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Behaviour and perception of hand hygiene practice among dental students - A cross-sectional study

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ABSTRACT

Hand hygiene is the act of cleaning one's hands to remove oil, grease, microorganisms (or) other unwanted substances. Hand hygiene is considered as a primary practice which is used to reduce the risk and spread of infections to some extent. Washing hands with soap and water are considered the best way to remove germs. It helps in preventing diarrhea and uncomfortable intestinal diseases and reduces bacterial content on our hands. Health care professionals use alcohol-based hand disinfectant to prevent healthcare-associated infections and transmission of pathogens. Another widely used standard precautionary measure is wearing protective gloves. The main aim of this study is to assess the knowledge of hand hygiene practice of dental students. The present study is a cross-sectional study conducted among 100 dental students. The questionnaire consisted of 15 questions which were circulated among dental students through an online survey link. The questions were read carefully, and the answers were marked accordingly. The data was then collected and statistically analyzed. 93% of the participants think that hand hygiene is really necessary for day to day life. 88% of the participants think that maintaining proper hand hygiene helps us to be free from infections. The present-day dental students have very good knowledge about hand hygiene practice.

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INTRODUCTION

Hand hygiene is the act of cleaning one's hands to remove oil, grease, microorganisms (or) other unwanted substances. Washing hands with soap and water are considered the best way to remove germs Nowadays children are prone to many infectious diseases due to lack of hand hygiene. Hand hygiene is considered as a primary practice which is used to reduce the risk and spread of infections to some extent (Myers *et al.*, 2008). WHO has introduced an evidence-based concept known as [My five moments for hand hygiene] which is proved to be very effective against deadly organisms (Nair *et al.*, 2014). Health care professionals use alcohol-based hand disinfectant to prevent healthcare-associated infections and transmission of pathogens (Baier *et al.*, 2020). Another widely used standard precautionary measure is wearing protective gloves. Although wearing gloves serves as a protective function, it also creates a warm, moist environment in which harmful microorganisms can multiply, so hand hygiene is necessary to eliminate

temporary microflora and decrease local microflora, even when gloves are worn (Thivichon-Prince *et al.*, 2014). Gloves only give a false sense of safety. They can also contaminate the hands when they are penetrated (or) when they are separated. Protocols recommend that the hands should be disinfected before and after removing the gloves (da Costa *et al.*, 2016).

Studies demonstrate that poor hand hygiene practices can contribute to an increase in the community -based infections including gastrointestinal, skin and respiratory diseases. Additionally, there has been a steady increase in the global burden of infectious diseases, resulting in an estimated 13 million deaths annually. Between 1980 and 1992, deaths attributed to infectious disease increased by 22%. This is a cause for concern as we continue to see a decline in hand hygiene promotion and education. Hypertension or high blood pressure is a predominant non-communicable disease in the developing and developed world which does not have anything to do with hand hygiene.

Over the past years various research was done by our team was on osteology on the importance of posterior condylar canal (Choudhari and Thenmozhi, 2016), accessory foramens present in middle cranial fossa (Hafeez and Thenmozhi, 2016), clinical importance of styloid process (Kannan and Thenmozhi, 2016), Occurance of foramen of Huschke (Keerthana and Thenmozhi, 2016), morphometric analysis of foramen meningo-orbitale (Pratha and Thenmozhi, 2016), Gerdy's tubercle in Tibia (Nandhini *et al.*, 2018), Clinical implication of Occipital emissary formanen (Subashri and Thenmozhi, 2016), stature estimation from facial lengths (Krishna and Babu, 2016), radiation effects of mobile phone on brain (Sriram *et al.*, 2015), use of i-pads vs textbook in education (Thejeswar and Thenmozhi, 2015), on Mi RNA on hypertension (Johnson *et al.*, 2020), microRNA especially on preeclampsia patients (Sekar *et al.*, 2019), animal studies (Seppan *et al.*, 2018), and in few other fields like thyroid function and obesity (Menon and Thenmozhi, 2016), and vision impairment in amblyopia (Samuel and Thenmozhi, 2015). There is a lack of much information on the current topic of hand hygiene among dental students; hence, the main aim of this study is to assess the knowledge of hand hygiene practice of dental students.

