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Knowledge and Awareness on Methods, Duration and Frequency of Hand Wash

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Abstract

Aim: To evaluate the knowledge and attitudes towards hand washing methods and duration among the general population

Introduction: Hand hygiene is now one of the most important components of infection control.the act of cleaning one's hands to remove soil, grease, microorganisms or other unwanted substances. Hand washing with soap should be often done throughout the day which prevents the spread of many diseases. Hand washing is the most simplest and effective measure to prevent the spread of germs .

Materials and Methods: An online survey was conducted regarding the knowledge and awareness of hand wash methods, duration and techniques by the general population. The study was conducted from march to may ,2020.The questionnaire was uploaded in an online portal. The data collected were statistically analysed using the latest software version SPSS. Descriptive statistical analysis was carried out and chi square test was used and p value was calculated.

Results: In this study ,about 89.9% are knowledgeable about the hand wash. Hand wash is playing a major role among the general public. 51.1% respondents washed hands with running water, only 12.4% - used hand sanitizer. 83.9% were aware about the technique given by WHO for hand hygiene. Statistical not significant differences (p value >0.05) were seen with respect to the duration of washing hands, awareness of WHO technique, importance of hand hygiene against COVID19, usage of alcohol based hand rub.

Conclusion The present study shows that people have adequate knowledge about the method and techniques used for hand hygiene. Majority of the respondents are aware about the technique given by WHO and follow the technique day to day life.

Key words: Hand hygiene, knowledge, practice, hand rubbing

Introduction

Hand hygiene is now one of the most important component of infection control.Since the infections causes a significant public health burden of health care associated infections (HCAIs), the increasing severity of illness and complexity of treatment, superimposed by multi-drug resistant (MDR) pathogen infections, health care practitioners (HCPs) are reversing back to the basics of infection preventions by simple measures like hand hygiene. (Trampuz and Widmer, 2004)

Hand washing also known as hand hygiene, is the act of cleaning one's hands to remove soil, grease, microorganisms, or other unwanted substances(Ariyarathne *et al.*, 2013)(Ananya, Rani and Brundha, 2020). Hand wash is a crucial step which is essential for the prevention of

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diseases such as diarrhoea and cholera that can be transmitted through fecal and oral route. As people are in continuous contact with the surrounding environment , highest number of pathogens are present in hands of human beings , so if people do not santantize their hands before getting contact with their eyes (Brundha, october2016), nose, or mouth,they can also be infected with respiratory diseases, such as influenza_or the common cold(Salemi, Teresa Canola and Eck, 2002)(Preethikaa and Brundha, 2018) .If hands are visible with dirt or grease , hand sanitizer with 60% alcohol can be used ,if soap and water are not available .(Ahmed *et al.*, 2018; Paludan-Müller *et al.*, 2020). Depending on the situation,the duration of time required for hand washing varies. To remove the normal flora in the hands , the minimum amount of time required is 10-15 seconds.(Borges *et al.*, 2007)(Shenoy and Brundha, 2016). High-risk health care professionals such as dentists,medical practitioners, usually require about a 2-minute hand wash.(Shreya and Brundha, 2017).

Medical hand hygiene is practiced by the medical professionals to maintain the proper hygiene as they are exposed to pathogens. Before administering any medicine, Hand washing is must which can prevent the spread of disease(World Health Organization, 2009; Balaji, Brundha and Path, 2016)(Prashaanthi and Brundha, 2018). The main medical purpose of washing hands is to cleanse the pathogens (bacteria, viruses, or other microorganisms) and chemicals which can cause harm(Brundha, 2015). Hand wash is primarily important for the health care worker who handles food in the workplace and even for the general public(John and Brundha, 2016). However, frequent hand washing will cause sensitization of the skin which leads to skin damage such as drying of the skin, eczema.(McBride, 1984)

Nosocomial diseases because of poor hand hygiene are a significant reason for expanding mortality, and medicinal services costs among hospitalized patients worldwide(Brundha, Pathmashri and Sundari, 2019; Timothy, Samyuktha and Brundha, 2019). The high predominance of these diseases are as high as 19%, in creating nations that represent a test to medicinal services suppliers(Larson, Cohen and Baxter, 2012). The professionals working in the health care centre are the most exposed to pathogens and act as transmitters for hazardous in health care association(Hannah *et al.*, 2019). Pathogens persist for 2-60 minutes on the hands of health care workers. Hand washing is the most simplest and effective measure to prevent the spread of germs(Ravichandran and Brundha, 2016; Brundha, Pathmashri and Sundari, 2019) .

