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Awareness on The Role of Sanitisers In Controlling the Spread of Covid-19 Among Urban Population

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Abstract: The pandemic of coronavirus has affected millions. The fast spreading virus has to be controlled and preventive measures should be taken. Since there is no vaccine or cure, sanitisers are 99.9% effective against germs and can kill SARS-COV2 by attacking its envelope. Usage of sanitiser is extremely important for the control of spread of coronavirus, and so, people should accordingly stock up on it. A survey questionnaire of 15 questions was conducted to test the awareness of properties of sanitisers and to encourage people to use them, among 100 random sample size belonging to the urban background. Majority of the people think that sanitisers are a convenient and effective way of fighting germs. Since they know that clean hands are the first line of defence in fighting infections, they use it often and accordingly stock up on PPE. Majority of people know the important facts about sanitisers and have started using them. Most people think that sanitisers are useful in controlling the spread of coronavirus and have accordingly increased their usage of it during the global pandemic.

Keywords: sanitisers; COVID-19; pandemic; germs; disinfection

INTRODUCTION

The pandemic of coronavirus is one that has become the talk of the world nowadays. It's rapid and fast spreading nature has stunned everyone. The well known coronavirus disease that emerged at the end of 2019 began threatening and compromising the health, well being and lives of millions of people after a couple of weeks(Gomez-Roman *et al.*, 2020). Highly and profoundly contagious with the possibility of causing severe respiratory infections, it has quickly impacted public health systems and governments, which have responded by declaring it as a public health emergency of national concern and by adopting measures such as a nationwide lockdown to restrain the outbreak(Hopkins *et al.*, 2020).

Coronavirus is a collection of viruses that causes diseases in mammals and birds. In humans, these viruses cause respiratory tract infection that can range from mild to severe(Chan *et al.*, 2020). Mild illnesses can include some cases of common cold while lethal cases include SARS & COVID-19(Tao *et al.*, 2020). COVID-19 is an infectious disease caused by severe acute respiratory syndrome coronavirus- 2 (SARS-COV2)(Peng *et al.*, 2020; Tao *et al.*, 2020). It was first identified in Wuhan, China and has since spread globally, resulting in a pandemic(Anitha and Ashwini, 2017). Common symptoms include fever, cough, fatigue, shortness of breath and loss of smell and taste(Ashwini, Ezhilarasan and Anitha, 2017). It can also lead to multiple organ failures, septic shocks, and blood clots(Xu, no date). The virus primarily spread between people during close contact via small droplets produced by coughing, sneezing, and talking(Hu *et al.*, no date). Recommended measures to prevent infection include frequent hand washing, maintaining physical distance from others, self quarantine, face covering and sanitising regularly(Kulkarni and Dhanushkodi, 2020). These preventive measures should be taken seriously as there are no vaccines nor specific treatments for infection(Kulkarni and Dhanushkodi, 2020; Parikh, Desai and Parikh, 2020).

One very prominent method of counteraction and self protection that has become very popular during the pandemic is use of sanitisers. Hand sanitisers are liquids, gels or foams that kill germs and infectious bacteria(Lakshmi *et al.*, 2015). It is used as an alternative to hand washing and the common method of using soap and water. They are considered to be almost as effective as soap and water however they cannot remove harmful chemicals(Sharma *et al.*, 2019a) (Ezhilarasan *et al.*, 2017). Due to less awareness about its many

benefits, in most settings, hand washing with soap and water is mostly preferred. They come in two main varieties, alcohol based and non alcohol(Hines *et al.*, 2013). Alcohol based versions typically contain a combination of isopropyl alcohol, ethanol, or n propanol with renditions containing 60% to 95% alcohol which is the most effective(Barrett and Babl, 2015). They work efficiently against a wide variety of microorganisms but not spores. In most healthcare settings, alcohol based sanitisers are preferable to washing with soap and water(Martyasari, Andayani and Hajrin, 2019). That is because it is better endured and more effective. The general use of non alcohol based hand sanitisers has no recommendations(Perumalsamy *et al.*, 2018). There is a proper technique to follow, while using a sanitiser. Generally, apply the liquid to the palm of one hand. Then rub it all over both hands until the sanitiser dries. This takes about 20 seconds(Mehta, Deeksha, Tewari, Gupta, Awasthi, Singh, Pandey, Chellappan, Wadhwa, Collet, Hansbro, Rajesh Kumar, *et al.*, 2019). One should not wipe hands before the sanitiser is dry. Doing that can make the process less effective in killing germs(Chen *et al.*, 2020). Generally, only 2 drops are enough, and should be used every 1 hour(Lakshmi *et al.*, 2017). It's mechanism of action is that it prevents the growth of microorganisms (especially Staphylococcus aureus, Staphylococcus epidermis, and Enterococcus faecalis)(Jha and Orthopaedics & Joint Replacement Surgery, 2020). It controls the spread of the virus by instantly killing and disinfecting the hands in the absence of immunisation or effective antiviral drugs. Hand hygiene is a main aspect to prevent the spread of SARS-COV2, the virus that causes COVID-19. And hand sanitisers are a major factor which contributes to the same(Meena, no date; Jha and Orthopaedics & Joint Replacement Surgery, 2020).

