Assessment of Knowledge, Attitude, Practice and Misconception Towards The Emerging COVID 19 Among Residents in Tamilnadu and Kerala

Dileep R, Sherin Elza John*, Thirugnanam.T. S, Yogakrishnan.S, N. Senthil Kumar, Smitha Sarah Thambi

Department Of Pharmacy Practice, Annai Jkk Sampoorani Ammal College Of Pharmacy, B. Komarapalayam; Nammakal; Tamil Nadu; India

www.ijppr.humanjournals.com

ABSTRACT

Objectives: To assess the knowledge, attitude, practice, and misconceptions towards the COVID-19. **Materials and Methods:** A questionnaire comprising of a total of 48 questions evaluating the Knowledge (15), Attitude (12), Practice (6), Misconceptions (10) of COVID-19, and questions were asked about the difficulties faced by participants in receiving hospital care and the problems faced by migrant workers on return to home (5). The questionnaire was prepared, pre-validated, and distributed through social media in the form of Google Forms. Requisite permissions from Institutional Ethics Committee and informed consent were obtained before response submission. Responses were recorded in Microsoft Excel® and evaluated for percentage response. **Result:** Epidemiological survey was conducted during the very early stages of the epidemic in both states and showed that about 25.92% and 37.18% of the participants had a good knowledge of COVID-19 from Tamil Nadu and Kerala respectively. While assessing the attitude towards the pandemic, almost 70% of the participants showed the right measure to take while being suspected. The data shows an almost similar rate of high misconceptions in both Tamilnadu 46.77% and Kerala 45.82%. **Conclusion:** Even though the sample has a high level of COVID-19 knowledge, there are many misconceptions among the respondents. These misconceptions have an impact on both short- and long-term disease control efforts and should thus be addressed in targeted campaigns. The majority of the people stated that they got fake information through social media. These findings could help public health officials devise and implement preventive measures to fight the pandemic.
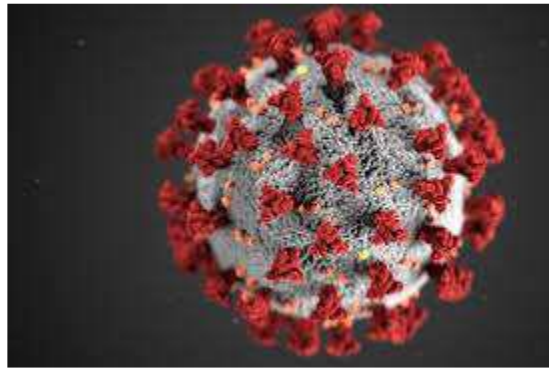
INTRODUCTION

COVID – 19 is a potentially severe acute respiratory viral infection caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Clinical trials and investigations are continuing to get adequate information about the virus, its origin, how it affects humans, and its management.

Figure No. 1: Illustration revealing ultrastructural morphology exhibited by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) when viewed with an electron microscopically, Centres for Disease Control and Prevention

(https://www.cdc.gov/media/subtopic/images.htm)

Since then, the epidemic has escalated and rapidly spread around the world, thus the WHO declared a situation of public health emergency on 30 January 2020, and then formally announced the scenario as a pandemic on 11 March 2020[1.]Two scenarios were highly considered for the origin of this novel coronavirus. Firstly, a majority of patients within the early stages of this happening reported a connection to the Huanan South China Seafood Market, a live animal or "wet" market, indicating a zoonotic link of the virus. The primary report states that 55% of the first 425 confirmed cases who were admitted before 1 January 2020 are linked to this market while only 8.6% were linked after this date which implicates that human transmission among close contacts was occurring since the midmonth of December 2019[2.] Secondly, considering the SARS-CoV-2 as a recombinant virus that could be genetically crippled between a bat coronavirus and an origin-unknown coronavirus[3]. Some studies suggest that this intervening host could be pangolins[4] and minks[5]. The incubation period is considered to be in between 1 – 14 days from exposure[6]. The reproduction number (R0) of the virus is estimated to be 2.5 by The Centers for Disease Control and Prevention[7].

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

671

Ongoing investigations to get the pieces of evidence of the host in between are still going on. The awareness of COVID-19 becomes very crucial during this period, as the risk of exposure and infections increases. This study aims at assessing the KAP and misconceptions among the public about the emerging pandemic. To explore the common beliefs and knowledge of COVID 19 in individuals.

