



Knowledge, Attitude And Practice Of Infection Control Among Dental Students In Chennai

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Abstract

INTRODUCTION: Infection control has been a major concern among the health care system and workers particularly among dentists as they are at high risk of getting infected. Due to the usage of sharp equipment and needles and also exposure to various fluids and blood makes them more prone to infections like HIV, hepatitis B, C. The aim of the study is to assess the knowledge, attitude and practice of infection control among dental students in chennai.

MATERIALS AND METHODS: A cross- sectional study was done for 102 responses that were collected online (via google form) from dental students in chennai. A self structured, pre-validated questionnaire was distributed among the subjects via email. Statistical analysis was performed in SPSS software version- 23. Descriptive and inferential statistics were performed.

RESULT: From the study, about 40.2% are postgraduates and 59.80% of undergraduates have responded and 30.39% of postgraduates are aware about the practical knowledge of infection control since their experience is more in comparison with undergraduates. About 33.03% postgraduates prefer social distance, 39.22% of postgraduates sterilize the equipment before use. There is a significant difference in the knowledge, attitude and practice of infection control among undergraduate and postgraduate dental students ($p < 0.05$).

CONCLUSION: Postgraduates have significant practical knowledge on infection control than undergraduate dental students. The knowledge and practice of infection control to be inculcated among undergraduate dental students.

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KEYWORDS: Attitude, practical knowledge, infection control, equipments, innovative technique

INTRODUCTION

A dental clinic is a place where transmission of diseases occurs more easily than in many other healthcare settings, as dentists and their auxiliary staff have a high risk of exposure to cross-infection with blood-borne pathogens through direct contact with patients' blood, saliva, and other potentially infectious materials during the course of routine dental procedures (Taiwo and Aderinokun, 2002). The unique nature of dental practice, involving the use of sharp instruments, high-speed handpieces that generate aerosols, and frequent contact with mucous membranes, creates multiple potential pathways for pathogen transmission that require vigilant attention to infection control protocols. Due to the exchange of various fluids and blood during dental procedures, even minimal lack of attention to proper infection control measures can cause greater damage for both patients and practitioners, potentially leading to serious, life-altering consequences (Silva et al., 2018). Blood spill and blood exposure incidents in the dental setting can increase the high risk of transmission of HIV, the virus that causes AIDS; Hepatitis B and C, which can lead to chronic liver disease and liver cancer; tuberculosis, a potentially fatal respiratory infection; and other deadly diseases which are spread by blood exposure and contact with infected bodily fluids. The consequences of such infections extend beyond the immediate health impact to include psychological distress, social stigma, economic burden, and potential legal liability for practitioners and healthcare institutions.

The measures for the control of infectious diseases in dental practice need to be taken seriously and implemented consistently, as dentists routinely use sharp instruments including needles, scalers, and surgical blades that can cause percutaneous injuries, and in invasive procedures such as surgery, periodontal treatment, and endodontic therapy, various pathogens are present in the treatment field (Harrison, no date; Bernardi, 2002). Accidental needle stick injuries with syringes may cause severe deadly disease transmission, representing one of the most significant occupational hazards in dental practice, as a single puncture wound can introduce blood-borne pathogens directly into the healthcare worker's bloodstream (Chitaladze and Kazakhashvili, 2020). The implementation of standard precautions, including wearing masks to filter airborne pathogens, gloves to provide a barrier against blood and body fluids, protective eyewear to prevent splashes to the mucous membranes of the eyes, and surgical scrubs or gowns to protect clothing and skin from contamination, is essential to avoid the exposure of contagious communicable disease from spreading between patients and providers (Lee et al., 2009; Chitaladze and Kazakhashvili, 2020). These protective measures, when consistently and correctly used, form the foundation of infection control in dentistry and have been demonstrated to significantly reduce the risk of pathogen transmission, protecting both dental healthcare workers and their patients from potentially devastating infections.

However, in spite of the documented effectiveness of these standard protocols and their endorsement by professional organizations and regulatory bodies worldwide, the reality observed in clinical practice shows us that there is very low compliance with these measures among dental practitioners in many settings, creating ongoing risks for disease transmission (Faller, Sampathkumar and Ung, 2020). This gap between recommended practices and actual behaviors represents a critical challenge for patient safety and occupational health that requires urgent attention and intervention through education, training, monitoring, and enforcement. The problem is compounded by the fact that the drugs available for the treatment of these infections are limited due to transportation challenges that affect supply chains, economic problems of the country that restrict healthcare budgets, and issues with drug procurement and distribution systems that can leave healthcare workers without access to post-exposure prophylaxis when accidents occur. Even when treatment is available, the costs can be prohibitive for affected individuals, and the physical and emotional burden of managing chronic infections such as HIV and hepatitis can be devastating, affecting quality of life, employment, and relationships for years after the initial exposure. These realities underscore the fundamental importance of prevention through strict adherence to infection control protocols, as preventing infection in the first place is far preferable to treating established disease, regardless of treatment availability.

The necessary knowledge, attitude, and practice regarding the skills of infection prevention can give way to better management of the limited resources available in the health sector for both health providers and their customers, ensuring that available supplies are used effectively and that protective measures are implemented consistently even when resources are constrained (Adejumo and Dada, 2013). Knowledge encompasses understanding of transmission routes, proper use of personal protective equipment, correct procedures for instrument processing and surface disinfection, and appropriate management of occupational exposures. Attitude reflects the personal commitment to infection control and the recognition of its importance for patient

and provider safety, including willingness to invest time and effort in implementing protective measures. Practice represents the actual implementation of infection control measures in daily clinical work, including the consistent use of personal protective equipment, proper handling and disposal of sharps, and adherence to protocols for instrument sterilization and surface disinfection. When all three components are aligned and positive, infection control practices are optimized and risks are minimized, creating a safer environment for everyone in the dental setting.

Unfortunately, despite the considerable emphasis placed on standardized infection control protocols in dental education and professional guidelines, it appears that only a few dentists consistently follow these procedures in their dental practices, with many demonstrating gaps in knowledge, negative attitudes, or inconsistent implementation of recommended practices (Singh et al., 2020). This concerning reality highlights the need for ongoing research to understand the barriers to compliance, identify factors associated with better adherence, and develop effective interventions to improve infection control practices across all levels of dental care delivery. Factors contributing to poor compliance may include inadequate training, lack of resources, time constraints, forgetfulness, discomfort with protective equipment, underestimation of risk, and cultural factors that influence attitudes toward infection control.

