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Knowledge and Practise of Hand Wash Hygiene Among Dentists

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Abstract: INTRODUCTION: Hand hygiene is a key method used to reduce the danger of infection and its spread. In the modern world hand hygiene includes hand cleaning, disinfection and surgical hand scrubbing. The aim of this study is to analyse the knowledge and practise of hand wash hygiene among dentists.
MATERIALS AND METHODS: A descriptive cross sectional survey was conducted among 118 dentists through a self administered questionnaire from march - april 2020. The responses were collected, tabulated in excel sheet and analysed using SPSS software. Chi square test was used to analyze the level of knowledge on hand hygiene among dentists with statistical significance of $P< 0.05$.
RESULTS: 58.72% Of the participants are aware of hand hygiene practices. 71.569% practise hand hygiene practises before and after procedure. 55.96% received formal training in hand hygiene in the last 3 years.
CONCLUSION: The overall knowledge on hand hygiene tends to be moderate among dentists. From the present study, female dentists had good knowledge on hand hygiene and its practices compared to males.

Keywords: Hand hygiene; awareness; disinfecting; dentists

INTRODUCTION:

Hand washing is the single most popular method to avoid the transmission of health-related diseases(Bjerke, 2004). Nosocomial infections attributable to bad hand hygiene are a significant cause of elevated morbidity, disability, and health care expenses for medical patients worldwide(Jemal, 2018). Health care providers' hands act as reservoirs of pathogens of clinical infection.Hand hygiene reduces the spread of infection (Bjerke, 2004; Myers et al., 2008). Health care providers' hands have been recognized as major reservoirs of pathogens. Modern world hygiene includes hand cleaning,hand disinfection and surgical hand scrubbing (Bjerke, 2004).

Alcohol based sanitizers are used to disinfect our hand. At the beginning of the work day, clinicians should wash their hands with either plain soap or antimicrobial hand wash for 1 full minute. Hands should always be cleaned because they become clearly soiled and dirty easily. If the gloves have been torn or punctured, they should be removed and the hygiene of the hand repeated (Fluent, 2013). Hand washing is cost-efficient and easy and has been proven to be an important method in the prevention of infections. (Teumta et al., 2019)Worldwide respiratory disorders are the primary causes of childhood morbidity and mortality, responsible for 64% of all infant deaths which is caused due to poor hand hygiene(Rayamajhi et al., 2014)

Previously our team had conducted numerous original studies(Sarbeen, Insira Sarbeen and Gheena, 2016; Krishnan et al., 2018; Padavala and Sukumaran, 2018; Abitha and Santhanam, 2019; Harrita and Santhanam, 2019; Palati et al., 2019; Shree et al., 2019) and surveys(Ahad and Gheena, 2016; Gunasekaran and Abilasha, 2016; Prasanna and Gheena, 2016; Hannah et al., 2018a; Sheriff, Ahmed Hilal Sheriff and Santhanam, 2018; Manohar and Abilasha, 2019; Palati et al., 2020; Uma et al., 2020) over the past 5 years. Now we are focussing on epidemiological surveys. The idea for this survey stemmed from the current interest in our community. The aim of the research is to evaluate the knowledge and practices on hand hygiene among dentists.

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., 2018b; 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).

MATERIALS AND METHODS:

STUDY DESIGN:

A cross sectional study was conducted from March to April 2020 through an online survey among dentists. A convenient sample of 118 dentists was done.

INCLUSION CRITERIA:

All dentists who were willing to participate were included

ETHICAL CONSIDERATIONS:

Returning the filled questionnaire was considered as implicit consent with no need for signing a written consent ethical approval for the study is obtained from the institutional review board(IRB)

STUDY METHOD:

Self administered close ended questions were prepared and it was distributed among undergraduate dental dentists through online survey forms "google forms". Demographic details were also included in the questionnaire.

STATISTICAL ANALYSIS:

Data was analysed with SPSS version (22.0). Descriptive statistics as number and percent were calculated to summarise qualitative data. Chi square test was used to analyze and compare knowledge and practises towards hand hygiene among dentists. Finally, the result was presented by using bar charts and frequency tables.

RESULTS

In the present study out of the 118 participants 56.88%were female and 43.12% were male (Figure 1) (Table1). 58.72% of the dental surgeons were aware of hand hygiene practises (Figure 2). 71.56% practise hand hygiene practises before and after procedure(Figure **3**). 58.72% think hand hygiene practises protect us from several diseases(Figure 4). 54.13% are aware of different methods of hand hygiene techniques(Figure 5). 59.63% of dentists use alcohol based handrub(Figure 6). 46.62% of dental surgeons wash their hands 10 times a day followed by 24.77% participants 5 times a day and 26.61% more than 10 times/day (Figure 7). 33.94% of dental surgeons use alcohol based sanitizers followed by 33.03% use soap and 33.03% use both to maintain their hand hygiene (Figure 8) , 55.96% received formal training in hand hygiene in the last 3 years (Figure 9**).** Majority of the female dentists (46) were aware of hand hygiene practices that are followed before and after the patient procedure p value = 0.484 (>0.05) statistically not significant (Figure10)Majority of female dentists(38) were aware of different methods of hand hygiene techniques p value = 0.085 (>0.05) statistically not significant

