

## Knowledge Attitude Practice regarding Surgical management of Odontogenic Space Infections among Dental Interns

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### ABSTRACT

**AIM:** This study aims to assess the knowledge, attitude, and practice regarding Surgical management of Odontogenic Space Infections among dental Interns

**Materials and Methods:** A cross-sectional study was carried out in three dental teaching institutions and dental colleges in Chennai. The questionnaire contained questions that were equally distributed in Knowledge, Attitude, and Practice Surgical management of Odontogenic Space Infections sharing online, the questionnaire was distributed to all eligible participants through social media platforms and personal contacts.

**Result:** A response rate of 89.8% was observed. There was a significant improvement in KAP as the years in clinical practice increased. Seventy respondents had “adequate” knowledge, while 132 had “correct” attitudes and 146 had “proper” practices. Overall, only 34 respondents had “adequate” knowledge, a “correct” attitude, and “proper” practices.

**Conclusion:** This study reflects an increased attitude and practice as dental professionals move higher in the hierarchy. Most of the dental interns in this study did not have complete knowledge regarding the management of space infections, More education and understanding will improve the effectiveness of use and solve the difficulties faced in dentistry.

**Keywords:** space infection, odontogenic, attitude, knowledge, practice, dental interns

### INTRODUCTION

Odontogenic infections are the most commonly encountered orofacial infections, which may spread into the adjacent anatomical spaces along the contiguous fascial planes, leading to the involvement of multiple spaces which can progress to life-threatening situations

The most common causes of odontogenic infections are dental caries, deep fillings or failed root canal treatment, pericoronitis, and periodontal disease. The infection starts locally around a tooth and may remain localized to the region where it started, or may spread into adjacent or distant areas. The course of the infection depends on the virulence of the bacteria, host resistance factors, and the regional anatomy (1)

The availability of penicillin and other “wonder drugs” in the years immediately after World War II ushered in an era of complacency in infectious disease treatment. Many traditional infectious disease management approaches, such as isolation, and quarantine was de-emphasized or discarded as no longer necessary because the new drugs were so effective in treating common infections. Antibiotics were prescribed when symptoms first appeared without first determining either the cause of the disease or the chemotherapeutic susceptibility of the microbe.(2)

Mamta Singh et al had a study which showed Amoxicillin and Clavulanic acid combination performed better, as 100 % of strains were sensitive to anaerobes in space infection. And very low sensitivity to the macrolide group. Few organisms were found sensitive to Erythromycin, and Cefuroxime, whereas Cefotaxime (third generation Cephalosporin) was found to be highly sensitive. Contrary to belief, Ciprofloxacin had 83 sensitivity amongst microorganisms, which is comparable to Cefotaxime. This shows their usefulness in the current topic. As expected, the Amikacin combination was effective on all organisms tested for sensitivity. So, the trend changing in terms of the predominance of anaerobic bacteria over aerobic ones (3)

Depending on the severity, under local anesthesia, extraoral incision and drainage were done using Hilton's method for canine, submandibular, buccal space infection and involved tooth extraction is usually advised. During drainage, discharge was found to be pus mixed with clotted blood. Dental interns are continuously kept themselves abreast to know the latest evidence developed for better prevention, control, and management of odontogenic space infection.

Previously our team has a rich experience in working on various research projects across multiple disciplines ([Govindaraju and Gurunathan 2017](#); [A. Christabel et al. 2016](#); [Soh and Narayanan 2013](#); [Mehta et al. 2019](#); [Ezhilarasan, Apoorva, and Ashok Vardhan 2019](#); [Campeau et al. 2014](#); [Kumar and S 2016](#); [S. L. Christabel 2015](#); [Kumar and Rahman 2017](#); [Sridharan, Ramani, and Patankar 2017](#); [Ramesh et al. 2016](#); [Thamaraiselvan et al. 2015](#); [Thangaraj et al. 2016](#); [Ponnulakshmi et al. 2019](#); “[Fluoride, Fluoridated Toothpaste Efficacy and Its Safety in Children - Review](#)” 2018) Now the growing trend in this area motivated us to pursue this project.

The aim of this study was, therefore, to assess the knowledge, attitude, and practice (KAP) among dental Interns in Surgical management of Odontogenic Space Infections.