MATERIALS AND METHODS

Study Design

A survey was conducted among dental students to evaluate their hand hygiene practice. The sampling method is simple random sampling method. The sample size of the study is 100. The participants did the survey voluntarily, and no incentives were given to them. This study was approved by the SRB of Saveetha Dental College and Hospitals and informed consent from the participants was obtained. The study was conducted in May 2020.

Survey Instrument

The survey instrument, which was a questionnaire, was prepared after an extensive review of the existing literature. The questionnaire was reviewed, and amendments were made to improve the clarity of the questions to eliminate ambiguous responses. The questionnaire consisted of a total of 15 questions. The questionnaire was shared to dental students using online survey platform.

Data Analysis

Only completed surveys were taken for analysis, and the incomplete surveys were eliminated. The statistical test used is descriptive statistics. All the responses obtained were tabulated, and the reliability of the data was checked. Bar graph with a frequency table was prepared and analyzed for each question using SPSS data analysis software.

RESULTS AND DISCUSSION

The survey population was sufficient enough to conclude the knowledge of dental students about hand hygiene practice. About 93% of the participants think that hand hygiene is really necessary for day to day life [Figure 1]. 90% of the participants think that hand washing is a part of personal hygiene [Figure 2]. 61% of the participants wash their hands with hand wash, 31% of the participants use soap for washing their hands and the remaining 8% use other things to wash their hands [Figure 3]. 35% of the participants wash their hands 5-7 times a day, 31% of the participants wash their hands 2-5 times a day, 22% of the participants wash their hands less than 2 times a day whereas the remaining 12% of the participants wash their hands more than 7 times a day [Figure 4]. 88% of the participants think that maintaining proper hand hygiene helps us to be free from infections [Figure 5]. 41% of the participants think that it takes 20 seconds for a handwash to kill the germs present in our hands, 28% of the participants think that it takes 3 seconds, 19% of the participants think that it takes 1 minute whereas the remaining 12% of the participants think that it takes 10 seconds for a hand wash to kill the germs present in our hands [Figure 6]. 90% of the participants think that washing hands with soap and water is considered to be the best way to remove germs [Figure 7]. 74% of the participants think that using hand

sanitizer frequently is bad for our health [Figure 8].

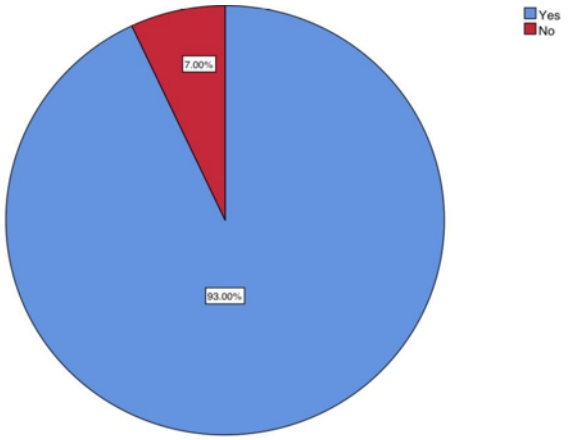

Figure 1: Hand hygiene is really necessary for day to day life. The majority (93%) agree, and few do not agree (7%).

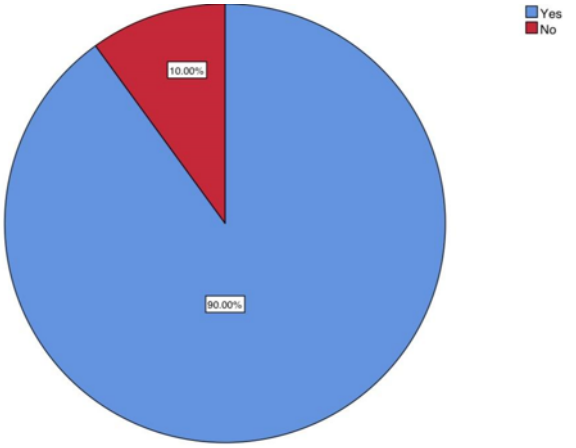

Figure 2: Hand washing part of personal hygiene. The majority (90%) agree, and few do not agree (10%).

