is no proved treatment or vaccination against SARS-CoV-2. Strong infection control measures are the primary intervention to minimize the spread of the virus in both health care settings and the community.[8] Public awareness of dealing with highly infectious respiratory diseases plays a vital role in limiting the spread of the infection, especially in middle and low-income countries. The objective of this study is to assess the knowledge and awareness of COVID-19 disease and its related infection control practices among public in the Indian scenario.

MATERIALS AND METHOD
Study design
A cross sectional online based survey conducted during the month of April. As it is not feasible to conduct population-based study in the critical condition of strict lockdown to implementing social distance to avoid spread of pandemic. So we conduct the online data collection by online questionnaire method.

Study Tool
The survey questionnaire was designed in English language and it covered the socio-demographic characteristics, knowledge and awareness regarding COVID-19.

Sampling, study population and data collection method
Sample size was expected up to 1000 and a response rate of 70%, confidence interval (CI) 95%, Z as 1.96. Considering, an additional 10% (n=100) for any error in questionnaire filling, but the final sample size was 1422. Survey was started on 1st April 2020, and response acceptance was closed on 30th April 2020, when maximum sample size was achieved.

The study population eligible for participation in this survey were age over 16 years and consented for filling the data form are invited to participate.

A questionnaire was designed on google forms and link generated was shared on WhatsApp groups of public. Link was also shared personally to people who were in contact list of investigators. Respondents from other provinces were also eligible to participate if they are willing to fill the questionnaire.

Ethical approval
The study was performed in accordance to declaration of Helsinki. Due to lockdown, universities were closed, hence study protocol was approved from Hospital board. Study questionnaire contained consent portion that stated purpose, nature of survey, study objectives, volunteer participation, declaration of confidentiality and anonymity. The study did not collect the name of the respondents on the questionnaire form to ensure confidentiality. Voluntary participation and privacy were ensured during data collection.
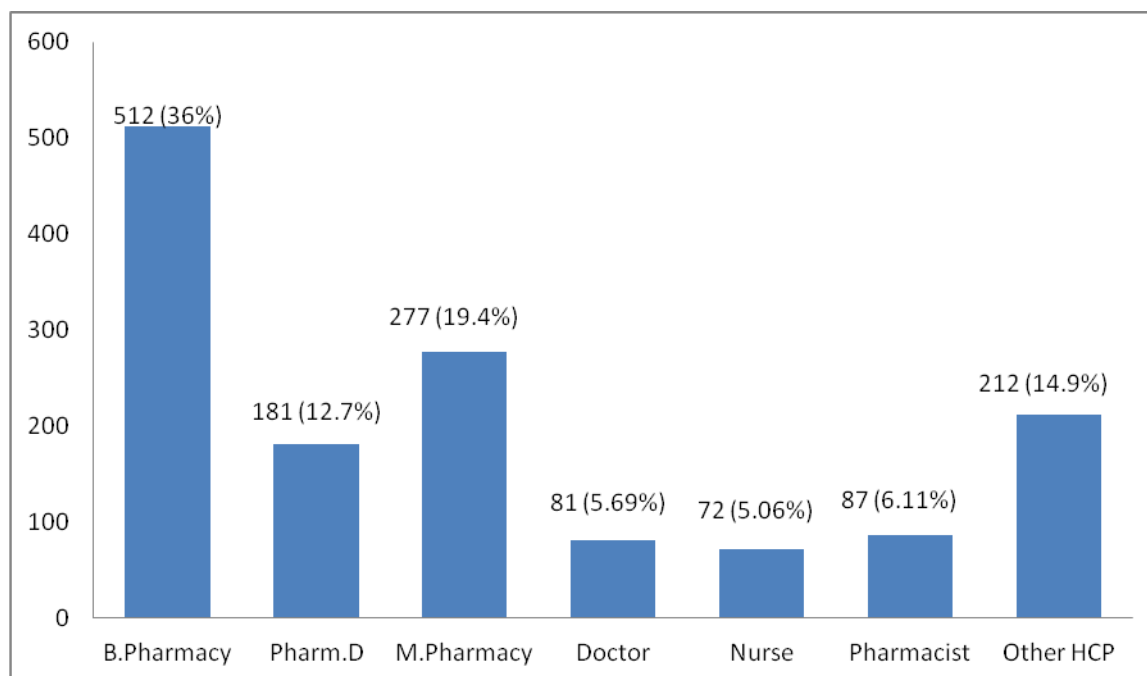
RESULTS
Table 1: Distribution of subjects according to their profession (N=1422).

Profession	Subjects (frequency)	Percentage
B.Pharmacy	512	36.00
Pharm.D	181	12.47
M. Pharmacy	277	19.47
Doctor	81	5.69
Nurse	72	5.06
Pharmacist	87	6.11
Other health care professional	212	14.90
	Total= 1422	100

Figure 1: Distribution of subjects according to their profession.

