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Awareness On The Mode Of Transmission Of Virus Causing COVID 19 Among General Public- A Questionnaire Survey

Research Article

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Abstract

Aim: The aim of study is to assess the awareness level on mode of spread of COVID 19 among the general public.
Introduction: COVID 19 is a communicable disease which is caused by coronavirus. People are affected from mild to moderate respiratory illness. The mode of spread of COVID19 is through droplets of various sizes. >5-10 micrometer is the size, which is named as the respiratory droplets. <5 micrometer is the size of the respiratory droplets called as the droplet nuclei. The transmission of droplets takes place from infected person to person with in 1-3m. Awareness on the mode of spread of COVID is necessary among all the people to decrease the number of cases. WHO recommends droplet and contact precautions such as usage of appropriate use of PPE, which not only includes masks but also requires correct usage by these health care workers.
Materials and method: A sample size of 100 people were taken for the study which was conducted from March to May 2020. A questionnaire containing around 20 questions were uploaded in the google forms. The survey was attended by the people of chennai from various areas. The questions were related to the awareness among people regarding mode of spread. The data was obtained through SPSS software and analysis was made.
Results: The survey shows that around 36% of the people have responded that the mode of spread of COVID is through contaminated objects and 32% of them have responded that it is mainly through droplet transmission. Almost 49% of the people follow all kinds of preventive measures in order to prevent the spread of COVID 19.
Conclusion: Therefore, it could be concluded that people are more aware of the most commonest mode of spread transmission of virus causing COVID19.

Keywords: Respiratory Droplet; Droplet Nuclei; Analysis; Infectious Disease.

Introduction

COVID19 is an infectious disease caused by coronavirus. Like other viruses, SARS-CoV2 infects these lung alveolar epithelial cells using receptor-mediated endocytosis through the angiotensin-converting enzyme II as an entry receptor [1]. Mode of transmission of COVID19 is mainly through infection droplets. These droplets are of various sizes in which the droplet particles of size >5-10 micrometer in diameter can be called as respiratory droplets where as the droplets of size <5 micrometer in diameter can be referred to as droplet nuclei [2]. The route through which COVID19 spreads is mainly from person to person transmission within a short distance [3, 4]. Airborne transmission is not recorded that much and still studies are being done regarding this

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type of transmission [5]. One of studies showed the presence of RNA sample of coronavirus in air was done using the Collison Nebuliser and then moved onto the Goldberg drum which yet must be confirmed with many experimental studies only.

COVID19 is yet not confirmed to be an airborne disease as it refers to the microbes which are with in the nuclei are the The droplet transmission occurs when an infected person is in contact with another person within 1-3m distance containing all the respiratory symptoms like sneezing, coughing which are at higher risk of getting affected by COVID19 [6]. Transmission of COVID19 mainly takes place through mucosae or conjunctiva when they are exposed to these potential infectious respiratory droplets [7, 8, 9]. The sources of these infectious diseases mainly occur through direct contact with infected people and also through the indirect contact with the surface in the surrounding environment or it could be even with the objects used by the infected person (eg: things in the environment) [10]. Particle size is considered to <5 micrometer in diameter, has the capacity to stay in the air for a longer period of time and which transmits to people who are at a longer distance which could be greater than 1m [11, 12, 13].

Bats are said to be potential reservoirs of SARS-COV-2 [14]. Human to human transmission mainly occurs through family members, friends who are in intimate contact with patients or incubated carriers. The transmission of COVID19 was mainly reported as nosocomial transmission [15]. People who are working at the health care department are more susceptible and the cases reports are maximum from their side [16]. Another mode of spread could be through the animals such as bats are known to be reservoir hosts for several human viruses, including rabies, Marburg, Nipah, Hendra etc. [17]. The sources and transmission route remains elusive [18, 19, 20]. Detection of SARS-CoV-2 virus in stools and sewage has been reported. So, this transmission can occur by the ingestion of the virus present in water.