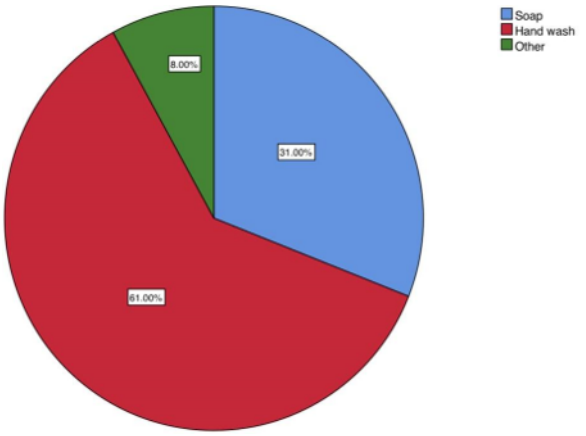

Figure 3: Awareness about washing hands. The majority wash their hands with hand wash (61%), with soap (31%) and with other things (8%).

57.58% of the participants think that wearing gloves

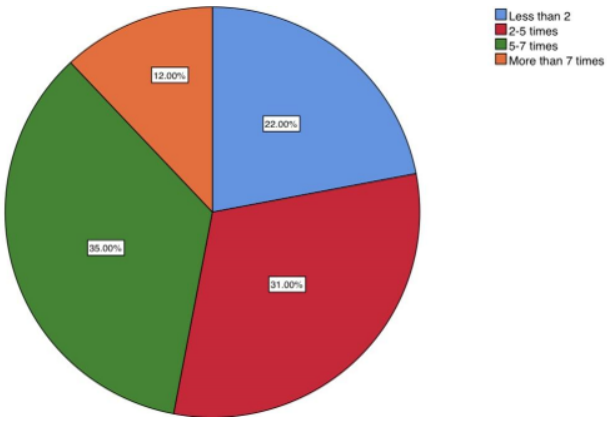

Figure 4: Awareness about frequently washing hands. 5-7 times a day (35%), 2-5 times a day (31%), less than 2 times a day (22%) and more than 7 times a day (12%).

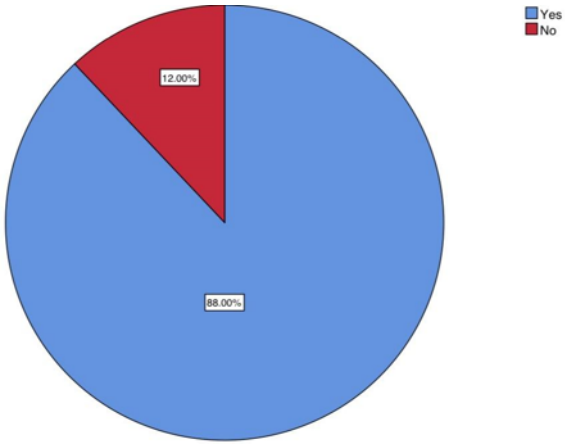

Figure 5: Awareness about maintaining proper hand hygiene. The majority (88%) are aware of proper hand hygiene, and few were not aware (12%).

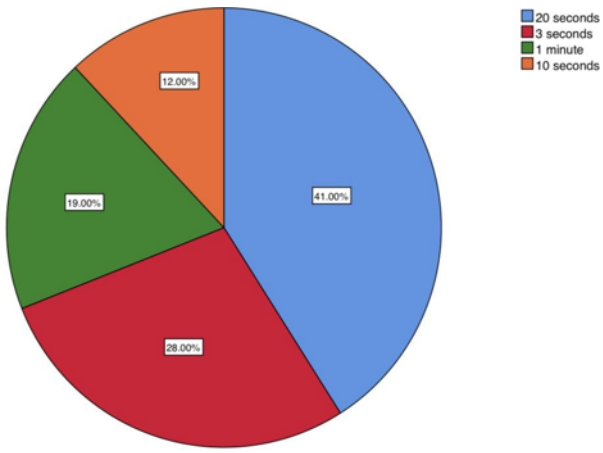

Figure 6: Awareness about the time taken by hand wash to kill the germs that are present in our hands. Within 20 seconds (41%), within 3 seconds (28%), within 1 minute (19%) and 10 seconds (12%).