Table 2: Response of subjects to questions in the designed questionnaire.

Questions	Subjects (frequency)	Percentage (Approx %)
1. When was the first corona virus isolated from Wuhan market china? a) 07 Dec 2019 b) 07 Jan 2020 c) 26 Jan 2020 **Total response =**	 637 687* 95 1422	 45 48 7 100
2. Full from of SARS-CoV a) Severe acute respiratory syndrome corona virus-2 b)Severe chronic respiratory syndrome corona virus-2 c) Severe acute and chronic respiratory syndrome corona virus-2 **Total response =**	 1096* 130 196 1422	 77 9 14 100
3. When was the 1st evidence of corona virus was founded by scientist? a) 1960 b) 1945 c) 2019 **Total response =**	 839* 204 379 1422	 59 14 27 100
4. The name of corona virus comes from a) The crown-like projection on their surfaces b) The crown-like structure on their surfaces c) It looks like crown **Total response =**	 1034* 217 169 1420	 73 15 12 100
5. In latin Corona means a) Crown b) 'Halo' & 'Crown' c) Both	 465 155 800*	 33 11 56

Total response =	**1420**	**100**
6. In which part of body corona virus first found a) Mouth b) Eye tears c) Nose	 **92** **252** **1075***	 **6** **18** **78**
Total response =	**1419**	**100**
7. Which family does corona viruses belong to? a) Coronaviridae b) Coronaviri c) Coronavinde	 **1187*** **130** **100**	 **84** **9** **7**
Total response =	**1417**	**100**
8. What do you think about transmission of corona virus from person to person? a) Droplets and airborne b) Surface transmission c) Fecal-oral d) All of the above	 **264** **38** **32** **1084***	 **19** **3** **2** **76**
Total response =	**1418**	**100**
9. What is the common symptom of covid-19? a) Cough b) Sneezes c) Fever d) All of the above	 **20** **17** **25** **1358***	 **1** **1** **2** **96**
Total response =	**1420**	**100**
10. Which age group people are higher risk of developing severe disease and death? a) Over 60 yrs of age b) 34-45 yrs of age c) 10-20 yrs of age	 **1350*** **40** **28**	 **95** **3** **2**
Total response =	**1418**	**100**
11. What was the incubation period on average, the time from exposure to symptom onset? a) About 5-14 days b) About 3-7 days c) About 16-17 days	 **1264*** **55** **100**	 **89** **4** **7**
Total response =	**1419**	**100**
12. What is the magic of corona virus spread? a) Asymptomatic spread b) Sneezes c) Fever	 **1053*** **293** **68**	 **74** **21** **5**
Total response =	**1414**	**100**
13. What are current available diagnosis tests in India? a) RT-PCR test b) Serology (Antibody) test c) Blood test	 **404** **48** **85**	 **29** **3** **6**

d) A and B	**880***	**62**
Total response =	**1417**	**100**
14. What will be sample specimen to do RT-PCR test in corona virus?		
a) Sputum	**112**	**8**
b) Lower respiratory tract aspirants	**105**	**7**
c) Nasal swabs	**185**	**13**
d) Above all	**1012***	**72**
Total response =	**1414**	**100**
15. How do we prevent spreading of corona virus?		
a) Use cloth face covers	**22**	**2**
b) Stay at home	**50**	**3**
c) Avoid close contact	**22**	**2**
d) Above all	**1320***	**93**
Total response =	**1414**	**100**
16. What was drug ordered by various nations from India to treat covid-19?		
a) Hydroxychloroquine	**1297***	**92**
b) Paracetamol	**110**	**7**
c) B-complex	**9**	**1**
Total response =	**1416**	**100**
17. Which state has more Red zones in India?		
a) Andhra Pradesh	**879***	**62**
b) Tamilnadu	**422**	**30**
c) Bihar	**110**	**8**
Total response =	**1411**	**100**
18. What is the common disinfectant using in India?		
a) Sodium hypochlorite	**1055***	**74**
b) Bleaching powder	**345**	**24**
c) Dusting power	**21**	**2**
Total response =	**1421**	**100**
19. What part of corona virus mediates entry in to the host cell?		
a) Membrane protein	**377**	**27**
b) The envelope protein	**160**	**11**
c) The spike protein	**870***	**62**
Total response =	**1407**	**100**
20. Which is the structure of corona virus?		
a) A	**26**	**2**
b) B	**50**	**3**
c) C	**1344***	**95**