The World Health Organization (WHO) introduced “My five moments for hand washing” to minimize problems related to hand washing. These five moments that call for the use of hand washing include the moment before touching a patient, before performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient, and after touching patient surroundings. (Allegranzi and Pittet, 2009) Our team has rich experience in research and we have collaborated with numerous authors over various topics in the past decade (Ariga *et al.*, 2018; Basha, Ganapathy and Venugopalan, 2018; Hannah *et al.*, 2018; Hussainy *et al.*, 2018; Jeevanandan and Govindaraju, 2018; Kannan and Venugopalan, 2018; Kumar and Antony, 2018; Manohar and Sharma, 2018; Menon *et al.*, 2018; Nandakumar and Nasim, 2018; Nandhini, Babu and Mohanraj, 2018; Ravinthar and Jayalakshmi, 2018; Seppan *et al.*, 2018; Teja, Ramesh and Priya, 2018; Duraisamy *et al.*, 2019; Gheena and Ezhilarasan, 2019; Hema Shree *et al.*, 2019; Rajakeerthi and Ms, 2019; Rajendran *et al.*, 2019; Sekar *et al.*, 2019; Sharma *et al.*, 2019; Siddique *et al.*, 2019; Janani, Palanivelu and Sandhya, 2020; Johnson *et al.*, 2020; Jose, Ajitha and Subbaiyan, 2020).

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The aim of the study is to assess the knowledge and awareness on methods, duration and techniques of hand washing among the general population.

Materials and Methods

An online survey was conducted among 150 general population based on the awareness and knowledge on the methods, duration and techniques of hand washing. The study was conducted from march to may, 2020. A questionnaire was prepared with 15 questions on methods, duration and frequency of handwash. Later, the questionnaire was uploaded in the Google forms which is an online survey application that can facilitate the distribution of questionnaires via email; smartphones by using applications, such as WhatsApp; and social media platforms, such as Instagram. This survey application allows participants to access the questionnaire easily, and it analyses and exports results after responses have been collected. The results were statistically analysed using the latest software version SPSS. Chi square test and pearson correlation analysis were used, with p values less than 0.05 to be statistically significant.

Results

The total of 137 respondents from various districts of TamilNadu have attended this survey. It shows that 62.04% males attended this survey more than the females of 37.96%.(Figure-1).

Hand hygiene is now regarded as the most important element in infection control ,It shows that 96.35% respondents know the importance of hand hygiene , whereas only 3.65% respondents didn't know that hand hygiene is mandatory out of total response(Figure-2). The figure 3 shows 43.07% of respondents purchased hand wash , 36.50% bought hand sanitizer and 18.98 % respondents soaps were purchased. Also 51.09% respondents wash hands with running water , 38.69% washed hands with running water and soap, only 10.22% - uses hand sanitizer.(Figure-4) Out of 137 respondents 35.77% - wash hands for less than 7 times, 27.01% respondents wash for 2- 5 times whereas, Only 10.22% respondents wash for more than 7times.(Figure-5)

The figure 6 shows 83.94% respondents that are aware of the technique introduced, Only 16.06% respondents have no knowledge about the technique.75.18% respondents follow the technique, whereas 24.82% respondents don't follow the technique suggested by WHO (Figure-7). The figure 8 shows that the majority of 80.29% of people were aware of COVID19 prevention in which handwash plays a major role. From a total of 137 respondents, 61.31% always used alcohol-based hand rub for hand hygiene whereas Only 38.69% of them don't use alcohol based hand rub.(Figure-9) The results for this survey were analysed using Chi square test and correlation bar graphs were added accordingly.

Figure 10: The bar graph represents the association between the gender and duration of washing hands. Majority of males (20.44%) used to wash hands less than 2 times than females (15.33%). There is no significant difference between gender and duration of washing hands. Chi square test was carried out to associate the variables. Chi square test value 2.98, P= 0.39 ($p>0.05$) hence it is statistically not significant. Figure 11: The bar graph represents association between the gender and awareness of techniques suggested by WHO, where the majority of males (50.3%) are aware of techniques suggested by WHO than females(32.12%). Chi square test was carried out to associate the variables. Chi square test value 0.31,P= 0.86 (>0.05) hence it is statistically not significant. Figure 12: The bar graph represents the association between the gender and prevention of COVID 19 by usage of hand wash, where majority of males