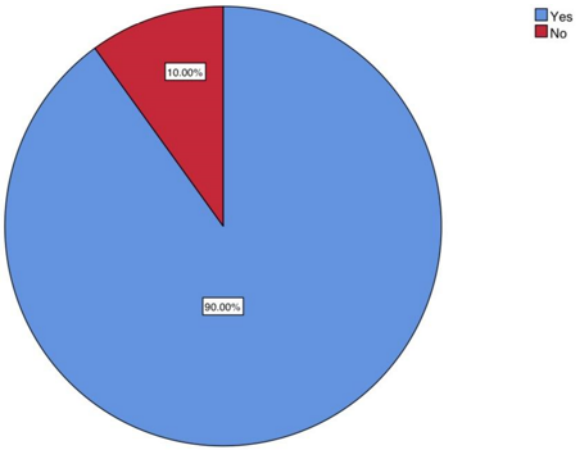

Figure 7: Washing hands with soap and water is considered to be the best way to remove germs. The majority (90%) agree, and the remaining (10%) disagree.

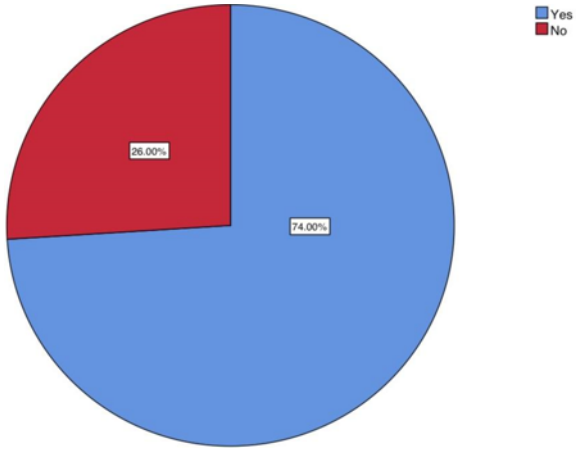

Figure 8: Frequent usage of hand sanitizer is bad for our health. The majority (74%) agree, and the remaining (26%) disagree.

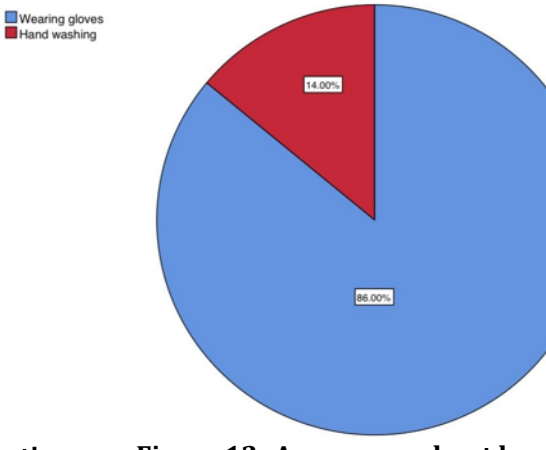

Figure 9: Single best way to prevent infections and the spread of microorganisms in a clinic. By Wearing gloves (57.58%) and by hand washing (42.42%).

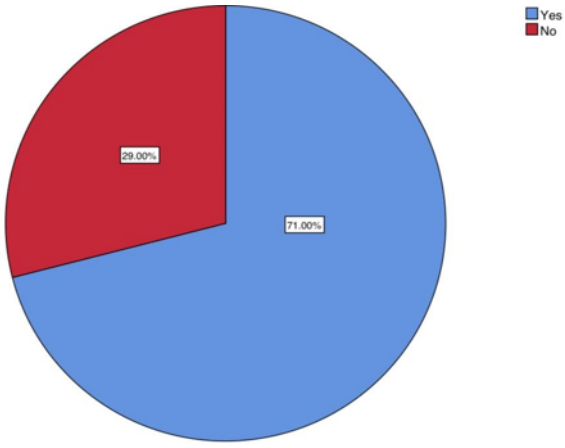

Figure 10: Knowledge about hand washing technique taught in primary classes. The majority were taught (71%), and the remaining were not taught (29%).