		100
(A) (B) (C)	1420	
Total response =		

*Correct answer
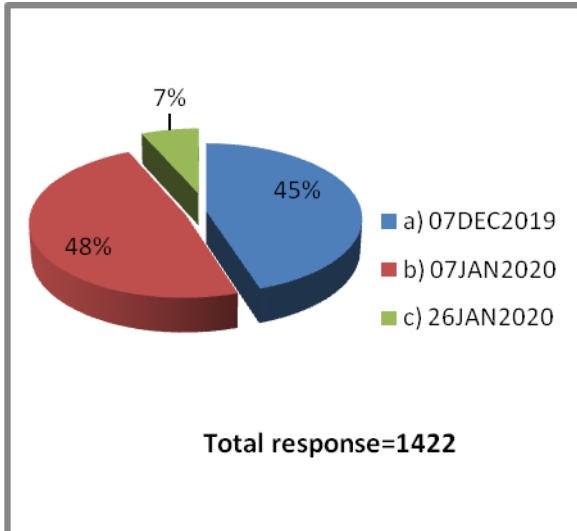
Fig 2: First corona virus isolated from Wuhan market china.
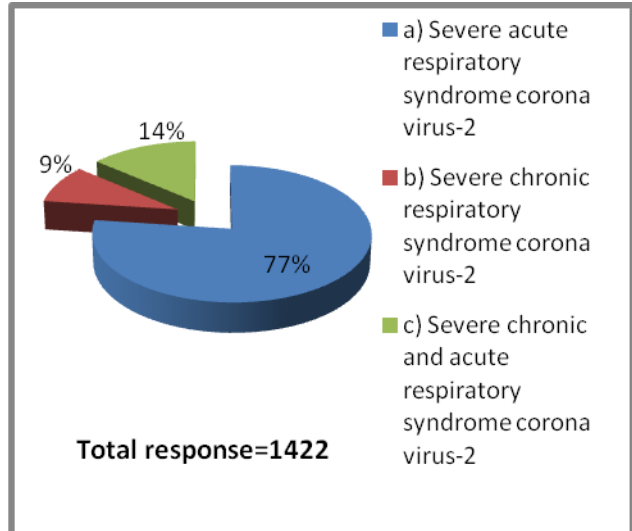
Fig 3: Full from of SARS-CoV.
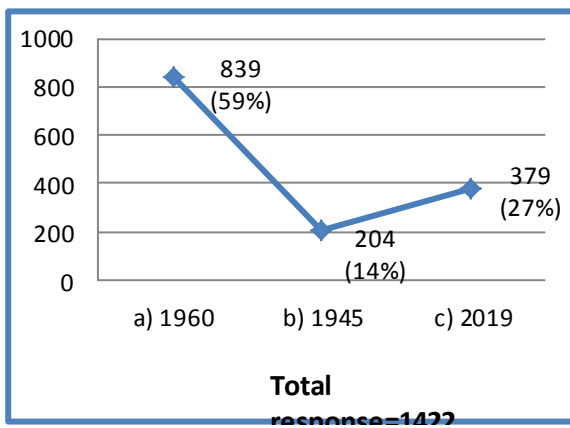
Fig 4: First evidence of corona virus founded.
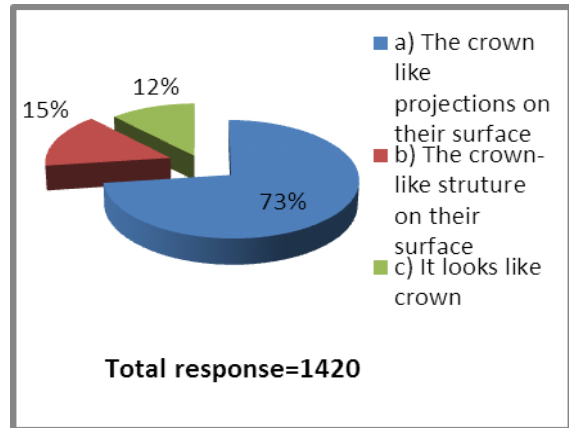
Fig 5: Name of corona virus comes from by scientist.
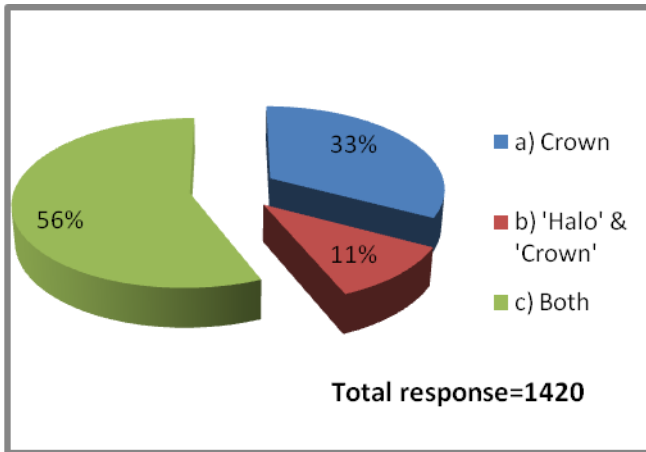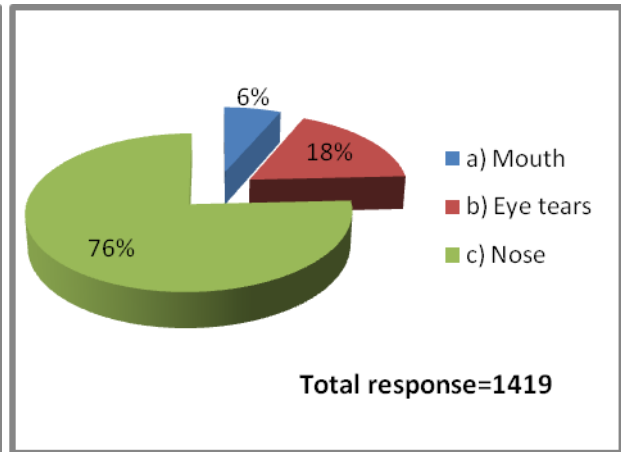
Fig 6: Latin name of corona.
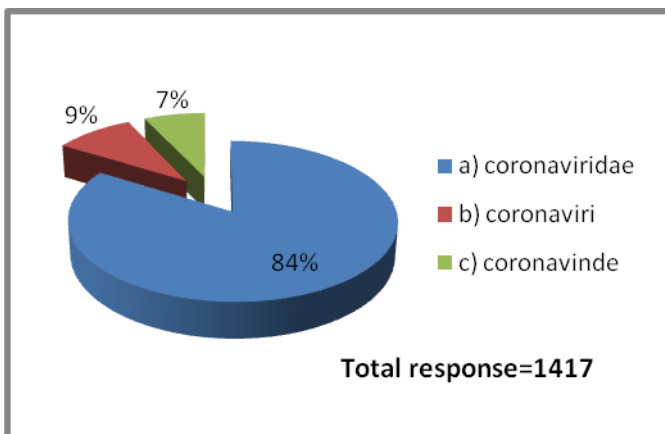