Bao-Liang Zhong et al (15 March 2020)., conducted Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey done from 27 January 2020 to 1 February 2020 among 6910 participants[8]. The rate of the right answers in the knowledge questionnaire is 90%. 97.1% have confidence that China can win the battle and 98.0% wore masks. MurtalaBindawaIsah et al (12 June 2020)., conducted Corona Virus Disease 2019 (COVID-19): Knowledge, attitudes, practices (KAP) and misconceptions in the general population of Katsina State, Nigeria conducted from 7th May 2020 to 18th May 2020 among 722 respondents using an online questionnaire[9]. Among the total individuals, 83% responded at least one misconception on COVID-19, suggesting that the virus was created in a laboratory (36%). Respondents with a lower level of education received and trust the information from local radio and television while people with all other levels of education trust the health care workers. Sai Krishna Gudi et al (4 July 2020)., carried Knowledge and beliefs towards universal safety precautions during the coronavirus disease (COVID 19) in March 2020 pandemic among the Indian public; A web-based cross-sectional survey carried among 1117 respondents concludes that the knowledge and beliefs of the Indian public towards USPs is acceptable but, there is a need for educational intervention[10]. Therefore, the primary objective of this study includes: To explore the common knowledge, belief, and misconception of COVID 19 in individuals and also to know the perception and factors causing the society, vulnerable to the returning of migrants. The secondary objective is stated to establish the proper usage and disposal of used masks and to identify the barriers of seeking care in the tertiary hospitals during the present situation of COVID 19.

**MATERIALS AND METHODS**

This was a cross-sectional study conducted in the states of Tamilnadu and Kerala in India. This cross-sectional survey was conducted among the residents of Tamilnadu and Kerala from September 2020 to December 2020; the three months when the government started to implement the first unlock measures.

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

672

One of the preventive measures from coronavirus is to maintain a safe social distance. To follow it, the study is organized using online google forms. The link which proceeds to the questionnaire is prepared and shared through various social media like WhatsApp, Facebook, Telegram, etc., and the email id of the participants after informing the objectives and confidentiality to the participants. The informed consent is obtained from the individuals who marked the "Yes" option for the section detailing the consent. A total of 1311 responses were recorded. Responses of participants were recorded and entered in Microsoft Excel 2016[R]. Data were analyzed for frequency and percentage responses.

RESULT AND DISCUSSION

Assessment of Demographic Characters

A total of 1311 responses were collected from 652 Tamilnadu and 659 Kerala residents. Tamilnadu participants comprises of 301 males and 351 females whereas Kerala participants were of 306 males and 353 females. The genderwise distribution is represented in Figure No.2.

GENDER WISE DISTRIBUTION

MALE — TAMILNADU 46.17%, KERALA 46.43%
FEMALE — TAMILNADU 53.83%, KERALA 53.57%

■ TAMILNADU ■ KERALA
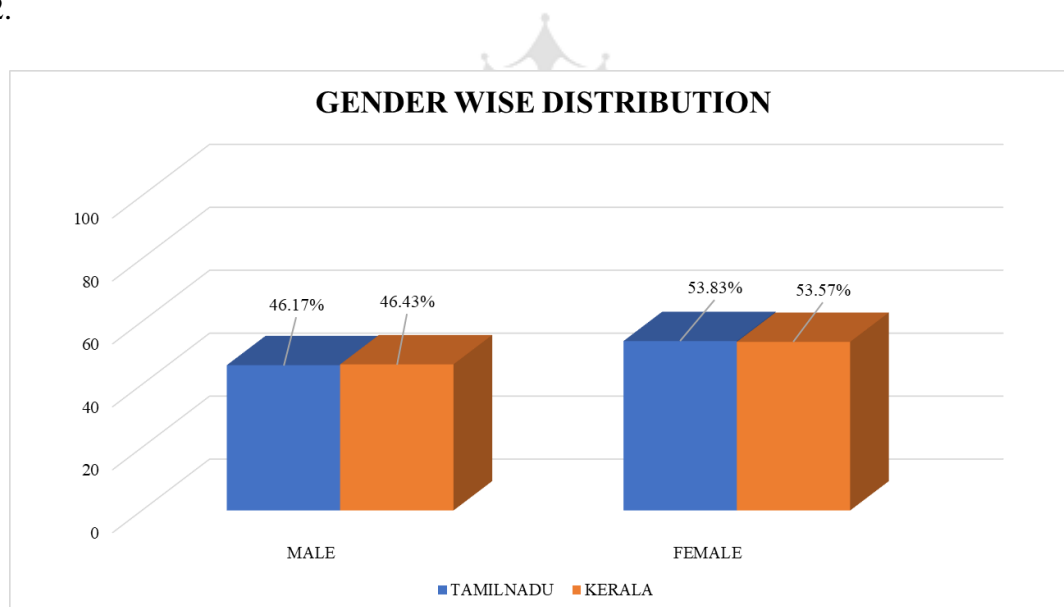
Figure No. 2. Statewise gender distribution of the participants