Our team has extensive knowledge and research experience in the fields of infection control, dental education, and public health, which has translated into high quality publications in peer-reviewed journals, providing a strong foundation for the current investigation (Sridharan et al., 2019; Chellapa et al., 2020; Mathew et al., 2020; Samuel, Acharya and Rao, 2020; Vikneshan et al., 2020; Barma et al., 2021; Ezhilarasan et al., 2021; Gowhari Shabgah et al., 2021; Kamala et al., 2021; Muthukrishnan, 2021a, 2021b; Samuel, 2021; Sekar and Auxzilia, 2021; Srinivasan Raj Samuel, Kuduruthullah, et al., 2021; Srinivasan Raj Samuel, Mathew, et al., 2021; Srinivasan R. Samuel et al., 2021)(J et al., 2018; Wahab et al., 2018; Mudigonda et al., 2020; R et al., 2020). The guideline that includes standard procedures for infection control in dental practice aims to ensure safety in the working environment and to prevent the spread of occupational and nosocomial infections among practitioners and their patients, protecting both groups from the serious consequences of healthcare-associated infections (Jahan, 2019; Singh et al., 2020). These guidelines are based on scientific evidence and expert consensus and provide a framework for safe practice that should be followed by all dental healthcare workers (Gopalakannan, Senthilvelan and Ranganathan, 2012; Campeau et al., 2014; Parthasarathy et al., 2016; Dhinesh et al., 2017; Sathish and Karthick, 2020).

The purpose of the current study was to analyze the knowledge, attitude, and practice of infection control among dental students in Chennai, a population that represents the future of the dental profession and whose training and habits will shape infection control practices for decades to come. By assessing the current state of knowledge, attitudes, and practices among students at various stages of their education, this study aims to identify gaps in understanding, areas where attitudes may be suboptimal, and practices that require improvement. The findings will provide evidence to guide curriculum development, targeted educational interventions, and institutional policies aimed at enhancing infection control compliance and ultimately improving safety for both dental providers and their patients. Understanding the factors that influence infection control behaviors among students is essential for developing effective educational strategies that will translate into lifelong habits of safe practice, ensuring that the next generation of dentists is well-prepared to protect themselves and their patients from the risks of healthcare-associated infections.

MATERIALS AND METHODS

Study Design and Setting

A cross-sectional study design was employed to assess the knowledge, attitude, and practice of infection control measures among undergraduate and postgraduate dental students in Chennai, India. This design is particularly appropriate for capturing a snapshot of current perspectives and behaviors at a specific point in time and for identifying factors associated with infection control compliance across different levels of dental education. The cross-sectional approach allows for efficient data collection from a defined population and facilitates the examination of relationships between educational level and various indicators of infection control knowledge, attitudes, and practices. The study was conducted among dental students enrolled in undergraduate and postgraduate programs at dental colleges in Chennai, representing a population at various stages of professional training whose infection control practices have direct implications for patient safety and occupational health.

Participant Selection and Sampling

The study population consisted of undergraduate and postgraduate dental students currently enrolled in dental colleges across Chennai, India. This population was selected because dental students represent the future of the dental profession, and their training and habits will shape infection control practices for decades to come. Furthermore, students at different educational levels may demonstrate different levels of knowledge, attitudes, and practices based on their exposure to infection control education and clinical experience. Both undergraduate students, who are in the early to middle stages of their dental education, and postgraduate students, who have completed their basic training and are specializing in specific areas of dentistry, were included to allow for comparison across educational levels and to identify any progression in infection control competence with advancing training.

Participants were recruited through convenience sampling by distributing the survey link to dental student email lists and through professional networks. The sample size was determined based on practical considerations of feasibility within the available resources and timeline, combined with the need to obtain sufficient statistical power for detecting meaningful associations between educational level and infection control outcomes. A target of approximately 200-300 responses was established to ensure adequate representation across educational levels and to enable robust statistical analysis.

Questionnaire Development and Validation

A pre-validated and reliable questionnaire was utilized for this study, containing 9 questions specifically designed to assess knowledge, attitude, and practice of infection control among dental students (Annexure 1). The use of a pre-validated instrument enhances the reliability and validity of the data collected and allows for meaningful comparison of findings across different studies and populations. The questionnaire was developed based on a thorough review of existing literature on infection control in dental settings, consultation with infection control experts, and consideration of the specific objectives of this study.

The internal consistency of the questionnaire was assessed using Cronbach's alpha, a statistical measure that evaluates how closely related a set of items are as a group and indicates the reliability of the scale. The Cronbach's α value was found to be 0.83, which is well above the commonly accepted threshold of 0.70 for good internal consistency, indicating that the questionnaire items reliably measure the underlying constructs of knowledge, attitude, and practice related to infection control. This high level of internal consistency provides confidence that the questionnaire yields consistent and reproducible results when administered to different populations or at different time points.

Questionnaire Content and Domains

The questionnaire contained 9 question items carefully selected to cover key aspects related to infection control in dental practice. The items were organized to assess three primary domains: knowledge, attitude, and practice. Knowledge items evaluated participants' understanding of infection transmission routes, proper use of personal protective equipment, correct procedures for instrument processing and surface disinfection, and appropriate management of occupational exposures such as needle stick injuries. These questions assessed the factual understanding that forms the foundation for safe infection control practices.

Attitude items assessed participants' personal commitment to infection control, their recognition of its importance for patient and provider safety, their willingness to invest time and effort in implementing protective measures, and their perceptions of barriers and facilitators to infection control compliance. These questions captured the motivational and affective components that influence whether knowledge is translated into action.

Practice items evaluated participants' self-reported implementation of infection control measures in their daily clinical work, including the consistent use of personal protective equipment such as masks, gloves, and eyewear; proper handling and disposal of sharps; adherence to protocols for instrument sterilization and surface disinfection; and compliance with standard precautions in all patient encounters. These questions provided insight into actual behaviors and the extent to which knowledge and attitudes are translated into practice.

The questionnaire was designed to be concise yet comprehensive, ensuring that participants could complete it within a reasonable time frame while providing meaningful data for analysis. The average time taken by participants to complete the questionnaire was approximately 8 minutes, indicating that the instrument was

appropriately concise and did not impose an excessive burden on respondents. This reasonable completion time likely contributed to good response rates and the quality of data collected.

Data Collection Procedure

The questionnaire was distributed to the participants electronically via Google Forms, which were sent to their respective institutional email addresses, ensuring efficient and widespread distribution while maintaining appropriate social distancing measures during the data collection period. Google Forms offers several significant advantages for data collection, including widespread accessibility through any internet-connected device, automated data entry that eliminates manual transcription errors, and convenience for participants who can complete the survey at their own pace and at a time and location of their choosing. The use of email distribution ensured that all dental students had equal opportunity to participate, regardless of their location or access to other communication platforms. The electronic format also facilitated anonymous responses, encouraging honest and candid answers without fear of judgment or repercussion, which is particularly important when assessing sensitive topics such as compliance with recommended practices.

The survey link was accompanied by an introductory message explaining the purpose of the study, the voluntary nature of participation, assurances of confidentiality and anonymity, and instructions for completing the questionnaire. Participants were informed that their responses would be used for research purposes only and that no individual identifying information would be collected or reported. Informed consent was implied by the voluntary completion and submission of the questionnaire.