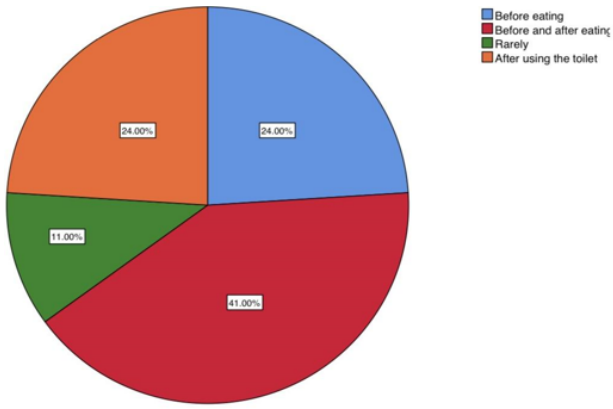

Figure 11: Knowledge about washing hands in a non-hospital setting. Before and after eating (41%), before eating (24%), after using the toilet (24%) and rarely (11%).

Figure 12: Awareness about handwashing technique proposed by WHO. The majority (86%) are aware of the technique proposed by WHO, and few are unaware (14%).

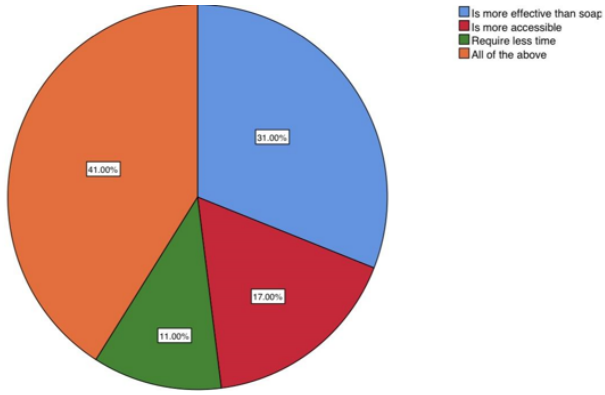

Figure 13: Alcohol-based hand rub is preferred over soap and water. Because it is more effective than soap(31%), it is more accessible(17%), it requires less time(11%) and due to all of these reasons(41%).

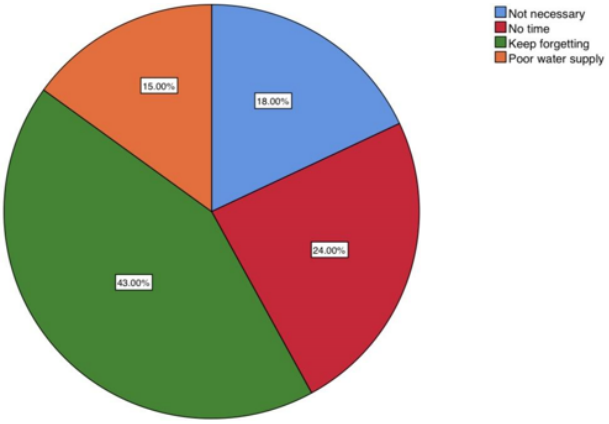

Figure 14: Knowledge about skipping hand washing at university. The majority keep forgetting (43%), not enough time (24%), not necessary (18%), and the minority skip washing hands due to poor water supply (15%).

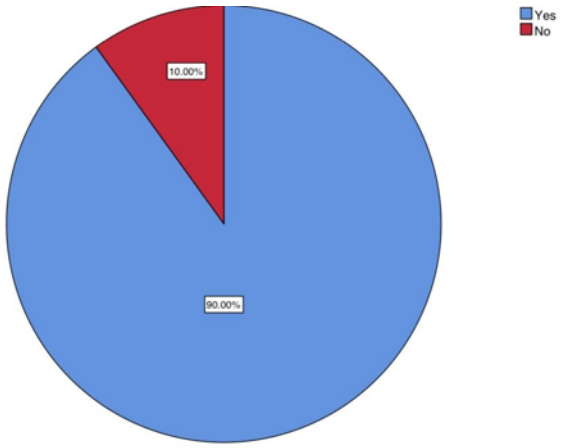

Figure 15: Satisfactory level of participants about hand hygiene. The majority(90%) are satisfied, and few are unsatisfied with their knowledge (10%).