This study seeks the amount of awareness that people have regarding the transmission of the virus. WHO emphasizes the rational usage of personal protective equipment (PPE) in a correct way by the health care workers. It also gives precautionary measures and importance of frequency hand hygiene, respiratory etiquette, disinfection and maintaining distance with people having the symptoms. The aim of the study is to assess and find out the level of awareness on the mode of spread of COVID 19.

Materials and method

Study Setting

This cross sectional study was conducted in chennai, Tamil Nadu, from March 2020 to May 2020. The pros of the present study include well educated people, easily accessible to online surveys. On the other hand, the cons of the study are language, communication barrier, illiteracy, difficulty in understanding and lack of resources.

Sample Size Collection

The sample size taken study for this study is 100 people residing in chennai.

Sampling Technique

People were selected randomly from various localities of the chennai city like T. Nagar, Alwarpet, Guindy etc. By a simple Randomised sampling method, this study was carried out. Measures were taken to minimise the sampling bias by avoiding leading questions, avoiding difficult concepts and making use of simple and understandable. Electronic distribution of the questionnaire was followed since this was the best approach for the collection of the data as a large number of the general population of Chennai city were involved and also suitable in the present condition where people have to avoid gatherings, close contacts for the prevention of COVID 19.

Study Procedure

A structured questionnaire was prepared by using google forms and it was validated with subject experts. The questionnaire contained individual details including age, gender and occupation were collected. The questionnaire contained around 17 questions which covered topics related to the awareness on the mode of spread of COVD, the rate of spread at group gatherings, role of social distancing, preventive methods taken to reduce the cases of COVID.

Statistical Analysis

Data entry was done with the help of SPSS software's latest version. Chi square test was used, with p value less than 0.05 to be statistically significant.

Results

The results for this survey are put forth by using pie charts to analyse the statistical data that has been obtained. The type of disease COVID to which it belongs to is represented in figure 1, where 42% of people have an awareness regarding COVID 19 being an airborne disease whereas 29% feel its not because of airborne or waterborne, 15% people feel its both airborne and water borne and 14% of the people feel its water borne disease. The bar chart represents the association between the gender and type of disease COVID belongs to. There is no significant difference found between the two groups with the p value of 0.167 ($p>0.05$) (figure 2). The responses obtained for the mode of spread of COVID through animals is shown in figure 3 and about 60% of the people have responded that COVID 19 can spread through animals and around 40% have disagreed towards the mode of spread through animals. The bar chart represents the association between gender and awareness on the mode of spread through animals. There is no significant difference found between the two groups with the p value 0.078 ($p>0.05$) (figure 4). The responses for the mode of spread of COVID 19 is depicted in figure 5 where around 32% of the people are aware of droplet transmission (through coughing/sneezing), 36% of participants are aware that COVID 19 is through contaminated objects and others are aware that it could be through airborne transmission, animals and faeces. The bar chart depicts the association between gender and awareness on the mode of spread of COVID 19. It could be found that there is a significant difference between the gender and mode of the spread. Chi square test was done where the p value is found to be 0.009 ($p<0.05$) (figure 6).

Figure 1. This pie chart represents the percentage of responses on the knowledge on mode of transmission of COVID 19. 42% of the people have responded that it could be an airborne disease (blue), 14% of them have responded to waterborne disease (orange), 29% neither of these types of diseases (green) and 15% have opted both airborne and waterborne (red).

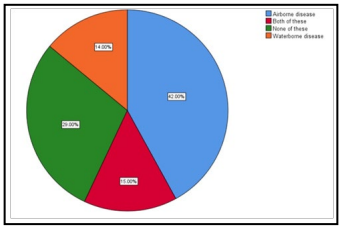


Figure 2. The bar chart representing the association between gender and awareness regarding mode of transmission of COVID19. X axis represents the gender and Y axis represents the mode of transmission. Majority of female participants are aware that COVID 19 could be airborne when compared to males. There is no significant difference between gender and awareness regarding the mode of transmission. Chi square test (Chi square value is 5.068) did not show any statistical significance with p = 0.167 (p>0.05).