Data Management and Statistical Analysis

Upon completion of data collection, which continued until the target sample size was achieved, the responses from Google Forms were exported directly into a Microsoft Excel spreadsheet, ensuring accurate transfer without manual data entry errors that could compromise data quality. The data were carefully reviewed for completeness and consistency, with any incomplete responses or obvious errors flagged for review and, where necessary, excluded from analysis to maintain data integrity. The cleaned and coded data were then imported into the Statistical Package for the Social Sciences (SPSS) software version 23.0 for Windows (IBM, Chicago, USA) for comprehensive statistical analysis. SPSS is a powerful and widely used statistical software package that offers a comprehensive range of descriptive and inferential statistical procedures suitable for health research, with user-friendly interfaces and robust analytical capabilities.

Descriptive statistics were performed to present the frequency distribution of the options for each question item, providing a clear and detailed overview of the sample characteristics and the patterns of responses across the study population. Frequencies and percentages were calculated for all categorical variables, providing a clear picture of how participants responded to each question and allowing for initial identification of trends, patterns, and areas of consensus or divergence within the population. These descriptive statistics form the foundation for understanding the knowledge, attitudes, and practices of the study population regarding infection control and serve as the basis for more complex inferential analyses.

Additionally, Pearson's chi-square test of association was performed to examine the influence of educational level on the knowledge, attitude, and practice of infection control measures among the participants. This statistical test is appropriate for analyzing the relationship between two categorical variables, in this case, educational level (categorized as undergraduate versus postgraduate students) and various indicators of infection control knowledge, attitudes, and practices. The chi-square test compares the observed frequencies in each category of the contingency table with the frequencies that would be expected if there were no association between the variables, calculating a test statistic that follows a chi-square distribution under the null hypothesis of independence. A p-value of less than 0.05 was considered to be statistically significant, indicating that the observed association is unlikely to have occurred by chance alone and providing evidence for a real relationship between educational level and infection control outcomes. This threshold is conventional in health research and provides a balance between detecting meaningful associations and avoiding false-positive findings that could lead to incorrect conclusions.

The results of the chi-square analyses will identify whether educational level is a significant determinant of infection control knowledge, attitudes, and practices, providing valuable insights that can guide targeted educational interventions and curriculum development. If significant associations are found, this would suggest that infection control competence develops with advancing education and that postgraduate training effectively

enhances knowledge and promotes positive attitudes and practices. Conversely, if no significant associations are found, this would indicate that knowledge and practices are similar across educational levels and that other factors such as individual motivation, institutional culture, or personal experience may be more important determinants of infection control behaviors. The combination of descriptive and inferential statistical analyses provides a comprehensive and nuanced understanding of the factors influencing infection control among dental students and generates robust evidence to inform educational policy, curriculum design, and infection control programs in dental institutions.

RESULTS

Demographic Distribution of Participants

According to the data collected from 103 dental students participating in this study, the majority of responses were received from undergraduate students, who comprised approximately 59.08% of the total sample, while postgraduate students represented about 40.02% of participants (Figure 1). This distribution reflects the larger enrollment numbers typically found in undergraduate programs compared to postgraduate specialty training, and provides adequate representation from both educational levels to enable meaningful comparative analysis. The undergraduate students, while larger in number, have relatively less clinical experience and exposure to infection control practices in real-world settings compared to their postgraduate counterparts, who have completed their basic training and are engaged in specialized clinical practice. This difference in experience levels between the two groups forms the basis for examining how education and clinical exposure influence knowledge, attitudes, and practices related to infection control.

Knowledge, Attitude, and Practice Patterns

The results of this study demonstrate that postgraduate students generally exhibit greater awareness and more positive attitudes and practices regarding infection control compared to undergraduates, suggesting that advanced training and clinical experience contribute to enhanced infection control competence. However, the larger number of undergraduate participants provides a comprehensive picture of the baseline knowledge and practices among students at earlier stages of their dental education, identifying areas where additional training and reinforcement may be needed.

Regarding hand hygiene practices, approximately 43.14% of all participants reported that they sanitize their hands frequently during clinical activities, indicating that a substantial minority of dental students consistently practice this fundamental infection control measure (Figure 2). Hand hygiene is widely recognized as one of the most effective and important measures for preventing healthcare-associated infections, and this finding suggests that while many students have adopted this practice, there remains significant room for improvement, with over half of participants not reporting frequent hand sanitization.

In the context of the COVID-19 pandemic, which has heightened awareness of infection transmission in healthcare settings, most participants, approximately 48.04%, reported being comfortable in following social distancing measures to prevent COVID-19 from spreading in the dental clinical environment (Figure 3). This finding indicates that nearly half of the students have adapted to the social distancing requirements necessitated by the pandemic, though a significant portion may still struggle with consistent implementation of this infection control measure.

A strong majority of participants, approximately 61.76%, stated that they sterilize the equipment used on patients, indicating that most dental students recognize the importance of proper instrument processing and report adherence to sterilization protocols (Figure 4). This finding is encouraging, as proper sterilization of dental instruments is critical for preventing transmission of blood-borne pathogens and other infectious agents between patients. However, the fact that nearly 40% of students did not affirm consistent equipment sterilization suggests that reinforcement of this essential practice is needed.

Regarding personal hygiene awareness, approximately 41.18% of participants reported being conscious about their hygiene, indicating that less than half of the students consistently attend to this aspect of infection control (Figure 5). Personal hygiene, including proper hand hygiene, appropriate attire, and attention to personal cleanliness, forms the foundation of infection control and is essential for protecting both patients and providers. A notable finding was that approximately 72.55% of participants reported being aware of the symptoms of COVID-19, indicating that the majority of dental students have acquired knowledge about this novel coronavirus and its clinical manifestations (Figure 6). This high level of awareness likely reflects the extensive public health messaging and professional education that has accompanied the pandemic, and positions dental students to recognize potential COVID-19 cases and take appropriate precautions.

Educational Level Comparisons

When examining awareness of how to overcome infection, significant differences were observed between educational levels, with approximately 36.27% of undergraduates and 18.63% of postgraduates reporting awareness of infection management strategies (Figure 7). This finding, showing higher reported awareness among undergraduates, may initially seem counterintuitive, but could reflect greater confidence or recent educational emphasis on infection control in undergraduate curricula, or differences in how the two groups interpret the question about "overcoming infection."

Regarding specific infection control practices, among undergraduate students, approximately 19.61% reported sanitizing as their primary infection control measure, while 20.59% reported wearing masks and gloves (Figure 8). Among postgraduate students, approximately 13.73% reported sanitizing and 14.71% reported wearing masks and gloves as their primary measures (Figure 8). These findings indicate that undergraduate students report slightly higher rates of these specific infection control practices compared to postgraduates, which may reflect more recent training, different clinical responsibilities, or differences in self-reporting tendencies.