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(50.6%) are aware of prevention of COVID19 by usage of hand wash than females. Chi square test was carried out to associate the variables. Chi square test value 0.11, P= 0.73 (>0.05) hence there is no statistical significance. Figure 13: The bar graph represents association between the gender and usage of alcohol based hand rub, in which the majority of males (36.5%) used alcohol based hand rub than females (24.82%). Chi square test was carried out to associate the variables. Chi square test value 0.58, P= 0.44 (>0.05) hence there is no statistical significance. Figure 14: The bar graph represents the association between the gender and reason for purchasing hand hygiene products. Majority of males (41.61%) purchased by influence of doctor than females(24.82%). Chi square test was carried out to associate the variables. Chi square test value 2.98, P= 0.39 (p>0.05) hence there is no statistical significance

Discussion

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)

In this current study, Hand hygiene is the most important element in preventing the transmission of nosocomial infections as the hands are the most common mode of transmission of pathogens (Jabbar *et al.*, 2010; Harsha and Brundha, 2017). Hand wash is a crucial step which is essential for the prevention of diseases. Maintenance of Good hand hygiene helps to decrease the risk of diseases like cold, food poisoning and healthcare associated infections being spread from person to person.

In our study, it is observed that out of 137 respondents, 96.4% were knowledgeable and 3.6%were not knowledgeable about hand hygiene. Hand hygiene plays an important role in preventing diseases. For instance, the participants were not aware that hand hygiene importance should be addressed during the future training sessions regarding hand wash.

Factors that contribute to poor adherence to hand hygiene include irritant contact dermatitis associated with frequent exposure to soap and water, high workloads, knowledge deficits among health care workers, and the failure of administrative leaders to make hand hygiene an institutional priority(Feather *et al.*, 2000; Mp, Brundha and Nallaswamy, 2019).

Hands can be cleansed by two methods, namely hand washing and hand rubbing. Hand washing is carried out with soap and water whereas hand rubbing is completed with an alcohol-based hand rub. In our study, 67.3 % respondents used alcohol based hand rub whereas only 38.7% of them don't use alcohol based hand rub.which's contraindicated by the study done by Tibballs Et al (Boyce, Pittet and Healthcare Infection Control Practices Advisory Committee. Society for Healthcare Epidemiology of America. Association for Professionals in Infection Control. Infectious Diseases Society of America. Hand Hygiene Task Force, 2002). Using alcohol-based hand sanitizer does not cause antibiotic resistance, does not kill Clostridium difficile, but it is still the overall recommended method for hand hygiene practice(Anargh *et al.*, 2013). 51.1% respondents washed hands with running water , 26.3% washed hands with running water and soap, only 12.4% used hand sanitizer. According to kampf and

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kramer,(Kampf and Kramer, 2004) Alcohol-based hand sanitizer is more effective than using soap and running water. In our study majority of the respondents purchased hand wash (43.1%) than the hand sanitizer(36.6%). Hand sanitizer may kill viruses and certain bacteria,but it does not clean hands like soap and water does. Sanitizer doesn't eliminates soil and debris whereas the Soap eliminates germs, binds to them, they will eliminate germs in them with water and soap whereas according to Nair SSet al, majority used hand sanitizer then hand wash(Kalaiselvi and Brundha, 2016)

The knowledge of buyer behaviour mainly due to the Social influences that affect consumer behavior include family, doctors , advertisement and health care. In our study the majority of the population purchased based on the influence on health care, 24.1% respondents purchased by the influence of family, 9.5% by advertisement influence .

Hands are main pathway for the germ transmission during health care and it is important in day to day life out of 137 respondents says that 35.8% respondents wash hands for more than 7 times whereas 27% respondents wash for 2- 5 times whereas Only 10.2 % respondents wash for less than 2times, but according to the CDC ,at least 10 times should be done ,depending on what you come in contact with(Kumar, Ashok Kumar and Brundha, 2016).According to Sengupta S, et al , similar results were obtained in his study (Brundha, october2016; Deepika, Preejitha and Brundha, 2020).

The World Health Organization (WHO) introduced “My five movements for hand washing” to minimize problems related to hand washing (World Health Organization, 2008). These five moments that call for the use of hand washing include the moment before touching a patient, before performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient, and after touching patient surroundings(Allegranzi and Pittet, 2009). Whereas 83.9% were aware about the technique given by WHO, but only 75.5% respondents followed the technique

In the current scenario, COVID 19 has become a major burden on the public health , economic stability of societies around the globe in which hand washing is the primary method to get rid of corona. In our study, the majority of people (90%) were aware of COVID19 prevention in which handwash plays a major role.

