



## **Awareness About Various Disinfecting Agents Against Coronavirus in Chennai Population**

**Aarthi Kannan<sup>1</sup>**

**Hannah. R<sup>2\*</sup>**

**Jothi Priya<sup>3</sup>**

**Journal for Educators, Teachers and Trainers, Vol. 13 (6)**

<https://jett.labosfor.com/>

Date of reception: 22 Oct 2022

Date of revision: 10 Nov 2022

Date of acceptance: 20 Dec 2022

**Aarthi Kannan, Hannah. R, Jothi Priya(2022). Awareness About Various Disinfecting Agents Against Coronavirus in Chennai Population *Journal for Educators, Teachers and Trainers*, Vol. 13(6). 130-152.**

---

<sup>1</sup>Saveetha Dental College and Hospital, Saveetha Institute of Medical and Technical Science, Saveetha University, Chennai-600077

<sup>2</sup>Senior Lecturer, Department of Oral and Maxillofacial pathology, Saveetha Dental College and Hospital, Saveetha Institution of Medical and Technical Sciences, Saveetha University, Chennai -600077

<sup>3</sup>Senior Lecturer, Department of Physiology, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai-600077



## **Awareness About Various Disinfecting Agents Against Coronavirus in Chennai Population**

**Aarthi Kannan<sup>1</sup>, Hannah. R<sup>2\*</sup>, Jothi Priya<sup>3</sup>**

<sup>1</sup>Saveetha Dental College and Hospital, Saveetha Institute of Medical and Technical Science, Saveetha University, Chennai-600077

<sup>2</sup>Senior Lecturer, Department of Oral and Maxillofacial pathology, Saveetha Dental College and Hospital, Saveetha Institution of Medical and Technical Sciences, Saveetha University, Chennai -600077

<sup>3</sup>Senior Lecturer, Department of Physiology, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai-600077

\*Corresponding Author

Email: arthikannandxb@gmail.com<sup>1</sup>, hannahr.sdc@saveetha.com<sup>2</sup>, jothipriya.sdc@saveetha.com<sup>3</sup>

### **ABSTRACT**

To evaluate the awareness about various disinfectants used against the corona virus among the Chennai population. The outbreak of coronavirus disease 2019 (COVID-19) has infected and killed lots of people around the world. This led to the broad use of various types of disinfectants in order to control the public spread of the highly contagious virus. coronavirus can be inactivated by washing hands with soap and water and alcohol based hand rub. The transmission could not be prevented by the usual standards of hand hygiene, practised in the household this must be improved by the use of liquid soap dispensers and alcohol based hand-wash. A cross-sectional descriptive survey was prepared, and circulated through an online survey link, among the Chennai population within the age group of 25-30 years. The results were analysed using statistical analysis. Demographic information, Knowledge, attitude, practice were the output variables. The data analysis was done using SPSS software. From the cross-sectional study conducted among the Chennai population it is evident that most of the people are aware about COVID-19, and the various disinfectants used against it. Most of them find alcohol based hand rubs more effective than washing hands with soap and water. The increased awareness about the disinfectants and methods used will help to contain the spread of the virus.

**Key words:** Disinfectants; virus; hand rubs; COVID-19.

### **INTRODUCTION**

The coronavirus disease (COVID-19) killed and infected a lot of people around the world. The epidemic started in Wuhan, China and quickly spread throughout the entire country and all over the world. Coronavirus (CoV) have been traditionally considered nonlethal pathogens to humans, mainly causing approx 15% of common cold. But few variants like SARS, MERS, etc were found to cause acute respiratory distress syndrome with increased rates of mortality. Therefore, the current COVID-19 is the third CoV outbreak in the recorded history of humans. (1)

It has been suggested that healthcare workers who are exposed to patients can be infected with coronavirus, regardless of the intensity of exposure. Wearing a face mask is the most important infection control, followed by appropriate hand hygiene, suggesting that droplets on hands play a major role in transmission.(2) The World Health Organisation has suggested that standard disinfectants should be effective against COVID-19. Their main components, the alcohols ethanol and isopropanol showed adequate inactivation of the virus. The first disinfectant recommended by the WHO consists of 80 volume percent ethanol, 1.45% glycerine and 0.125% hydrogen peroxide, the second disinfectant consists of 75% isopropanol, 1.45% glycerine and 0.125% hydrogen peroxide(3).

Ethanol is widely used in hand rubs, gels and foam for hand hygiene in healthcare settings.(3). Alternatively, 1% sodium hypochlorite is also used as a surface disinfectant. It has a broad spectrum of use against the various microbial pathogens and viruses. As stated by an author in a study microbial variation can take place due to climate change and might have an effect on human health.(4) In addition to the various disinfectants used, thermal inactivation at 56 degree celsius was highly effective in reducing virus titre to below detectability. (5)

The transmission could not be prevented by the usual standards of hand hygiene, practised in the household this must be improved by the use of liquid soap dispensers and alcohol based hand-wash. (6). Raising awareness regarding these disinfectants is the primary role of the healthcare worker in order to reduce the transmission of the virus and hence save lives. There are also various other surveys conducted to raise awareness regarding oral biopsies and about the use of ethics and scope of dental photography done among the Chennai population.(7–11)

There are various researches done among dental students to assess their awareness on the current trend in dental technology and oral diseases (12–16). Numerous surveys are also being done in our institution among similar population groups and this encouraged us to pursue research in the current topic of Covid 19. (17–20). The aim of the study is to evaluate the awareness about various disinfectants used against the corona virus among the Chennai population.

## MATERIALS AND METHODS

This is a cross sectional descriptive survey that was conducted among 109 participants belonging to the Chennai population. Convenience sampling was done. The study was approved by the scientific review board. This survey consists of a self-administered questionnaire which was validated. The questionnaire was then dispatched through an online portal - google forms.. The data was tabulated in excel sheet and exported to SPSS. The results were then analysed using appropriate statistical analysis. Demographic information, Knowledge, attitude, practice were the output variables. Pie charts and bar graphs were used to depict the result.

## RESULTS AND DISCUSSION

On surveying, the age group between 25-30 years were more active in response, and the majority of the population were women- 69%. (Figure 1). When the knowledge of the participants regarding the disinfectants was assessed, 79% of the population were aware about coronavirus, when the association between age and awareness about the coronavirus was done the value was not found to be statistically significant. (Figure 2,3) 65% of the population thought that concentrated bleach is recommended for disinfection, when the association between age and knowledge regarding the concentrated bleach was done the p value was not found to be statistically significant.(Figure 4,5). 37% of the population thought that coronavirus is transmitted through direct contact with cases, 19% thought that corona virus is transmitted through contaminated surfaces/objects, 7% of them thought that it is transmitted through respiratory droplets, 38% of the population thought that all of these can transmit coronavirus, when the association between age and modes of transmission of coronavirus was done the p value was not found to be statistically significant. ( Figure 6,7)

46% of the population thought that washing hands with soap and water is most effective against coronavirus, 30% of them thought washing hands with water is more effective, whereas 25% of them thought that alcohol based hand rubs are most effective against CoV, when the association between age and knowledge regarding the most effective method against coronavirus was done the p value was not found to be statistically significant. ( Figure 8,9). 31% of the population thought that phenolic disinfectants are recommended for mopping the floor, 31% of the population thought that 70% alcohol is recommended and 21% of the population thought that 15% of sodium hypochlorite (bleach) is recommended for mopping floor, whereas a very few thought water can be used to mop the floor, when the association between age and disinfectant used for mopping floors was done the p value was not found to be statistically significant.( Figure 10,11). 31% of the population thought phenolic disinfectants should be used to disinfect metallic surfaces, 28% of them thought that 70% alcohol should be used, and 25.7% of the population thought that 1% sodium hypochlorite( bleach) should be used and 17% of the population thought that water can be used to disinfect metallic surfaces, when the association between age and the recommended disinfectant for metallic surfaces was done the p value was not found to be statistically significant (Figure 12,13). 44% of the population thought that bleach is not recommended on tiles, 37% thought that bleach is not recommended on metal surfaces, 12% of the population thought that bleach is not recommended on plastics, whereas a few of them (8%) thought that bleach is not recommended on granites, when the association between age and knowledge about surface bleach was done the p value was found to be statistically significant.(Figure 14, 15).

42% of the population thought that 70% of alcohol is an effective disinfectant, 39% of them thought that 60% of alcohol is effective, whereas 18% of the population thought that 50% of alcohol is an effective disinfectant, when the association between age and the recommended percentage of alcohol was done the p value was not found to be statistically significant.( Figure 16, 17). 46% of the population thought that soap and warm water is used for disinfecting clothes, carpets, whereas 38% of them thought that 70% of alcohol is used, and a very few think that bleach or water is used to disinfect clothes, carpets, when the association between age and disinfectant used on clothes was done the p value was not found to be statistically significant. (Figure 18, 19). 49% of the population thought that soap and water is the recommended disinfectant for electronics, 37% of them thought that 70% of alcohol can be used, whereas a very few thought that bleach or water can be used, for disinfecting electronics, when the association between age and disinfectant used for electronics was done the p

value was not found to be statistically significant. (Figure 20, 21). 88% of the population are aware about the various disinfectants used against coronavirus, when the association between age and awareness about various disinfectants was done the p value was not found to be statistically significant. ( Figure 22,23).

On assessing the attitude of the participants towards use of disinfectants, 73% of the population thought that the use of disinfectants on contaminated surfaces will reduce the risk of coronavirus,when the association between age and attitude of participants towards the use of disinfectants was done the p value was not found to be statistically insignificant.

(Figure 24, 25).

When the practice aspect was evaluated, 27% of the population used alcohol based hand rubs to protect themselves against corona, whereas 46% of them had taken all the necessary measures to protect themselves ( social distancing, washing hands, wearing masks while going out),when the association between age and practice aspect regarding the measures taken was done the p value was found to be statistically significant. ( Figure 26, 27). 68.8% of the population washed their hands very often, when the association between age and frequency of washing hands was done the p value was not found to be statistically significant.