Perceptions of Oral Infections

Regarding perceptions of the most common type of infection in the oral region, notable differences were observed between educational levels. According to postgraduate students, approximately 14.71% identified pathogenic infection as the most common type affecting the oral cavity, reflecting a nuanced understanding of microbial causes of oral disease (Figure 9). In contrast, among undergraduate students, approximately 24.51% identified bacterial infection as the most common type, indicating a more specific focus on bacterial etiologies (Figure 9). These differences in perception may reflect the more advanced microbiological and clinical training received by postgraduate students, who recognize the broader category of pathogenic infections encompassing viral, fungal, and other microbial causes, while undergraduates focus more specifically on bacterial infections, which are indeed common but represent only one category of oral pathogens.

Statistical Significance

The statistical analysis revealed a significant difference in the knowledge, attitude, and practice of infection control among undergraduate and postgraduate dental students, with p-value less than 0.05 indicating that the observed differences between educational levels are unlikely to have occurred by chance alone. This significant finding confirms that educational level is an important determinant of infection control competence and suggests that the additional training and clinical experience gained during postgraduate education meaningfully influences students' understanding and implementation of infection control measures. The significant difference between groups underscores the importance of ongoing infection control education throughout dental training and highlights the need for reinforcement of key concepts and practices at all educational levels.

Summary of Findings

In summary, the results of this study demonstrate that while both undergraduate and postgraduate dental students show variable levels of infection control knowledge, attitudes, and practices, significant differences exist between educational levels. Postgraduate students generally demonstrate more sophisticated understanding of infection types and may have different patterns of practice compared to undergraduates. Key findings include moderate levels of hand sanitization practice (43.14%), comfort with social distancing (48.04%), strong commitment to equipment sterilization (61.76%), and high awareness of COVID-19 symptoms (72.55%). Areas requiring improvement include personal hygiene consciousness (41.18%) and consistent implementation of infection control measures among all students. The significant difference between undergraduate and postgraduate students supports the value of advanced training and clinical experience in developing infection control competence, and identifies opportunities for strengthening infection control education at all levels of dental training.

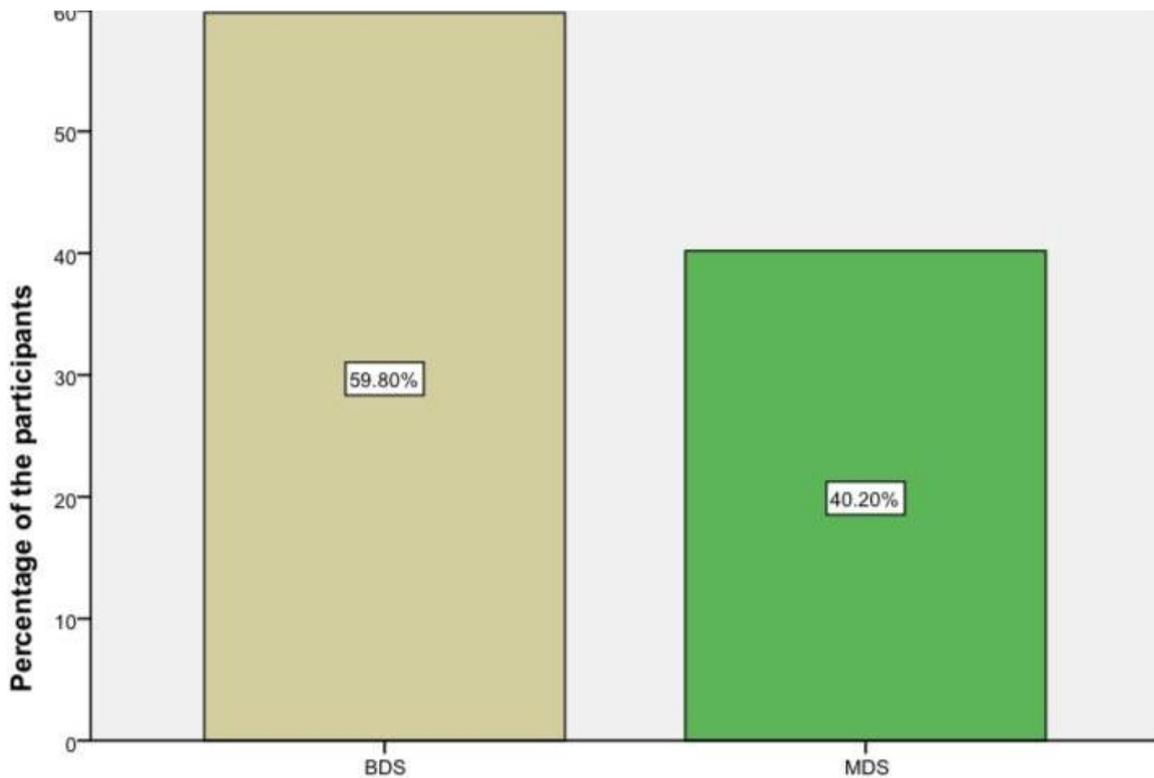


Figure 1: Bar graph depicts the percentage of undergraduate (59.80%) and postgraduate (40.20%) participants. In which beige ‘represents’ BDS and ‘green’ represents MDS.