(Figure 11)Majority of female dentists (37)routinely used alcohol based handrub

P value = 0.991 (>0.05) statistically not significant(Figure 12)Majority of female dentists(21)used alcohol based sanitizers and (21) used soap p value = 0.972 (>0.05) statistically not significant(Figure 13)

DISCUSSION

Thousands of people around the world die every day from infections acquired while they receive health care. Hands are the primary pathways for the transmission of germs during health care. Hand-hygiene is therefore the most important measure to avoid harmful germ transmission

and prevent health care-associated infections.(World Health Organization, 2009)

The questionnaire was distributed among 118 participants out of the 118 participants. 58.72% of the dentists were aware of hand hygiene practises . Similar results have been reported in the study done by vinod et al (60%)(Kamble et al., 2016). 71.56% practise hand hygiene practises before and after the procedure . Similar results have been reported in the study done by vinod et al(70.9%)(Kamble et al., 2016). Hand hygiene is essential to eliminate transient microflora, even when gloves are worn.Hands should always be cleaned because they become clearly soiled and dirty easily.

58.72% think hand hygiene practises protect us from several diseases .Similar results have been reported in the study done by Muawia et al(87%)(Qudeimat, Farrah and Owais, 2006). Hand hygiene in dental practice is one of the most important parts of the infection control process. It reduces the risk of transmitting microorganisms from provider to patient.

54.13% are aware of different methods of hand hygiene techniques . Similar results have been reported in the study done by Sreejith Sasidharan Nair (74%)(Nair et al., 2014). 59.63% of dentists use alcohol based handrub. Similar results have been reported in the study done by vinod et al(58.1%). 33.94% of dental surgeons use

alcohol based sanitizers followed by 33.03% use soap and 33.03% use both to maintain their hand hygiene The two major hand antiseptics are alcoholic rubs and medicated soaps or foams containing chlorhexidine. Alcohols have the most rapid antimicrobial effect, in contrast to chlorhexidine, equally effective against gram-positive and gram-negative microorganisms. The antimicrobial activity of alcohols is due to their ability to denature proteins. Alcohol solutions containing 60–95% alcohol are most effective, and higher concentrations are less potent. A disadvantage of pure alcohol is its drying effect on the skin and the absence of a residual antimicrobial activity. (Boyce and Pittet, 2002)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)

48.62% of dental surgeons wash their hands 10 times a day to prevent cross transmission.

55.96% received formal training in hand hygiene in the last 3 years **.** Formal training is provided to give clear ideas and proper steps to follow hand hygiene.Similar results have been reported in the study done by vinod et al(85.4%)(Kamble et al., 2016). Compliance in hand hygiene depends on transmitting correct information about infection control through multiple modes of instruction such as the seminars, conferences, continuing education programs and infection control guidelines.

Emphasis on hand hygiene education programs would improve the quality of behavior. Hand hygiene education programs have to be incorporated through teachers since the behavior of students is strongly influenced and molded by their mentor's attitude chair side.The limitations of this study are the data presented here are restricted only to a selected number of dentists and hand hygiene practices among the healthcare professionals vary geographically.

CONCLUSION

The overall knowledge on hand hygiene tends to be moderate among dentists. From the present study, female dentists had more awareness towards the use of alcohol based hand rub and sanitisers compared to males. Hand hygiene training sessions need to be conducted more frequently with continuous monitoring and performance feedback to encourage them to follow correct hand hygiene practices.

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AUTHORS CONTRIBUTIONS:

Roshan A: Literature search, survey /data collection, analysis, manuscript writing
Guide name: Study design, data verification, manuscript drafting

CONFLICT OF INTEREST

The authors declare that there were no conflicts of interest in the present study

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LEGENDS FOR GRAPHS AND TABLE:

Figure 1: Pie graph depicting the percentage of gender distribution.
Figure 2: Pie graph depicts percentage distribution of awareness of hand hygiene practises
Figure 3: Pie graph depicts percentage distribution of practise of hand hygiene during the procedure.
Figure 4:Pie graph depicts percentage distribution of the awareness of hand hygiene in protecting from diseases
Figure 5: Pie graph depicts percentage distribution of the awareness of different methods of hand hygiene techniques
Figure 6: Pie graph depicts percentage distribution of use of alcohol-based handrub for hand hygiene
Figure 7: Pie graph depicts percentage distribution of number of times of hand washing a day.
Figure 8: Pie graph depicts percentage distribution about reagents used to maintain hand hygiene.
Figure 9: Pie graph depicts percentage distribution of the awareness on formal training in hand hygiene in the last three years
Figure 10: Bar chart represents the comparison of responses between gender and hand hygiene practices that are followed before and after the patient procedure,using chi square test.
Figure 11: Bar chart represents the comparison of responses between gender and different methods of hand hygiene techniques,using chi square test
Figure 12: Bar chart represents the comparison of responses between gender and use of alcohol based handrub,using chi square test
Figure 13: Bar chart represents the comparison of responses between gender and materials used to maintain hand hygiene, using chi square test.