Fig 7: Part of body part corona found first.

Fig 8: corona virus family.
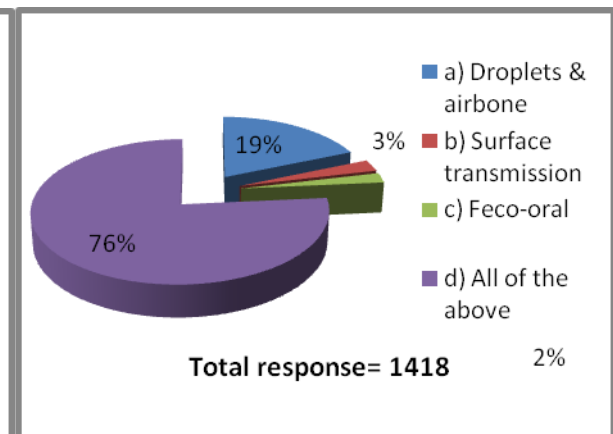
Fig 9: Transmission of virus.
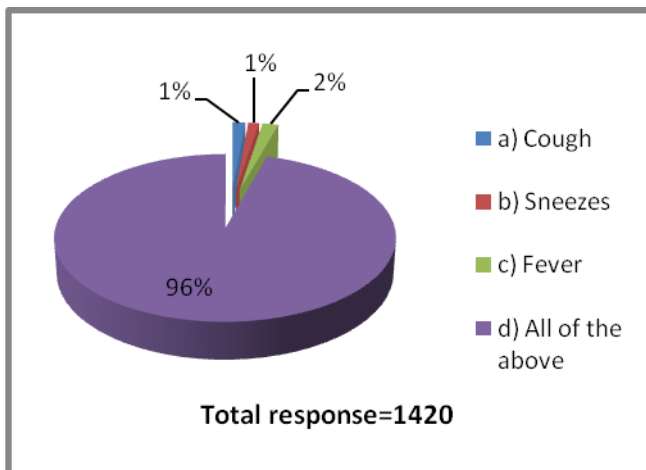
Fig 10: Common symptoms of COVID-19.
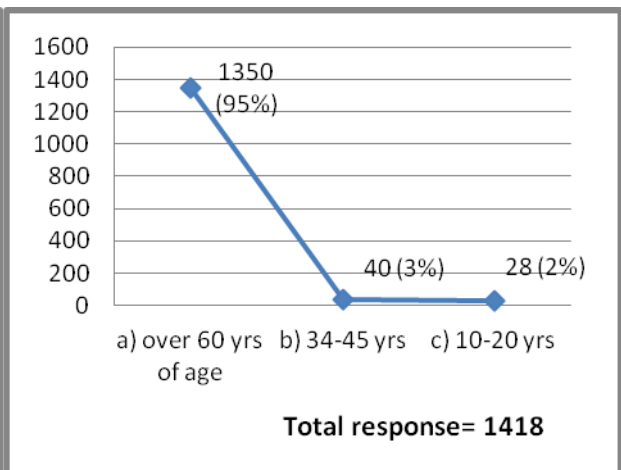
Fig 11: Higher risk age group people developing severe disease.