( Figure 28, 29). 87.2% of the population thought that disposable gloves are to be used while disinfecting exposed surfaces, when the association between age and use of disposable gloves was done the p value was not found to be statistically significant. ( Figure 30, 31). 98.2% of the population are aware about the hand washing techniques, when the association between age and awareness about the hand washing techniques was done the p value was not found to be statically significant. (Figure 32, 33).

From the survey, it is seen that most of the people are aware about coronavirus, and the various disinfectants used. But they are not completely aware about the various techniques and methods by which the disinfectants are used. In a study conducted by Christine Dellanno, when tested, common hypochlorite was effective at inactivating CoV. (21) This is in agreement with the survey result wheremost of the participants agreed that where 1% sodium hypochlorite is used as an effective disinfectant on door handles, mopping floors, etc.

On assessing the knowledge of the participants regarding the disinfectantants, 57% of the population thought that washing hands with soap and water is most effective against coronavirus, whereas 30% of them thought that washing hands with water is effective and a few of them think that alcohol based hand rubs are most effective against the virus. On viewing the guidelines on disinfectants against the COVID-19, it was stated that hands should be washed with soap and water often and immediately after getting exposed to susceptible surfaces.(22) Regarding the disinfectants used for mopping the floor, 23% of the population recommended 1% sodium hypochlorite, and 33% of them recommended phenolic disinfectants whereas 32% recommended 70% alcohol. But as stated on the guidelines, it was recommended that all indoor areas should be mopped with a disinfectant with 1% sodium hypochlorite or phenolic disinfectants.(23)

28% of the population thought that metallic surfaces like door handles, etc should be disinfected using 1% sodium hypochlorite, and 33% of them thought that phenolic disinfectants are to be used whereas 31% of them thought that 70% alcohol is to be used. On viewing the guidelines, it was recommended that for metallic surfaces like door handles, security locks, keys, etc 70% alcohol can be used to wipe down surfaces where the use of bleach does not suit.(24) On surveying, 39% of the population responded that bleach ( 1% sodium hypochlorite) is not recommended for metallic surfaces, whereas 45% of them responded that bleach is not recommended on tiles. Viewing the guidelines on disinfectants used it was stated that sodium hypochlorite displays a broad spectrum and is effective against several pathogens at various concentrations.(25). But high concentrations of chlorine can lead to corrosion of metals, hence it is important to use only the recommended conc. of bleach while disinfecting surfaces. Regardless of the concentration used it is also important to first clean the surfaces with soap and water or detergents.(26)

On viewing the graph showing the percentage of alcohol, 45% of the population thought that 70% of alcohol is used as an effective disinfectant and 41% of them thought that 60% of alcohol can be used as an effective disinfectant. As recommended by the WHO, alcohol with 70%-90% concentration may be used for surface disinfection.(27) On surveying, disinfectants used for electronics such as tablets, touch screens, etc 49% of the population recommended the use of soap and water, and 43% of them recommended the use of 70% of alcohol and few of them recommended the use of 1% sodium hypochlorite. As stated by WHO, regarding the use of disinfectants against COVID-19, in a non-health care setting surfaces should be cleaned with soap and water first and followed by the use of disinfectants, sodium hypochlorite at a recommended concentration.Alternatively, alcohol with 70-90% concentration may also be used, as a surface disinfectant.(28)

On viewing the guidelines, it was that to prevent the risk of virus it is recommended to wear appropriate PPE (Personal protective Equipment) which includes a triple layer mask, gloves, along with regular washing hands with soap and water or alcohol hand rubs.(29) From the present study it was evident that most of them took appropriate measures to protect themselves against the virus. On surveying, it was evident that most people were aware about the handwashing techniques. The hand washing technique recommended by WHO mentioned that the hands should be washed using soap and water.(24) Fecal and respiratory samples (droplets) can remain infectious for a long period of time. Hence it is evident that coronavirus is transmitted through respiratory

droplets, direct contact with cases, etc. Hence it is important to carry out necessary precautions with the disinfecting agents.

The main limitation of the study is the low sample size and the lack of quantitative data.

## CONCLUSION

Within the limitations of the study we can conclude that among the Chennai population there is good knowledge about the various disinfecting agents used. It is important to advocate the guidelines given by WHO regarding cleaning and disinfection of environmental surfaces in the context of COVID 19. Increase in awareness about the new disinfectants and methods of employing it will reduce the transmission of COVID 19.

## REFERENCES

1. Yi Y, Lagniton PNP, Ye S, Li E, Xu R-H. COVID-19: what has been learned and to be learned about the novel coronavirus disease [Internet]. Vol. 16, International Journal of Biological Sciences. 2020. p. 1753–66. Available from: <http://dx.doi.org/10.7150/ijbs.45134>
2. Rabenau HF, Kampf G, Cinatl J, Doerr HW. Efficacy of various disinfectants against SARS coronavirus [Internet]. Vol. 61, Journal of Hospital Infection. 2005. p. 107–11. Available from: <http://dx.doi.org/10.1016/j.jhin.2004.12.023>
3. Kampf G. Efficacy of ethanol against viruses in hand disinfection. J Hosp Infect. 2018 Apr;98(4):331–8.
4. Sarbeen JI, Insira Sarbeen J, Gheena S. Microbial variation in climatic change and its effect on human health [Internet]. Vol. 9, Research Journal of Pharmacy and Technology. 2016. p. 1777. Available from: <http://dx.doi.org/10.5958/0974-360x.2016.00359.0>
5. Rabenau HF, Cinatl J, Morgenstern B, Bauer G, Preiser W, Doerr HW. Stability and inactivation of SARS coronavirus [Internet]. Vol. 194, Medical Microbiology and Immunology. 2005. p. 1–6. Available from: <http://dx.doi.org/10.1007/s00430-004-0219-0>
6. Rheinbaben F, Schünemann S, Gross T, Wolff MH. Transmission of viruses via contact in a household setting: experiments using bacteriophage straight phiX174 as a model virus. J Hosp Infect. 2000 Sep;46(1):61–6.
7. Hannah R, Ramani P, Herald. J. Sherlin, Ranjith G, Ramasubramanian A, Jayaraj G, et al. Awareness about the use, Ethics and Scope of Dental Photography among Undergraduate Dental Students Dentist Behind the lens [Internet]. Vol. 11, Research Journal of Pharmacy and Technology. 2018. p. 1012. Available from: <http://dx.doi.org/10.5958/0974-360x.2018.00189.0>
8. Palati S, Ramani P, Shrelin HJ, Sukumaran G, Ramasubramanian A, Don KR, et al. Knowledge, Attitude and practice survey on the perspective of oral lesions and dental health in geriatric patients residing in old age homes. Indian J Dent Res. 2020 Jan;31(1):22–5.
9. Ahad M, Gheena S. Awareness, attitude and knowledge about evidence based dentistry among the dental practitioner in Chennai city [Internet]. Vol. 9, Research Journal of Pharmacy and Technology. 2016. p. 1863. Available from: <http://dx.doi.org/10.5958/0974-360x.2016.00380.2>
10. Sheriff KAH, Ahmed Hilal Sheriff K, Santhanam A. Knowledge and Awareness towards Oral Biopsy among Students of Saveetha Dental College [Internet]. Vol. 11, Research Journal of Pharmacy and Technology. 2018. p. 543. Available from: <http://dx.doi.org/10.5958/0974-360x.2018.00101.4>
11. Mohan SK, Veeraraghavan VP, Jainu M. Effect of pioglitazone, quercetin and hydroxy citric acid on extracellular matrix components in experimentally induced non-alcoholic steatohepatitis. Iran J Basic Med Sci. 2015 Aug;18(8):832–6.
12. Manohar J, Abilasha R. A Study on the Knowledge of Causes and Prevalance of Pigmentation of Gingiva among Dental Students [Internet]. Vol. 10, Indian Journal of Public Health Research & Development. 2019. p. 95. Available from: <http://dx.doi.org/10.5958/0976-5506.2019.01859.x>
13. Shree KH, Hema Shree K, Ramani P, Herald Sherlin, Sukumaran G, Jeyaraj G, et al. Saliva as a Diagnostic Tool in Oral Squamous Cell Carcinoma – a Systematic Review with Meta Analysis [Internet]. Vol. 25, Pathology & Oncology Research. 2019. p. 447–53. Available from: <http://dx.doi.org/10.1007/s12253-019-00588-2>
14. Palati S, Ramani P, Herald. J. Sherlin, Gheena S, Don KR, Jayaraj G, et al. Age Estimation of an Individual Using Olze’s Method in Indian Population-A Cross-Sectional Study [Internet]. Vol. 13, Indian Journal of Forensic Medicine & Toxicology. 2019. p. 121. Available from: <http://dx.doi.org/10.5958/0973-9130.2019.00179.8>