The mean age of the respondents was 27 ± 5 years. Out of the 652 Tamilnadu respondents, 38.80% were graduates; 24.39% were post graduates and 22.54% were from other medical courses. On the other hand, the 659 Kerala 32.91% were graduates; 26.71% were post graduates and 26.71 were from other medical courses. The majority of the respondents were students 896 (68.34%).

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

673

Assessment of Knowledge

A total of 15 questions which are categorized as Knowledge A (based on COVID-19) and Knowledge B (based on practice) were used to measure knowledge on the COVID-19 virus. The average knowledge score for participants was 8.87 (SD =3.00, Range 0–15). The scale used to assess the knowledge level implies 0-5, 6-10, 11-15 as poor, moderate, and good knowledge regarding the COVID-19 respectively.

Among the 1311 participants, only 27.53% correctly responded that the COVID-19 is not an airborne disease but a respiratory droplet transmittable disease. The people who stated that this virus can cause severe conditions for geriatric patients and patients with other comorbidities were 91.53%. Half of the participants correctly stated the ideal strength of alcohol content in hand sanitizer 53.54%. Around three quarters (69.26%) and less than half (34.70%) of the total participants were aware of the isolation and quarantine procedures that are usually followed during outbreaks. Bisected participants knew that the self-isolation period was of 3-14 days (54.99%). 64.60% knew that anybody can spread the disease without being symptomatic. The right responses for selecting the statement regarding the duration for coronavirus staying alive on the various surface were 71.54%.

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

674
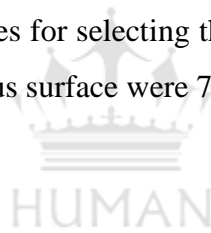
Table No. 1: Distribution of Disease based Knowledge A (n=1311)

KNOWLEDGE A QUESTIONS	ANSWER	RESPONSE
1. Coronavirus can be carried through the air?	False	361
2. COVID - 19 affects severely and can cause death in elderly people, people with a weak immune system, and other chronic illnesses.	True	1200
3. What is the ideal strength of alcohol that a hand sanitizer should contain to be used during outbreaks?	60%	702
4. During outbreaks, QUARANTINE is a procedure usually followed by?	People who are at risk	455
5. During outbreaks, ISOLATION is a procedure usually followed by?	Infected people	908
6. The SELF-ISOLATION PERIOD from the day of exposure to the coronavirus confirmed or suspected one to identify the symptoms is?	3 – 14 days	721
7. Do you think someone will spread the disease without being symptomatic?	Yes	847
8. Which of the following statement is correct? (a) The virus stays for 48 hours on the stainless steel surface (b) The virus stays for 4-5 days on plastic, surgical gloves, and papers (c) The virus stays for 4 days on wood and glass	Both(a), (b), and (c)	938

People who answered correctly helped us to assess their understanding of ideal duration for hand wash of 20sec 738(56.29%) and ideal social distance of 2m 728(55.53%) The awareness on mask usage is observed by four questions, i.e.; the purpose of the mask 484(74.23%), steps to be followed before using the mask 512(78.52), steps to follow while taking off the mask 454(69.63%), the disposal of the used mask in home 438(67.17%) in Tamilnadu and Kerala highlights the awareness on the mask from the responses showing the purpose of using mask 505(76.63%), the instructions to maintain before using mask 541(82.09%) while taking off the mask 504(76.47%) and for its proper disposal 448(67.98%). 1207(92.06%) respondents had the opinion that the gloves can be used in

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

675

community prevention, which is an incorrect tool recommended for community prevention of the disease.