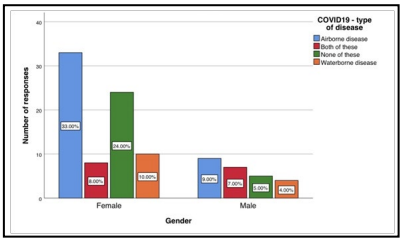


Figure 3. The above pie chart represents the awareness on mode of spread of COVID through animals. 60% of the people have agreed (red) while 40% of the people have not agreed (blue).

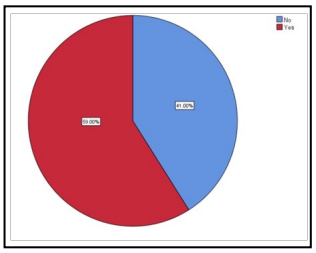
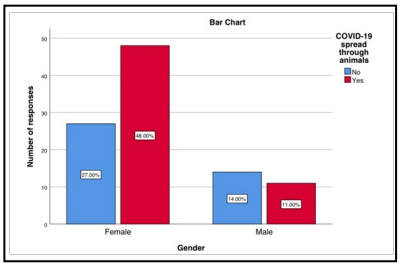


Figure 4. The bar graph represents the association between gender and the awareness on the mode of spread of COVID through animals. X axis represents the gender and the Y axis represents the number of responses. Majority of females are aware that COVID could spread through animals when compared to males. There is no significant difference between the gender and the awareness of mode of spread of COVID through animals. Chi square analysis (Chi square test value = 3.100) did not show any statistical significance with p = 0.078 (p>0.05).



The awareness of people on the distance travelled by the virus in a second is shown in figure 7. The responses obtained are 57% of participants are aware that it is between 3-5 m whereas 34% have opted for 10m and 9% more than 10m. The bar chart represents the association between gender and awareness on the distance travelled by the virus in a second. There is no significant difference between the two groups and the p value is found to be 0.828 (p>0.05) (figure 8). The responses obtained from the people who are aware if COVID could be asymptomatic is represented in figure 9 and these responses suggest that around 80% of the people agreed that it is possible for COVID to spread to other members from a person who is asymptomatic while 20% of the people disagreed.

The preventive measures taken by the people to stop the spread of COVID is depicted in the form of pie chart in figure 10 where around 49% of the people prefer using face masks, sanitizers and also tend to maintain social distancing whereas 14% of the people seek only social distancing, 18% of the people use only sanitisers and 19% of the people use only face masks regarding the prevention control. The bar chart depicts the association between the gender and the preventive measures taken to stop the spread of COVID 19. There is no significant difference between

Figure 5. The above pie chart represents the responses on the commonest mode of transmission of COVID 19. Almost 37% of the people have opted droplet transmission (orange), 36% of them have responded as contaminated objects (green), 17% of them opted for airborne transmission (blue), 7% of them have told that it is through faeces (yellow) and 3% of them have opted that the spread could be through animals (red).

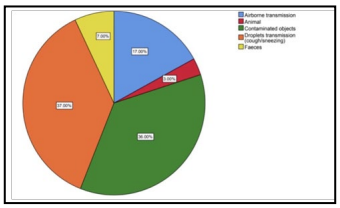


Figure 6. The bar graph represents the association between gender and mode of spread of COVID19. X axis represents the gender and Y axis represents the number of responses. Majority of females are aware that COVID 19 spreads through the droplet transmission compared to males. Chi square test (Chi square value =13.631) shows statistical significance with p = 0.009 (p<0.05). There is significantly increased awareness level seen in females compared to male on the most common mode of transmission of the virus.

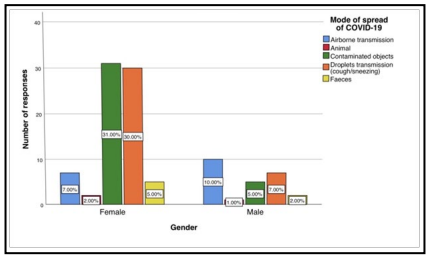


Figure 7. This pie chart reveals the response to the question regarding the distance travelled by the virus in a particular time. Around 57% of them have opted for 3-5m (red), 34% them for 10m (blue) and 9% of them for more than 10m (green).