15. Gunasekaran G, Abilasha R. TOOTH SENSITIVITY AMONG RESIDENTIAL UNIVERSITY STUDENTS IN CHENNAI [Internet]. Asian Journal of Pharmaceutical and Clinical Research. 2016. p. 63. Available from: <http://dx.doi.org/10.22159/ajpcr.2016.v9s2.13228>
16. Sukumaran G, Padavala S. Molar incisor hypomineralization and its prevalence [Internet]. Vol. 9, Contemporary Clinical Dentistry. 2018. p. 246. Available from: [http://dx.doi.org/10.4103/ccd.ccd\\_161\\_18](http://dx.doi.org/10.4103/ccd.ccd_161_18)
17. Abitha T, Santhanam A. Correlation between bizygomatic and maxillary central incisor width for gender identification [Internet]. Vol. 22, Brazilian Dental Science. 2019. p. 458–66. Available from: <http://dx.doi.org/10.14295/bds.2019.v22i4.1775>
18. Prasanna GE, Gheena S. A study of empathy across students from 4 health disciplines among 1st years and Final years [Internet]. Vol. 9, Research Journal of Pharmacy and Technology. 2016. p. 1472. Available from: <http://dx.doi.org/10.5958/0974-360x.2016.00286.9>
19. Krishnan R, Ramani P, Sherlin H, Sukumaran G, Ramasubramanian A, Jayaraj G, et al. Surgical specimen handover from operation theater to laboratory: A survey [Internet]. Vol. 8, Annals of Maxillofacial Surgery. 2018. p. 234. Available from: [http://dx.doi.org/10.4103/ams.ams\\_51\\_18](http://dx.doi.org/10.4103/ams.ams_51_18)
20. Harrita S, Santhanam A. Determination of Physical Height Using Clinical Crown Height of Deciduous Teeth [Internet]. Vol. 13, Indian Journal of Forensic Medicine & Toxicology. 2019. p. 23. Available from: <http://dx.doi.org/10.5958/0973-9130.2019.00255.x>
21. Dellanno C, Vega Q, Boesenberg D. The antiviral action of common household disinfectants and antiseptics against murine hepatitis virus, a potential surrogate for SARS coronavirus. Am J Infect Control. 2009 Oct;37(8):649–52.
22. Rutala WA, Weber DJ. Best practices for disinfection of noncritical environmental surfaces and equipment in health care facilities: A bundle approach [Internet]. Vol. 47, American Journal of Infection Control. 2019. p. A96–105. Available from: <http://dx.doi.org/10.1016/j.ajic.2019.01.014>
23. COVID-19 and Food Safety: Guidance for food businesses: Interim guidance [Internet]. 2020. Available from: <http://dx.doi.org/10.4060/ca8660en>
24. Gon G, Dancer S, Dreifelbis R, Graham WJ, Kilpatrick C. Reducing hand recontamination of healthcare workers during COVID-19 [Internet]. Vol. 41, Infection Control & Hospital Epidemiology. 2020. p. 870–1. Available from: <http://dx.doi.org/10.1017/ice.2020.111>
25. Pereira SSP, Oliveira HM de, Turrini RNT, Lacerda RA. [Disinfection with sodium hypochlorite in hospital environmental surfaces in the reduction of contamination and infection prevention: a systematic review]. Rev Esc Enferm USP. 2015 Aug;49(4):681–8.
26. Karatai, T. Ö., Okan, Z. The powerful use of an English language teacher recruitment exam in the Turkish context: An interactive qualitative case study(2021) International Online Journal of Education and Teaching, 8 (3), pp. 1649-1677.
27. Köhler AT, Rodloff AC, Labahn M, Reinhardt M, Truyen U, Speck S. Efficacy of sodium hypochlorite against multidrug-resistant Gram-negative bacteria. J Hosp Infect. 2018 Nov;100(3):e40–6.
28. Bennett JE, Dolin R, Blaser MJ, Mandell GL. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases E-Book. Elsevier Health Sciences; 2009. 4320 p.
29. Rutala WA, Weber DJ. Uses of inorganic hypochlorite (bleach) in health-care facilities [Internet]. Vol. 10, Clinical microbiology reviews. 1997. p. 597–610. Available from: <http://dx.doi.org/10.1128/cmr.10.4.597-610.1997>
30. Mahmood SU, Crimbly F, Khan S, Choudry E, Mehwish S. Strategies for Rational Use of Personal Protective Equipment (PPE) Among Healthcare Providers During the COVID-19 Crisis [Internet]. Cureus. 2020. Available from: <http://dx.doi.org/10.7759/cureus.8248>.

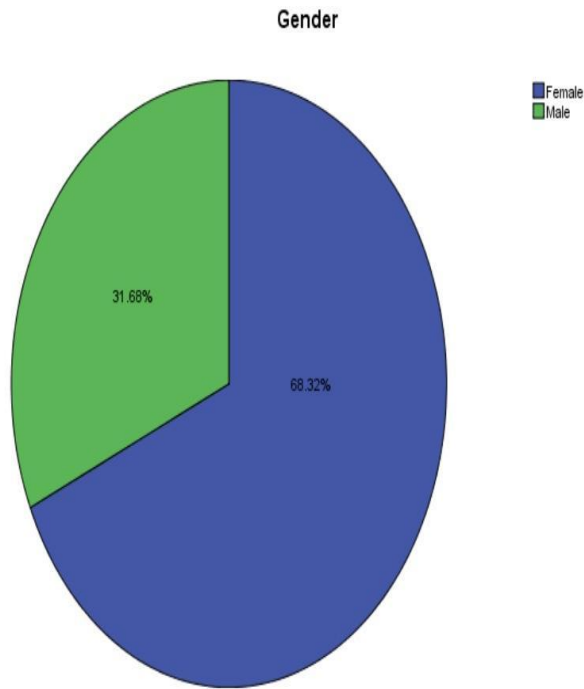


Figure 1: Pie Chart showing the distribution of gender , 69% were Female (blue) and 32% were Male (Green).

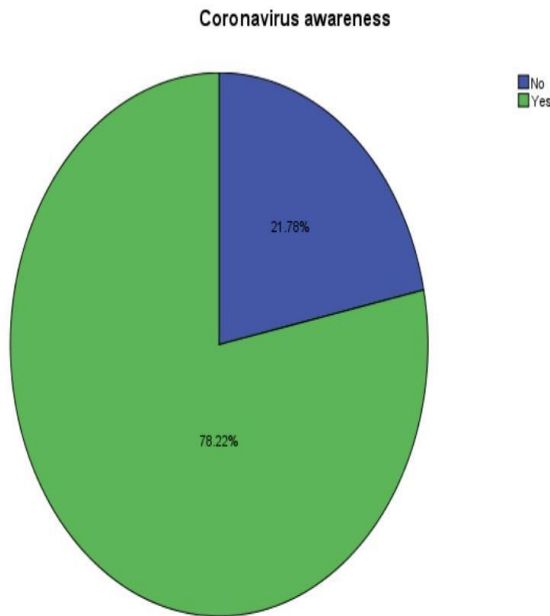


Figure 2 : Pie chart showing the awareness about coronavirus among the Chennai population. 79% were aware about coronavirus (Green), and 22% were not aware (blue).

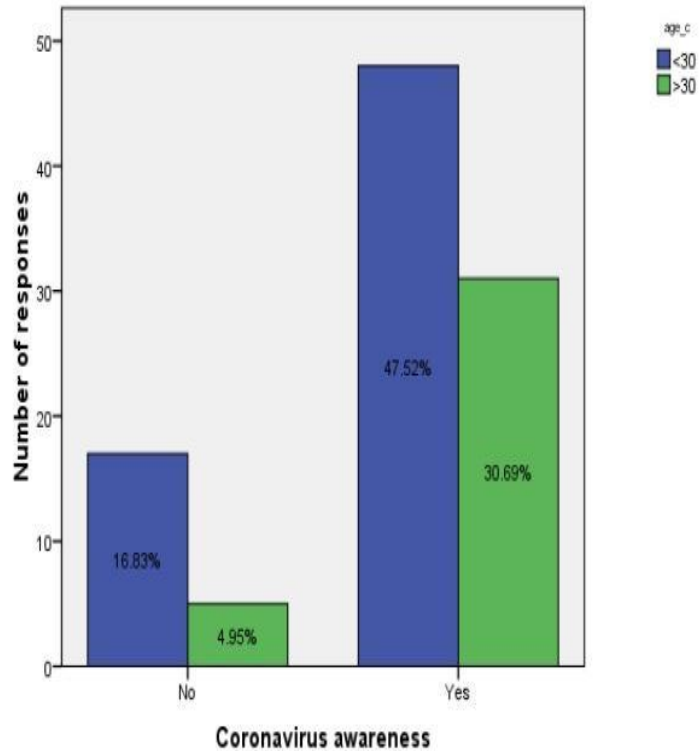


Figure 3: Bar graph showing the comparison between the age group and awareness about coronavirus. X axis represents the coronavirus awareness and Y axis represents the number of responses. blue represents the participants below 30 years and green represents the participants above 30 years of age. Out of 78% of the population who were aware, 47.52% were below 30 years and 30.69% were above 30 years. Chi square test was analysed, the value was 2.046. The p value was 0.153( $P > 0.05$ ) and it was not found to be statistically significant.

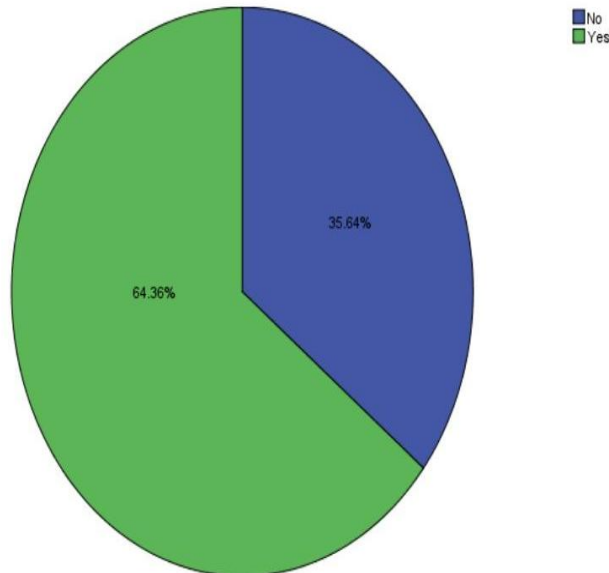


Figure 4: Graph showing the knowledge of participants regarding concentrated bleach among the Chennai population, in which 65% had knowledge regarding the concentrated bleach (Green) and 36% did not.(blue)