Table No. 2: Distribution of Practice-based Knowledge (B) (n=1311)

KNOWLEDGE B QUESTIONS	ANSWER	RESPONSE
1. What would be the ideal length of time to wash hands in preventing the spread of COVID-19?	20 sec	738
2. What would be the ideal social distance to be maintained in preventing the spread of COVID-19?	6 feet/2m	728
3. The purpose of wearing a mask is to _?	both (a) and (b)	989
4. The things which are to be practiced before using a mask is _	Both (a), (b), and (c)	1053
5. The step(s) to be followed while taking off a mask after use?	Both (a), (b), and (c)	958
6. How to dispose of a used mask in the house?	Both (a), (b), and (c)	886
7. Is it recommended to use gloves in community prevention?	No	104
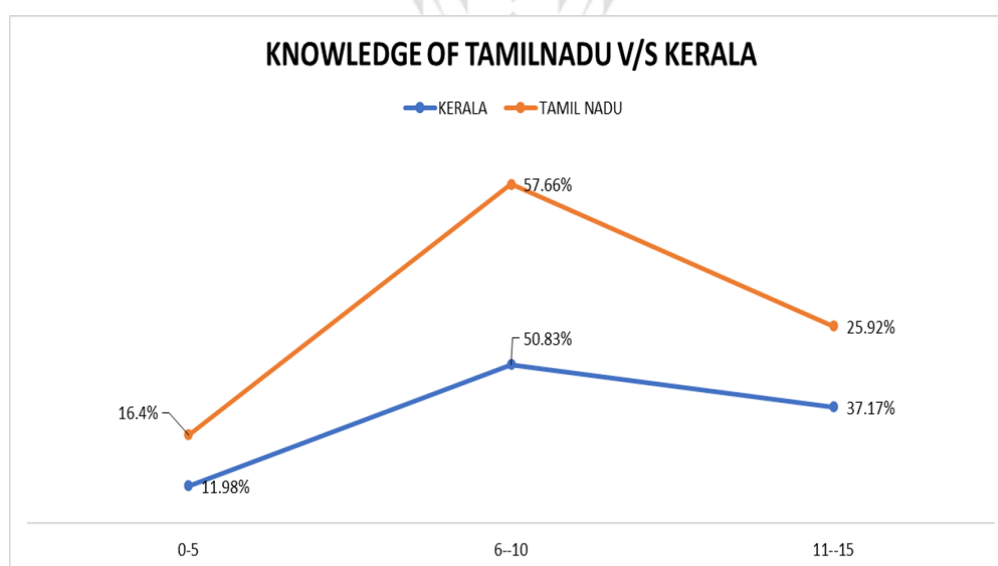
Figure No. 3. Comparison of knowledge score among Tamilnadu and Kerala

Most of the respondents within the female category were 30.96%, 20-40 age group 29.47%, graduate degree 31.27% and students 31.91% scored above 11 and were considered as having high knowledge. Overall, 56.10% females, 20-40 age group 59.27%, graduate degree 55.53% and student 56.36% participants were able to obtain scores above 6, representing an

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

676

acceptable moderate level of knowledge. The male 17.95%; age group (20 – 40) 11.24%; graduate degree 13.19%; and student 11.71% are remarked with lower knowledge score 0-5. The comparison of knowledge score among Tamilnadu and Kerala gives a statistical significance of $p < 0.05$.

Assessment of Attitude

Participants were asked 12 questions to assess their mental attitudes. Positive attitude towards the disease is of utmost importance especially while being in a pandemic situation irrespective of the socio-economic basis of the people.