The alcohol in the sanitiser attacks and destroys the envelope protein that surrounds some viruses, including coronavirus(Ezhilarasan, 2018). This protein is vital for a virus's survival and multiplication. But a hand sanitiser needs to be at least 60% alcohol to kill most viruses. Our team has rich experience in research and we have collaborated with numerous authors over various topics in the past decade (Deogade, Gupta and Ariga, 2018; Ezhilarasan, 2018; Ezhilarasan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; J *et al.*, 2018; Menon *et al.*, 2018; Prabakar *et al.*, 2018; Rajeshkumar, Kumar, *et al.*, 2018; Vishnu Prasad *et al.*, 2018; Wahab *et al.*, 2018; Dua *et al.*, 2019; Duraisamy *et al.*, 2019; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Gheena and Ezhilarasan, 2019a; Malli Sureshbabu *et al.*, 2019; Mehta, Deeksha, Tewari, Gupta, Awasthi, Singh, Pandey, Chellappan, Wadhwa, Collet, Hansbro, Kumar, *et al.*, 2019; Panchal, Jeevanandan and Subramanian, 2019; Rajendran *et al.*, 2019; Rajeshkumar *et al.*, 2019; Ramakrishnan, Dhanalakshmi and Subramanian, 2019; Sharma *et al.*, 2019b; Varghese, Ramesh and Veeraiyan, 2019; Gomathi *et al.*, 2020; Samuel, Acharya and Rao, 2020)

MATERIALS AND METHODS

A survey was conducted among the general public during the pandemic of COVID-19. The study setting was an online setting among the urban population. The sample size was 100. The sampling method was randomised. The statistical software used was IBM SPSS. Correlation and association type of analysis was used. Primary data collection by asking and receiving responses directly through online portals. The questions of the survey were based on awareness of salient facts of sanitisers, and preference of people between sanitizers and soap and water.

RESULTS AND DISCUSSION

The pandemic of COVID-19 is a cause of worry for all. The fast spreading virus has changed the lifestyle of millions of people. The need of the hour is to use as many preventive measures as possible, to control the spread of the virus. Sanitisers, being a main self protective measure should be used on a daily basis(Ezhilarasan, Sokal and Najimi, 2018).

Figure-1 Shows that only 76% of the people who answered the survey questions use a sanitiser on a daily basis. Since the benefits and advantages of using sanitisers are not well known among most people, it is unlikely for them to use them regularly or on a daily basis. Most rural populations have no knowledge of such an item available in the market and so it is quite impossible for them to use it.(Rajeshkumar, Agarwal, *et al.*, 2018) Another factor being its price/costing. It is priced above an average soap and so, it is unlikely for most people to buy a relatively expensive item when a cheaper, and tried & tested replacement is already available('Commonwealth Pharmacists' Association release video guide on making hand sanitiser', 2020). Figure-2 Shows that out of the people, 30% use a sanitiser once a day, 29% use it twice a day and only 22% use it every 6 hours. Ideally, a sanitiser should be used every 2 hours , and more, if one is working with people or in an unclean environment(Ezhilarasan, Sokal and Najimi, 2018). Studies show that most people who use sanitisers, often use it when they are outside and have no access to the conventional method of washing hands, that is soap and water(Barrett and Babl, 2015).

Figure- 3 shows that only 62% think that sanitisers are effective against germs and the rest do not think so. In reality, sanitisers are 99.9% effective against the growth and multiplication of microorganisms. They are known to have an inhibitory effect on the reproduction of microbes by inhibiting the protein which helps in the same(Jin *et al.*, 2016). Figure- 4 Shows the percentage of people who know that alcohol based sanitisers are

99.9% effective against germs. 63% knew, whereas 18% did not. In actuality, most alcohol based sanitisers, which have alcohol content over 95% are highly effective in controlling the spread of germs. In comparison, sanitisers having minimal to no alcohol content are not used anymore, since they are not very helpful (Yao, Wang and Liu, 2020). Figure- 5 Shows the people who know that sanitising hands is an alternate method to washing hands with soap and water. 65% claimed to know this, whereas 19% did not and the remaining 16% are not sure. A lot of people seem to think that it is just a way to clean hands but do not compare it to the vale and quality of the conventional method of using soap and water. Figure- 6 Shows the number of people who think that sanitisers are as effective as soap. 60% think as such, whereas 19% don't think so. Studies show that sanitisers are almost as effective as conventional preventive measures of washing hands with soap and water, however, they cannot disinfect chemicals(Sriram *et al.*, 2018).