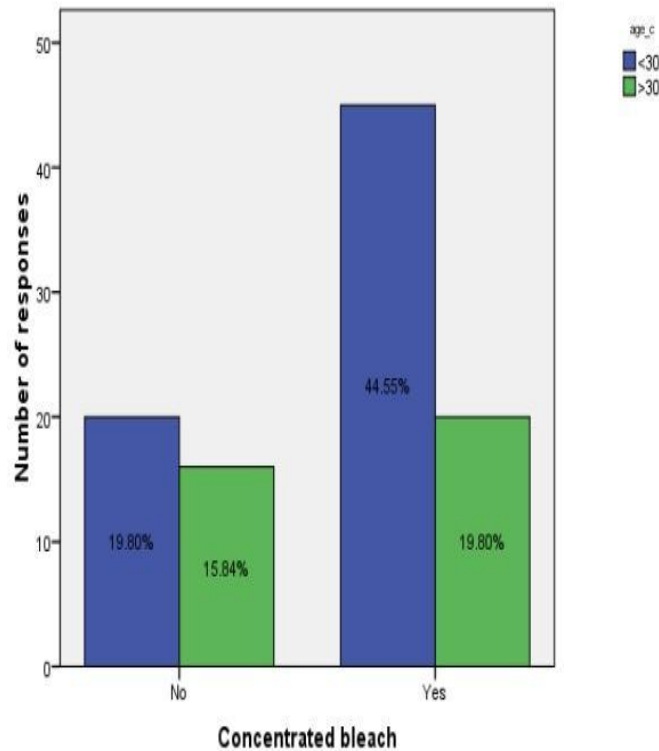


Figure 5: Bar graph showing the comparison between the age groups and knowledge regarding concentrated bleach. X axis represents concentrated bleach and Y axis represents number of responses. Blue represents participants below 30 years and green represents participants above 30 years. Out of 64% of the population who had knowledge regarding the use of concentrated bleach, 44.5% were below 30 and 19.8% were above 30. knowledge regarding concentrated bleach was more among the population below 30 years of age. Chi square test was not statistically significant with (Pearsons chi square value - 1.889) P=0.169 (P>0.05)

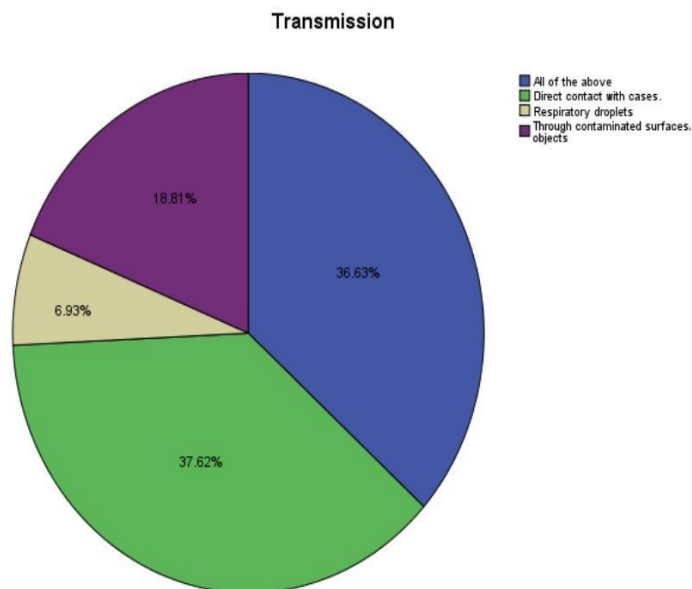
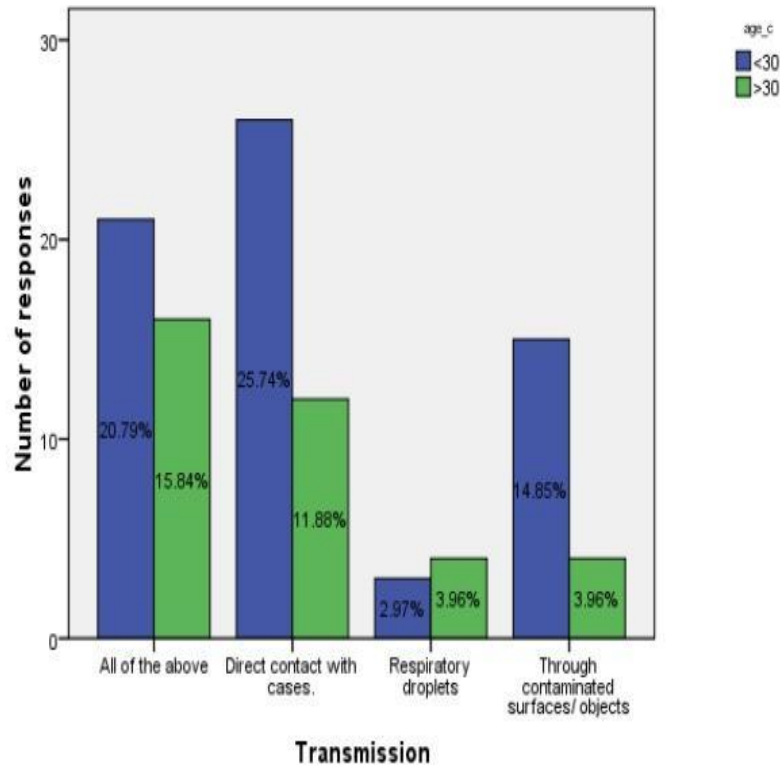
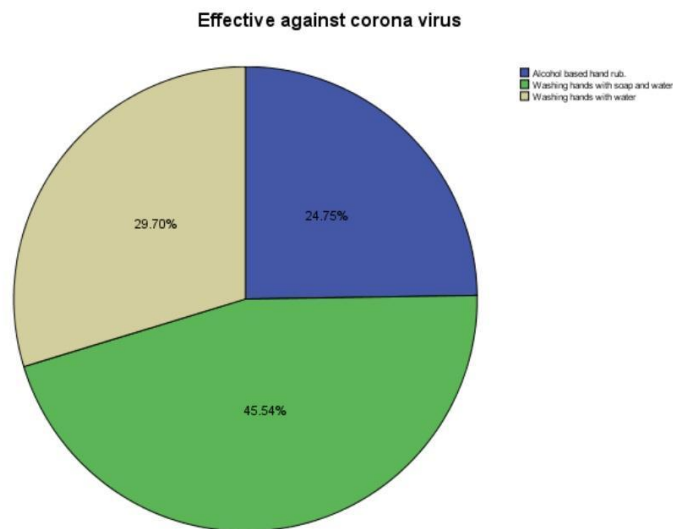


Figure 6: Pie Chart showing the knowledge of participants regarding the mode of transmission of coronavirus, among which 38% of them responded All of the above (blue), 37% felt that Direct contact with cases is a mode of transmission (green), 19% responded that mode of transmission is Through contaminated surfaces (Purple), 7% felt that Respiratory droplets might lead to transmission of coronavirus (grey)



**Figure 7 : Bar graph showing the comparison between the age group and transmission of coronavirus. X axis represents modes of transmission and the Y axis represents the number of responses. Blue represents participants below 30 years and green represents participants above 30 years. knowledge regarding the mode of transmission of coronavirus was more among the population below 30 years of age. Chi square analysis was not found to be statistically significant pearsons chi square value =4.379. and p value 0.223 (P>0.05).**



**Figure 8: Pie chart showing the knowledge of the participants regarding the most effective method against coronavirus. Among which 46% of them washed hands with soap and water (Green), 30% of the population washed hands with water (Grey), 25% used alcohol based hand rub. (Blue)**

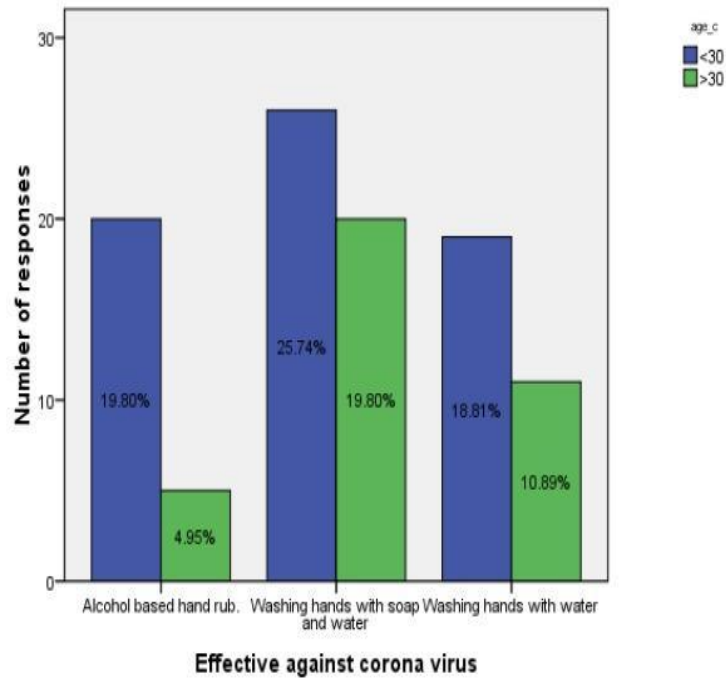


Figure 9: Bar graph showing the comparison between age group and effective hand hygiene method against coronavirus. X axis represents an effective hand hygiene method and Y axis represents the number of responses. Blue represents participants below 30 years and Green represents participants above 30 years. Maximum response was for washing hands with soap and water by <30 years of age group (25.7%). Chi square test was analysed, (Pearson's chi square value = 3.912)  $p = 0.141$  ( $P > 0.05$ ) and it was not found to be statistically significant.

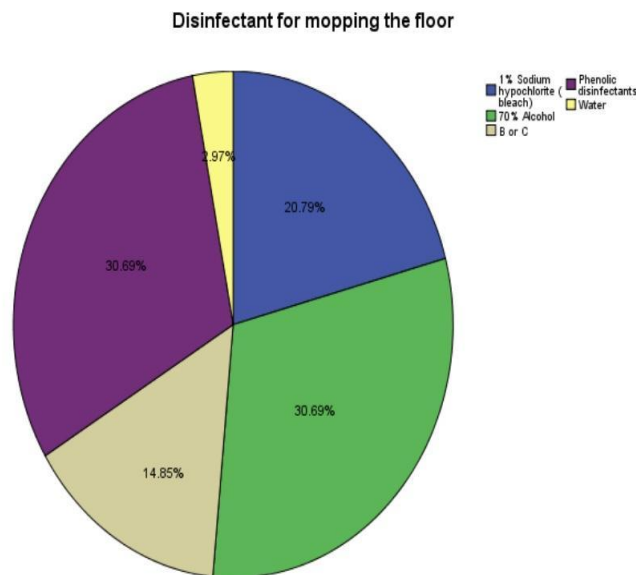


Figure 10: Pie Chart showing the participants knowledge regarding the disinfectant used for mopping the floor. Among which 31% used Phenolic disinfectants (Purple), 31% used 70% Alcohol (Green), 21% used 1% Sodium Hypochlorite (blue), 15% used (1% Sodium hypochlorite and phenolic disinfectants) (green) and a very few (3%) used Water (Yellow).