### Materials and Methods

The study was a cross-sectional study done for 3 months from November 2020 to January 2021 in three dental teaching institutions in Chennai. The questionnaire contained questions related to KAP on Surgical management of Odontogenic Space Infections.

A structured questionnaire was prepared to ascertain the KAPs of Surgical management of Odontogenic Space Infections employed at multiple places of action like colleges and dental teaching institutions. The questionnaire was sent to experts for content validity. The questionnaire comprised of three sections, the first section to provide information to the participants about the title of the study and to obtain their consent for participation, the second section to reveal the sociodemographic details of participants, and the third section had a set of 15 questions with multiple choices. Necessary modifications in the same were done before sharing online, the questionnaire was distributed to all eligible participants through WhatsApp study groups and shared through personal contact. Questions were divided to assess knowledge, awareness, and practice on the various aspects of Odontogenic Space Infections. All questions carried equal weightage (i.e., 1 mark each for every right answer) with a maximum of a total of 15 marks. Snowball sampling strategy was used to recruit responders across the country, in addition to their participation; respondents were encouraged to invite new respondents from their contacts. The questionnaires were sent to 324 dental interns using E-mail, WhatsApp messages, and telephonic conversations. We received 245 responses, of which 219 responses were selected after applying the exclusion criteria.

### Inclusion criteria

All dental students who are currently in the internship year were included in the study.

**Exclusion criteria:** Participants unwilling to give consent or participate in the study were excluded

Institutional ethical committee approval was taken before the start of the study, participants filling up the form was taken as implied consent, and informed consent was also taken from each of the participants before the start of the study.

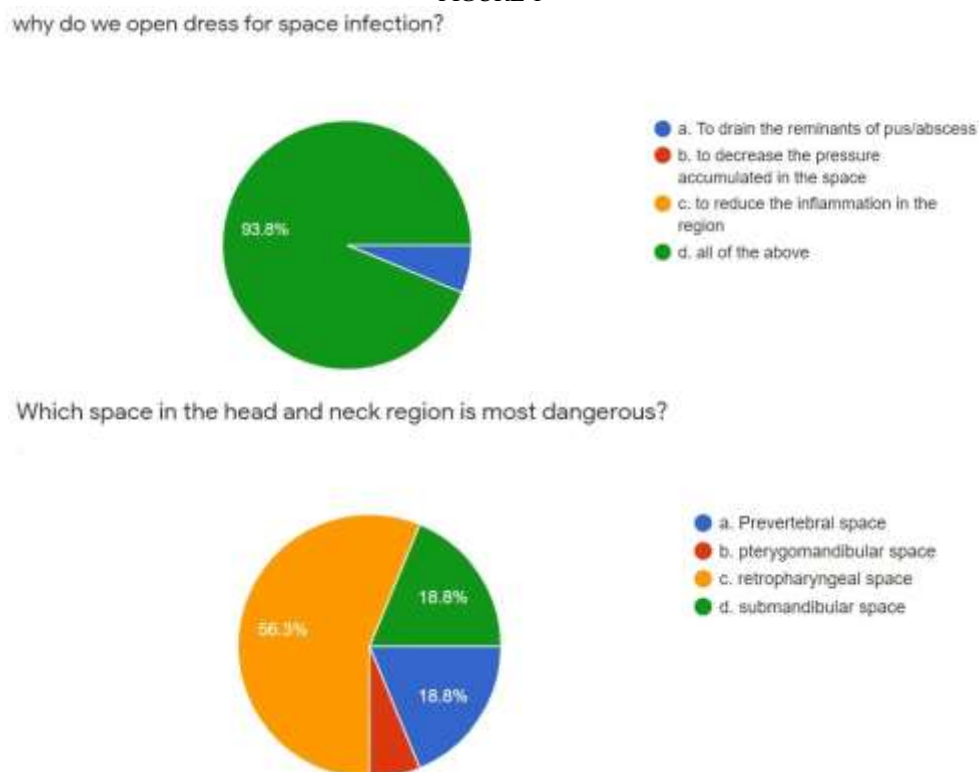
The questionnaire was distributed among the dental students. The results were collected, and the data were analyzed using Microsoft Excel.

