ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF RESEARCH IN PHARMACEUTICAL SCIENCES

Published by JK Welfare & Pharmascope Foundation Journal Home Page: www.ijrps.com

Awareness and prevention of covid-19 infection among rural populations

Kushali R[1], Geetha R V[*2]

[1]Saveetha Dental College, Saveetha Institute of Medical And Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India
[2]Department of Microbiology, Saveetha Dental College and Hospitals, Saveetha Institute of Medical And Technical Sciences (SIMATS), Saveetha University, Chennai, Tamil Nadu, India

Article History:

Received on: 21 Jul 2020
Revised on: 20 Aug 2020
Accepted on: 10 Sep 2020

Keywords:

COVID 19,
rural population,
prevention methods,
awareness,
symptoms,
transmission

ABSTRACT

COVID infection is the current pandemic outbreak which is a global emergency in more than 150 countries. This has bought the entire nation to a halt. Health officials and medical professionals are struggling to prevent the transmission of this highly contagious disease. Awareness of the current outbreak is essential. Risk of spreading the virus is heightened in rural areas. Reasons for high chances in such areas are due to a number of factors, limited supply of clean water and limited availability of food. Low level of nutrients, ill-equipped and insufficient public health centres and district hospitals. The survey was distributed online to around 100 participants of various rural areas of Tamil Nadu, and the inclusive criteria were age, sex, presence of Medical conditions and awareness on COVID infections, mode of transmission and if any preventive measures were used by them. The results reveal that around 98% of the study population are aware and have enough knowledge about the virus, and 2% of individuals show a lack of awareness. High preventive measures were adopted by the people, like social distancing, covering faces with masks and not touching their faces often. The study concludes that there is awareness of COVID and it's prevention among the people of the rural areas. Wide preventive measures are taken to control the spread of the infection. Also, there is a high awareness of the symptoms seen in suffering patients.

*Corresponding Author

Name: Geetha R V
Phone: 9710456203
Email: geetha@saveetha.com

ISSN: 0975-7538

DOI: https://doi.org/10.26452/ijrps.v11iSPL1.3064

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INTRODUCTION

Newer pathogens are emerging every day, which pose a major threat in treating hospitalised patients (Ashwin and Muralidharan, 2015). 2019 n-CoV is a large family of coronaviruses that causes illness like the common cold, more severe like Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV)and the worst thing about this new virus is that it has no conspicuous symptoms (Girija, 2019). The coronavirus (COVID-19) pandemic is the defining global health crisis of the current time and is the greatest challenge we have faced since World War 2. The current pandemic outbreak is a global emergency call for nearly 150 countries (Singhal, 2020) China, its origin country, South Korea, Italy and Iran are some of the heavily impacted regions in the world. These countries are racing to slow down the spread of the virus's infection by treating the infected individuals, carrying out contact tracing, limiting travel, quarantining infected citizens, and importantly cancelling large gatherings such as

sports events, concerts, marriages, schools, colleges and other institutions as well (Anderson, 2020). Also, since there is no vaccine, studies reveal that since the oral entry of the virus is common, it should be prevented by maintaining a hygienic oral cavity (Selvakumar and Muralidharan, 2017). The pandemic attack is moving like a strong wave, that may yet crash on those least able to cope. Every day, people are losing their jobs and income, with no way of knowing when normality will return (Koh, 2020). This scenario has brought the entire nation to a halt.

In our country, health officials and medical professionals are struggling with containing the disease. On the other hand, awareness of the current outbreak is essential (Tanne, 2020; Srichan *et al.*, 2020). Risk of spread of the virus is definitely at a greater heights in the rural areas. Reasons for high chances of infection spread in such areas are due to a number of factors like a limited supply of clean water, limited availability of food, low level of nutrients, ill-equipped and insufficient public health centres and district hospitals and lack of knowledge about vaccines of infectious diseases (Pratha and Geetha, 2017; Ranscombe, 2020). People of the village work for daily wages in cities and return to homes which can lead to the easy spread of the virus (Ahirwar, 2020). Rural populations completely lack awareness and are exposed to very minimum preventive measures (Adhikari *et al.*, 2020).