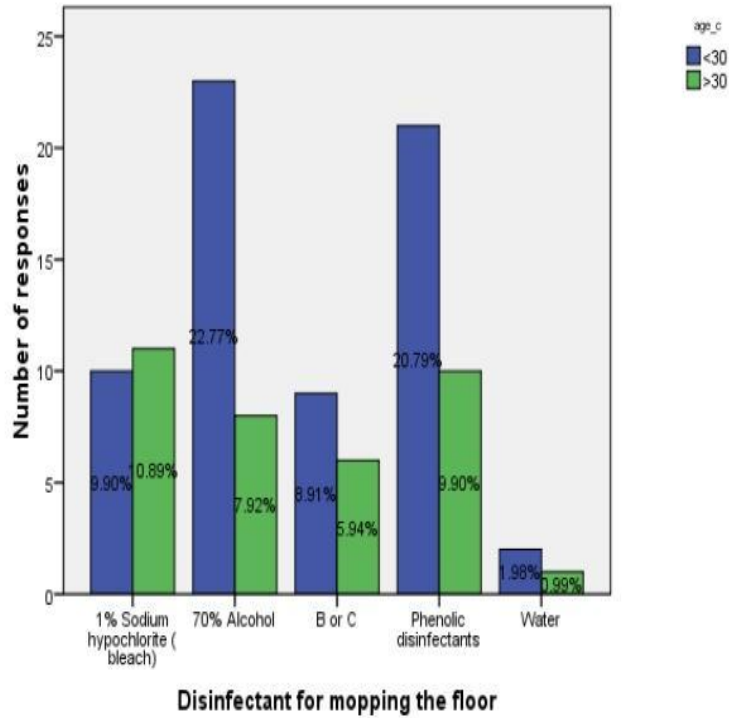


Figure- 11 : Bar graph showing the comparison between age group and the disinfectant used for mopping the floor. X axis represents the disinfectant used for mopping the floor and Y axis represents the number of responses. Blue represents participants below 30 years and Green represents participants above 30 years. Chi square test was analysed, the value was 4.158. The p value was 0.385 and it was not found to be statistically significant.

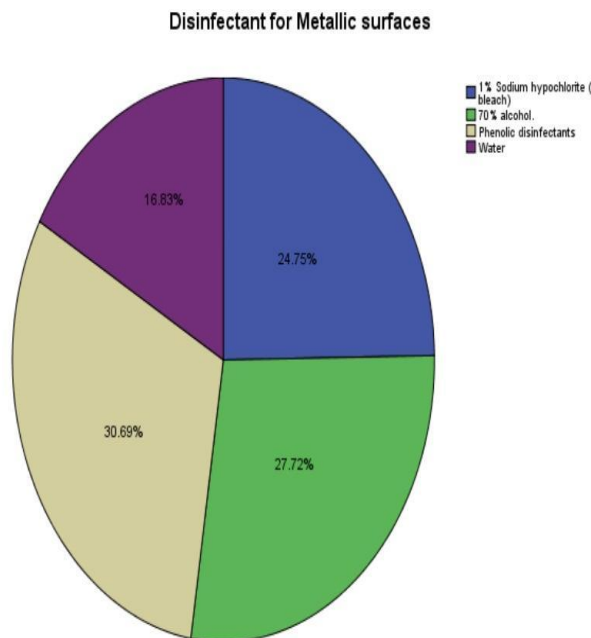


Figure 12: Piechart showing the knowledge of the participants regarding disinfectants used on metallic surfaces. Among which 31% used Phenolic disinfectants (Light green), 28% used 70% Alcohol (Green), 25% used 1% Sodium hypochlorite (blue) and 17% used Water (Purple).

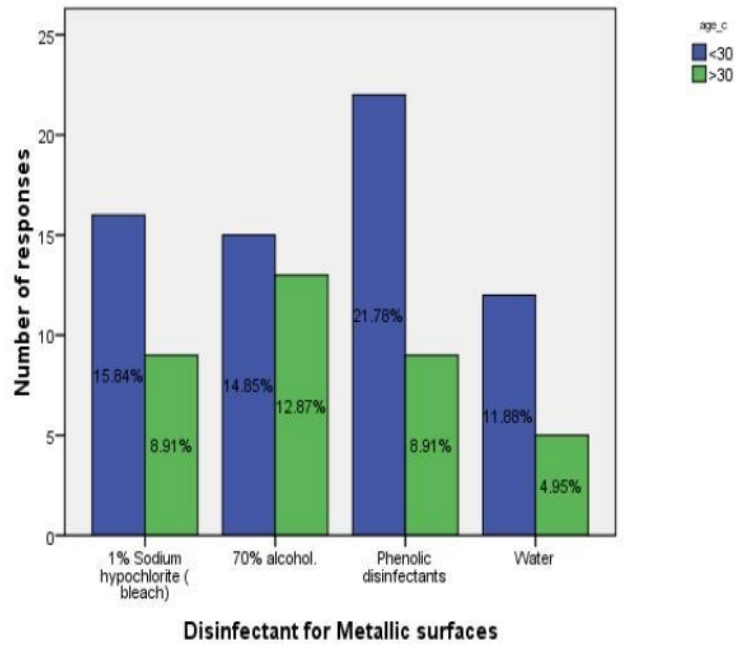


Figure- 13: Bar graph showing the comparison between age groups and disinfectant for metallic surfaces. X axis represents disinfectants used for electronics and Y axis represents the number of responses. Blue represents participants below 30 years and Green represents participants above 30 years. Out of the total participants only 27% were aware that 70% is recommended for disinfecting metal surfaces and maximum response was among the below 30 years of age. Chi square test was analysed (chi square value was 2.300) The p value was 0.513 ( $P > 0.05$ ) and it was not found to be statistically significant.

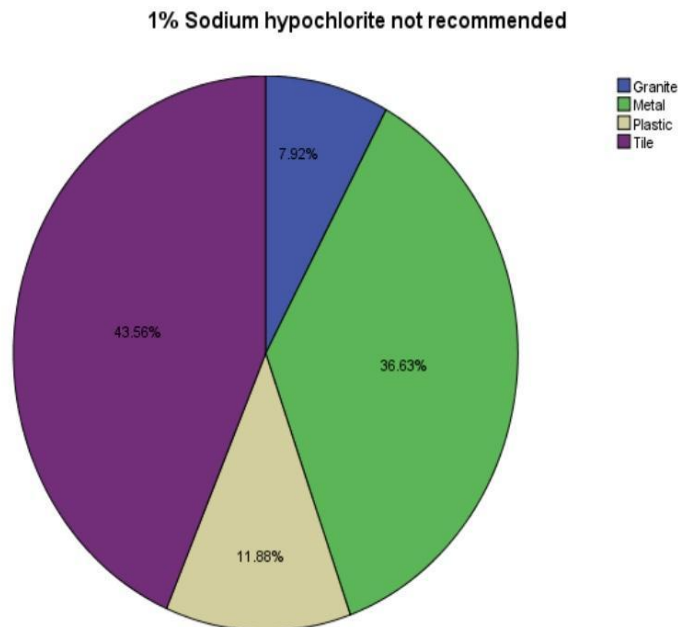


Figure- 14: Piechart showing for knowledge of participants regarding surface bleach. 44% of the population did not recommend the use of bleach on Tiles, (Purple), 37% on Metal (Green), 12% on Plastic (Light green) and 8% on Granite (blue)

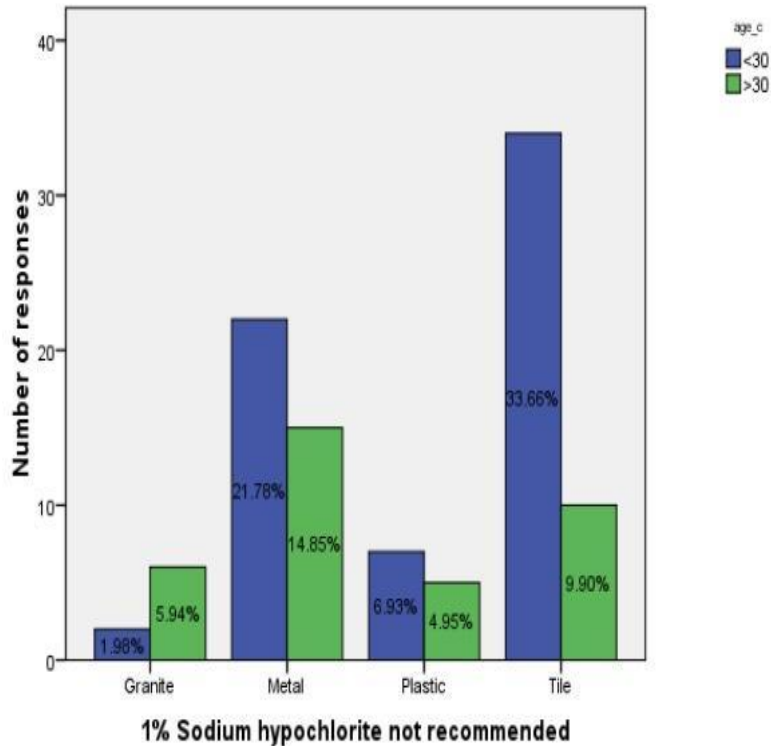


Figure -15 : Bar graph showing the comparison between the age groups and knowledge of participants regarding surface bleach. X axis represents the knowledge regarding the use of bleach and Y axis represents the number of responses. Blue represents participants below 30 years and Green represents participants above 30 years. Out of the total population only 36% answered that 1% sodium hypochlorite cannot be used on a metal surface. Maximum answer was from below 30 years of age. Chi square test was analysed (Chi square value was 9.179) p value 0.027 (P<0.05) showing a statistically significant knowledge regarding use of 1% sodium hypochlorite among <30 years of age.