This study has several limitations. The actual number of respondents is low compared to the total number of persons and therefore may not be representative of the entire group. Many studies can be conducted in this aspect, since people are not used to regular hand washing hands and techniques should be well known among the population. Many similar surveys should be conducted to see different opinions among different sets of populations and their level of awareness.

Conclusion

From the study, it can be concluded that the majority of the participants have adequate knowledge and awareness on the methods and techniques used for hand hygiene. Majority of the respondents were also aware about the technique recommended by WHO and follow the technique in their day to day life.

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Figure 3: The pie chart shows products purchased by the participants for hand hygiene,
Figure 4: The pie chart shows the recommenders of buying hand wash products.
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Figure 12: The bar chart shows the association between gender and prevention of COVID 19 by usage of hand wash.
Figure 13: The bar chart shows the association between gender and alcohol based hand rub.
Figure 14: The bar chart shows the association between gender and recommenders of buying hand wash products

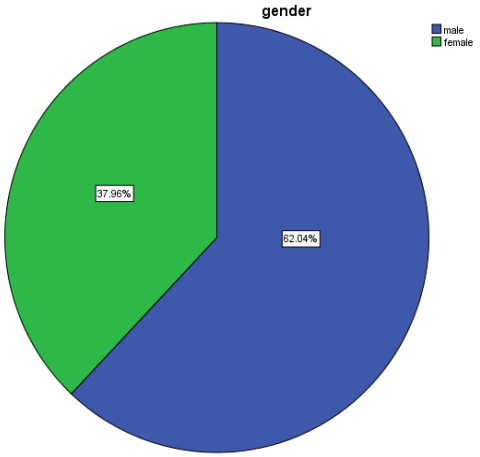

Figure 1: The pie chart showing the percentage distribution of gender of the participants. Where 62.04% are male (Blue), 37.9% are females (green).

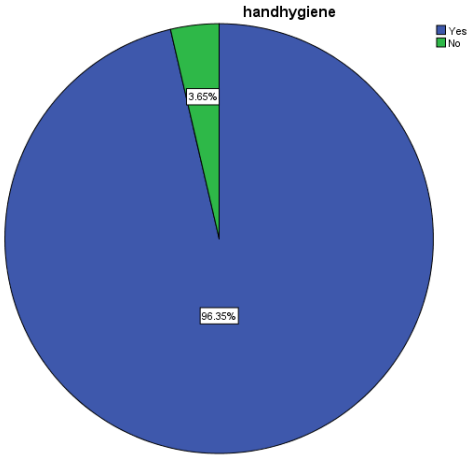

Figure 2: The pie chart showing the percentage distribution of the awareness of hand hygiene. where the majority 96.3% (Blue) of them are aware of hand hygiene and 3.65% (green) are not aware of hand hygiene.

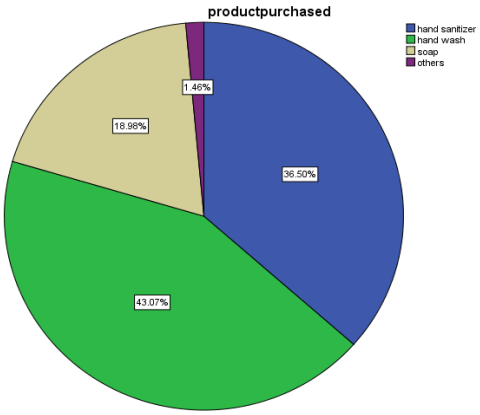

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Figure 3: The pie chart showing the percentage distribution of products purchased by the participants for hand hygiene, where 43.07% (green) of the respondents purchased handwash , 36.5% (Blue) of the respondents purchased hand sanitizer, 18.98% (yellow) purchased soap.

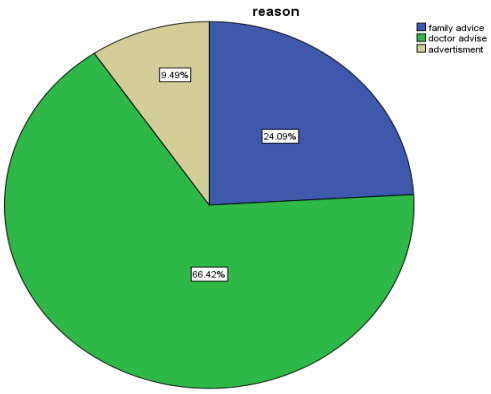

Figure 4: The pie chart showing the percentage distribution to the recommenders of buying hand wash products. 66.42% (green) purchased hand wash products by influence of doctor,24.09% (Blue) by family advice and 9.49% (Green) by the influence of the advertisements.