Figure -7 Shows the percentage of people who prefer using soap (47%) or sanitiser (37%). The preference is such because most people do not know about the acclaimed benefits of using sanitisers and are accustomed to using soap and water throughout their lives. Figure- 8 Shows the number of people who consider soap to be equivalent to washing hands with soap and water (68%) whereas 32% didn't know this. Figure- 9. Shows that 67% of the people knew that the effect of sanitisers last till 6 hours, if not contaminated. The rest 33% didn't know. This shows that most people are not aware about the salient facts about sanitisers. Figure -10 Shows that 68% of them think that it is effective against coronavirus whereas 13% of them do not think so. In reality, sanitisers attack the envelope of coronavirus and inhibit their multiplication by doing so. So, it is very much effective(Gheena and Ezhilarasan, 2019b). Figure- 11 Shows the increase in usage of sanitisers, after the beginning of the pandemic. Most people started becoming aware about sanitisers only after they learnt about its antimicrobial properties. Sanitisers became very popular after the pandemic hit and people started stocking up on it.

Figure- 12 shows that in comparison, 76% of them used to use sanitisers before the emergence of COVID-19, whereas 24% weren't doing so. Figure -13 shows that 71% of them have stocked up on personal preventive measures and equipment such as mouth masks, gloves and sanitisers. Figure -14 shows the percentage of people who knew that clean hands is the first line of defence against germs, only 64% know, whereas 20% didn't. Since, it is very common for people to touch most objects which come in their way, and then touch their face/nose/eyes/mouth/ears, it gives way for easy transmission of the disease(Umer, Haji and Zafar, 2020). To prevent this, we must have clean hands all the time, along with the conscious effort to avoid the touching of face without sanitisation (Fang *et al.*, 2016; Sriram *et al.*, 2018). Figure-15 Shows that 66% of people think that sanitisers usage is more convenient than soaps. In comparison, the remaining think the opposite. Majority of people think that sanitisers are a convenient and effective way of fighting germs(Menon *et al.*, 2018). Since they know that clean hands are the first line of defence in fighting infections, they use it often and have accordingly stocked up on PPE. Majority of people know the important facts about sanitisers(Rajeshkumar, Kumar, *et al.*, 2018) and have started using them, even though they didn't use them before the pandemic(Han and Zhou, 2020). Even though they are aware of the benefits of using sanitisers(Karthiga, Rajeshkumar and Annadurai, 2018), they still prefer using soap and water over it(Pratt *et al.*, 2001). This study was conducted only in the urban population, so it is limited by a biased view point.

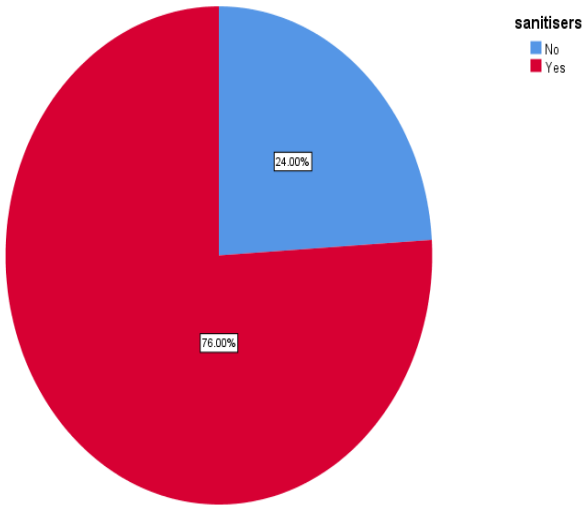

Fig.1: A Pie chart showing the responses to the question "Do you use sanitisers on a regular basis?". 76% of the respondents reported that they use sanitisers(Red), whereas the remaining 24% reported that they do not do so(Blue).