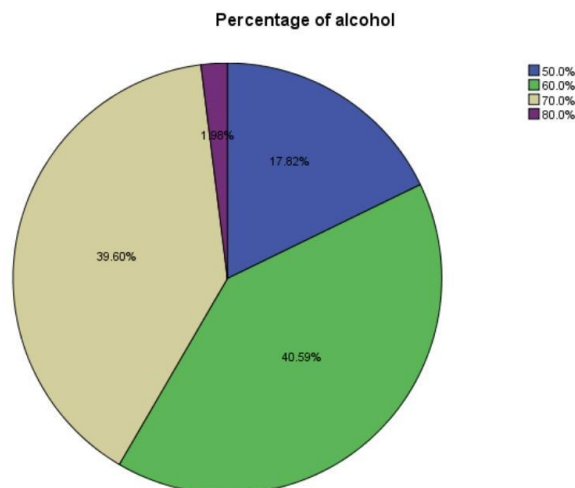


Figure 16: Pie Chart showing the response for percentage of alcohol used as an effective disinfectant. Among which, 39% used 70% Alcohol (Grey), 40% used 60% Alcohol (green), 18% used 50% Alcohol (blue) and 2% used 80% Alcohol (Purple).

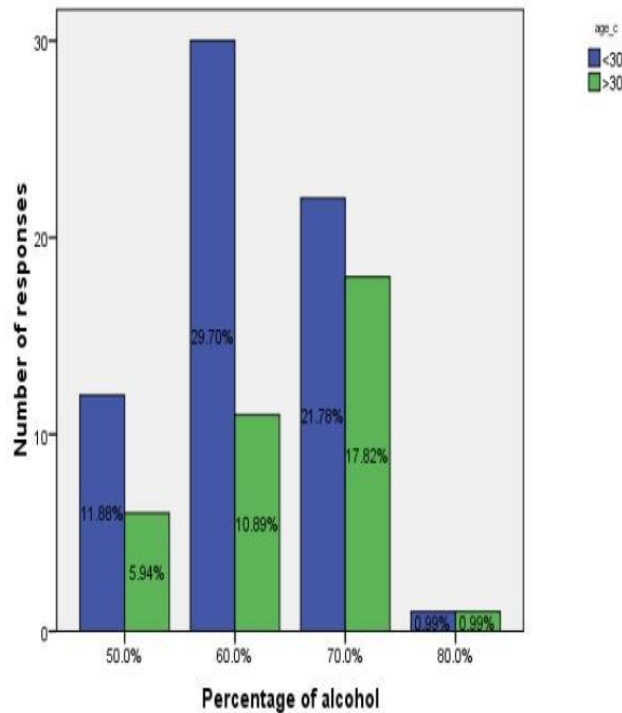


Figure- 17 : Bar graph showing the comparison between the age group and percentage of alcohol used as a disinfectant. X axis represents the percentage of alcohol used as an effective disinfectant and Y axis represents the number of responses. Blue represents participants below 30 years and green represents participants above 30 years. Out of the total population who had knowledge regarding the percentage of alcohol used, 64% were below 30 and 36% were above 30 years. Hence knowledge regarding the percentage of alcohol used against coronavirus was more among the population below 30 years of age. Chi square test was analysed, the value was 3.137. The p value was 0.371 and it was not found to be statistically significant.

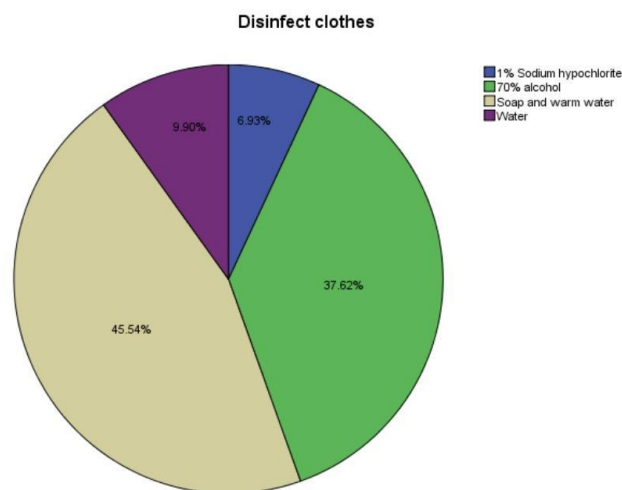
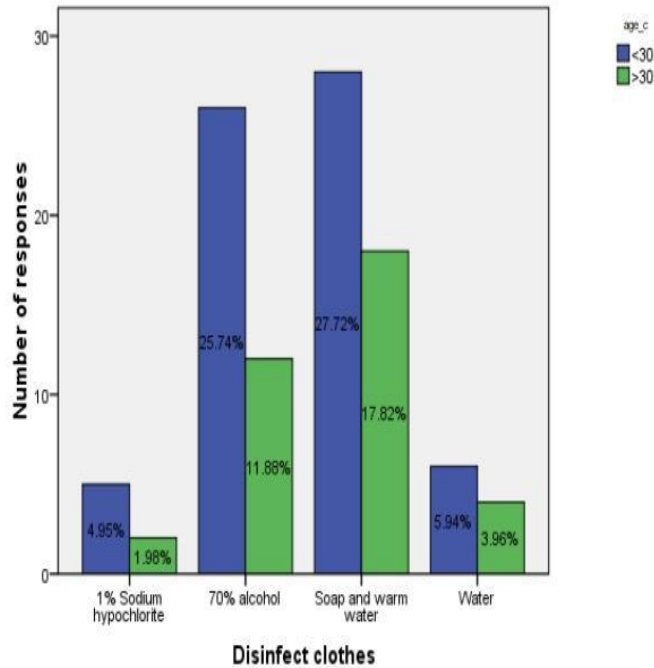
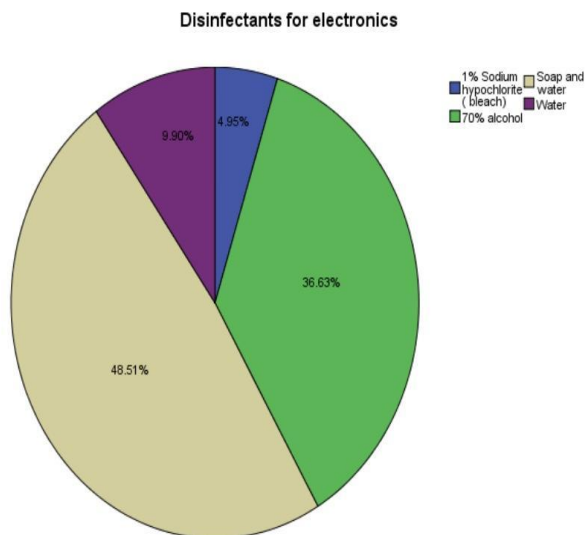


Figure- 18: Pie Chart showing the recommended method to disinfect clothes, carpets, rugs, and drapes. Among which 46% used Soap and water (Light green), 38% used 70% Alcohol (Green), 10% used Water (Purple) and 7% used 1% Sodium hypochlorite (Blue).



**Figure- 19:** Bar graph showing the comparison between age groups and the disinfectants used for clothes. X axis represents the disinfectants used for clothes and Y axis represents the number of responses. Violet represents participants below 30 years and Green represents participants above 30 years. 45% participants who had knowledge regarding the disinfectant used for clothes that is soap and warm water, 25.7% were below 30 years. Hence knowledge regarding the disinfectants used for clothes was more among the population below 30 years of age. Chi square test was analysed, (Chi square value 0.753) the p value was 0.861 ( $P > 0.05$ ) and it was not found to be statistically significant.



**Figure -20:** Pie Chart showing the disinfectants used for electronics such as tablets, touch screens, keyboards and remote controls. Among which 49% used Soap and water (Light green), 37% used 70% Alcohol (Green), 10% used Water (Purple) and 5% used 1% Sodium hypochlorite (Blue)



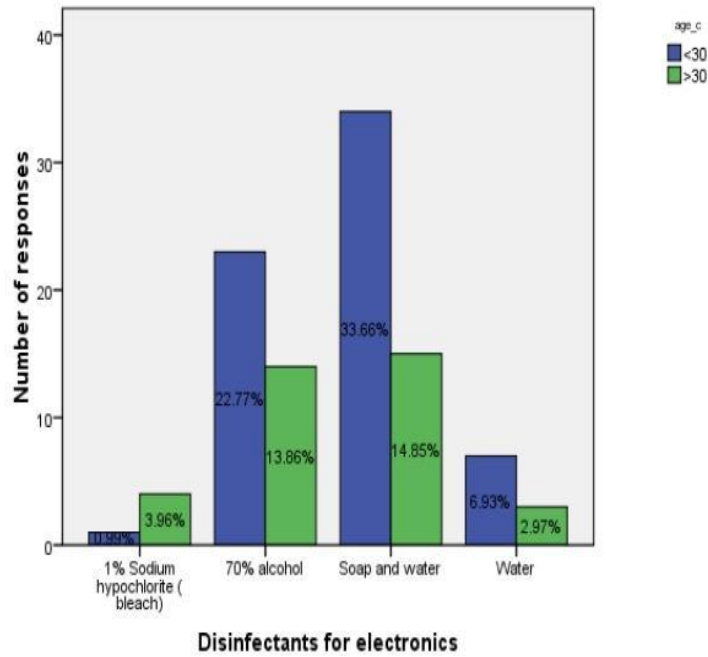


Figure - 21: Bar graph showing the comparison between age groups and the disinfectants used for electronics. X axis represents the disinfectants for electronics and Y axis represents the number of responses. Blue represents participants below 30 years and Green represents participants above 30 years. Only 36% of the participants answered correctly as 70% alcohol, out of which maximum were below 30 years of age. Hence knowledge regarding the disinfectant used for electronics was more among the population below 30 years of age. Chi square test was analysed, the value was 5.046. The p value was 0.168 ( $P > 0.05$ ) it was not found to be statistically significant.