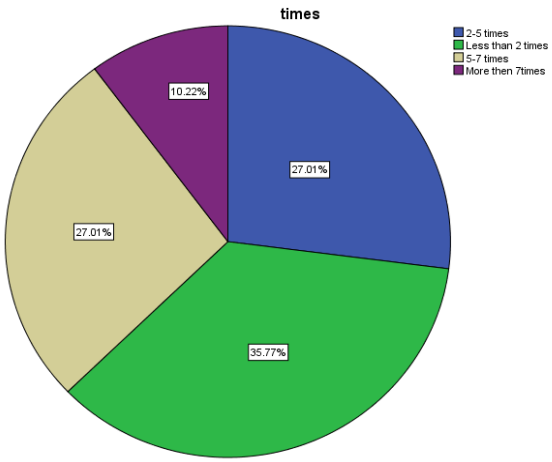

Figure 5: The pie chart showing the percentage distribution of the duration of washing hands, where 35.77% (green) of the respondents wash their hands for less than 2times, 27.01% (Blue) of the respondents washed their hands for 2-5time, 27.01% (yellow) of the respondents washed for 5-7times and 10.22%(violet) washed more 7times.

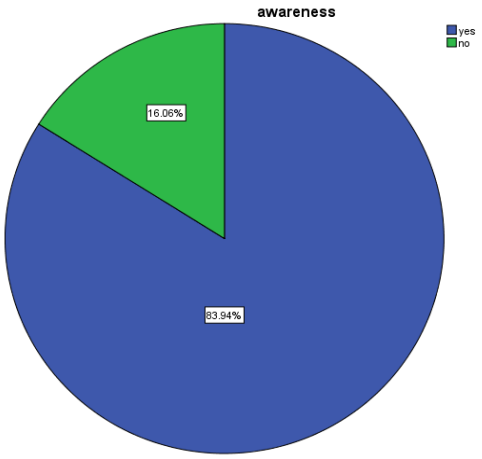

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Figure 6: The pie chart showing the percentage distribution of the WHO Technique, where 83.9 % (Blue) are aware of the technique given by WHO and 16.06% (green) are not aware of the technique given by WHO.

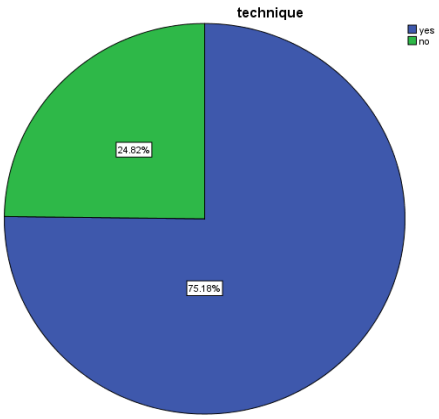

Figure 7: The pie chart showing the percentage distribution of the number of responses following WHO technique for hand wash , where 75.18% (Blue) of the respondents followed the technique given by WHO and 24.82% (green) of the respondents do not follow the technique given by WHO.

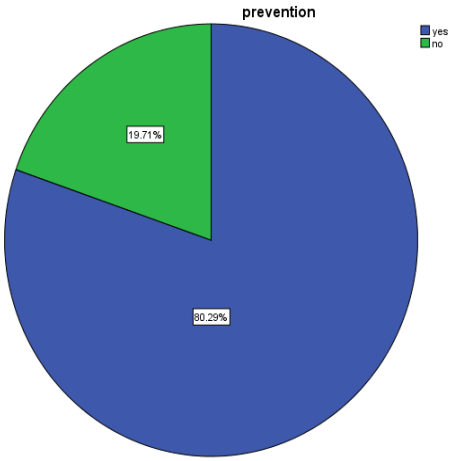

Figure 8: The pie chart showing the percentage distribution of the awareness on importance of hand wash hygiene against COVID 19, where 80.29%(Blue) of the respondents are aware of the prevention of COVID 19 by hand wash and 19.71%(green) of the respondents are not aware of the prevention of COVID 19 by hand wash.

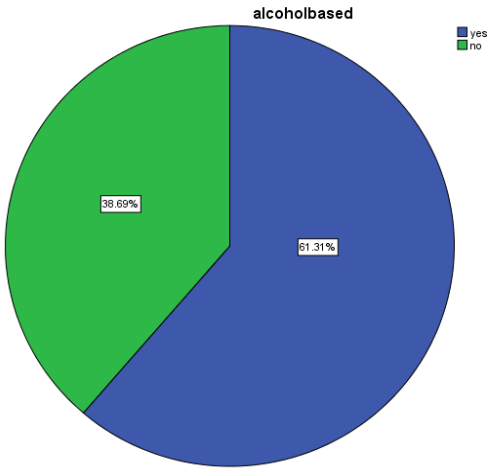

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Figure 9:The pie chart shows the distribution percentage of the usage of alcohol based hand wash, where 61.3% (Blue) are using alcohol based hand wash, and 38.69% (green) are not using hand wash.