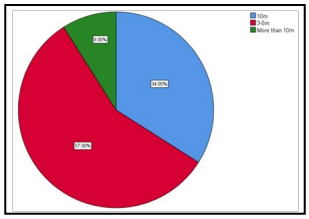
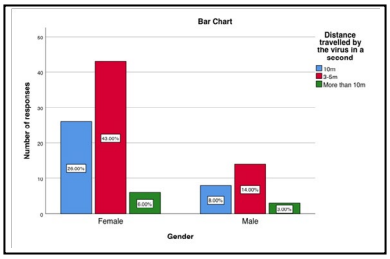


Figure 8. The bar graph represents the association between gender and response to the question regarding the distance travelled by the virus in a particular time. X axis represents the gender and Y axis represents the number of responses Majority of females answered 3-5m. There is no significant difference between the gender and the distance travelled by the virus in a particular time. Chi square test (Chi square value =0.378)did not show statistical significance with p=0.828 (p>0.05).



the gender and the preventive measures taken. Chi square test was done and the p value is found to be 0.426 (p>0.05) (figure 11). The opinion of the people towards the reduction of transmission of COVID could be seen in figure 12 where 70% of the people agreed that this lockdown is helpful in reducing the number of cases of COVID 19 where as 30% of the people had an opinion of this lockdown not being effective. The usage of face masks by the people is shown in figure 13 and around 87% of them have responded that they use face masks while 13% of them do not use face masks. The responses obtained for the type of face mask used by the people is shown in figure 14. It was found that 36% of the people prefer surgical masks, 33% for cloth masks, 18% of the people use N95 respirator and 13% of the people do not use any type of face mask. The responses obtained on the role of social distancing in the reduction in the transmission of COVID is depicted in figure 15 where almost 84% of people have agreed that social distancing plays a major role in preventing the spread of COVID 19 and 16% disagreed. The opinion of the people on the role of group gatherings in increasing the rate of transmission of COVID 19 is shown in figure 16. Around 90% of the people have agreed whereas 10% of the people have disagreed.

Discussion

In this study, it is seen that a large percentage of people are aware of the mode of spread of COVID 19. The mode of transmission

Figure 9. This pie chart depicts the response to the question regarding the possibility of an individual being asymptomatic with COVID. 80% of the people have agreed (red) that COVID can be asymptomatic whereas 20% of the people have not agreed (blue).

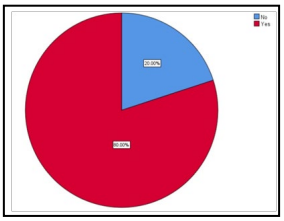


Figure 10. This pie chart represents the preventive measures taken for COVID by the people. About 49% of them use masks, maintain social distancing and also use sanitisers (blue), 14% of the respondents maintain only social distancing in such situations (green), 18% use only sanitisers (red) and 19% of them use only face masks (orange).

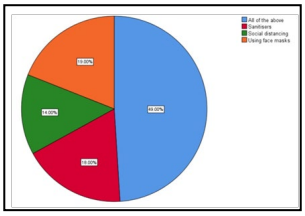


Figure 11. The bar graph representing the association between the gender and preventive measures taken to stop the spread of COVID 19. X axis represents the gender and Y axis represents the number of responses. Females are found to be following more preventive measures than the males. There is no significant difference between the gender and preventive measures taken. The chi square test (Chi square value = 2.783) did not show any statistical significance with p = 0.426 (p>0.05).

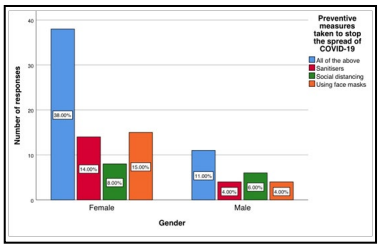


Figure 12. This pie chart depicts the effectiveness of lockdown in reducing the transmission of COVID. Around 70% of the people have agreed (red) that lockdown plays a role while 30% of them disagreed (blue).