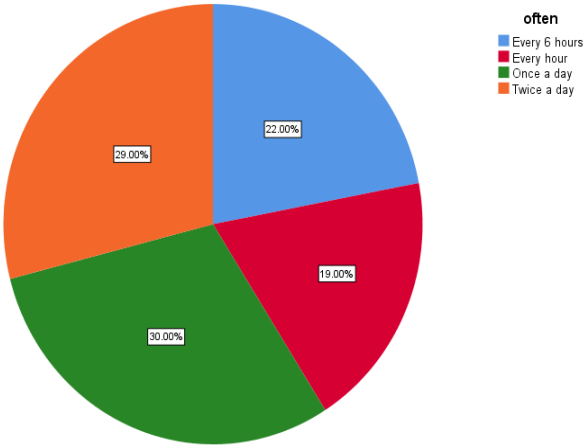

Fig.2: A Pie chart showing the responses to the question "How often do you use a sanitiser?". 30% of the respondents reported that they use a sanitiser once a day(Green), 29% reported they use it twice a day(Orange), 22% use it every 6 hours (Blue) and 19% use it every 1 hour(Red).

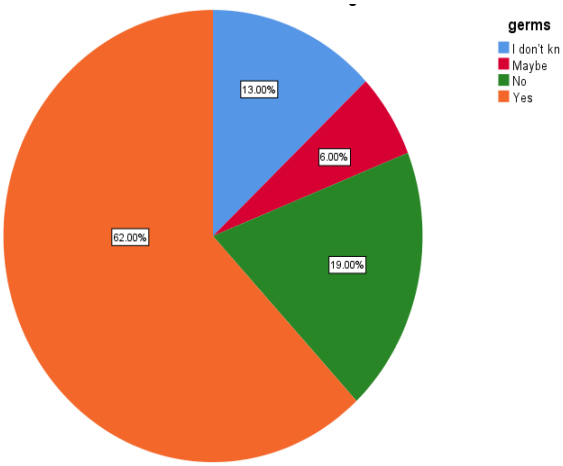

Fig.3: A Pie chart showing the responses to the question "Do you think sanitisers are effective against germs?". 62% of the respondents reported that they do think sanitisers are effective against germs(Orange), 19% reported the opposite(Green), 13% of them do not know (Blue)and 6% are not sure (Red).

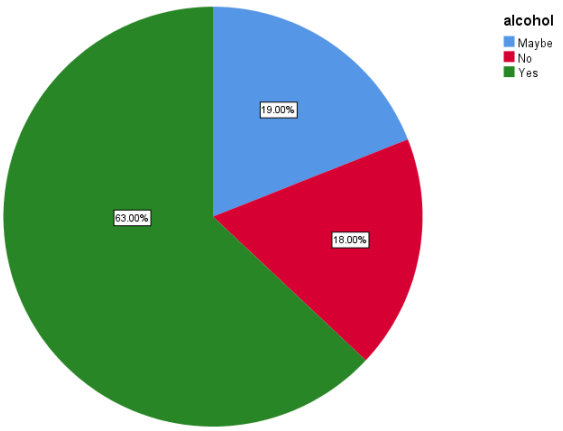

Fig.4: A Pie chart showing the responses to the question "Did you know alcohol based sanitisers are 99.9% effective against germs?". 63% of the respondents reported that they are aware sanitisers 99.9% are effective against germs(Green), 18% reported the opposite (Red), 19% of them are not sure(Blue).

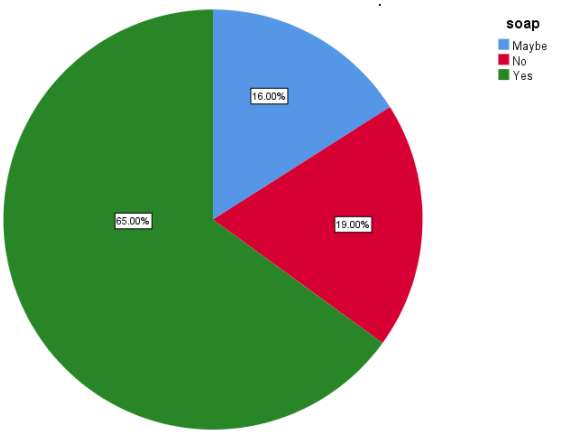

Fig.5: A Pie chart showing the responses to the question "Did you know sanitisers are used instead of soap sometimes?". 65% of the respondents reported that they are aware sanitisers are an alternative to soap and water(Green), 19% reported the opposite (Red), 16% of them are not sure(Blue).

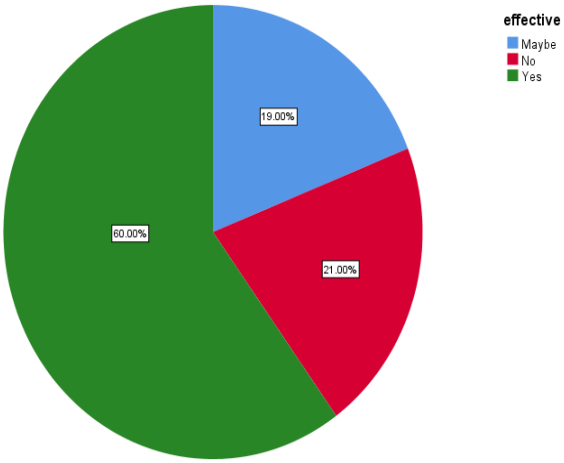

Fig.6: A Pie chart showing the responses to the question "Do you think sanitisers are as effective as soap?". 60% of the respondents reported that they do think sanitisers are as effective as soap and water (Green), 21% reported the opposite (Red), and the remaining 19% of them are not sure(Blue).