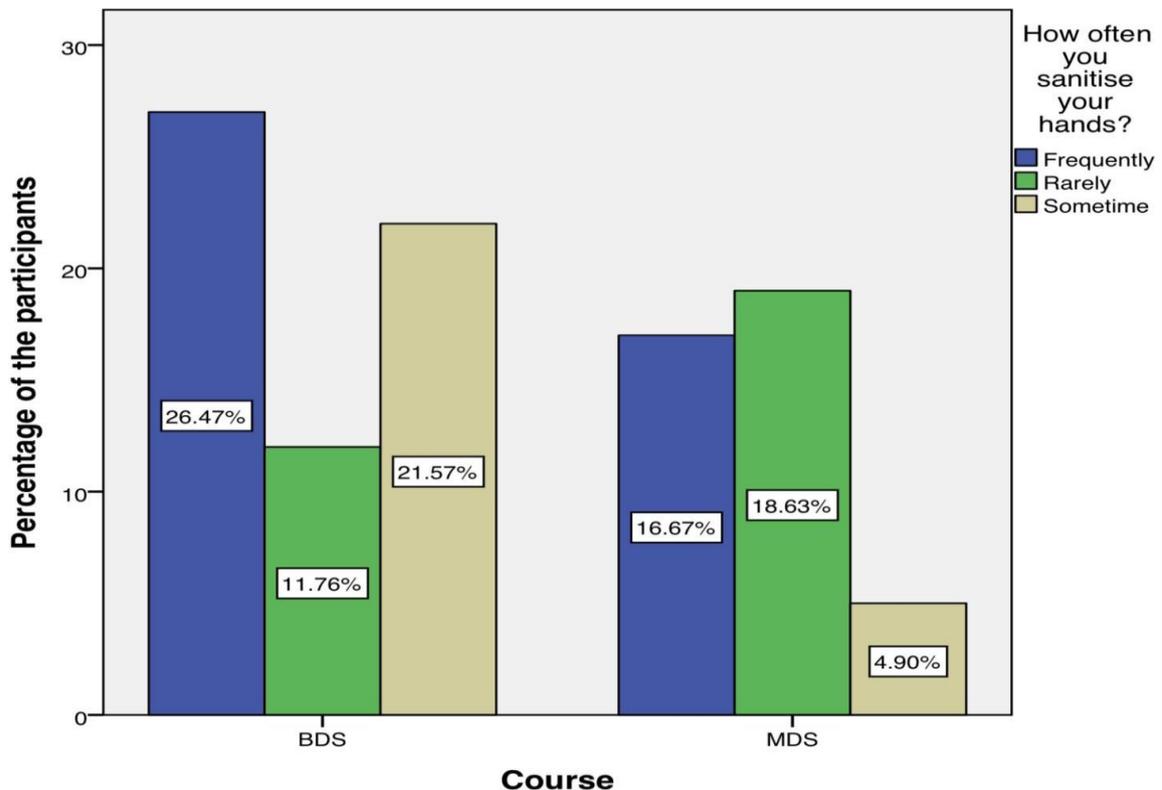


Figure 2 Bar graph represents the percentage of the participants about how often they sanitise their hand. X axis represents the course opted by the participants and Y axis represents the percentage of the participants. Blue colour represents “frequently”, green colour represents “rarely” and beige colour represents “sometime”. However undergraduates frequently wash their hands in comparison with postgraduates. This difference was statistically significant (chi-square test; p value = 0.003)

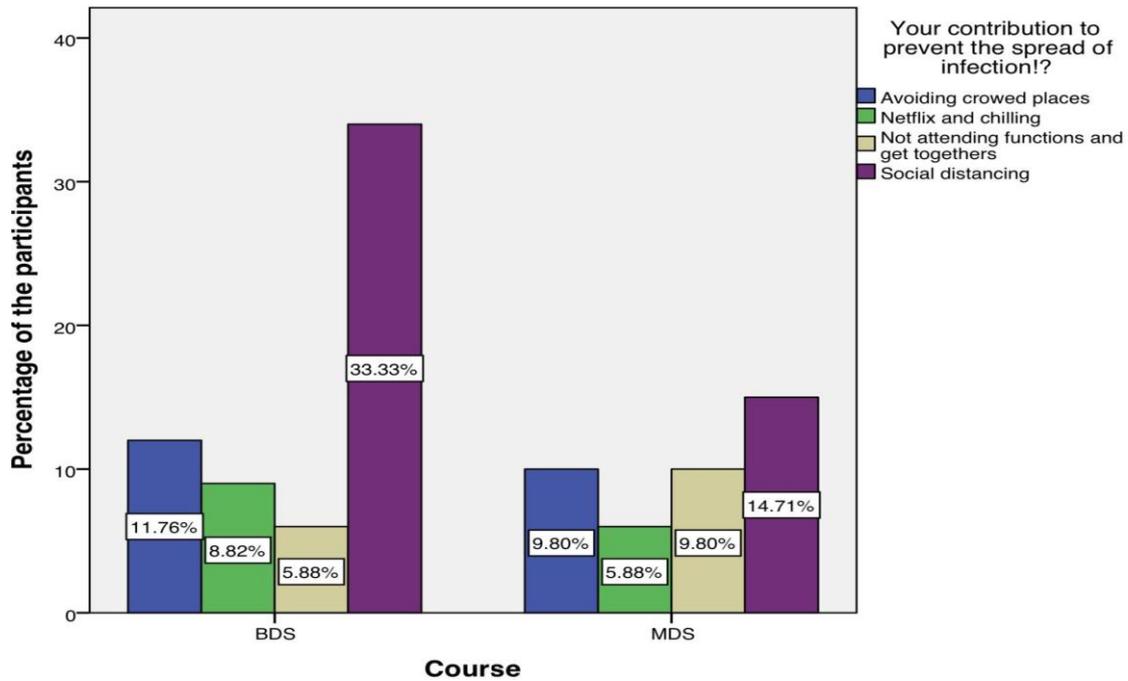


Figure 3: Bar graph represents the percentage of participants' contribution to prevent the spread of infection. X axis represents the course opted by the participants and Y axis represents the percentage of the participants. Blue colour represents “avoiding crowded places”, green colour represents “netflix”, beige colour represents “not attending functions and get together” and purple represents “social distancing”. However both undergraduates and postgraduates prefer social distance. This difference was statistically significant (chi-square test; p value = 0.041)

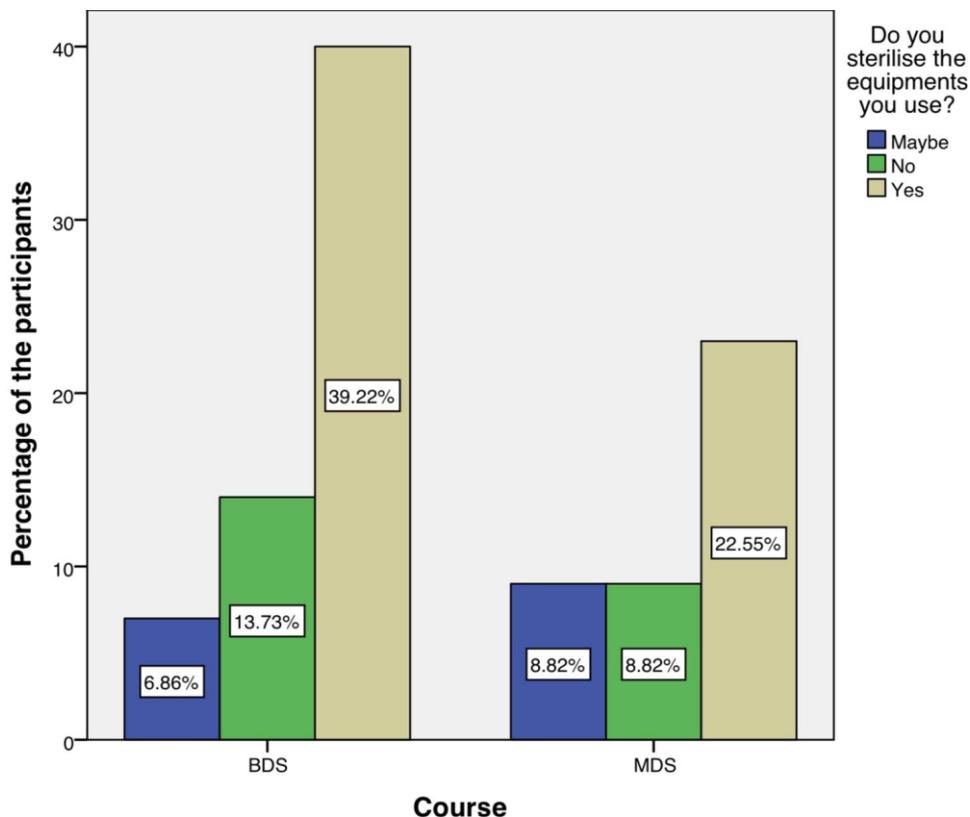


Figure 4: Bar graph represents the percentage of participants sterilizing the equipment before using it on the patients. X axis represents the course opted by the participants and Y axis represents the percentage of the participants. Blue colour represents “maybe”, the green colour represents “no” and the beige colour represents “yes”. However both undergraduates and postgraduates sterilize their equipment before using it on the patients . This difference was statistically significant (chi-square test; p value = 0.038)