It is necessary to take preventive measures like cleaning hands often using soap and water or an alcohol-based hand rub, maintaining a safe distance from anyone who is coughing or sneezing, not touching eyes, nose or mouth, covering nose and mouth with bent elbow or a tissue when coughing or sneezing and staying home if feeling unwell (Shahana and Muralidharan, 2016). If one has a fever, cough and difficulty breathing, seeking medical attention immediately is important to prevent further infection by following the directions of local health authorities (Struben, 2020; Tung and Tung, 2020). There can be individuals with pre-existing medical conditions like diabetes, heart disease, as well as those who live in poor and densely populated areas, are more vulnerable to the worst outcomes of the virus (Fang *et al.*, 2020). Although Researches are done on promising new molecular target in hypertension and cardiovascular diseases (Paramasivam *et al.*, 2020). For people with a chronic respiratory disease like chronic obstructive airways disease, infectious diseases like HIV and tuberculosis, chronic cardiovascular disease like cardiomyopathy, previous myocardial infarction, rheumatic heart disease and cancers, susceptibility is very high (Aafreen *et al.*, 2019).

Senior citizens above the age of 60 are highly prone (Xu, 2020; Watkins, 2020). It is equally necessary to avoid large gatherings, crowds much as possible. Practising social distancing of at least 1-2 meters from a person with respiratory symptoms at public places like stores and daily vendors can prove helpful (Priyadarshini *et al.*, 2018; Singh *et al.*, 2020). Vulnerable people should be considered in rural areas and should spend their time in voluntary isolation also, should be receiving food supplies via a neighbour or relative, but without direct contact (Balachandar, 2020). Travel should be reduced to a minimum (Vaishali and Geetha, 2018). Use a mask if travelling by bus, train or plane. If masks are not available or affordable, cover your nose and mouth with a cloth or similar (Marickar *et al.*, 2014). Awareness can be maintained in the rural population by mass media and communication. Sanitise hands thoroughly after coming from outside. Supply of free food by the government can avoid huge crowds/population at visit places for purchase. In villages, there is shortage of PPEs, masks, ventilators, medicines, surgical gloves, oxygen cylinders, oxygen regulators, disinfectants (Girija *et al.*, 2018; Wang *et al.*, 2020). There is Lack of testing facility and infrared thermometers for the Population of the village, and thus more free health teams should visit for awareness spread in such regions (Smiline *et al.*, 2018). The study is necessary since the rural population is the most affected when compared to the urban city, and this is due to the various reasons mentioned above. Thus, the main aim of this study is to know the awareness on COVID-19 and preventive measures in rural areas.

MATERIALS AND METHODS

Cross-sectional survey research was conducted by electronically distributing the questionnaire, and the sample size included 100 participants. This was the best approach for the collection of data as a large number of community peoples were involved and also suitable in present conditions where people have to avoid gathering, close contact etc. for prevention of COVID-19. The inclusive criteria were age, sex, presence of the existing medical condition, awareness on COVID and preventive measures. The survey included 17 questions and was distributed to the people of various rural areas of Tamil Nadu. The data was collected and analysed using SPSS software in which Chi square analysis test was used, with a p-value less than 0.05 to be statistically significant.

RESULTS AND DISCUSSION

The results of the current study were statistically analysed and represented as a pie chart and are given below.

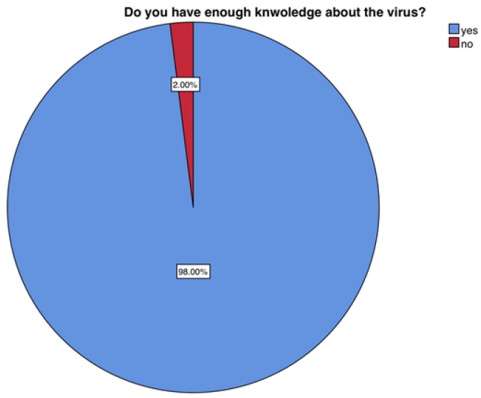

Figure 1: A pie chart showing responses to the question, "Do you have enough knowledge about the virus?"