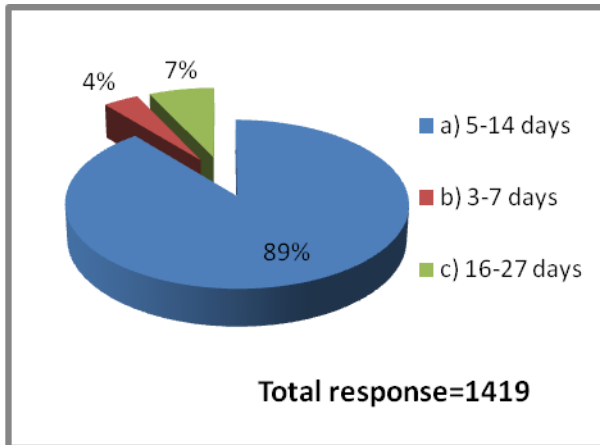
Fig 12: Incubation period of virus.
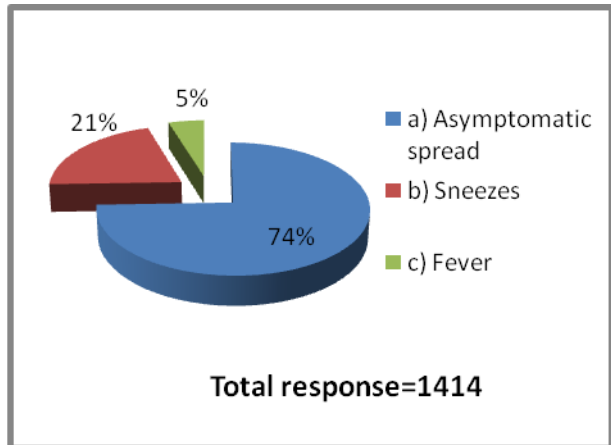
Fig 13: Magic of corona virus spread.
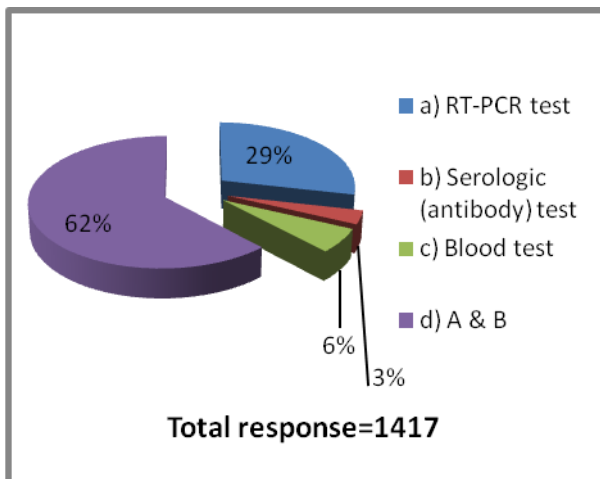
Fig 14: Available diagnosis test in India.
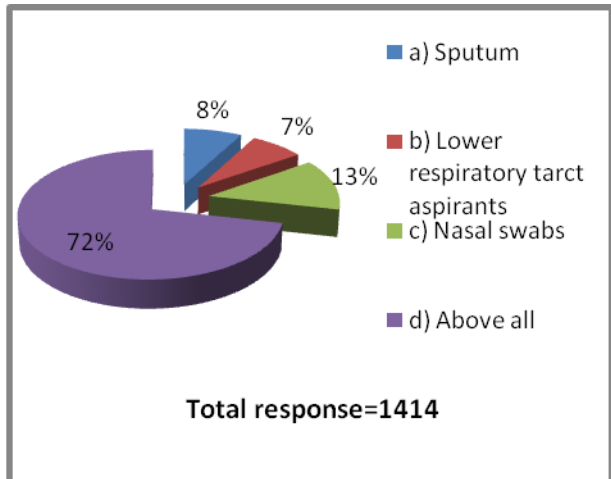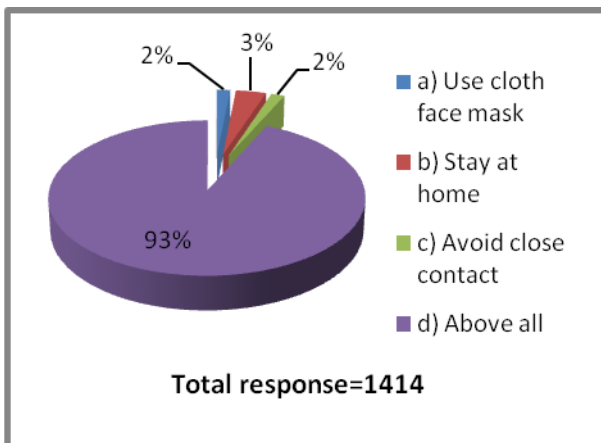

Fig 15: Sample specimen to do RT-PCR test.