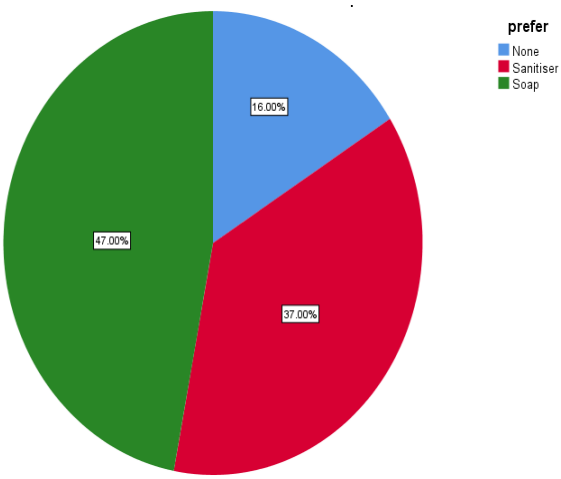

Fig.7: A Pie chart showing the responses to the question "Do you prefer using a sanitiser or soap?". 47% of the respondents reported that they prefer soap (Green) , 37% reported that they prefer using a sanitiser (Red), and the remaining 16% do not have any preference (Blue).

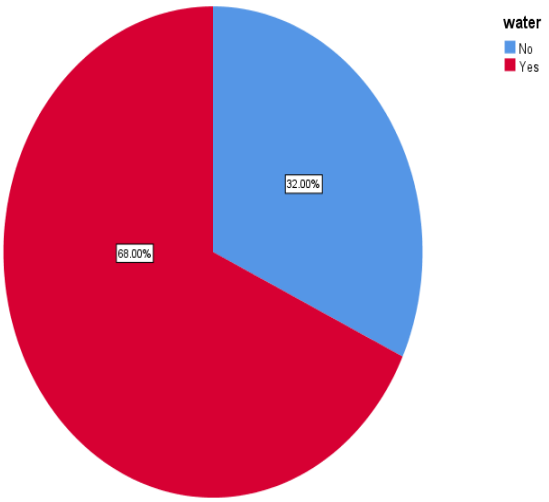

Fig.8: A Pie chart showing the responses to the question "Did you know sanitisers are as effective as soap and water?". 68% of the respondents reported that they are aware of this fact (Red), 32% reported that the opposite (Blue).

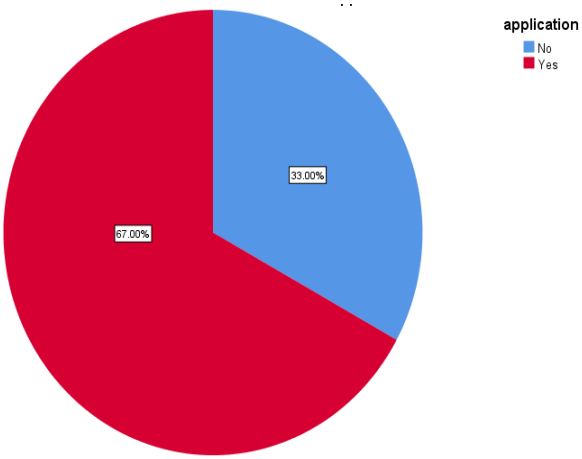

Fig.9: A Pie chart showing the responses to the question "Did you know the effect of sanitisers lasts till after 6 hours of application?". 67% of the respondents reported that they are aware of this fact (Red) , 33% reported that the opposite (Blue).

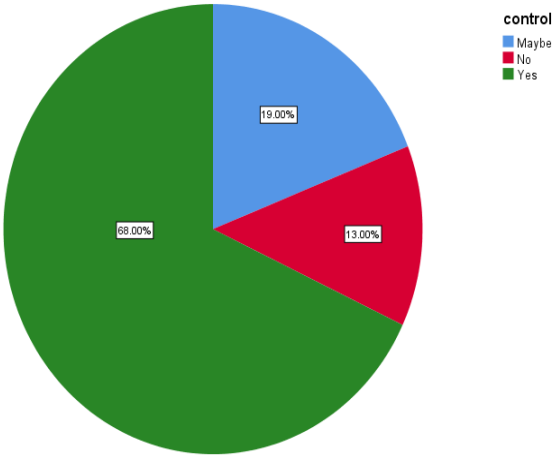

Fig.10: A Pie chart showing the responses to the question "Do you think sanitisers are effective against the spread of coronavirus?". 68% of the respondents reported that they do think sanitisers will help in the control of coronavirus (Green) , 13% reported the opposite (Red) and the remaining 19% are not sure (Blue).