Table No. 3: Attitude based questions

SL NO	ATTITUDE BASED QUESTIONS
1	Your chance of getting infected with Corona is?
2	Why do you think you are at low or at moderate risk?
3	Has anyone you know or contacted is tested positive for the Corona virus?
4	In suspecting infection with COVID – 19, I will_
5	Do you think that COVID-19 will finally be successfully controlled in the coming days?
6	The government is handling the COVID – 19 health crises very well.
7	Do you think that this SARS cov-2 virus is created in the laboratory by a government or terrorist organization to depopulate the world?
8	In my opinion, the MAJOR factor which causes the rise in the case is?
9	I will continue to maintain normal behavior and relationship with the people who recovered from COVID – 19?
10	The major difficulty faced by the migrants who return to home is?
11	The major sources which gave me FAKE information on COVID-19?
12	Which Channel do you trust the MOST to receive information related to Coronavirus?

Out of 1311 respondents, 223(17%) of the total participants indicated that they have a high risk of being infected with COVID-19 and 111(8.46%) were already had this viral disease. The reason which the candidates (N=1047) put forward in thinking as they are not of high risk is due to their faith in immunity power 363(34.67%), God 111(10.60%), not traveling

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

677

outside their locality 350(33.42%) and lesser number of COVID-19 cases in neighborhood 223(21.29%). Overall, 657(50.11%) of the respondents informed that the people whom they contacted were tested positive for the virus. 909(69.33%) of them know the procedures to follow if they suspect the presence of this SARCov-2 antigen, which is a piece of striking information in the scenario. Notably, only Half of participants 745 (56.82%) agreed that COVID-19 would successfully be controlled and 372 (28.37%) of participants were unsure whether the virus would be controlled. A smaller number of participants 194 (14.79%) disagreed and stated that it would not be successfully controlled. It is followed by the question asked whether the participant agreed that the Indian government was handling the COVID-19 health crisis well. Only bisected 647(49.35%) respondents agreed with this statement, the rate of disagreement and uncertainty was at 325(24.79%) and 339(25.85%) respectively. Half of the respondents 450 (34.32%) agreed that SARS CoV -2 virus was created in a laboratory by any government or any terrorist group to depopulate the world. Rates of reporting "disagree" and "I don't know or No Opinion" were 187 (14.26%), 427(32.57%), and 247(18.84%) respectively. The perspective of the people on the increased COVID-19 cases is lack of awareness among public 647 (49.35%); returning of the migrants 329 (25.09%), and lack of movement restriction by government and other opinions than the mentioned above includes 335(25.55%). 439(33.48%) participants stated their confusion and lack of interest in socializing with the infected people even after they recovered from the coronavirus infection. The major difficulties faced by the migrants were identified as financial crisis 478 (36.46%); infection risk while traveling 335 (25.55%); lack of basic needs availability while being in quarantine 317 (24.18%) and inadequacy of room to maintain quarantine 181 (13.80%).

The sources from which fake news on COVID -19 circulated per respondent is marked as Social Media 750 (57.20%) > News Channel and Government websites 121 (9.22%) > Health care workers 32 (2.44%.). The most updated and trusted information source for coronavirus were reflected from the feedback as News Channel and Government websites 419 (31.96%) > Health Care Workers 358 (27.30%) > All the mentioned sources 333 (25.40%) > Social Media 85 (6.48%).

Assessment of Practice

Practices toward COVID-19 were measured using 6 questions. 80.32% of participants reported that they were using masks while leaving home. 64.98% of people avoided crowding

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

678

and maintained social distance when outside the home. 80.93% reported that they practiced proper hand hygiene by frequently washing their hands and using hand sanitizer,73.68% of the participants avoided public transport which could be due to the risk of exposure to infection and movement restriction,.46.60% responded that they use N-95 face mask and flu face mask were used by minor proportion 7.32%. 65.98% of participants stated that they did not remove the mask while outside the home and stated that they often avoid masks because of facial skin breakdown and breathing difficulty 13.34%; communication difficulty 10.75% and visual difficulty 9.91%.

Assessment of Misconception

The myths and beliefs regarding the COVID-19 were evaluated using 10 questions with options "Yes", "No", "I Don't Know". Scores for every right answer, Don't Know and the wrong answer is 0, 1, and 2 respectively.