Table 1.Depicts the percentage of responses on Knowledge and awareness of hand hygiene among dentists.

S.NO	QUESTION	CHOICE	RESPONSE
1	Gender	Male Female	43.12% 56.88%
2	Are you aware of hand hygiene practises	yes No	41.28% 58.72%
3	Do you practise hand hygiene practises handling the patients before and after the procedures	yes No	71.56% 28.44%

4	Do you think that hand hygiene practises protect us from several disease	yes No	58.72% 41.28%
5	Are you aware of different methods of hand hygiene techniques	yes No	54.13% 45.87%
6	Do you routinely use an alcohol based hand rub for hand hygiene	yes No	59.63% 40.37%
7	How often do you wash your hand a day	5 times 10times More than 10 times	24.77% 46.62% 26.61%
8	what do you use to maintain your hand hygiene	Soap Alcohol based sanitizer Both	33.03% 33.94% 33.03%
9	Did you receive formal training in hand hygiene in the last 3 years	yes No	55.96% 44.04%

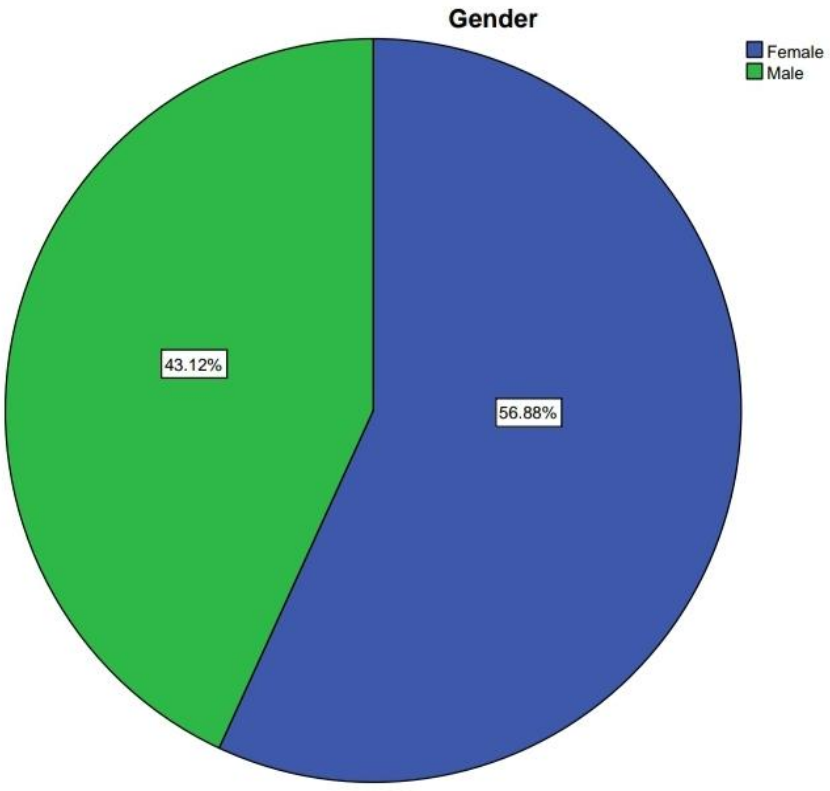

Fig.1: Pie graph depicting the percentage of gender distribution. Green represents male and blue represents female. 56.88%(blue) were females and 43.12%(green) were males.

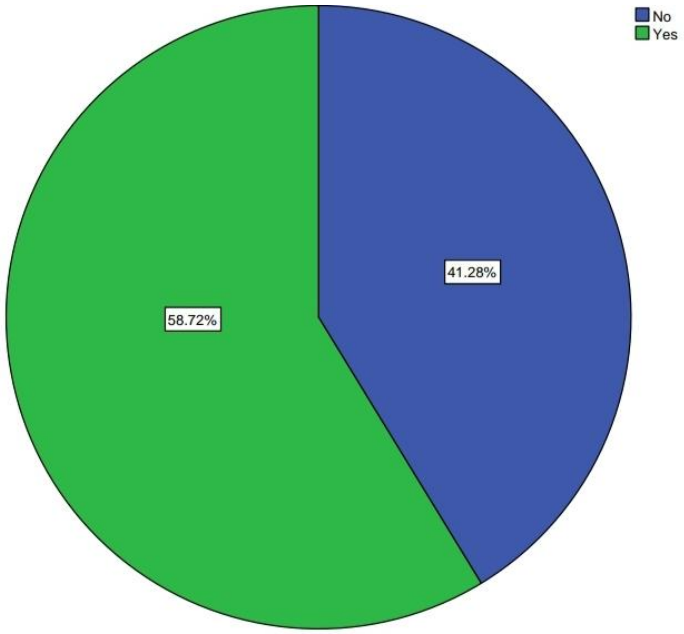

Fig.2: Pie graph depicts percentage distribution of awareness of hand hygiene practises. Blue indicates no and green indicates yes. 58.72% were aware of hand hygiene practices.