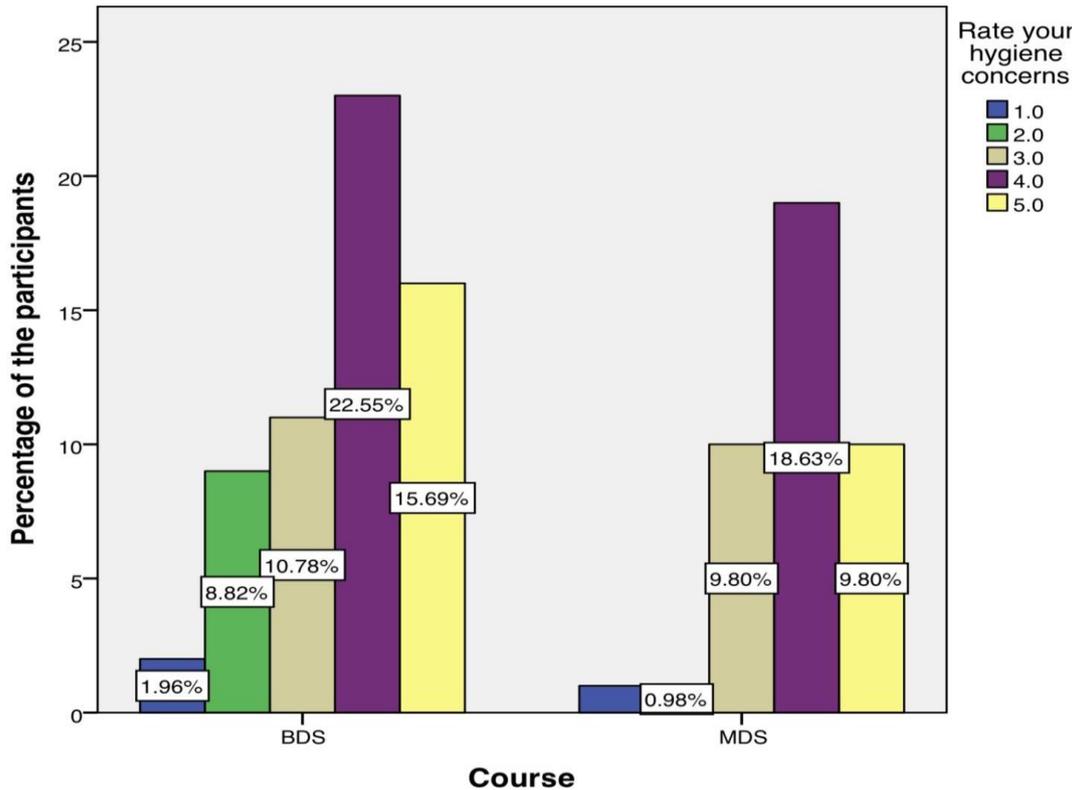


Figure 5: Bar graph represents the percentage of participants concerned on the rate of hygiene level. X axis represents the course opted by the participants and Y axis represents the percentage of the participants. Blue colour represents “1”, the green colour represents “2”, the beige colour represents “3”, the purple represents “4” and the yellow represents “5”. Where “1” denotes poor condition, “2” denotes average condition, “3” denotes good condition, “4” denotes very good condition, “5” denotes excellent condition. However both undergraduates and postgraduates prefer their hygiene levels at “4”. This difference was statistically significant (chi-square test; p value = 0.026)

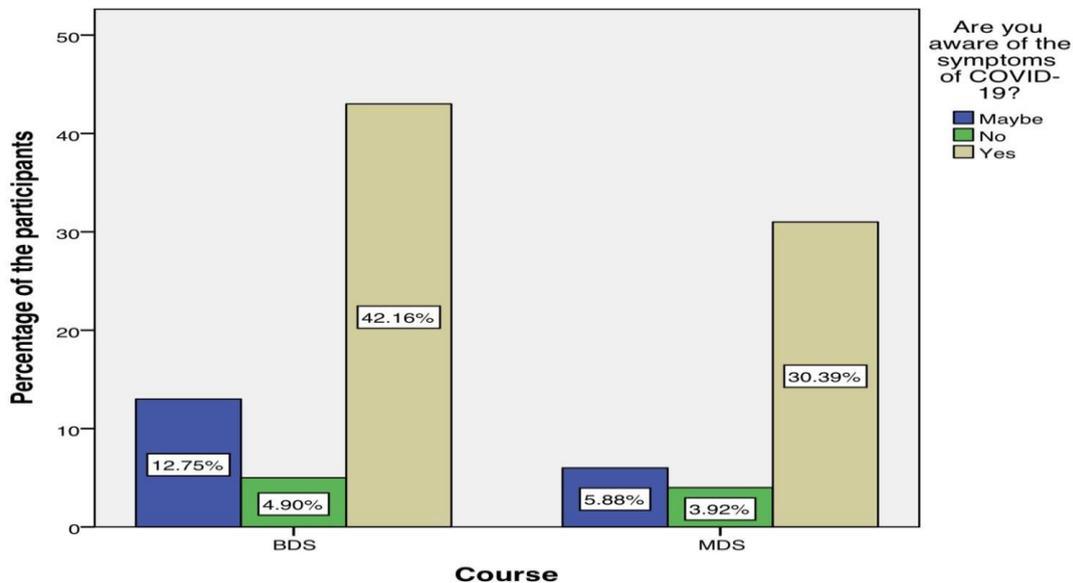


Figure 6: Bar graph represents the percentage of participants who are aware of the symptoms of COVID-19. X axis represents the course opted by the participants and Y axis represents the percentage of the participants. Blue colour represents “maybe”, the green colour represents “no” and the beige colour represents “yes”. However, the majority of the undergraduates and postgraduates are aware of the symptoms caused by the patients who are positive to COVID-19. This difference was statistically significant (chi-square test; p value =0.018)