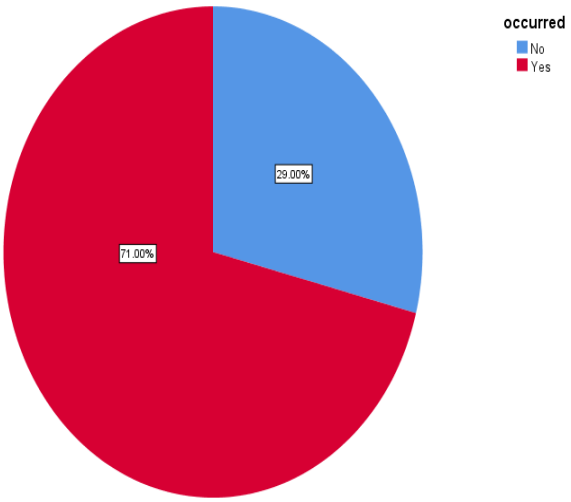

Fig.11: A Pie chart showing the responses to the question "Have you increased your usage of sanitisers after the pandemic of COVID-19?". 71% of the respondents reported that they did increase their usage of sanitisers once the pandemic hit (Red), 29% reported the opposite (Blue).

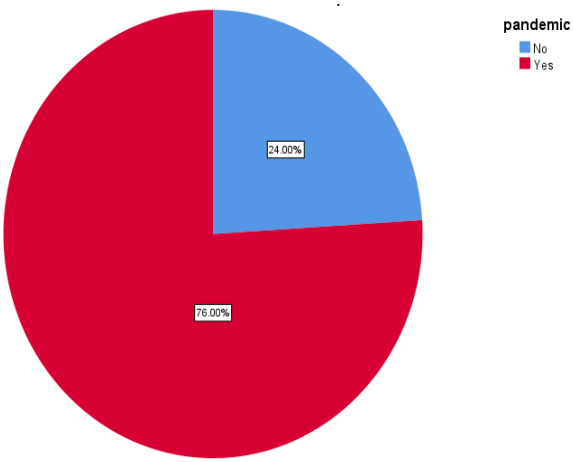

Fig.12: A Pie chart showing the responses to the question "were you using sanitisers regularly before the pandemic of COVID-19?". 76% of the respondents reported that they did use sanitisers beforehand (Red), and the remaining 24% reported the opposite (Blue).

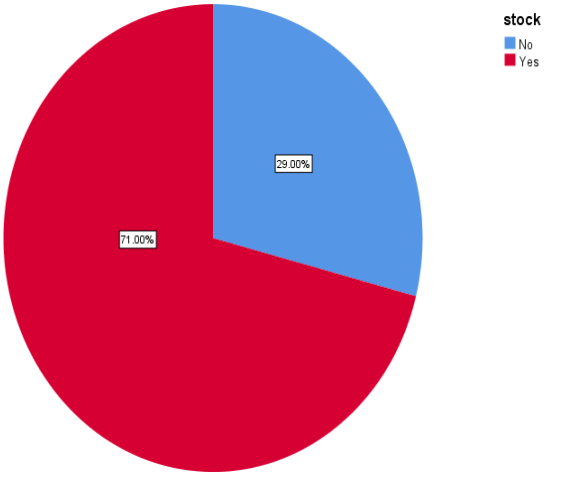

Fig.13: A Pie chart showing the responses to the question "Have you stocked up on PPE, mouth masks, gloves and sanitisers?". 71% of the respondents reported that they have stocked up on PPE (Red), and the remaining 29% reported the opposite (Blue).

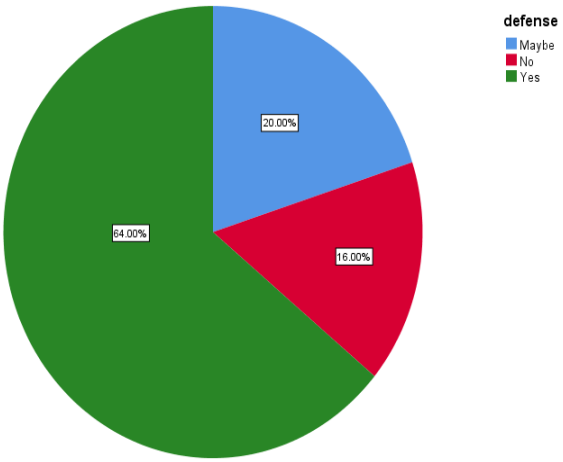

Fig.14: A Pie chart showing the responses to the question "Are you aware that clean hands are the first line of defense against transmission of microorganisms?". 64% of the respondents reported that they were aware of this (Green), 16% reported the opposite(Blue) and the remaining 20% weren't sure (Red).