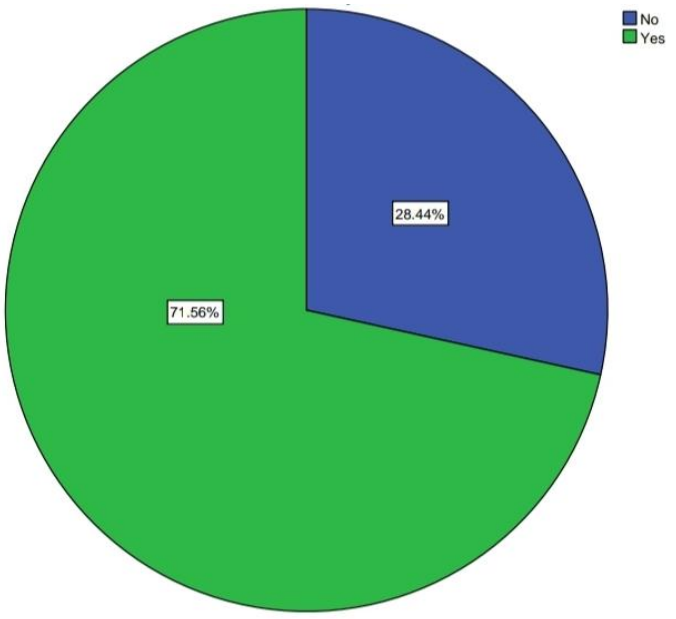

Fig.3: Pie graph depicts percentage distribution of practise of hand hygiene during the procedure. Blue indicates no and green indicates yes. 71.56% practise hand hygiene during the procedure

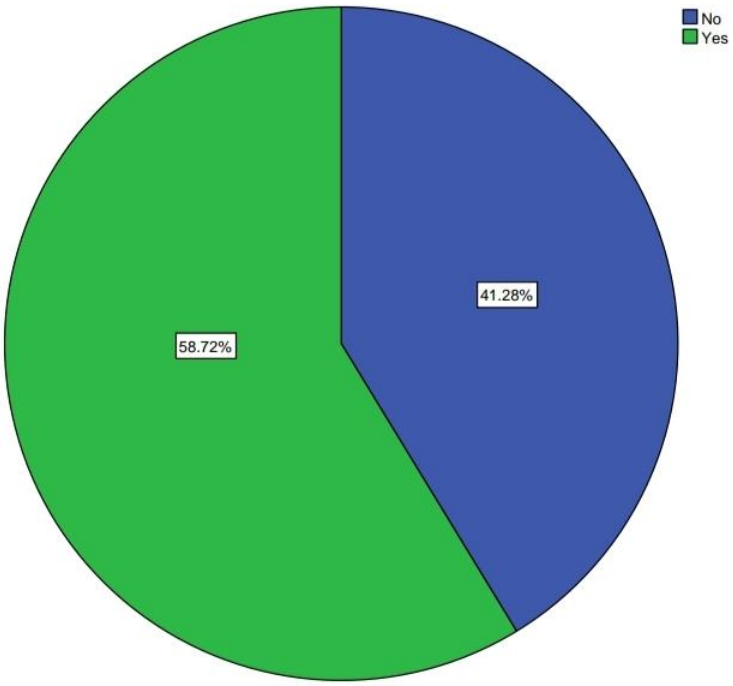

Fig.4: Pie graph depicts percentage distribution of the awareness of hand hygiene in protecting from diseases. Blue indicates no and green indicates yes. 58.72%were aware that hand hygiene practise protect from several diseases

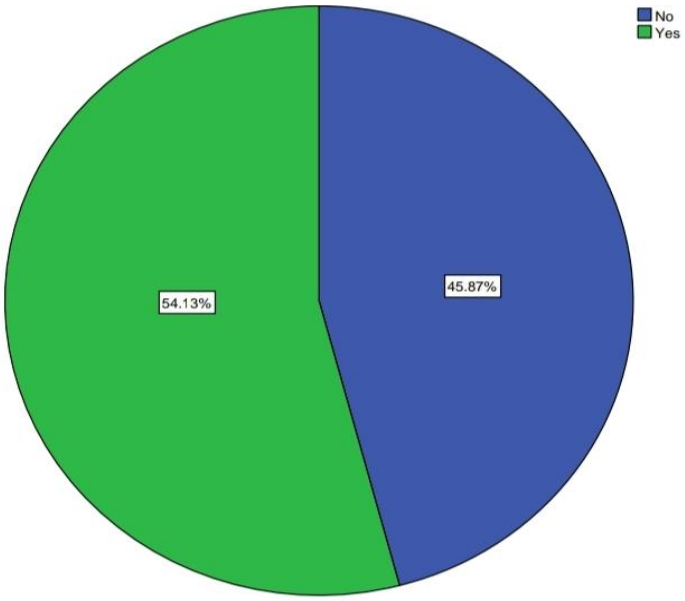

Fig.5: Pie graph depicts percentage distribution of the awareness of different methods of hand hygiene techniques . Blue indicates no and green indicates yes. 54.13%were aware of different methods of hand hygiene techniques