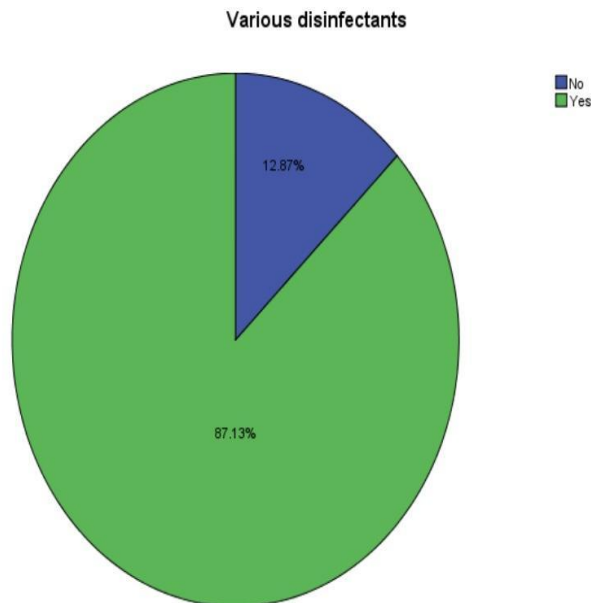
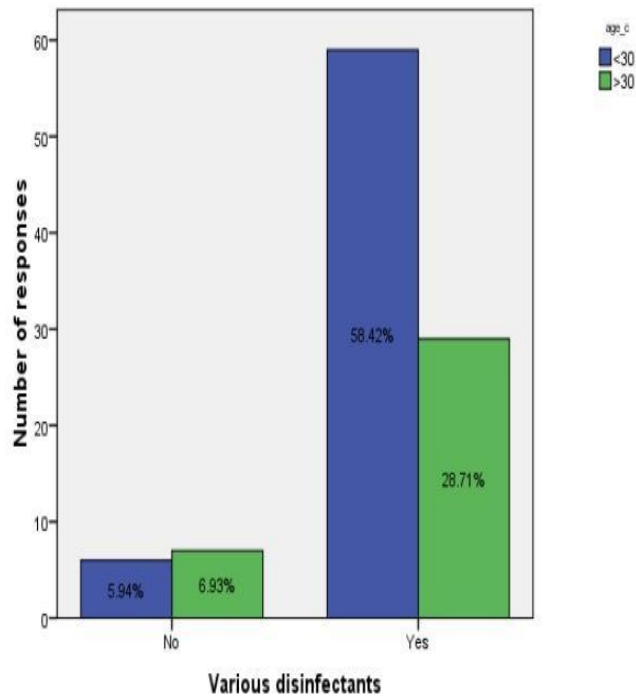
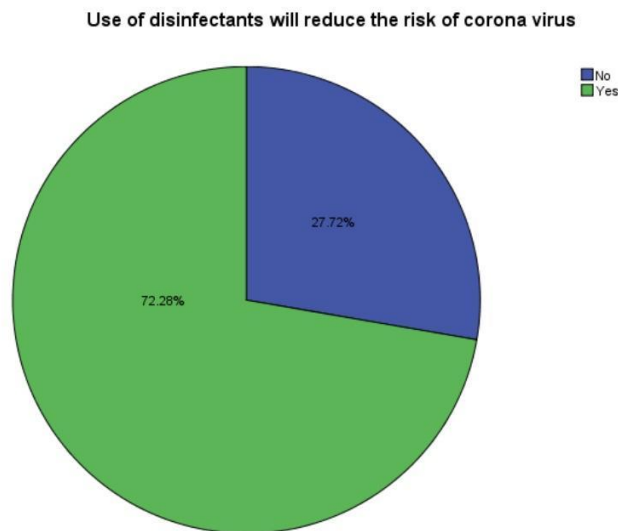


Figure-22 : Pie Chart showing the awareness about various disinfectants used against coronavirus among the Chennai population. In which 88% were aware (Green) and 13% were not aware.(Blue)



**Figure-23:** Bar graph showing the comparison between the age groups and about the various disinfectants used. X axis represents the various disinfectants and Y axis represents the number of responses. Blue represents participants below 30 years and Green represents participants above 30 years. Out of 86% of the population who were aware, 58% were below 30 and 28% were above 30 years. Hence the awareness about the various disinfectants was more among the population below 30 years of age. Chi square test was analysed, the value was 2.155. The p value was 0.142 and it was not found to be statistically significant.



**Figure-24:** Pie Chart showing the knowledge of the use of disinfectants on contaminated surfaces reducing the risk of coronavirus. Among which 73% felt that the use of disinfectants reduced the risk of virus. (Green) and 28% did not. (Blue)

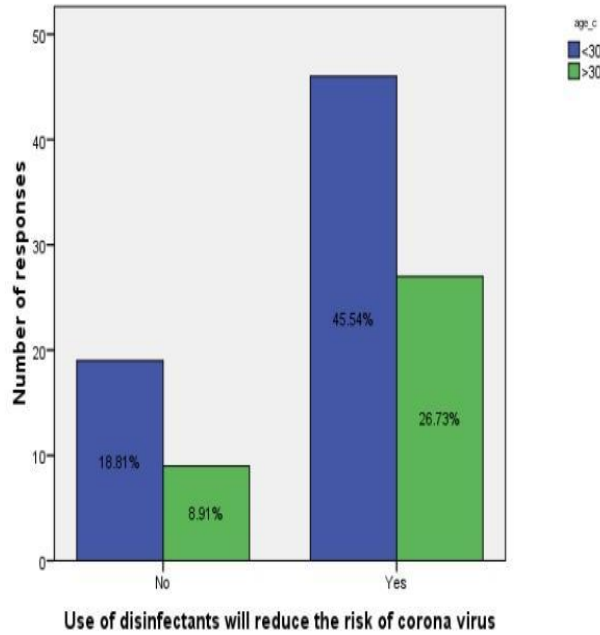


Figure-25: Bar graph showing the comparison between the age groups and the knowledge of the use of various disinfectants. X axis represents the knowledge of the use of disinfectants to reduce the risk of virus and Y represents the number of responses. Blue represents participants below 30 years and Green represents participants above 30 years. Out of 72% of the population, who felt that the use of disinfectants will reduce the risk of virus, 45.54% were below 30 and 26.73% were above 30 years. Hence the knowledge regarding the use of disinfectants on contaminated surfaces was more among the population below 30 years of age. Chi square test was analysed, the (Chi square value 0.207), the p value was 0.649 ( $P > 0.05$ ) and it was not found to be statistically significant.

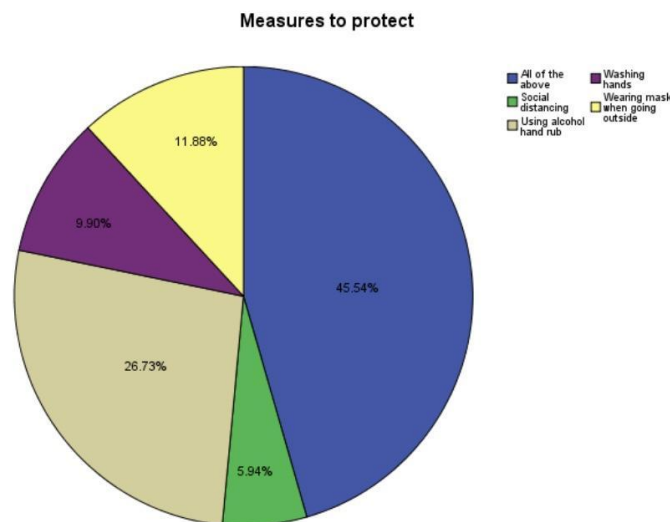
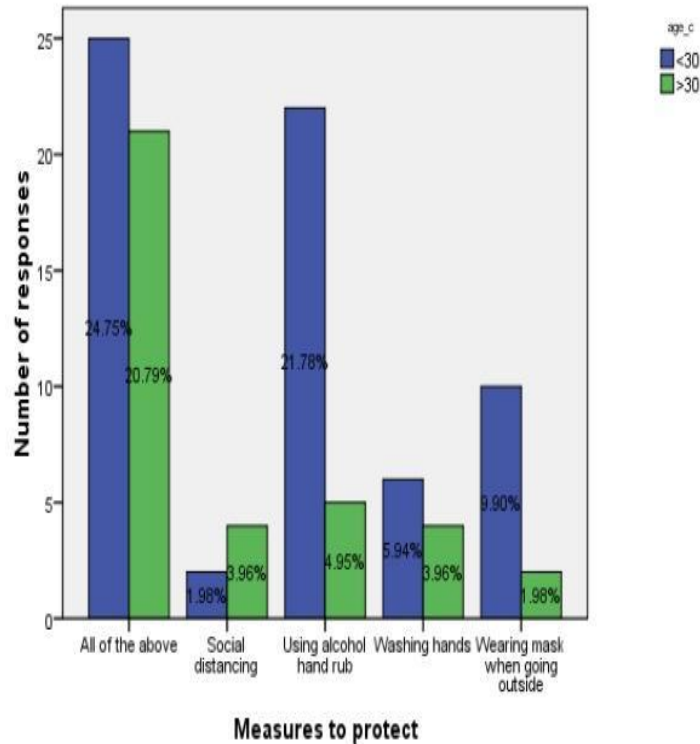
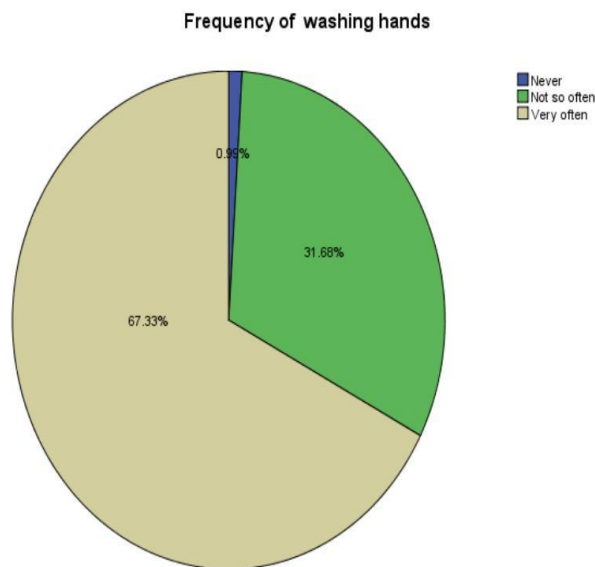