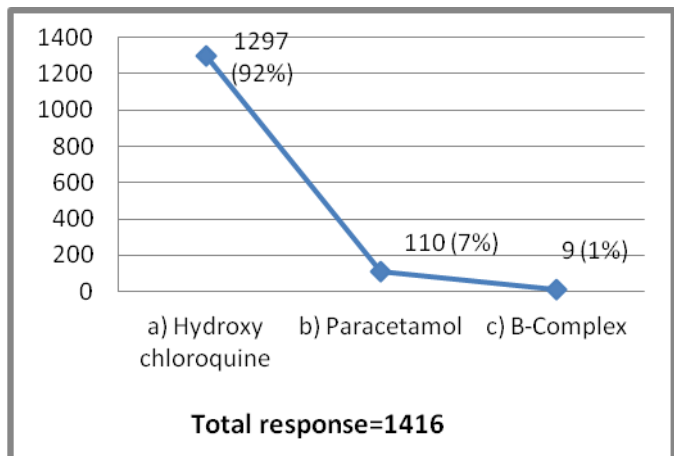**Fig 16: Spreading of corona virus prevention.**

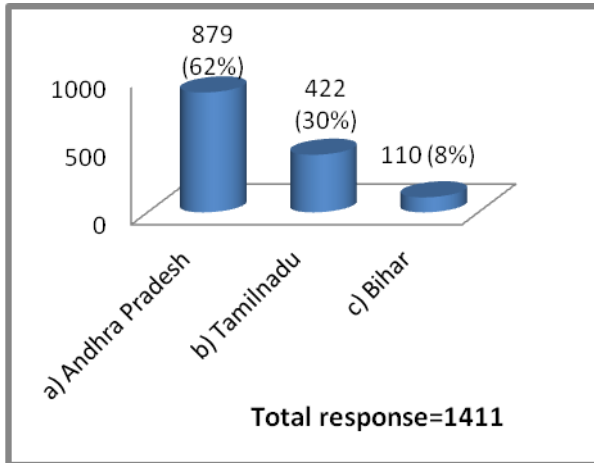**Fig 17: Drug ordered by different nations from India to treat COVID-19.**
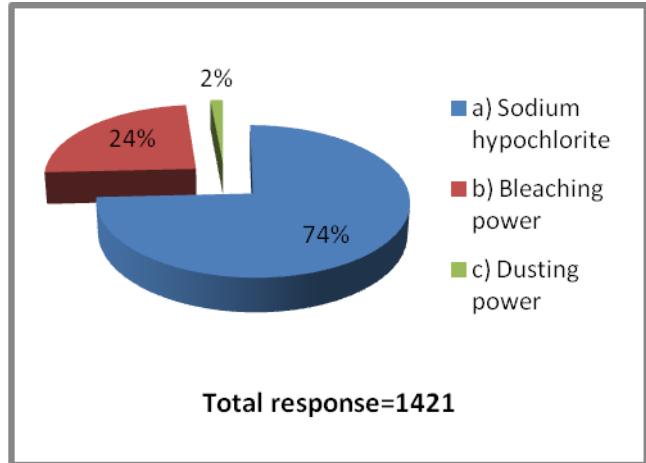
Fig 18: State with more red zones.

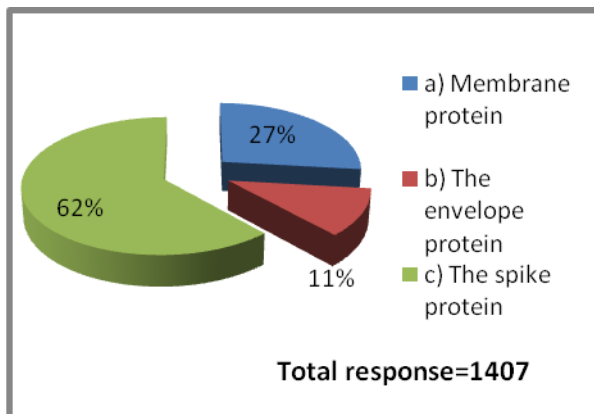**Fig 19: common disinfectant using in India.**

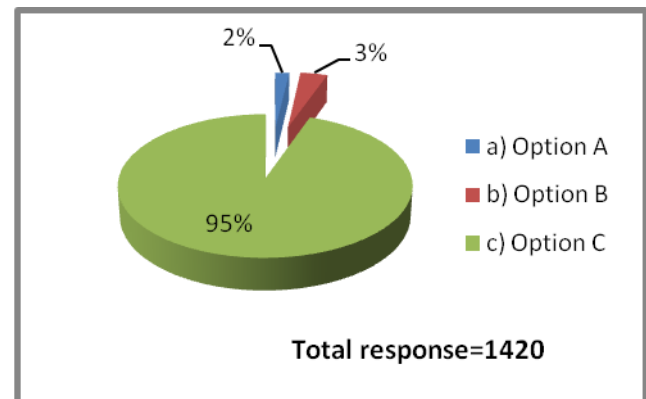**Fig 20: Part of virus mediates entry into host cell.**

Fig 21: Structure of corona virus.