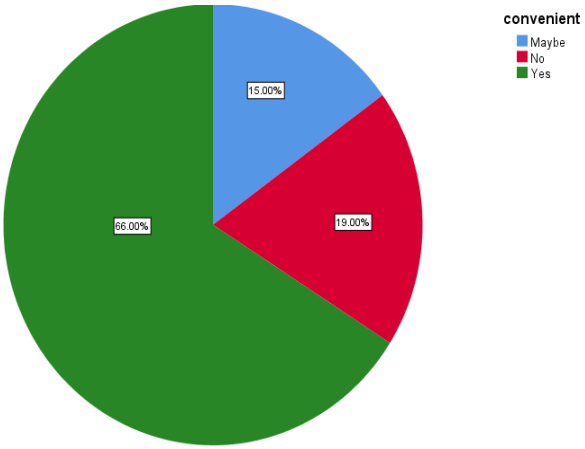

Fig.15: A Pie chart showing the responses to the question "Do you think using sanitisers is more convenient than using soap and water?". 66% of the respondents reported that they think as such (Green), 19% reported the opposite (Red) and the remaining 15% weren't sure (Blue).

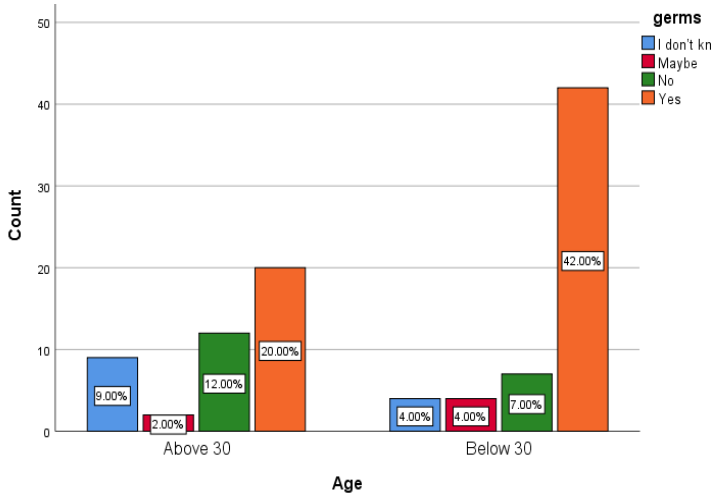

Fig.16: Bar representing correlation between age and awareness about sanitisers being 99.9% effective against germs. X axis represents the age and Y axis represents the awareness about sanitisers being 99.9% effective against germs. There is a significant increase seen in the awareness of people below 30. (Chi square analysis was done , Pearson Chi SquareValue= 11.850, the P value was 0.019, which was found to be statistically significant)

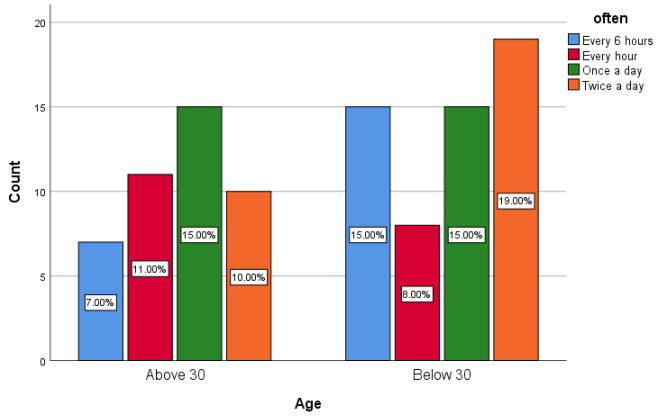

Fig.17: Bar representing correlation between age and frequency of usage of sanitisers during the pandemic. X axis represents the age and Y axis represents the frequency of usage of sanitisers during the pandemic. Highest amount of people (19%) who are below 30 have responded twice a day.(Chi square analysis was done , Pearson Chi Square Value= 6.114, the P value was 0.23, which was found to be statistically insignificant)