Table No. 4: Misconception based questions

MISCONCEPTIONS	
1. Hydroxychloroquine and other antiviral tablets are used to treat the COVID – 19 illness?	No
2. Even if we use medical masks properly, is the chance of causing CO2 toxicity and Oxygen deficiency is HIGH?	No
3. The chance of shoes, banknotes, coins and purchased food materials in spreading the COVID – 19 is _	Low
4. Drinking alcohol (methanol, ethanol) DOES NOT protect against COVID – 19 and can be dangerous?	Yes
5. Being able to hold your breath for 10sec or more without coughing or feeling discomfort means you are free from COVID – 19.	No
6. The COVID – 19 cannot spread in hot climates and exposing myself to the sun or temp > 25˚C protects from COVID – 19 disease?	No
7. Can regularly be rinsing my nose with saline and Eating garlic, turmeric, ginger, lemon to help to prevent this coronavirus?	No
8. COVID-19 can be transmitted through houseflies and household pets to humans.	No
9. Thermal Scanning cannot detect the presence of coronavirus?	Yes
10. The lactating mother should not be avoid from breastfeeding the baby.	Yes

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

679
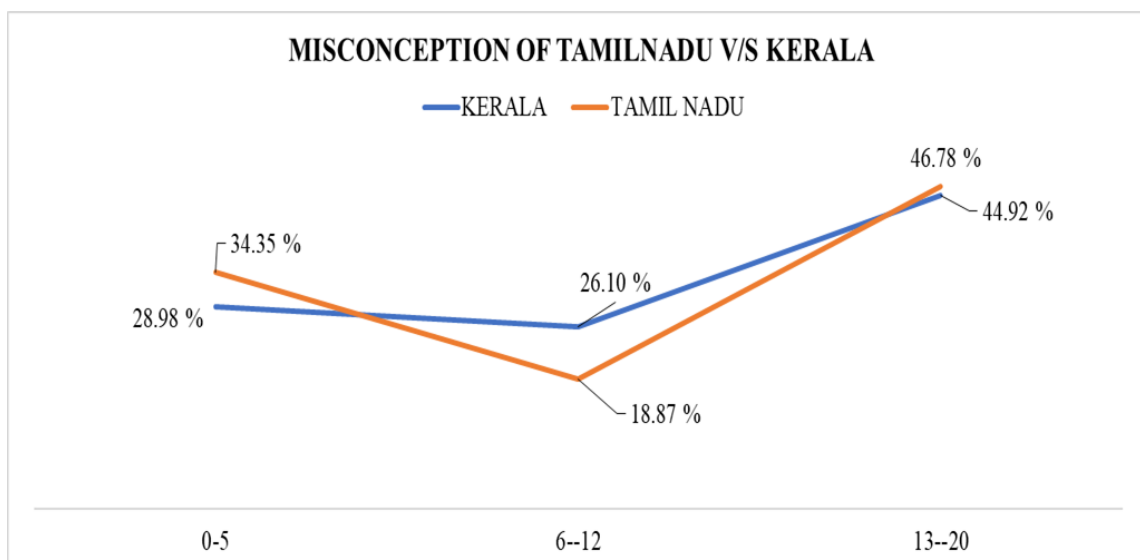
Figure No. 4.: Comparison of Misconception score among Tamil Nadu and Kerala

The mean misconception score was 10.30 (SD = 7.35; Range 0 – 20). The scale of 0 – 5 implies the people with lower misconceptions, 6 – 12 people with average misconceptions and 13 – 20 indulges the candidates with high misconceptions. In Tamilnadu, the highest misconceptions are observed among participants male 51.83%; 20 – 40 age group 40.48%; graduate degree 43.48% and students 46.49% while the low misconception was viewed in female 36.18%; 20 – 40 age groups 41.69%; graduate degree 32.02% and students 34.47%. The data shows an almost similar rate of high misconceptions in both Tamilnadu 46.77% and Kerala 45.82%. People with moderate misconceptions were observed in Kerala 25.49% than Tamil Nadu 18.86%. Respondents with fewer misconceptions of 34.35% and 28.67% are found in Tamilnadu than Kerala respectively. The comparison of misconceptions score among Tamilnadu and Kerala shows the statistically significant result at $p < .01$. The misconception towards COVID-19 pandemic was highest in male 54.58%; 20 – 40 age group 38.52; graduate degree 39.17% and students 49.12%. The lowest misconceptions were seen in respondents who are female 34.84%; 20 – 40 age groups 30.53; graduate degree 35.48% and students 27.71% in Kerala.