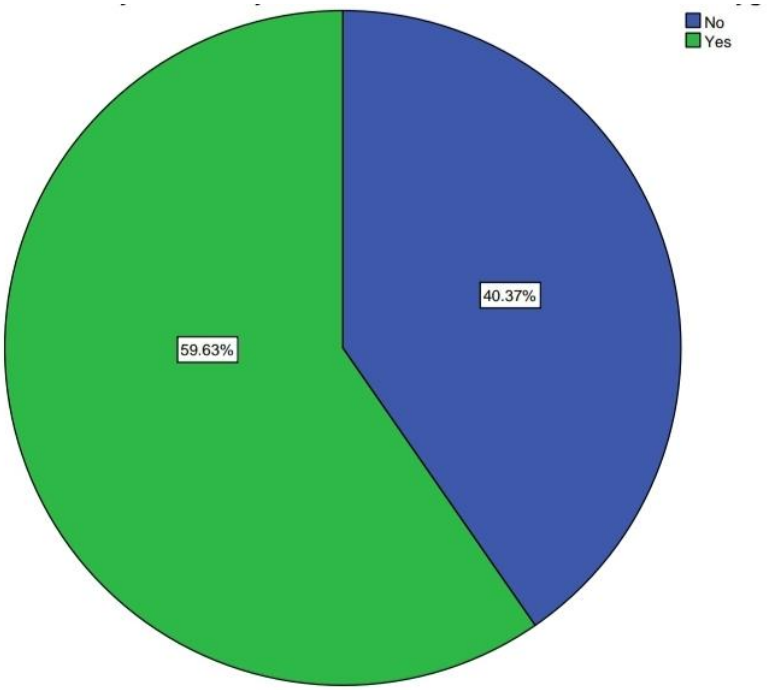

Fig.6: Pie graph depicts percentage distribution of use of alcohol-based handrub for hand hygiene . Blue indicates no and green indicates yes. 59.63% use alcohol-based handrub for hand hygiene

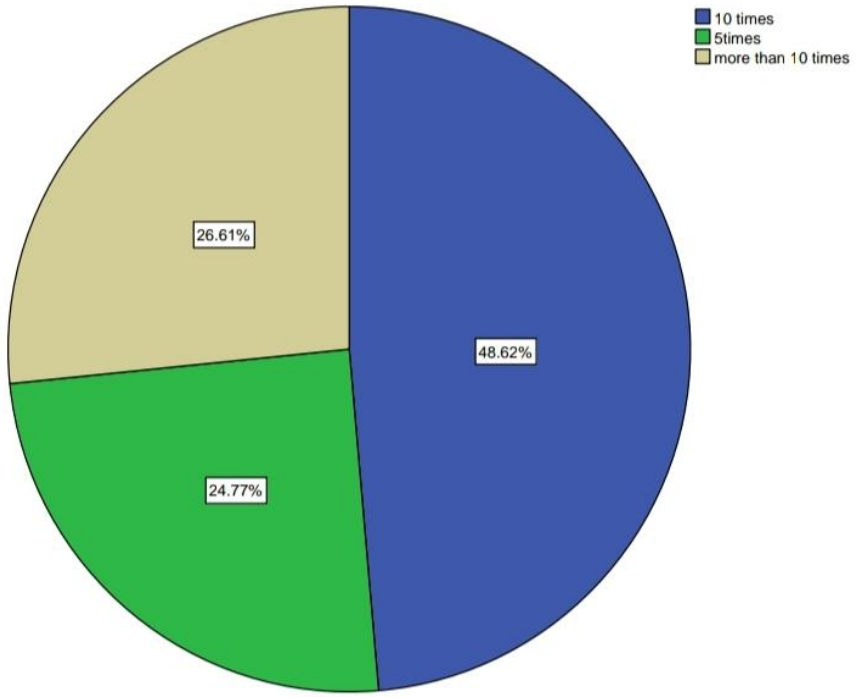

Fig.7: Pie graph depicts percentage distribution of number of times of hand washing a day. Blue indicates 10 times , green indicates 5 times and brown indicates more than 10 times. 48.62% use wash their hands 10 times