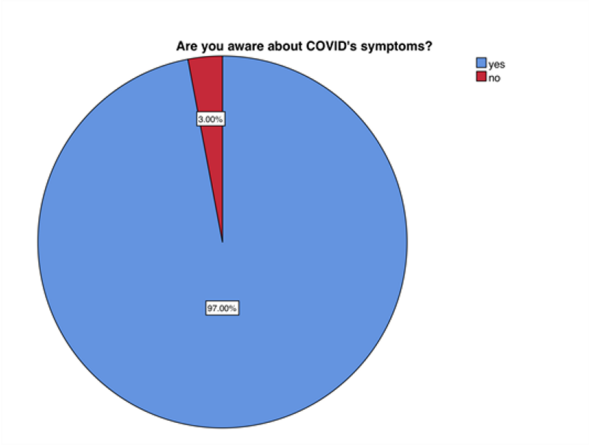

Figure 2: A pie chart showing responses to the question, "Are you aware of COVID's symptom

Figure 1, 98% of the study population reported that they are aware and have knowledge about COVID, and 2% of the respondents of the rural population are unaware.

Figure 2, 97% of the population is aware, and 3% are unaware.

Figure 3, 11% agree that it is transmitted by droplets from infected individuals, 21% of the population agrees it transmits touching contaminated objects and a majority of 68% think that it can be transmitted by both of the above.

Figure 4, The symptoms are seen in infected people where 14% believe that the 1st seen symptom is fever, 10% think its dry cough, 9% sore throat and a

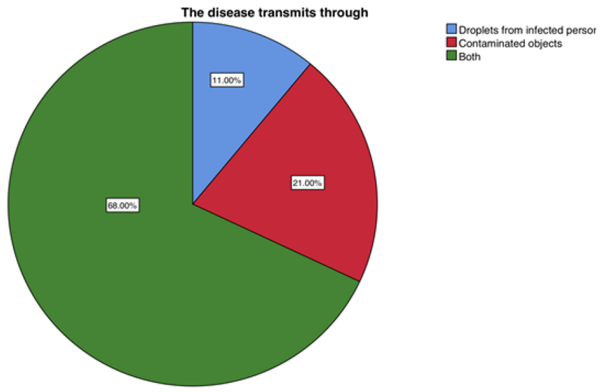

Figure 3: A pie chart showing the responses to the question, "The diseases transmitted through"

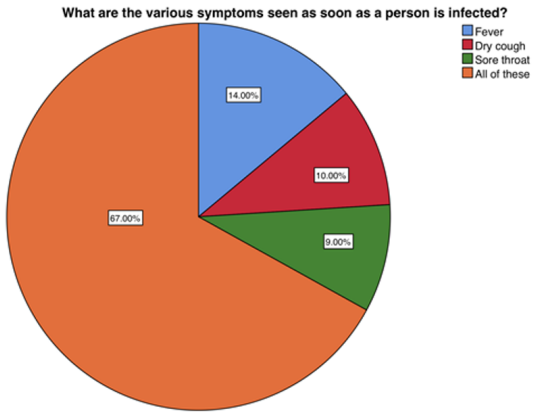

Figure 4: A pie chart showing the responses to the question," What are the various symptoms seen as soon as a person isinfected?"

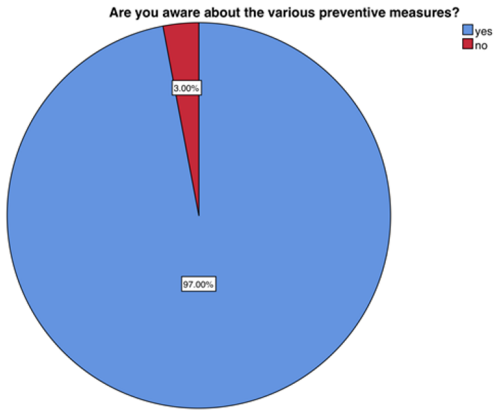

Figure 5: A pie chart showing the responses to the question," Are you aware of the various preventive measures?"