The requirement of COVID-19 volunteers during this pandemic is vital, so the question asking for the willingness of the participants to work as a volunteer was 63.23%. Since quarantine was an important preventive measure that was instructed for travelers and migrant workers who return home. The quarantine facility was of important concern. From our study, it was found that out of 1311 participants 938 (71.5%) stated that they do not have a facility

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

680

for home quarantine and used paid rooms or houses owned by relatives where the facility was available.

Hospital visits were also avoided by many peoples because of the fear of getting infected with the COVID-19 virus. In the study, it was found that 905 (69.03%) of the study participants avoided hospital visits and half of the cases among them were of general medicine 661 (50.41%). The major problem which they faced in seeking medical care was fear of getting infected from the hospital 338 (44.46%) followed by transportation 287 (25.78%); financial problem 249 (19.75%); while 31 (9.99%) stated that they didn't face any difficulties in going to the hospital.

DISCUSSION

The KAP of a population can often determine the severity of an infectious disease outbreak. Indeed, KAP surveys were used as vital assets of facts to lay out health interventions and public health policies. To the best of our knowledge, this is the first study in Tamil Nadu and Kerala examining the KAP towards COVID-19 among residents. This epidemiological survey was conducted during the very early stages of the epidemic in both states and showed that about 414 (31.57%) of the participants had a good knowledge of COVID-19 from Tamil Nadu and Kerala respectively, which is comparable with a study conducted in China were more than 70% of the study participants had good knowledge. The results found in this study are lower than those found by Bao-Liang Zhong et al. being a higher average than what was found in our study[8]. Due to limited access to the internet and online health information resources, the vulnerable populations of older adults and rural people are more likely to have poor knowledge, negative attitudes, and inappropriate preventive practices towards COVID-19. While assessing the attitude towards the pandemic, almost 70% of the participants showed the right measure to take while being suspected. Only half of the participants showed attitudes that were favorable when it came to successfully control COVID-19 and winning the battle, however, it is striking that a proportion of subjects did not know if the virus was successfully controlled, and another concerning fact is that Tamil Nadu and Kerala did not win the battle to COVID-19, which can be attributed to false information distributed by social networks, due to the fear and anxiety that exists in these cases, which can be mitigated by a culture of proper use of information. Specifically, this study found that still, 30-40% hold the view that the COVID- 19 is a biological weapon designed by any government or terrorist group. What this means is that there may currently be no consensus among residents as to

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

681

what could be the real source of the virus. We caution that this perception has implications for bilateral relations between the Indians and the other governments and may stand as a hindrance to India accepting whatever form of aid may come from the other governments. The Central and State government of India and other stakeholders must embark on campaigns to raise awareness of the true sources of the COVID-19 to curb a brewing stereotype and prejudice towards other people.

The primary objective was the concerns about the migrant workers. Half of the states that the rise in the case is due to the returning of migrants from other states and countries thus the negative attitude towards the migrants makes it difficult to maintain a healthy social life. The difficulty faced by them were financial insecurity, risk of being infected while traveling, lack of availability of the basic needs while being in quarantine and lack of room to maintain the home quarantine. Thus, the state government should authorize volunteers to ensure that every need of these groups of people who returns after losing their job because of the crisis.

The majority of the people stated that they got fake information through social media. Governmental and non-governmental organizations should make extensive use of the media to educate the public on proper social distancing, proper personal hygiene, and the use of personal protective equipment to ensure compliance with the WHO-approved pandemic-fighting strategies. The secondary objective was to assess the usage and disposal of the mask which is a major potent factor that could spread the disease, if not used properly. The majority of the people know the purpose and steps to follow while using and after using the mask. It was found that more than half of the participants avoided the hospital visit because of the fear of getting infected from the hospital.

Respondents with a lower level of education and those who did not go to school had the highest rates of misconception, negative attitudes, and bad COVID-19 related practices. It is therefore important for local stations to include campaigns that debunk misinformation and disinformation about the disease. Among various infection control strategies, the use of personal protective equipment (PPE) is critical during outbreaks such as COVID-19, particularly among healthcare workers and infected people. Although PPE is not recommended as a frontline defense measure, it should be included with other administrative and environmental control measures. Gloves that are considered as a PPE are not considered for community prevention, but a majority of the people 92.06% believe that it reduces the

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

682

community spread of the pathogen, which may lead to the shortage of gloves in health care institutions.