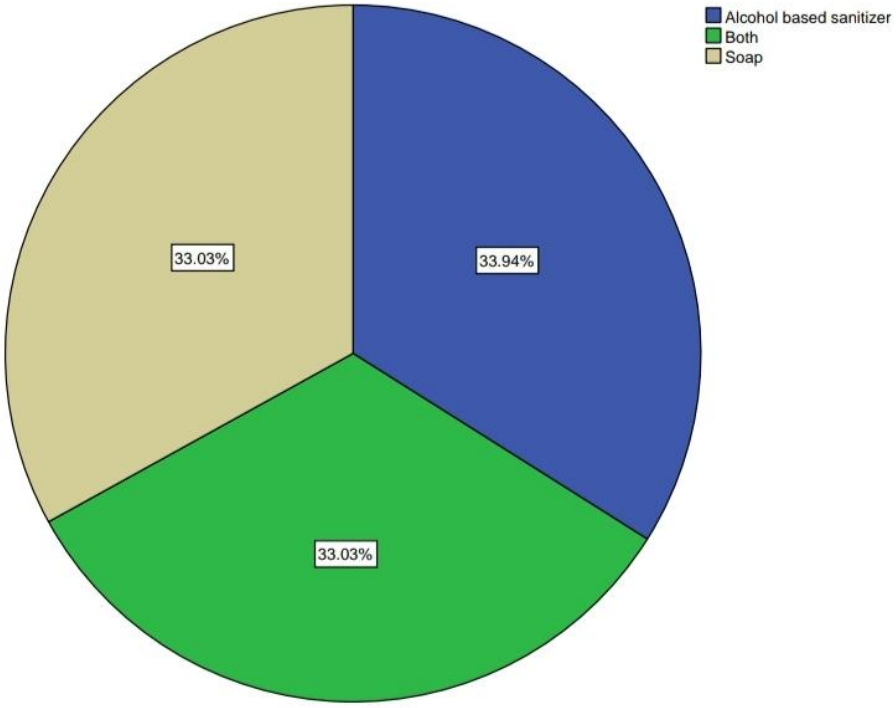

Fig.8:Pie graph depicts percentage distribution about reagents used to maintain hand hygiene . Blue indicates alcohol based sanitizer and green indicates both, brown indicates soap. 33.94% use alcohol based sanitizer

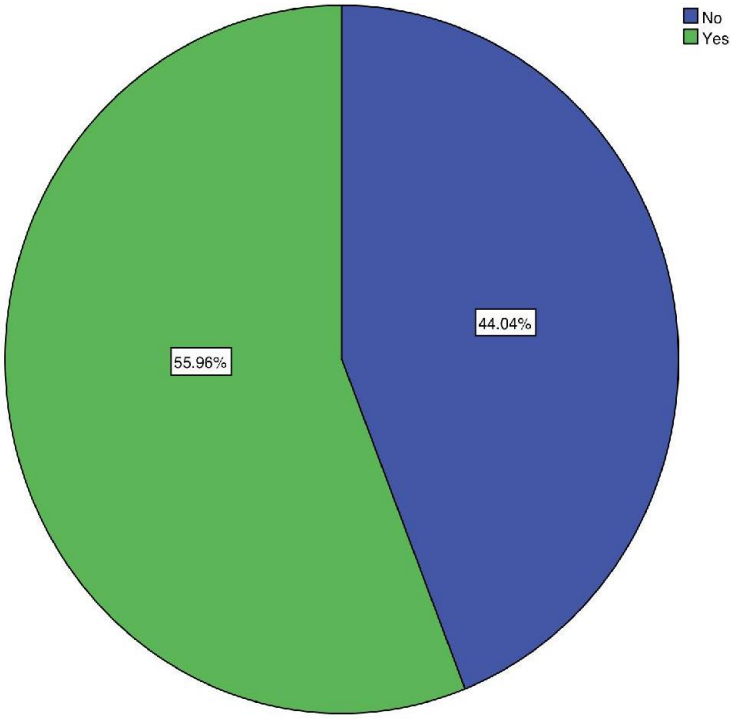

Fig.9:Pie graph depicts percentage distribution of the awareness on formal training in hand hygiene in the last three years. Blue indicates no and green yes .55.96% received formal training in hand hygiene in the last three years