Table 3: Calculation of knowledge score and response rate.

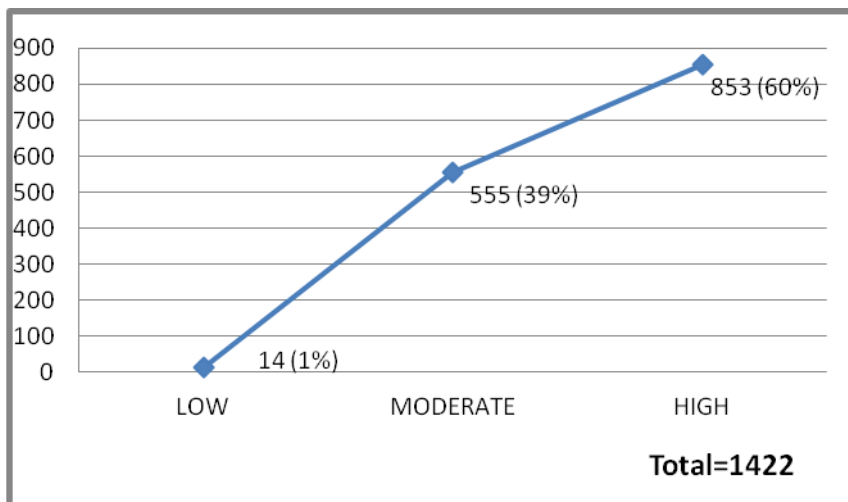| Knowledge score (range 0-20)	Subjects (frequency)	Percentage
Low (<10)	14	1
Moderate (10-15)	555	39
High (>15)	853	60
Mean ± SD	**12.5 ±2.73**	
Total response rate (%)	**99.6%**	

Fig 22: Knowledge score of subjects.

DISCUSSION AND CONCLUSION

Corona virus is the emerging health emergency in the present world and thousands of individuals are losing their lives every day because of the severity of the infection and its complications.[9] On the 11th of March 2020, the World Health Organization (WHO) characterized the disease as the first pandemic caused by a coronavirus.[10] In the present situation disease had spread to 213 countries and territories around the world with a highest mortality rate in countries like USA, Italy and Spain. In India also the situation getting dangerous day by day due to community spread of COVID-19.

To the best of your knowledge, the present study is first of its kind about assessing awareness among health care providers in mostly southern part of India. A standard questionnaire was designed and validated. Administration of questionnaire was done on online based during the month of April. As it is not feasible to conduct population-based study in the critical condition of strict lockdown to implementing social distance to avoid spread of pandemic. The questionnaire contains the questions regarding their profession and followed by questions on corona virus in order to assess the knowledge of individual on COVID-19. Response rate of participants to survey questions was very high with 99.6%.

Regarding profession 36% of individuals were B.Pharmacy graduates, followed by next highest of 19.47% of M.Pharmacy graduates. Whereas Pharm.D and other healthcare professional were about 12.47% and 14.9% respectively, healthcare providers like doctors, nurses and pharmacist are very few percentages around 5% to 6%. Most of the subjects with pharmacy back ground were well responded to the questionnaire. In the present research study we also included the question about history of corona virus which help the individual to acquire few basic knowledge regarding virus isolation, other names, family of virus and other few facts, which is the novelty of our study because there is no other study till now which include facts and history of corona virus. Results obtained that almost 48% of subjects have knowledge about first isolation of corona virus in Wuhan market China, 77% of Health care providers(HCP) aware of the full form of SARS-CoV, almost 59% of individual know the 1st evidence of corona virus which was founded by scientist.

Subjects responded well regarding corona virus structure, latin name and family of virus. Almost three-fourth of the HCPs answered that corona virus named after the crown like projections on their surface, 56% of participants known that latin name of corona was 'halo' and 'crown'. Whereas 84% of subjects marked that corona virus belongs to family *coronaviridae*. Maximum of 78% of participants responded that nose is the first part of the body where corona virus found earlier. Knowledge of HCPs about transmission of virus was greater than three-fourth of the sample which is of 76%

which concluded that majority of HCP aware of transmission of corona virus. These findings were also consistent with the study conducted by Bhagavathula et al, in which they assessed the awareness and perception of COVID-19 among health care workers and reported that knowledge of transmission (60%) was poor among HCP.[11] According to study conducted by Huynh Giao et al, regarding knowledge and attitude towards COVID-19 in Vietnam reported that 72.8% (n=327) were aware of symptoms.[12] In the present study 96% of participants have adequate knowledge about COVID-19 symptoms therefore the findings of the study stated that health care worker were well aware of symptomology of virus when compared to other studies. Our study reported that 95% of individuals were aware of high risk age group who easily affected with corona virus.