Statistical analysis was done using SPSS (Statistical Package for Social Sciences) version 20 (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp). Descriptive statistical analysis was used and mean median mode values were calculated.

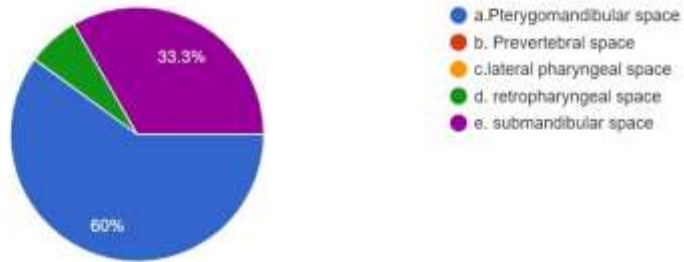
### Results

A total of 245 responses were received from dental interns, among which 219 responses were excluded as per exclusion criteria. Of the 219 selected responses, 87 were male, and 132 were female. many responders were interns at teaching institutes,

FIGURE 1



Patient with a complaint of restricted mouth opening and swelling for the past 4 days will have infection involving which of the following space?



what is lincoln's highway?

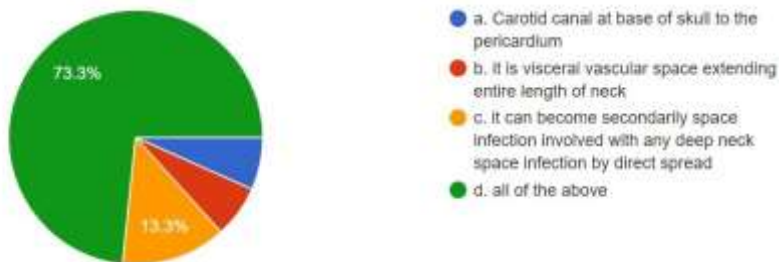


FIGURE 2

According to you, Which of the following technique is better in the management of space infection?



Do you prefer taking culture sensitivity tests before prescribing antibiotics?

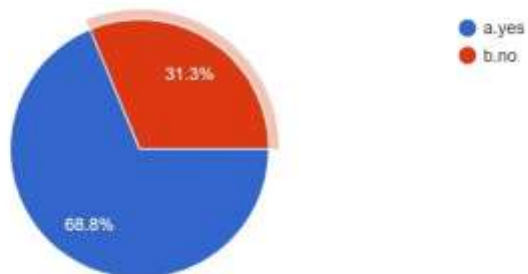
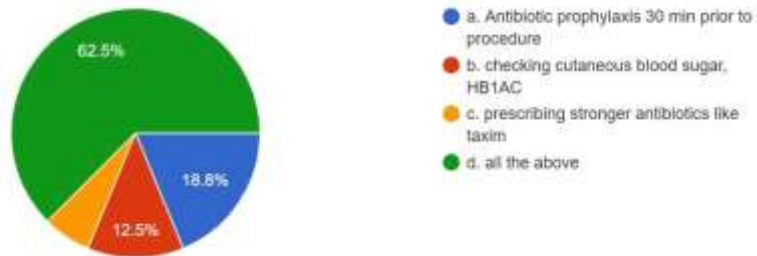
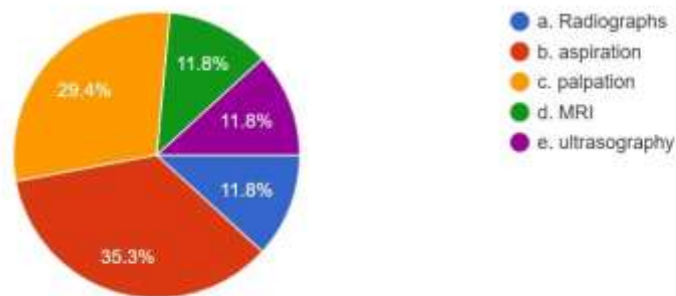


FIGURE 3

what precautions do you take in management of odontogenic space infections patients with co morbidities such as diabetes mellitus?



what investigation do you prefer to confirm space infections?



Overall, the knowledge score regarding space infections was low. The mean knowledge score of the sample was  $2.1 \pm 0.8$ , which implies participants had a “moderate” level of knowledge.