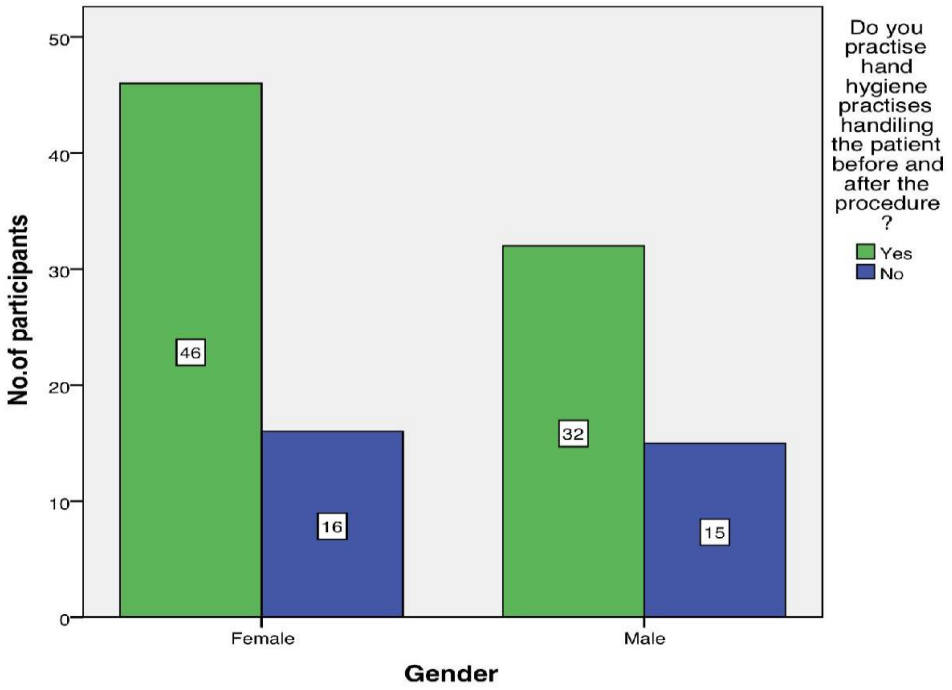

Fig.10: Bar chart represents the comparison of responses between gender and hand hygiene practices that are followed before and after the patient procedure. X axis represents gender and Y axis represents the number of participants who responded yes(green) and no (blue) . Majority of the female dentists(46-green) were aware of hand hygiene practices that are followed before and after the patient procedure. However the difference was statistically not significant. Chi square test p value = 0.484 (>0.05) statistically not significant

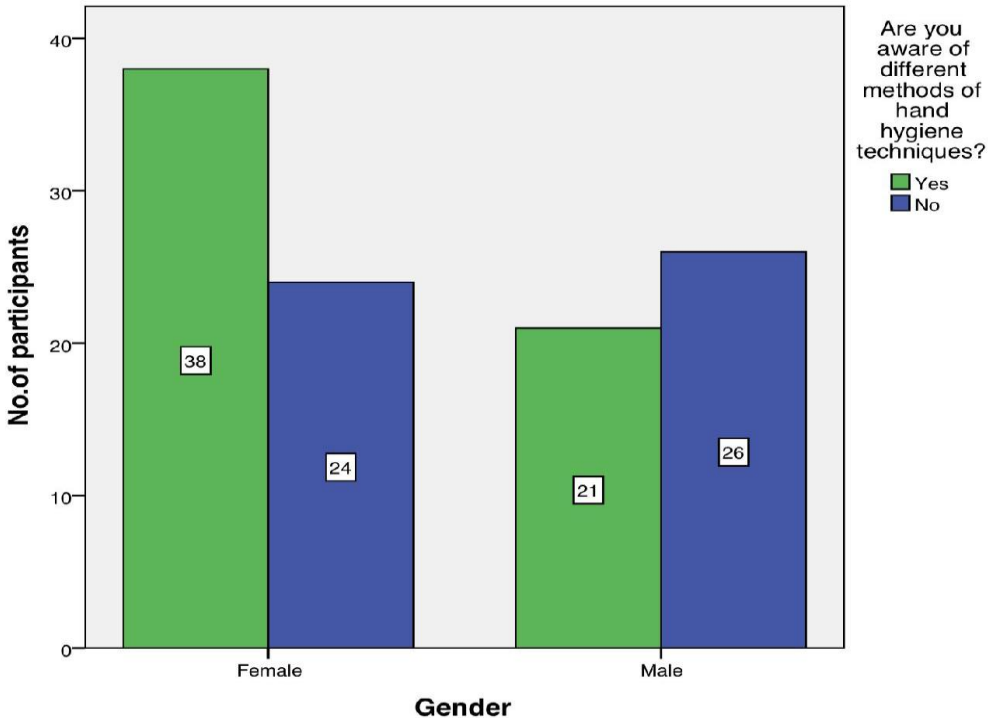

Fig.11:Bar chart represents the comparison of responses between gender and different methods of hand hygiene techniques. X axis represents gender and Y axis represents the number of participants who responded yes(green) and no(blue). Majority of female dentists(38-green)are aware of different methods of hand hygiene techniques.However the difference was statistically not significant. Chi square test p value = 0.085 (>0.05) statistically not significant