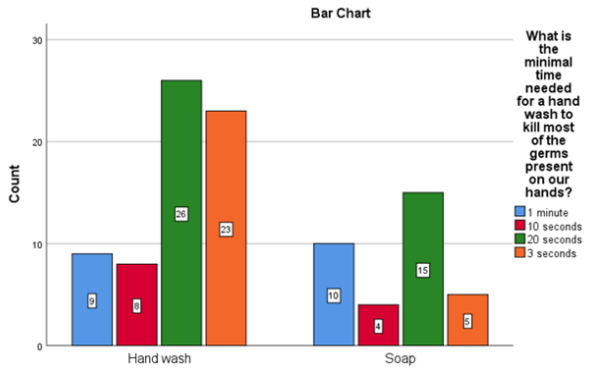

Figure 16: Bar graph representing the association between types of material used to wash hand and the time taken for hand washing

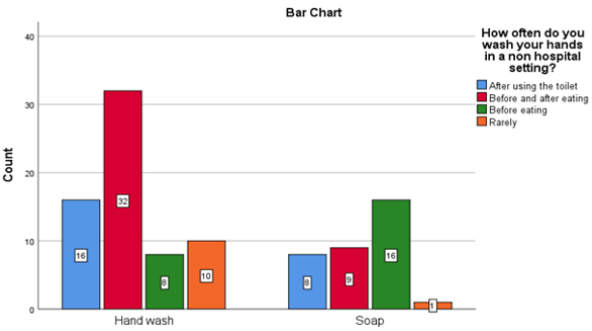

Figure 17: Bar graph representing the association between types of material used to wash hands and when they wash hands in non-hospital settings

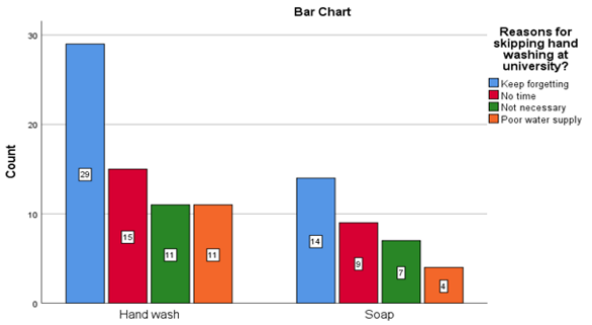

Figure 18: Bar graph representing the association between types of material used to wash hand and the reasons to skip hand washing

is the single best way to prevent infections and the spread of microorganisms in a clinic [Figure 9]. 71% of the participants were taught about hand-washing techniques in their primary classes [Figure 10]. 41% of the participants wash their hands before and after eating in a non-hospital setting, 24% of the participants wash their hands before eating, 24% of the participants wash their hands after using the toilet whereas the remaining 11% of the

participants wash their hands rarely [Figure 11]. 86% of the participants are aware of the proper hand washing technique, which was proposed by WHO [Figure 12]. 31% of the participants prefer alcohol-based hand rub because it is more effective than soap, 17% of the participants prefer alcohol-based hand rub because it is more accessible, 11% of the participants prefer alcohol-based hand rub because it requires less time whereas the remaining 41% of the participants prefer alcohol-based hand rub due to all these reasons [Figure 13]. 43% of the participants keep forgetting to wash their hands, 24% of the participants do not have enough time to wash their hands, 18% of the participants think that it is not necessary to wash their hands, whereas the remaining 15% of the participants skip washing their hands due to poor water supply [Figure 14]. 90% of the participants are satisfied with their knowledge about hand hygiene [Figure 15].