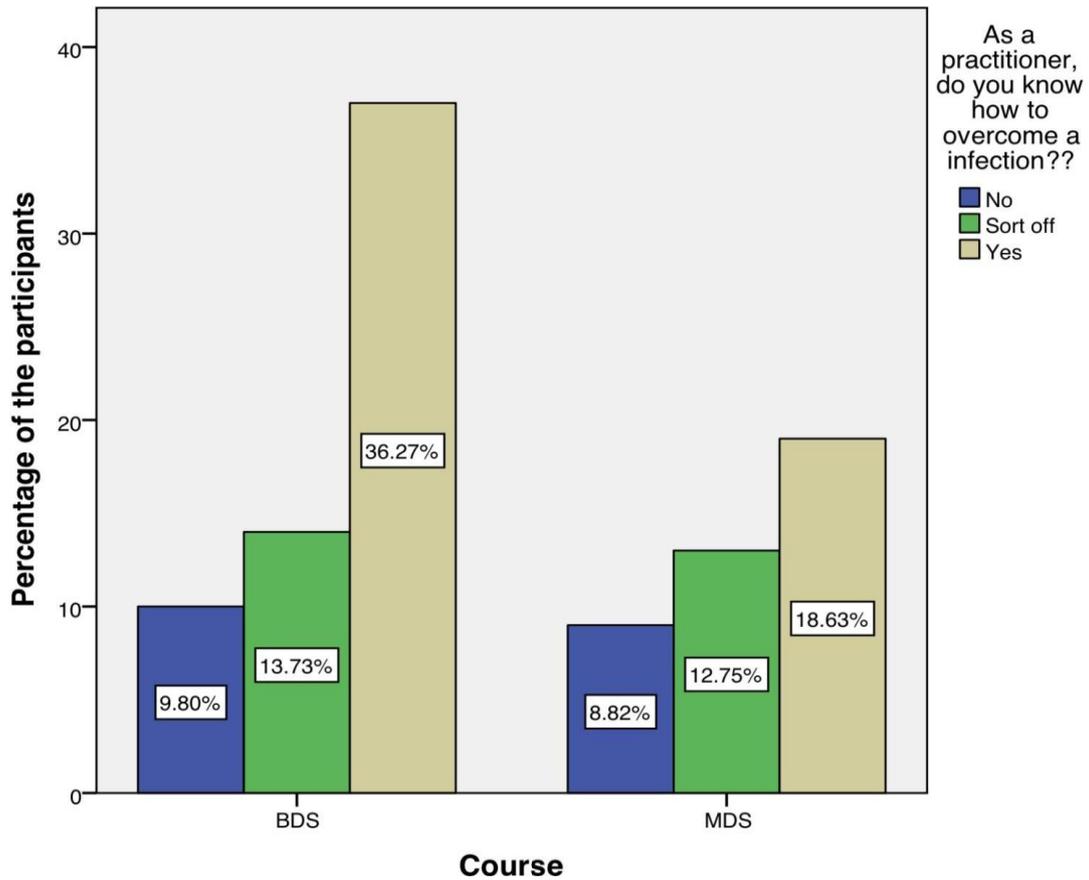


Figure 7: Bar graph represents the percentage of participants who know how to overcome infections. X axis represents the course opted by the participants and Y axis represents the percentage of the participants. Blue colour represents “no”, the green colour represents “sort of” and the beige colour represents “yes”. However the majority of the undergraduates and postgraduates are aware how to overcome infections if caused. This difference was statistically significant (chi-square test; p value = 0.047)

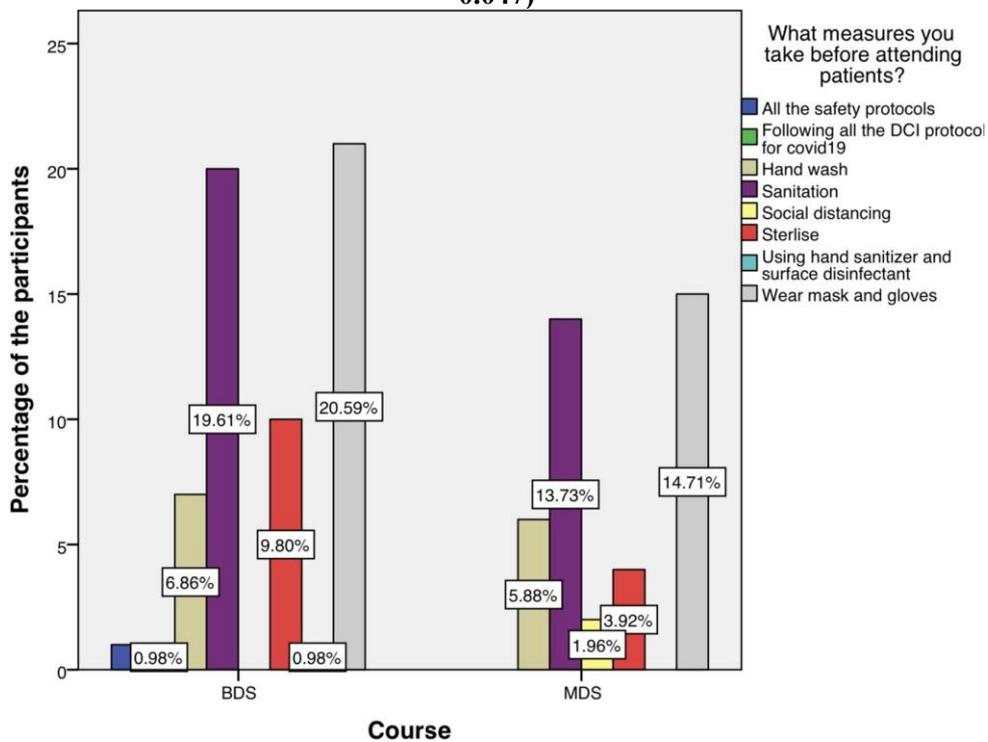


Figure 8: Bar graph represents the percentage of participants taking primitive measures before attending patients. X axis represents the course opted by the participants and Y axis represents the percentage of the participants. Blue colour represents “all the safety protocols”, the green colour

represents “DCI protocols” and the beige colour represents “hand wash”, the purple represents “sanitation”, the yellow denotes “social distancing”, the orange represents “sterilize” and the grey denotes “wearing masks and gloves”. However the majority of the undergraduates and postgraduates are taking the primitive measures along with wearing gloves and masks while attending patients. This difference was statistically significant (chi-square test; p value = 0.038)