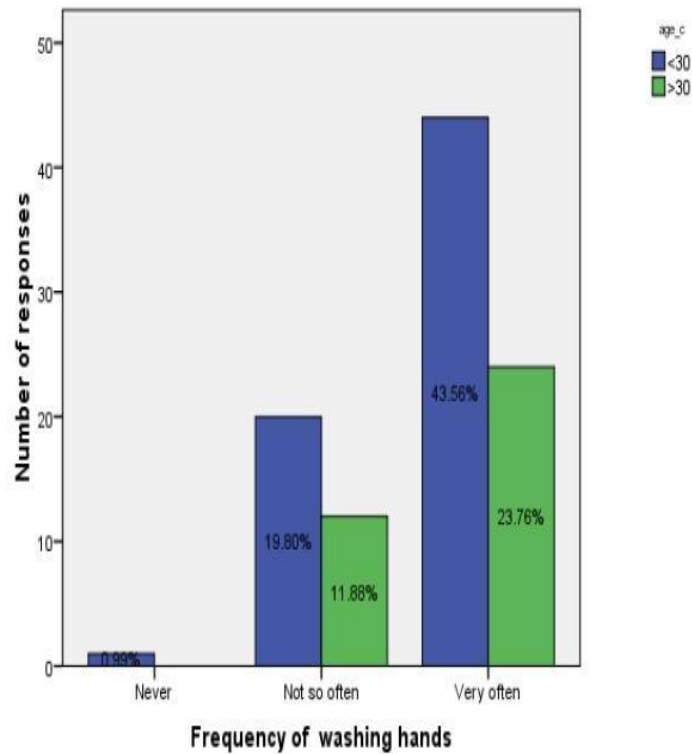
Figure- 26: Piechart showing the measures taken to protect ourselves from coronavirus. 27% Used alcohol based hand rubs ( Light green), 12% Wore mask while going out (Yellow), 10%-Washed hands (Purple), 6% practiced Social distancing (Green) and 46% Took all of the necessary measures to protect themselves (Blue).



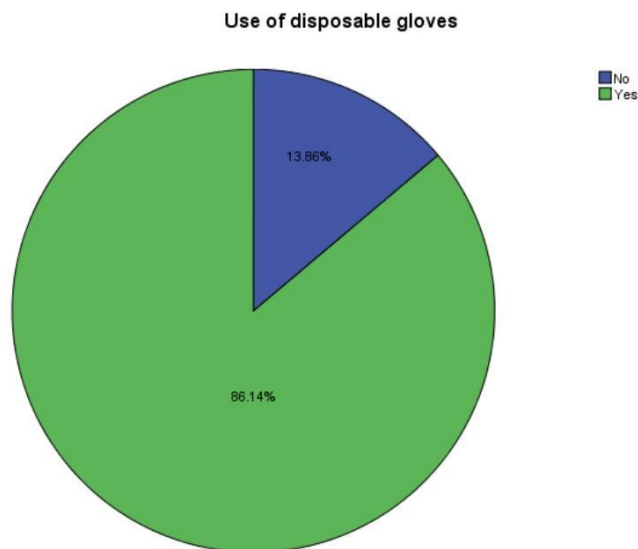
**Figure-27: Bar graph showing the comparison between the age groups and measures taken to protect ourselves from coronavirus. X axis represents the measures to protect against the virus and Y represents the number of responses. Blue represents participants below 30 years and Green represents participants above 30 years. Maximum response was for all of the above (24.75%) by lesser than 30 years of age. Chi square test was analysed (Chi square value 9.945) the p value was 0.041 (P<0.05) and it was found to be statistically significant. The participants lesser than 30 years followed social distancing, used alcohol rub and washed hands in order to protect themselves from coronavirus.**



**Figure-28: Piechart showing how often people wash their hands. 68% washed their hands Very often (green) and 32% responded Not so often (Grey).**



**Figure-29: Bar graph showing the comparison between age groups and frequency of washing hands. X axis represents the frequency of washing hands and Y represents the number of responses. Violet represents participants below 30 years and Green represents participants above 30 years. Chi square test was analysed (Chi square value 0.606) the p value was 0.739 and it was not found to be not statistically significant.**



**Figure-30: Graph showing if disposable gloves are used while disinfecting potentially exposed surfaces. Among which 87% used disposable gloves (Green) and 14% did not use. (Blue)**

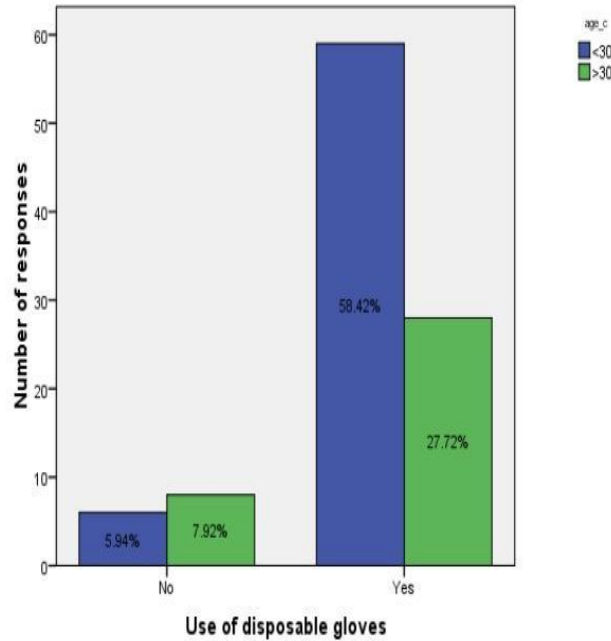


Figure-31: Bar graph showing the comparison between age groups and use of disposable gloves. X axis represents the use of disposal of gloves and Y axis represents the number of responses. Blue represents participants below 30 years and Green represents participants above 30 years. Out of 86% of the population who use disposable gloves, 58% were below 30 and 27.7% were above 30 years. Hence the use of disposable gloves was more among the population below 30 years of age. Chi square test was analysed (Chi square value 3.275) and the p value was 0.070 and it was not found to be statistically significant.

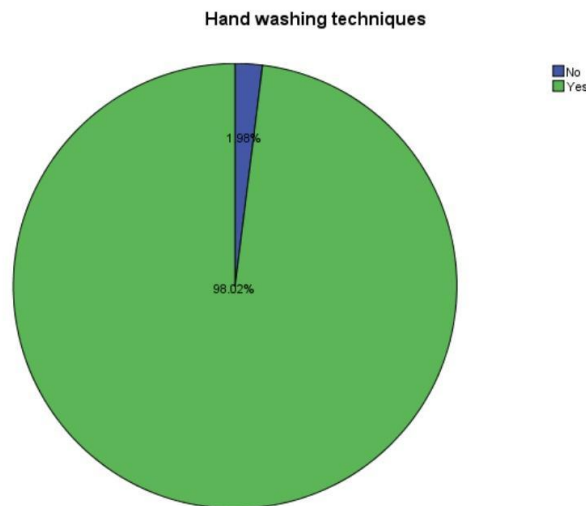


Figure-32: Pie Chart showing the awareness about the hand washing techniques. Among which 99% were aware about the hand washing techniques (Green) and 2% were not aware. (Blue)

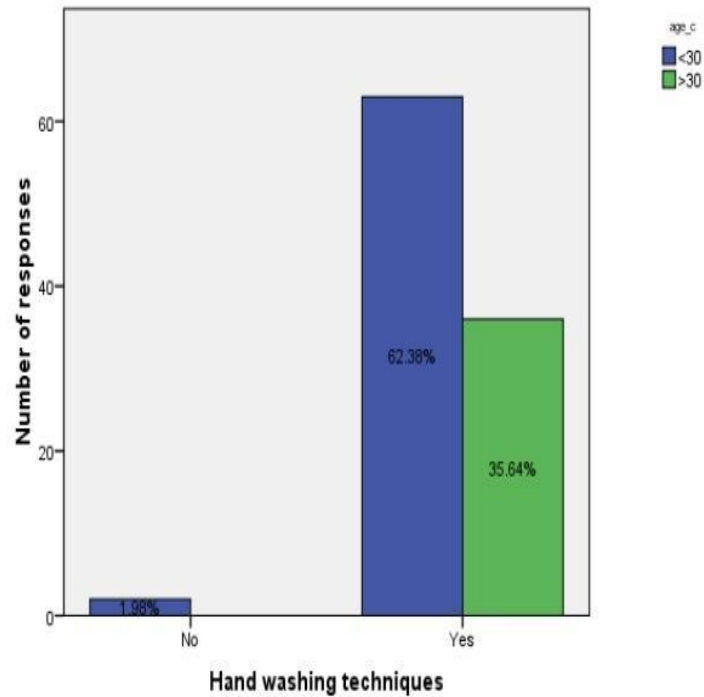


Figure 33: Bar graph showing the comparison between the age groups and hand washing techniques. X axis represents the hand washing techniques and Y axis represents the number of responses. Violet represents participants below 30 years and Green represents participants above 30 years. Out of 97% of the population who had knowledge about the hand washing techniques, 62% were below 30 and 35% were above 30 years. Hence the knowledge regarding the hand washing techniques was more among the population below 30 years of age. Chi square test was analyzed (Chi square value 1.130) the p value was 0.288 ( $P > 0.05$ ) and it was not found to be statistically significant.