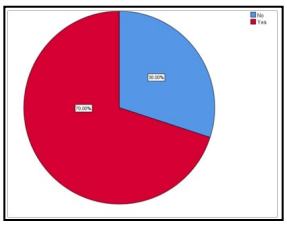
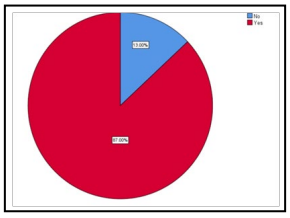


Figure 13. This pie chart represents the responses obtained for the use of face masks by the people. Around 87% of the people use face masks for protection while 13% of them do not use face masks.



of COVID is mainly through droplet transmission [21, 22]. People are aware that social distancing is important to reduce the transmission of COVID. The term "close contact" is defined as being within 2m of a COVID case for a long period of time or having direct contact with the infectious secretions of COVID affected person [23]. This could transmit the disease from one person to another. The benefits of social distancing were most effective as the number of cases decreased. It reduced the median number of cases by more than 92% in China and hence seemed to be very effective [24]. According to WHO, people are requested to maintain a minimum of 1-3m of distance from a person having symptoms of the COVID [25]. This distance which is being estimated depends on the timescale, persistence and the pathogenic payload travel increasing the exposure mainly for the health workers [26].

Figure 14. This pie chart depicts the type of face mask preferred in preventing the spread of COVID. Around 36% of the responders use surgical masks (orange), 33% of them use cloth masks (blue), 18% use N95 respirator masks (red) and 13% of the people do not use any type of mask (green).

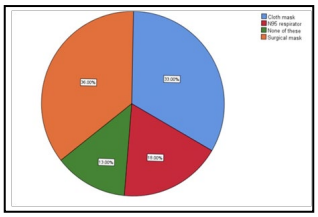


Figure 15. The pie chart depicts the role of social distancing in the prevention of COVID. Around 84% of them agreed (red) that it has a role in decreasing the transmission while 16% of the people disagreed (blue).

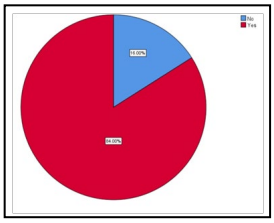
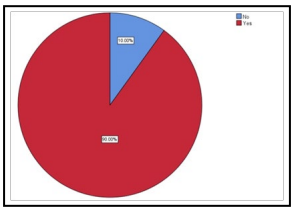


Figure 16. The pie chart represents the responses obtained on the role of spread of COVID 19 at a higher rate in group gatherings. Around 90% of the people have agreed (red) whereas 10% of the people have disagreed (blue).



Personal protective equipment is recommended in such cases especially in the case of health workers who are more susceptible for the virus attack [27, 28]. The spread of virus could even be through animals as bats were the main carrier when this pandemic originated [29, 30, 31]. The New England Journal of Medicine has recently reported that coronavirus remained viable in aerosols for 3 hrs in a laboratory setting.

Atmospheric conditions that impact the rate of evaporation and distance of droplet spread would determine the range of the droplet size and behaviour on the impact of the transmission. Lockdown is said to be effective only in the cases where people are intended to follow rules and regulation and provide a proper means to decrease the number of cases. Spread of COVID could be possible through a person who is asymptomatic and this creates an issue where the others are affected when they are not aware of the people affected by COVID around them [32, 33]. Personal protective equipment plays a major role regarding the control of control of COVID.

The masks which are being used have the ability to decrease the spread from an infected person. The N95 mask contains a filter which completely filters the incoming air from aerosolized droplet nuclei [33]. The masks are designed in such a way that the particulate matter is separated from future spread. The use of masks, sanitisers and social distancing have played a major role in stopping the widespread of COVID. WHO also provided staff training and recommended adequate amounts of precautionary measures that needed to be taken.

Conclusion

From the study it can be concluded that people have awareness about the most commonest mode of spread of COVID 19 infection. The study also shows that people were aware that COVID can be spread from an asymptomatic person. In order to control the spread of infection, social distancing, quarantine, using face-mask with proper hand hygiene can be practiced as preventive measures.

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