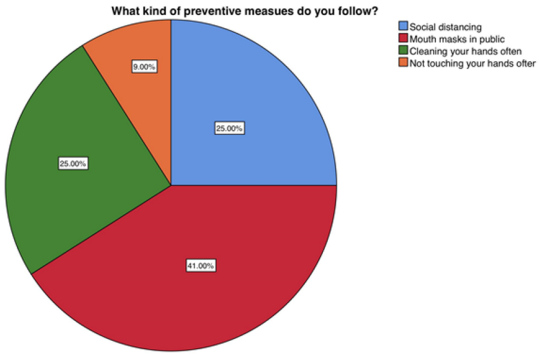

Figure 6: A pie chart showing the responses to the question," What kind of preventive measures do you follow?"

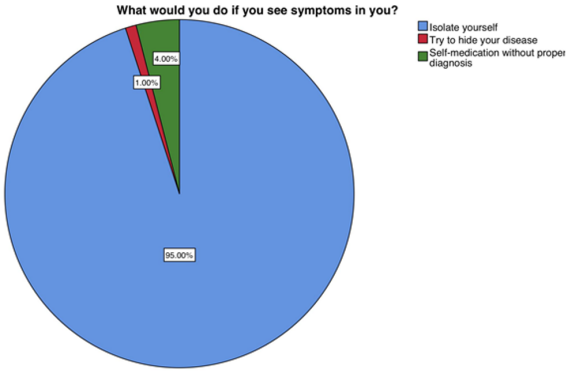

Figure 9: A pie chart showing the responses to the question," What would you do if you see symptoms in you ?"

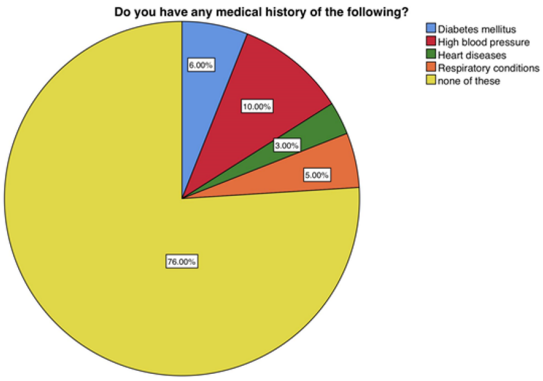

Figure 7: A pie chart showing the responses to the question," Do you have any medical history of the following?"

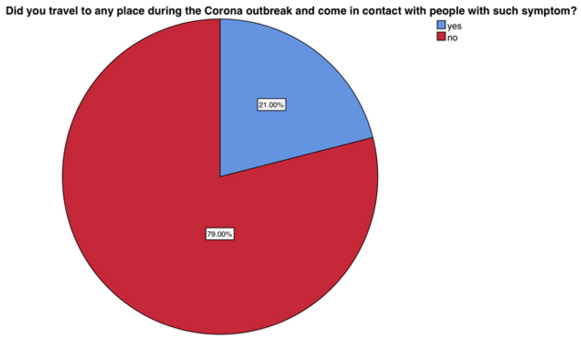

Figure 10: A pie chart showing the responses to the question," Did you travel to any place during the corona outbreak and come in contact with people with such symptoms?"

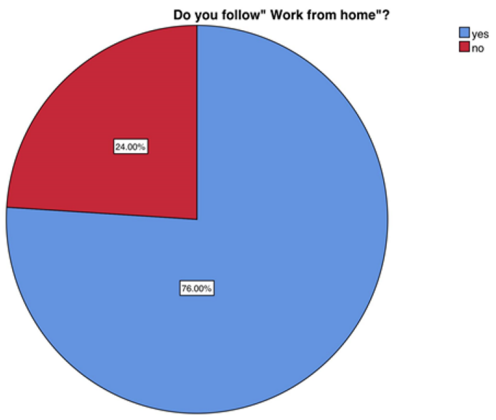

Figure 8: A pie chart showing the responses to the question," Do you follow work from home?"