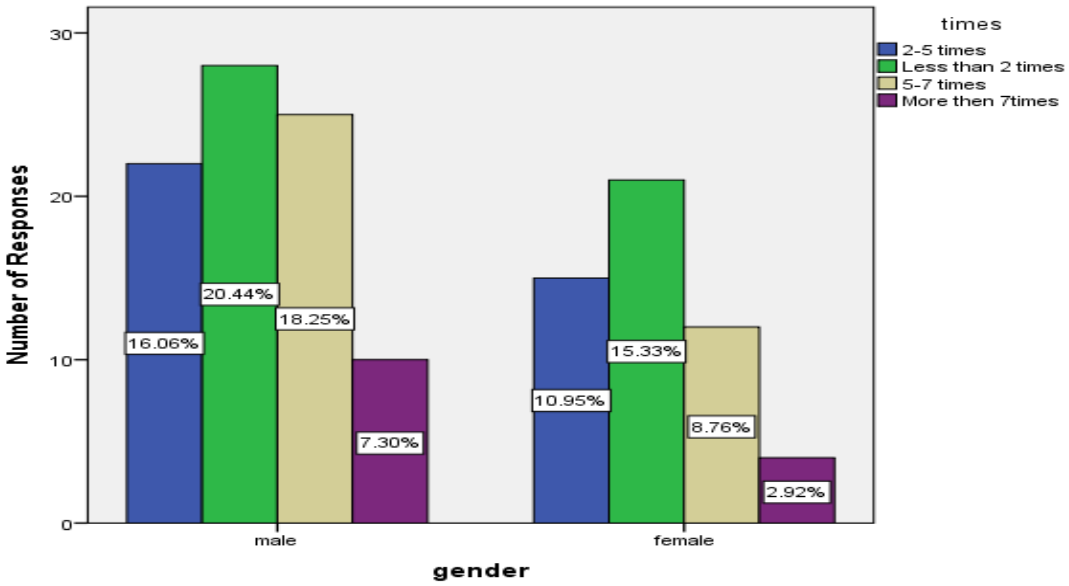

Figure 10: The bar graph represents the association between the gender and duration of washing hands. X axis represents gender and Y axis represents number of responses. Where blue denotes 2-5times, green denotes less than 2 times, yellow denotes 5-7 times, violet denotes more than 7times. Males (20.44%) wash hands less than 2 times than females (15.33%). But statistically there is no significant difference between gender and duration of washing hands. Chi square test was carried out to associate the variables. Chi square test value 2.98, P= 0.39 ($p>0.05$) hence it is statistically not significant.