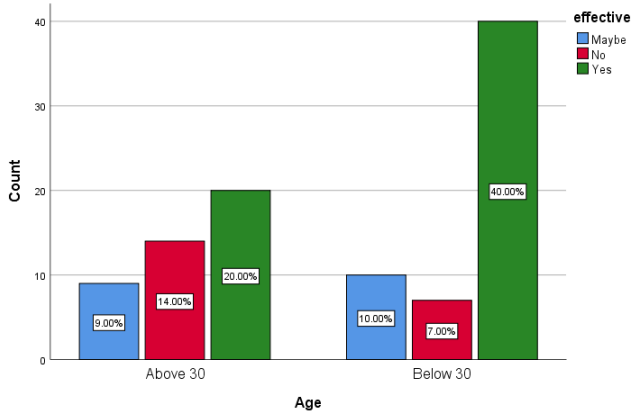

Fig.18: Bar representing correlation between age and effectiveness of sanitisers in comparison to soap and water. X axis represents the age and Y axis represents the effectiveness of sanitisers in comparison to soap and water. There is a significant increase seen in the awareness of effectiveness of sanitizers in people below 30. (Chi square analysis was done , Pearson Chi SquareValue=9.027 the P value was 0.027, which was found to be statistically significant)

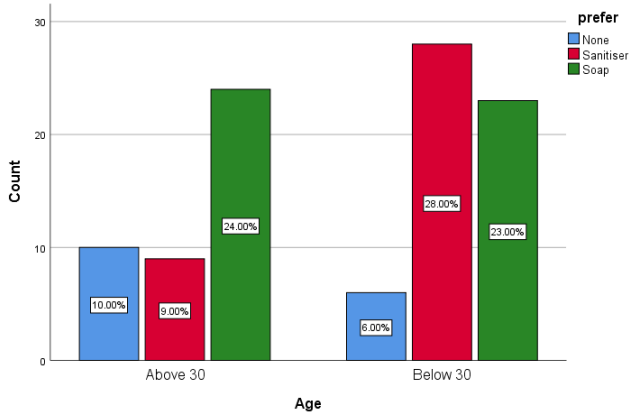

Fig.19: Bar representing correlation between age and preference of product - soap or sanitiser. X axis represents the age and Y axis represents the preference of product - soap or sanitiser. There is a significant increase seen in the preference of sanitizers in people below 30. (Chi square analysis was done, Pearson Chi SquareValue= 9.993, the P value was 0.011, which was found to be statistically significant)

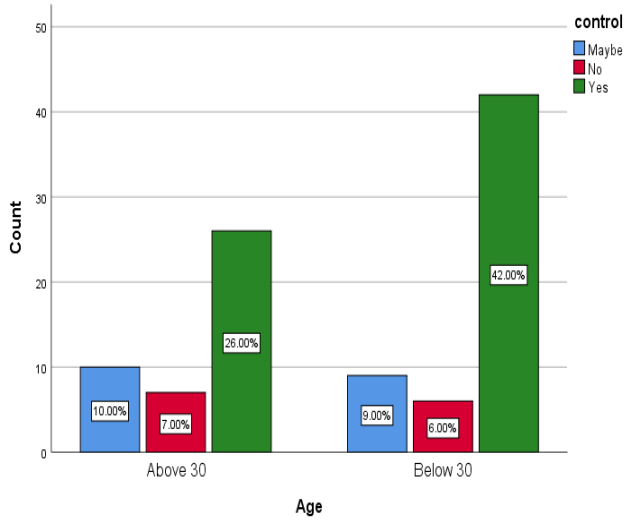

Fig.20: Bar representing correlation between age and effectiveness of sanitizers against coronavirus. X axis represents the age and Y axis represents the effectiveness of sanitizers against coronavirus. People below 30 have responded yes (42%) and people above 30 have responded yes (26%) (Chi square test was done, Pearson Chi SquareValue=3.553 the P value was 0.373, which was found to be statistically insignificant) Our institution is passionate about high quality evidence based research and has excelled in various fields ((Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; Vijayashree Priyadharsini, Smiline Girija and Paramasivam, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019; Vijayashree Priyadharsini, 2019; Chandrasekar *et al.*, 2020; Mathew *et al.*, 2020; R *et al.*, 2020; Samuel, 2021)

CONCLUSION

The pandemic of COVID-19 is a cause of worry for all. The fast spreading virus has changed the lifestyle of millions of people. The need of the hour is to use as many preventive measures as possible, to control the spread of the virus. Our study shows that the majority of people think that sanitisers are useful in controlling the spread of COVID-19 and have increased their usage of it, accordingly during the pandemic. They've stocked up and hence, use it often as a preventive measure against the virus. However, this change of mindset has come only after the occurrence of the pandemic and before this, most of them were not using them. On an average, only 60% know about the salient features and benefits of using sanitisers.

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