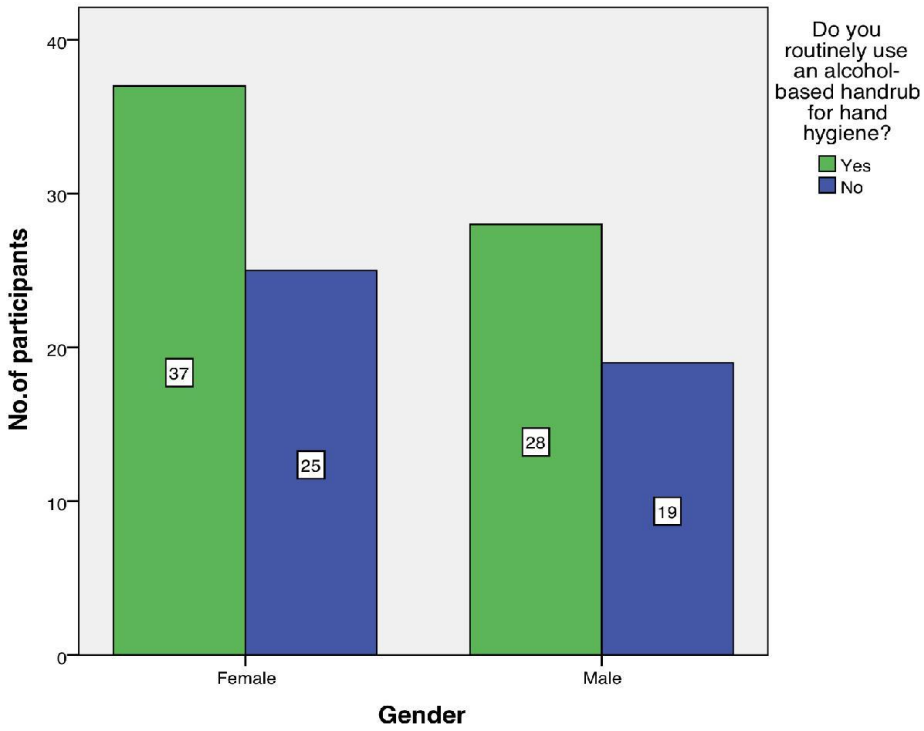

Fig.12:Bar chart represents the comparison of responses between gender and use of alcohol based handrub. X axis represents gender and Y axis represents the number of participants who responded yes(green) and no(blue). Majority of female dentists (37-green)routinely use alcohol based handrub. However the difference was statistically not significant. Chi square test p value = 0.991 (>0.05) statistically not significant

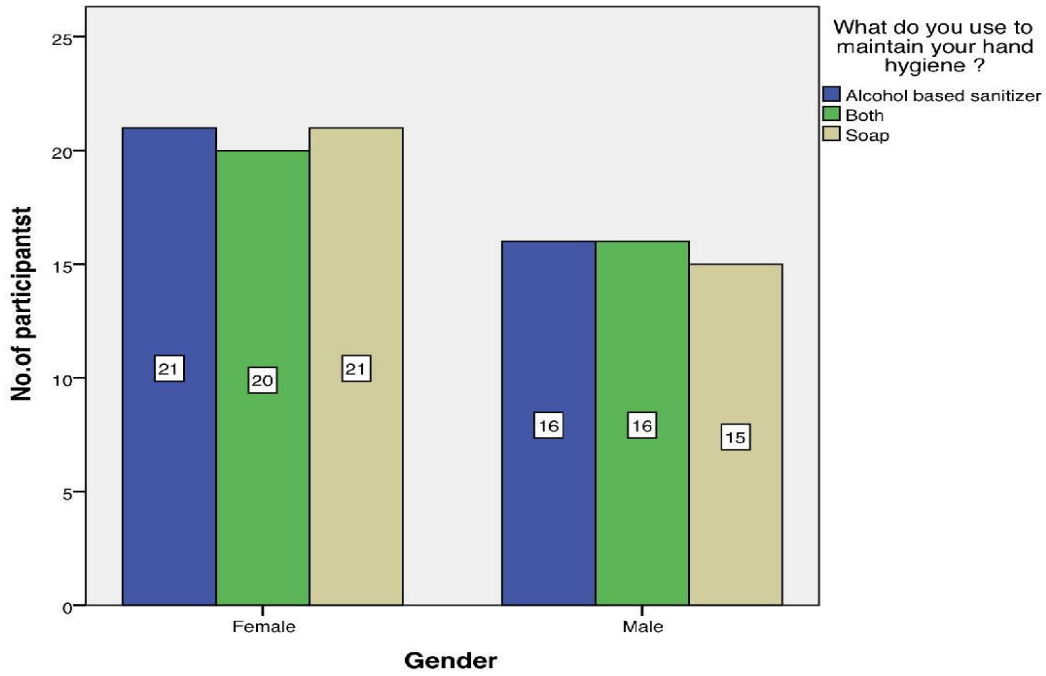

Fig.13:Bar chart represents the comparison of responses between gender and materials used to maintain hand hygiene. X axis represents gender and Y axis represents the number of participants who responded to alcohol based sanitizer (blue), both(green) and soap (brown). Majority of female dentists(21-blue)use alcohol based sanitizers and (21-brown) use soap. However the difference was statistically not significant. Chi square test p value = 0.972 (>0.05) statistically not significant