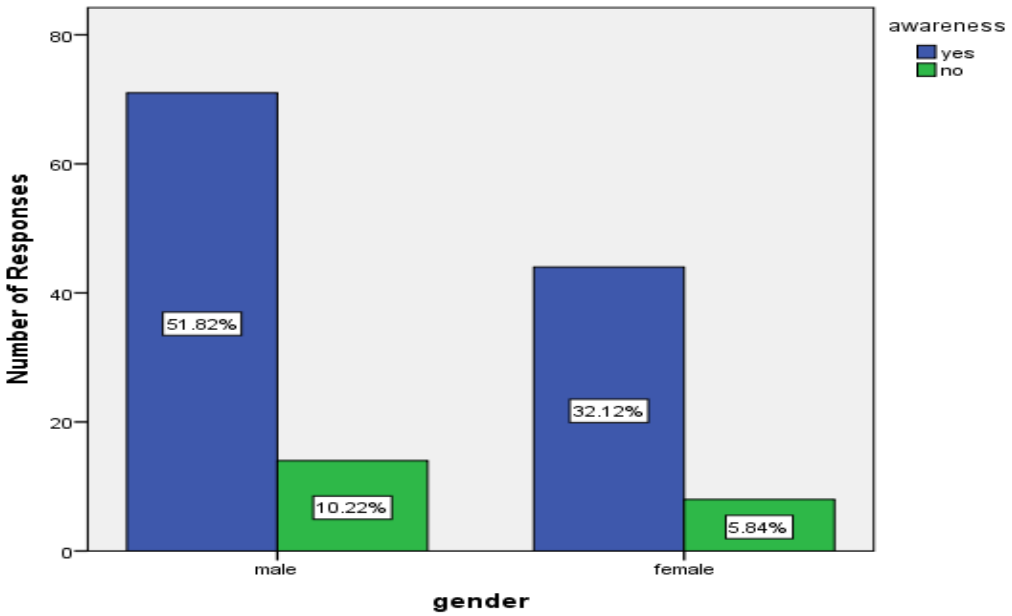

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Figure 11: The bar graph represents association between the gender and awareness of techniques suggested by WHO. X axis represents gender and Y axis represents the number of responses. Where the blue denotes Yes and green denotes No. Majority of males (50.3%) are aware of techniques suggested by WHO than females(32.12%). But statistically there is no significance between the gender and awareness of techniques suggested by WHO. Chi square test was carried out to associate the variables. Chi square test value 0.11, P= 0.86 (>0.05) hence it is statistically not significant.

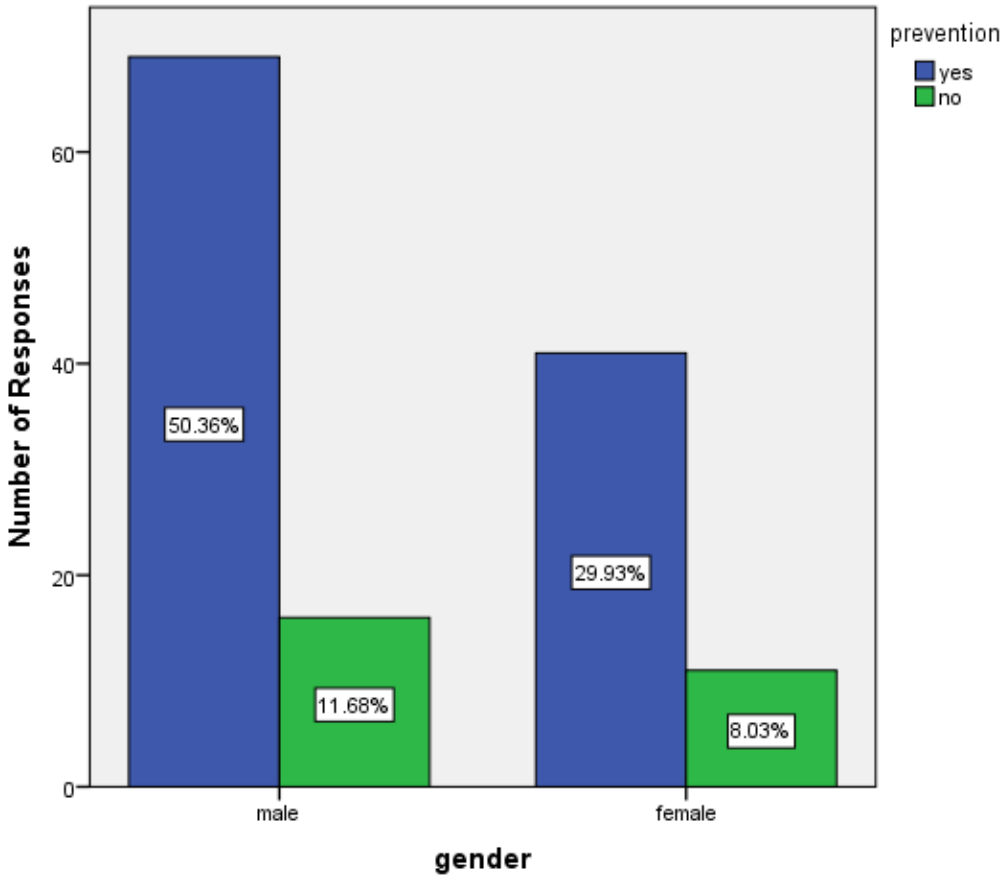

Figure 12: The bar graph represents the association between the gender and prevention of COVID 19 by using hand wash, X axis represents gender and Y axis represents number of responses . The blue denotes Yes and green denotes No. Majority of males (50.6%) are aware of prevention of COVID19 by using hand wash than females. But statistically there is no significant difference between the gender and prevention of COVID 19 by using hand wash. Chi square test was carried out to associate the variables. Chi square test value 0.11, P= 0.73 (>0.05) hence there is no statistical significance