56.3% of participants considered retropharyngeal space in the head and neck region as the most dangerous space infection (figure 1). Based on attitude, 50% of participants felt that infected tooth extraction and drainage through socket technique is better in the management of space infection. 68.8% of participants prefer taking culture sensitivity tests before prescribing antibiotics. (figure 2) Only 35.3 participants preferred aspiration for confirming space infection. During practice, 62.5 participant stake precautions in the management of odontogenic space infections in patients with co-morbidities such as diabetes mellitus by giving antibiotic prophylaxis 30 min before procedure, checking cutaneous blood sugar, HB1AC, and prescribing stronger antibiotics like cefotaxime. (figure 3)

Overall, 219 respondents had a total score of 10 or above (Good awareness about Surgical management of Odontogenic Space Infections). The mean score was  $(10.98 \pm 2.43)$ , and the median score was 11.

Based on the scores of the responders in the survey, the responders were classified as having “adequate” or “inadequate” knowledge, “correct” or “incorrect” attitudes, and “proper” or “improper” practices related to Surgical management of Odontogenic Space Infections.

A score of more than 2 out of 5 knowledge questions was considered “adequate” knowledge, more than or equal to 3 out of 5 attitude questions was considered “correct” attitude, and more than or equal to 3 out of 5 was considered “proper” practice

Seventy respondents had “adequate” knowledge, while 132 had “correct” attitudes and 146 had “proper” practices. Overall, only 34 respondents had “adequate” knowledge, a “correct” attitude, and “proper” practices

#### Discussion

Our current study showed adequate KAP mean scores in Interns students. The knowledge amongst the students towards the role of management in minor oral surgical procedures like space infection management in our study was doubtful, As dental internship includes elective and basic emergency management of oral surgical procedure, so to ensure it this type of survey is necessary to improve standards of education and teaching. A similar study done regarding Management of Space Infections among Dental Practitioners by Ahmed Hilal Sherif et al. authors focused more on antibiotics aspects and concluded that the dental practitioners in his study did not have complete knowledge regarding the new generation of cephalosporins. (5)

Masticator space involvement was identified much more frequently than in other anatomic studies of severe Odontogenic space, where the submandibular space was the most frequently reported location (6). Kuriyama et al (4) found an increased rate of resistance to beta-lactam antibiotics in subjects with odontogenic infection who had received such antibiotics before sampling. They recommended beta-lactamase stable antibiotics in patients with unresolved infections that have previously received beta-lactam antibiotics. The most frequent pathogens isolated for which complete species identification was performed were: Prevotella, Viridans streptococci (including the S. milleri group), and Peptostreptococci. These results are consistent with the studies of Heimdahl et al, (9) Lewis et al, (7) Sakamoto et al (8), and others. According to otolaryngology literature (10), few cases might require airway management. The most frequently used airway management technique was fiberoptic intubation under light sedation, followed by direct laryngoscopic

intubation under general anesthesia. The airway management technique was selected by the anesthesiologist in consultation with the oral and maxillofacial surgeon. These data reflect the perceived increasing availability of and facility in fiberoptic intubation techniques among anesthesiologists. As in other reports (11,12), the most frequently identified causative tooth was the lower third molar in (68%) of cases, followed by other lower posterior teeth. Upper posterior teeth were involved much less frequently, and no anterior teeth were identified as causing severe OI in this study. Pericoronitis was not diagnosed as frequently

Our institution is passionate about high-quality evidence-based research and has excelled in various fields (Jayaseelan Vijayashree Priyadharsini 2019; Pc, Marimuthu, and Devadoss 2018; Ramesh et al. 2018; Ramadurai et al. 2019; Sridharan et al. 2019; Ezhilarasan, Apoorva, and Ashok Vardhan 2019; Mathew et al. 2020; Samuel 2021; R et al. 2020; Chandrasekar et al. 2020; J. Vijayashree Priyadharsini, Smiline Girija, and Paramasivam 2018)

**Conclusion:** This study reflects an increased knowledge and practice as dental professionals move higher in the hierarchy. Most of the dental interns in this study did not have complete knowledge regarding the management of space infections, More education and understanding will improve the effectiveness of use and solve the difficulties faced in dentistry.

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