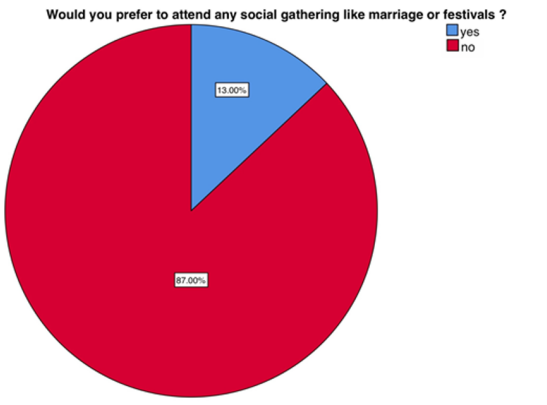

Figure 11: A pie chart showing the responses to thequestion," Would you prefer to attend any social gathering like marriagesor festivals?"

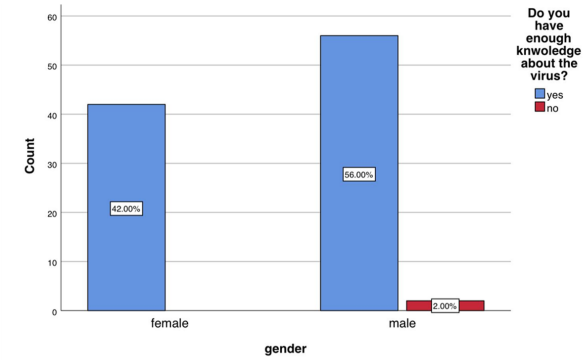

Figure 12: Bar graph representing the association between gender and awareness and knowledge about viruses

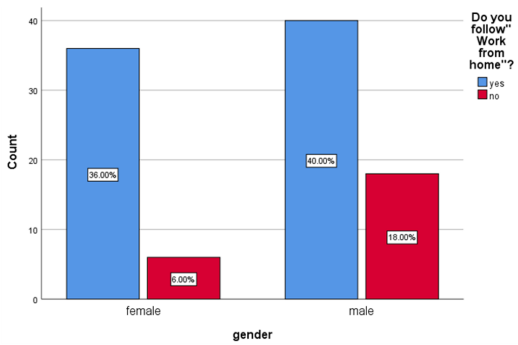

Figure 13: Bar graph representing the association between gender and symptoms seen in an infected person

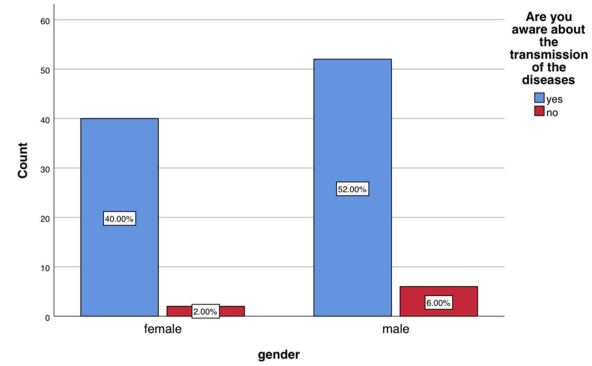

Figure 14: Bar graph representing an association between gender and awareness on transmission

majority of 67% believe that all the above symptoms are seen during the onset of the infection.

Figure 5, 97% of the respondents are aware of the different preventive measures, while 3% of them are unaware.

Figure 6, 25% of the participants prefer social distancing, another 25% prefer cleaning their hands often, 9% don't touch their face often, and a majority of 41% prefer mouth masking in public.