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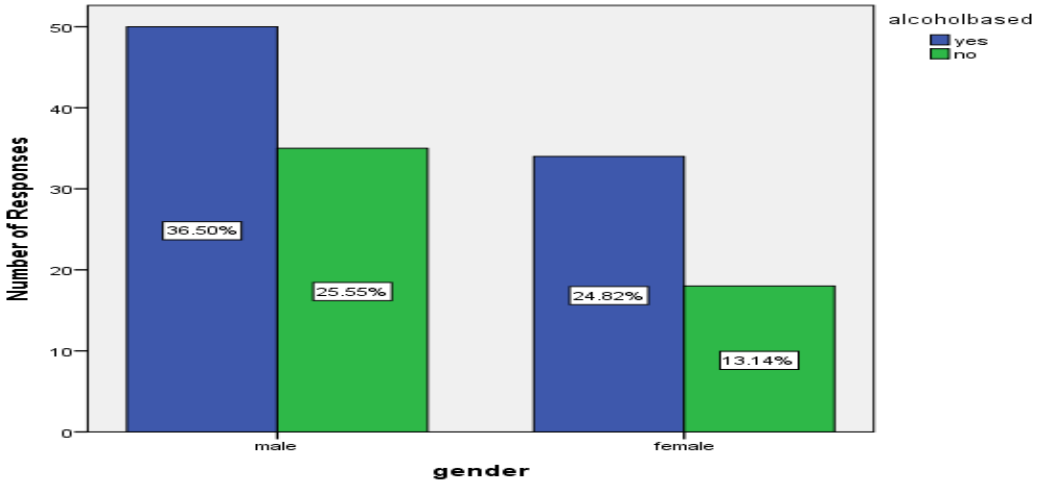

Figure 13: The bar graph represents association between the gender and usage of alcohol based hand rub. X axis represents gender and Y axis represents number of responses. Where the blue denotes Yes and green denotes No. Majority of males (36.5%) used alcohol based hand rubs than females (24.82%). But statistically there is no significant difference between the gender and usage of alcohol based hand rub. Chi square test was carried out to associate the variables. Chi square test value 0.58, P= 0.44 (>0.05) hence there is no statistical significance.

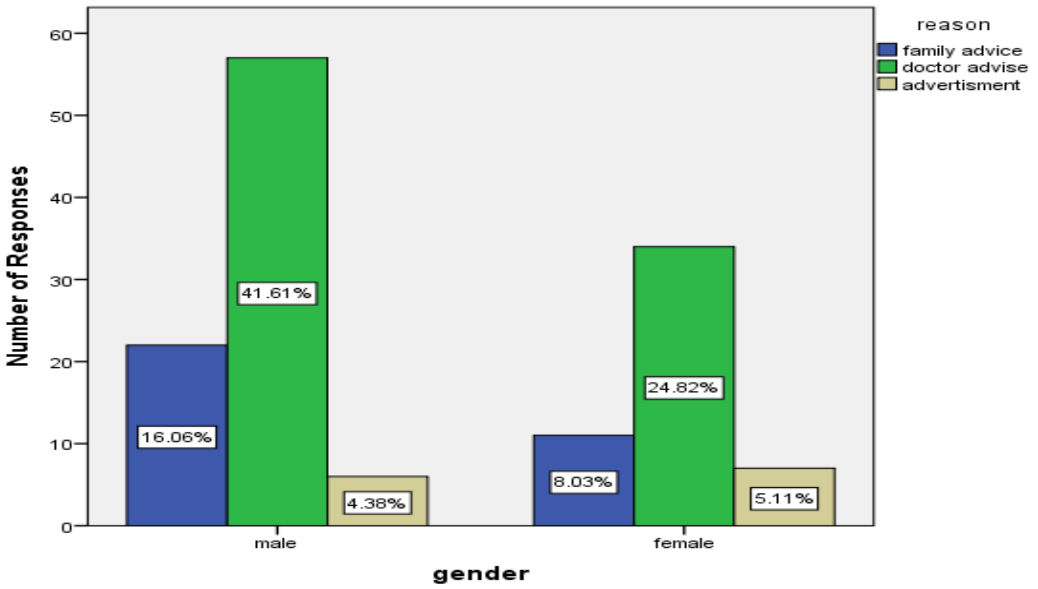

Figure 14: The bar graph represents the association between the gender and recommenders of buying hand wash products hand wash products, X axis represents gender and Y axis represents number of responses. Where blue denotes family advise , green denotes doctor advise , yellow denotes advertisement. Majority of males (41.61%) purchased by influence of doctor than females(24.82%). But statistically there is no significant difference between the gender and recommenders for buying hand wash products. Chi square test was carried out to associate the variables. Chi square test value 2.98, P= 0.39 (p>0.05) hence there is no statistical significance.