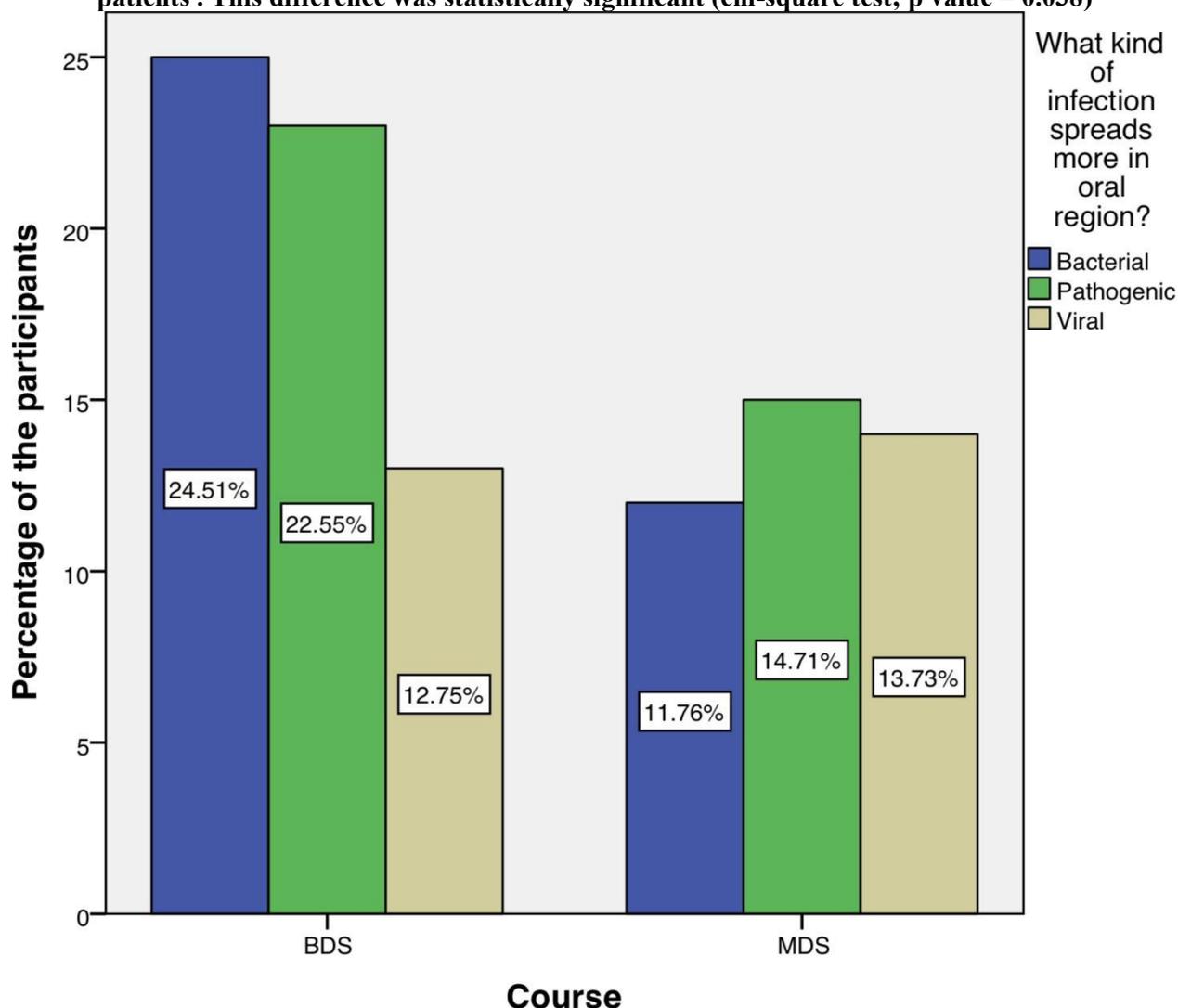


Figure 9: Bar graph represents the percentage of participants known about the most prone infection in the oral region. X axis represents the course opted by the participants and Y axis represents the percentage of the participants. Blue colour represents “bacterial”, the green colour represents “pathogenic” and the beige colour represents “viral”. However the majority of the undergraduates said its bacterial infections and postgraduates have said pathogenic infections are more prone in the oral region. This difference was statistically significant (chi-square test; p value = 0.012)

DISCUSSION

It is very much essential for any dental clinics or hospitals to follow certain protocols or measures to prevent the spread of infections among the practitioners and patients. According to the present study finding, on the whole, about 43.14% frequently sanitize their hands due to post COVID-19 scenarios and mostly 61.76% sterilize the equipment used in the clinics. Due to several precautionary methods needed to be taken as COVID-19 about 67.65% agreed that they follow strict protocol to avoid the spread of infection. About 54.90% are now aware of overcoming an infection. And only 36.27% stated the oral region is mostly prone to bacterial infections and about 41.18% are more conscious about hygiene. This is correspondingly high in comparison with other surveys related, where very few students are aware about infection and follow the respective protocols to prevent the spread of infections (Wiwanitkit, 2002).

According to the previous study, about 100% of people wear gloves, 83.6% wear masks, 55% wear eyewear, 53.4% wear head cap and 94.5% wear gowns and about 94.9% do not remove any of them while working in

the clinic (Acosta-Gío *et al.*, 2008). This shows how conscious the postgraduates are while working and as conscious as a doctor to avoid the spread of infections by any means.

Sterilization of equipment is a very essential part in biomedical industries and it leads to various other hazardous diseases to spread. It is associated with the risk of spread of hepatitis B, C and pneumonia, tuberculosis etc., In recent study, many outbreaks were reported due to improper sterilization of equipment (Sopwith, Hart and Garner, 2002). Various methods are used for cleaning the equipment varies according to the microbes and the weight. High temperature is used to destroy all types of microbes, low temperature targets gram positive, gram negative and lipid enveloped viruses and liquid chemicals for prions. It is lately observed that regular cleaning of the surrounding environment and belongings has drastically reduced the transmission of various infections (Rutala, Gergen and Weber, 1998).

Main reason for the spread of infection in dentistry and other areas of working is due to accumulation of pus perforates bone from weakest to thinnest part, In mandible, the lingual scale side of the molar region represents the easier way (Rocha *et al.*, 2015). It is conjectured that midline enables free communication from either the sublingual or submandibular space (Ariji *et al.*, 2002). The limitation of the study is that it is done in a small population and in a specific dental college. Further the study has to be done in a wide population to extrapolate the results.

CONCLUSION

Even though the majority of respondents are the undergraduates, the knowledge, practice and attitude towards the awareness about infection control is more among the postgraduates as the years of experiences in the clinic is more in comparison with undergraduates. The major concern around the globe is about infections which can be handled along with hand in hand experience. Further knowledge and practice of infection control to be inculcated among undergraduate dental students.

AUTHOR CONTRIBUTIONS

Author 1: Priyanka Rajesh, carried out the study by collecting data and drafted the manuscript after performing the necessary statistical analysis and in the preparation of the manuscript.

Author 2: Arthi Balasubramaniam, aided in conception of the topic, designing the study and supervision of the study, correction and final approval of the manuscript.

ACKNOWLEDGEMENT

The author would like to thank all the participants for their valuable support and Saveetha Dental College for allowing us to conduct the study.

CONFLICTS OF INTEREST

None declared

FUNDING

The present project is supported by Saveetha Institute of Medical and Technical Sciences SaveethaDental College and Hospitals, Saveetha University

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