Recent research has observed that asymptomatic patients and patients in their incubation period are also carriers of this particular virus which can lead to disease transmission.[13] Almost 74% of subjects were aware of this fact that corona even spread from asymptomatic person and 89% of study participants marked that incubation period of corona is about 5-14 days. Advanced technology promotes the fast detection of corona virus by using rapid kit test, but accurate results must be obtained by doing test with RT-PCR technique. In the present study 62% of individual aware about diagnosis tests and 72% know about sample collection methods for RT-PCR test. According to study by Ahmed Samir et al, reported that 97.1% of subjects aware about spreading of corona[14] but in our present study only 93% of participants aware about spreading of COVID-19. Almost 92% of subjects aware of Hydroxychloroquine used in the treatment of COVID-19 in India and 74% known about common disinfectant like sodium hypochlorite use in India. Least amount (62%) of participants aware about entry mechanism of corona virus into the body and almost 95% of individual aware about viral structure in the present study.

The knowledge score of individuals was calculated and categorized into low knowledge (1%), moderate knowledge (39%) and high knowledge (60%). Overall results of the study shows that almost more than half of the health care providers have adequate knowledge regarding COVID-19 transmission, symptoms, preventive measures but moderate knowledge regarding history and few diagnosis techniques of corona virus. Additional education intervention and campaigns are required for health care providers to avail them with the knowledge regarding all aspects of COVID-19. As the emerging corona virus does have vaccine and treatment options only method is to follow the preventive strategies to combat from COVID-19. Hence, more studies are warranted to investigate the knowledge towards COVID-19 among health care worker.

REFERENCES

1. Schoeman D, Fielding BC. Coronavirus envelope protein: Current knowledge. Virol J., 2019; 16(1): 69.
2. Hui DS, Azhar EI, Madani TA, Ntoumi F, Kock R, Dar O, et al. The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health the latest 2019 novel coronavirus outbreak in Wuhan, China. Int J Infect Dis., 2020; 91: 264-6.
3. World Health Organization (WHO). Novel Coronavirus (2019-nCoV) Situation Report- 1. WHO Bulletin; 2020.
4. World Health Organization. WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. Available at: https://www.who.int/dg/speeches/detail/who-direct-or-general-s-opening-remarks-at-the-media-briefing-on-covid-19
5. Cascella, M., Rajnik, M., Cuomo, A., et al. (2020). Features, Evaluation and Treatment Coronavirus (COVID-19), in StatPearls. Treasure Island, FL: StatPearls Publishing LLC.
6. Guo, Y. R., Cao, Q. D., Hong, Z. S., et al. (2020). The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak - an update on the status. Military Medical Research, 7(1): 11.
7. World Health Organization (WHO). Coronavirus Disease 2019 (COVID-19) Situation Report- 61. WHO Bulletin; 2020. Available at: https://www.who.int/docs/default-source/coronaviruse/situation-reports/2020-0321-sitrep-61-covid-19
8. Li, J. Y., You, Z., Wang, Q., et al. (2020). The epidemic of 2019-novel-coronavirus (2019-nCoV) pneumonia and insights for emerging infectious diseases in the future. Microbes and Infection, 22(2): 80–85.
9. Velavan T.P., Meyer C.G.: The COVID-19 epidemic. Trop Med Int Health, 2020; 25: 278-80.
10. WHO Director-General's opening remarks at the media briefing on COVID-19 11 March 2020. Retrieved April 4, 2020. https://www.who.int/dg/speec hes/detai l/who-direc tor-gener al-s-opening-remar ks-at-the-media -brief ing-on-covid -19-11-march -2020.
11. Bhagavathula AS, Aldhaleei WA, Rahmani J, Mahabadi MA, Bandari DK. Novel Coronavirus (COVID-19) Knowledge and Perceptions: A Survey on Healthcare workers. Med Rxiv., 2020; 2020.03.09.20033381.
12. Huynh G, Nguyen TNH, Tran VK, Vo KN, Vo VT, Pham LA. Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital, Ho Chi Minh City. Asian Pac J Trop Med, 2020; 13. doi: 10.4103/1995-7645.280396.
13. Huynh G, Nguyen TNH, Tran VK, Vo KN, Vo VT, Pham LA. Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital, Ho Chi Minh City. Asian Pac J Trop Med, 2020; 13. doi: 10.4103/1995-7645.280396.
14. Ahmed Samir Abdelhafiz, Zeinab Mohammed et al, Knowledge, Perceptions, and Attitude of Egyptians Towards the Novel Coronavirus Disease (COVID‑19). Journal of Community Health. April 2020.