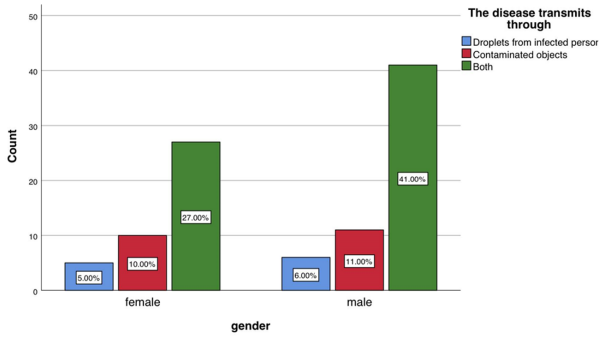

Figure 15: Bar graph representing the association between gender and transmission of diseases

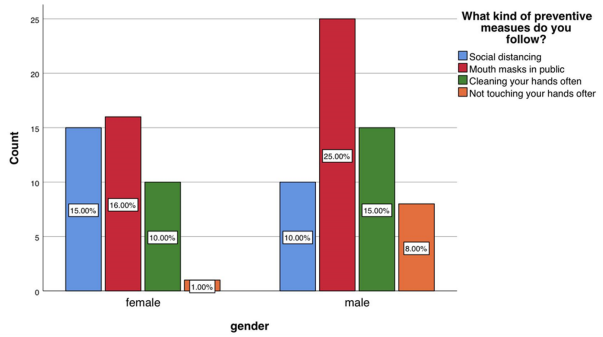

Figure 16: Bar graph representing the association between gender and between different preventive measures

Figure 7, 6% of them suffer from Diabetes mellitus, 10% suffer from High blood pressure, 3% suffer from Heart diseases, 5% suffer from respiratory conditions and 76% of them suffer from none of the above.

Figure 8, Percentage of the population staying at home and continuing to do their work.76% of them stay at home while on the other hand, 24% of them do not follow this.

Figure 9, 95% of the study population would prefer to stay at home and isolate themselves in case they find they are infected with the virus.

Figure 10, 79% of individuals travelled around and came in contact with people who had such symptoms and 21% of the people did not travel and also did not come in contact with people who had any of these symptoms.

Figure 11, 87% of the respondents would not prefer to attend social gatherings like marriages and festivals since gathering being a public place can increase the chances of infection and spread but 13% of the population would do the above.

Figure 12, The X-axis represents gender, and Y-axis represents COVID awareness. The blue color denotes yes, and red color denotes no. Association

between gender and awareness was done using chi square test(p-value is 0.224) statistically insignificant.

Figure 13, The X-axis represents gender, and Y-axis represents gender and symptoms seen in the infected person. The blue color denotes yes, and red color denotes no. Association between the both was done using chi square test (p-value is 0.053) statistically significant. Out of 76% of the public who choose yes, 36% were females, and 40% were male.

Figure 14, The X-axis represents gender, and Y-axis represents awareness of transmission. The blue color denotes yea and red denotes no. Association between gender and awareness on transmission was done using chi square analysis test (p-value =0.310)statistically insignificant. Out of 92% of the public who were aware, 40% were females and 52% males.

Figure 15, The X-axis represents gender, and Y-axis represents transmission of the diseases. The blue color denotes droplets from an infected person, red color denotes contaminated objects, and green denotes both of the above. Association between gender and transmission of the diseases was done using chi square analysis test. (p-value is 0.789 statistically insignificant).

Figure 16, The X-axis represents gender, and Y-axis represents different preventive measures. The blue color denotes social distancing; the red denotes mouth masks in public, green denotes cleaning your hands often. Association between gender and different preventive measures were done using chi square analysis test(p-value is 0.071 statistically insignificant). Out of 25% of social distancing 15% were females and 10% males, out of 41% of mouth masks in public 16% were females and 25% males, out of 255 cleaning hands often 10% were females and 15% males, and out of 9% of not touching face often 1% were females and 8% males.