Bar graph representing an association between types of material used to wash hands and the time taken for hand washing. Chi-square test was done (P-value = 0.097 (>0.05)) and the association was found not to be statistically significant. Even though the graph is statistically insignificant, the majority of the population that is 26% think that it takes 20 seconds for a hand wash to kill the germs present on our hands whereas 15% of the population think that it takes 20 seconds for soap to kill the germs present on our hands. Chi-square test was done, and the association was found to be statistically insignificant P-value =0.097 (>0.05) [Figure 16]**.** Bar graph representing the association between types of material used to wash hands and when they wash hands in non-hospital settings. Chi-square test was done (P-value = 0.001(<0.05)) and the association was found to be statistically significant proving hand wash was used more than soap to wash hands in non-hospital settings. Chi-square test was done, and the association was found to be statistically significant, P-value =0.001(<0.05) [Figure 17]**.** Bar graph representing the association between types of material used to wash hands and the reasons to skip hand washing. Chi-square test was done, (P-value = 0,868(>0.05)) and the association was found not to be statistically significant. Even though the graph is statistically insignificant, the majority of the population keep forgetting to wash their hands due to lack of hand wash whereas 14% of the population keep forgetting to wash their hands due to lack of soap. Chi-square test was done, and the association was found not to be statistically significant P value = 0,868(>0.05) [Figure 18].

Proper hand hygiene is the single most important, simplest and least expensive means of reducing the prevalence of healthcare-associated infections and the spread of antimicrobial resistance (Mathur, 2011). In the study done by Mariwah *et al.* (2012), 20% of the participants washed their hands with soap after defecation, whereas 31% of the participants wash their hands with soap in our study. In study done by Modi (2017), 36.1% of the participants think that it takes 20 seconds for a hand rub/hand wash to kill the germs present in our hands, 33.7% participants think that it takes 10 seconds for a hand rub/hand wash to kill the germs present in our hands, 23 .7% of the participants think that it takes 1 minute for a hand rub/hand wash to kill the germs present in our hands and 6.5% of the participants think that it takes 3 seconds for a hand rub/hand wash to kill the germs present on the hands whereas in our study 41% of the participants think that it takes 20 seconds for a hand wash to kill the germs present in our hands, 12% of the participants think that it takes 10seconds for a hand wash to kill the germs present in our hands, 19% of the participants think that it takes 1 minute for a hand wash to kill the germs present on the hands and 28% of the participants think that it takes 3 seconds for a hand wash to kill the germs present in our hands.

In a study done by Zil-E-Ali *et al.* (2017), 13% of the participants wash their hands before eating in a non-hospital setting, 17.1% of the participants wash their hands before and after eating in a non-hospital setting, 0.6% of the participants wash their hands rarely in a non-hospital setting, 12.4% of the participants wash their hands after using the toilet in a non-hospital setting, and 56.8% of the participants wash their hands in all type of scenarios whereas, in our study, 24% of the participants wash their hands before eating in a non-hospital setting, 41% the participants wash their hands before and after eating in a non-hospital setting, 11% of the participants wash their hands rarely in a non-hospital setting, 24% of the participants wash their hands after using the toilet in a non-hospital setting.

In a study done by Ergin *et al.* (2011), 63.7% of the participants think that hand washing is not necessary, 2.3% of the participants stated that they don't get enough time for washing their hands, Whereas, in our study, 18% of the participants think that hand washing is not necessary, 24% of the participants stated that they don't get enough time for washing their hands.

Limitations of the study

This is a cross-sectional study done only among 100 dental students. Dental students are not much aware of the handwashing technique proposed by WHO. The gender of the participants was not men-

tioned in this study.

Future scope

Automated monitoring and real-time feedback help to improve hand hygiene performance of people.

CONCLUSION

From this study, we conclude that the present-day dental students have very good knowledge about hand hygiene practices, but they were unaware of the handwashing technique proposed by WHO. Hand hygiene is considered as an important part in a dentist's life because it reduces the risk of transmission of harmful microorganisms from the provider to the patient.

ACKNOWLEDGEMENT

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The authors declare no funding support for this study.

Conflict of Interest

The authors reported the conflict of interest while performing this study to be nil.

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