CONCLUSION

COVID-19 is a new virus that had devastating results inside the brief time as it is first detected in December 2019. To date, there was restricted posted information on knowledge, attitudes, and practices towards COVID-19, particularly in Tamilnadu and Kerala. The novelty of this disease and its uncertainties make it critical for health authorities to plan appropriate strategies to organize and manage the general public. It is so of utmost importance that the information, attitudes, and practices of the population being studied guide these efforts. The misconceptions and the fake pieces of information spreading through various media are to be inevitably addressed. Thus, this study is very important and helps the government to take necessary policies and programs to ensure that every people are having relevant information regarding the disease.

REFERENCES

1. Nature Microbiology, 2020. The species Severe acute respiratory syndrome-related coronavirus: classifying 2019-nCoV and naming it SARS-CoV-2. 5(4), pp.536-544.
2. Origin of SARS-CoV- 2 [Internet]. 2021 [cited 8 September 2021]. Available from: https://apps.who.int/iris/bitstream/handle/10665/332197/WHO-2019-nCoV-FAQVirus_ origin-2020.1-eng.pdf
3. Lam T, Jia N, Zhang Y., 2020. Identifying SARS-CoV-2-related coronaviruses in Malayan pangolins. Nature, 583(7815), pp.282-285.
4. Oreshkova, N, Molenaar, R, Vreman, S, 2020. SARS-CoV-2 infection in farmed minks, the Netherlands, April and May 2020. Eurosurveillance, 25(23).
5. World Health Organization. 2021. Transmission of SARS-CoV-2: implications for infection prevention precautions – scientific brief. [online] Available at: <https://www.who.int/publications/i/item/modes-of-transmission-of-virus-causingcovid- 19-implications-for-ipc-precautionrecommendations> [Accessed 8 September 2021].
6. Centers for Disease Control and Prevention. 2021. Healthcare Workers. [online] Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html> [Accessed 8 September 2021].

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

683

7. National Institutes of Health. 2021. Coronavirus disease 2019 (COVID-19) treatment guidelines. [online] Available at: <https://covid19treatmentguidelines.nih.gov/> [Accessed 8 September 2021].

8. Zhong B, Luo W, Li H, (et.al)., 2020. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. International Journal of Biological Sciences, 16(10), pp.1745-1752.

9. Isah, M, Abdulsalam M, Bello A., (et.al)., 2021. Coronavirus Disease 2019 (COVID-19): A Cross-Sectional Survey of the Knowledge, Attitudes, Practices (KAP) and Misconceptions in the General Population of Katsina State, Nigeria. UMYU Journal of Microbiology Research (UJMR), 6(1), pp.24-37.

10. Gudi S, Chhabra M, Undela K, (et al).,2020. Knowledge and beliefs towards universal safety precautions during the coronavirus disease (COVID-19) pandemic among the Indian public: a web-based cross-sectional survey. Drugs & Therapy Perspectives. 2020;36(9):413-4

	(Co-author) SHERIN ELZA JOHN PHARM-D INTERN JKKMMRF'S AJKKSA COLLEGE OF PHARMACY, MGR UNIVERSITY, INDIA
	Dr. N. SENTHIL KUMAR PRINCIPAL JKKMMRF'S AJKKSA COLLEGE OF PHARMACY, MGR UNIVERSITY, INDIA
	SMITHA SARAH THAMBI ASSISTANT PROFESSOR JKKMMRF'S AJKKSA COLLEGE OF PHARMACY, MGR UNIVERSITY, INDIA
	DILEEP.R PHARM-D INTERN JKKMMRF'S AJKKSA COLLEGE OF PHARMACY, MGR UNIVERSITY, INDIA

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

684

THIRUGNANAM.T.S

PHARM-D INTERN

JKKMMRF'S AJKKSA COLLEGE OF PHARMACY, MGR UNIVERSITY, INDIA

YOGAKRISHNAN.S

PHARM-D INTERN

JKKMMRF'S AJKKSA COLLEGE OF PHARMACY, MGR UNIVERSITY, INDIA

HUMAN

Citation: Sherin Elza John et al. Ijppr.Human, 2021; Vol. 22 (2): 670-685.

685