The study reveals the following results and shows that among the study population there is a prevalence of very high knowledge about the virus and the infection caused by it, and only a tiny percentage of the study sample were unaware. They did not possess enough knowledge about the virus, as seen in Figure 1, where 98% of the population are aware and have knowledge about COVID, and 2% of the rural population are unaware. A questionnaire-based study was conducted in Mumbai Metropolitan region to know the awareness of COVID among a total of 1562 healthcare students and professionals and results show that high awareness existed (Modi, 2020). This is a similar finding to our study. Figure 2, represents awareness of COVID 19 symptoms among the study population, where 97% of the population is aware, and 3% are unaware. We also get a clear idea from Figure 3, about the transmission of the diseases.11% agree that it is transmitted by droplets from infected individuals, 21% of the population agrees it transmits touching contaminated objects, and a majority of 68% think that it can be transmitted by both of the above. Figure 4, states the symptoms seen in infected people where 14% believe that the 1st seen symptom is fever, 10% think its dry cough, 9% sore throat and a majority of 67% believe that all the above symptoms are seen during the onset of the infection (Priyadarshini *et al.*, 2018). In Figure 5, the pie chart represents that 97% of the respondents are aware of the different preventive measures, while 3% of them are unaware. A cross-sectional study conducted in the U.S among 630 adults came up with a result stating that third of the population couldn't identify the symptoms or other ways to prevent infection (Wolf, 2020). In Figure 6, when different options were asked for the usage of preventive measures, 25% of the participants prefer social distancing, another 25% prefer cleaning their hands often, 9% don't touch their face often, and a majority of 41% prefer mouth masking in public (Priyadarshini, 2018). A survey was conducted for quantifying the impact of physical distance measures on the transmission of COVID-19 in the UK, and the results showed that adopting physical distancing has substantially reduced rate cases of COVID and the mortality rate (Jarvis *et al.*, 2020). In Figure 7, existing medical conditions among the population are discussed. 6% of them suffer from Diabetes mellitus, 10% suffer from High blood pressure, 3% suffer from Heart diseases, 5% suffer from respiratory conditions and 76% of them suffer from none of the above. The importance of knowing about the study population suffering from any of these conditions is that these people are more prone to the viral infection (Guo *et al.*, 2020).Figure 8, represents the percentage of the population staying at home and continuing to do their work.76% of them stay at home while on the other hand, 24% of them do not follow this. In Figure 9, pie chart,95% of the study population would prefer to stay at home and isolate themselves in case they find they are infected with the virus. This is a positive outcome since there is awareness of self-isolation (Armitage and Nellums, 2020). While 1% of them would hide their condition due to fear of being isolated and 4% would take self-medication without a kind of proper diagnosis if they find themselves infected by any chance (Shahzan *et al.*, 2019).Figure 10, reveals that 79% of individuals travelled around and came in contact with people who had such symp-

toms and 21% of the people did not travel and also did not come in contact with people who had any of these symptoms (Girija and Priyadharsini, 2019).Figure 11, states that a majority of 87% of the respondents would not prefer to attend social gatherings like marriages and festivals since gathering being a public place can increase the chances of infection and spread but 13% of the population would do the above. Figure 12, bar graph representing the association between gender and awareness and knowledge about viruses. The X-axis represents gender, and Y-axis represents COVID awareness. In Figure 13, the bar graph represents the association between gender and symptoms seen in an infected person. The X-axis represents gender, and Y-axis represents gender and symptoms seen in the infected person. In Figure 14, the bar graph represents the association between gender and awareness on transmission; the X-axis represents gender, and Y-axis represents awareness on transmission. Figure 15, bar graph represents the association between gender and transmission of diseases. The X-axis represents gender, and Y-axis represents transmission of the diseases. In Figure 16, the bar graph represents the association between gender and different preventive measures. The X-axis represents gender and different preventive measures.

CONCLUSIONS

The study concludes that there is awareness on COVID among the rural population and also there is awareness of different preventive measures which can help fight against the virus. Participants are also aware of the symptoms of viral infection. But since a large group of people have travelled around and came in contact with individuals with symptoms, the chances of further spread is more. Rural areas, being the most neglected population, should be considered furthermore to make the worse, better.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

Funding Support

The authors declare that they have no funding support for this study.

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