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Awareness of Ludwig's Angina among Dental Practitioners

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INTRODUCTION

Ludwig's angina is life-threatening cellulitis. It is primarily seen involving the submandibular space followed by secondary involvement of the submental space. This disease has an aggressive characteristic and spreads rapidly causing a compromised airway with little warning. [1] it is seen mostly in young adults due to dental infections however it may develop among children[2]. This was first described by Wilhelm Frederick Von Ludwig in 5 patients in 1836 [1,3] As we know the submandibular space is divided into the submaxillary and sublingual spaces with the mylohyoid muscles between the two. In some patients it is secondary to abscess of a posterior molar. The infection will penetrate through the inner table of the mandible to the submaxillary space, around the mylohyoid to the sublingual space. Spread of infection is contained anteriorly by the mandible and inferiorly by the mylohyoid [1,4]

Ludwig's angina is a potentially lethal infection with a mortality of 8% [5,6] This evolves from odontogenic infections, a penetrating injury in the floor of the mouth, osteomyelitis or fracture of the jaw, otitis media, tongue piercing, sialadenitis or silaolithiasis of the submandibular gland[6,7]There are various predisposing factors to this disease which includes dental caries, systemic

illnesses such as diabetes mellitus, malnutrition, alcoholism and compromised immune system [8–11] Ludwig's angina in children can occur de novo without any apparent precipitating cause

Early diagnosis and immediate initiation of the appropriate treatment must be done for this condition. Treatments incision and drainage of exudates from the associated space bilaterally, extraction of offending tooth/teeth, aggressive antibiotics (penicillin and metronidazole) and fluid therapy. These are important in the management of this odontogenic infection [12] Airway management is the first step into managing Ludwig's angina as airway compromise can lead to death of the patient. [6] Intravenous steroids and nebulized adrenaline use have been shown to allow for easier intubation avoiding tracheostomy or cricothyroidotomy. It allows for increased penetration of antibiotics into the fascial space by reducing oedema and cellulitis.[6,9] Surgery is indicated for patients who develop abscesses and are unresponsive to antibiotics and medical management which is achieved by decompression of the submental, submandibular and sublingual spaces by external incision and drainage [13]

Previously our department has published extensive research on various aspects of prosthetic dentistry [14–24], this vast research experience has inspired us to research about Thus , the aim of this study, is to determine the level of knowledge and awareness of dental practitioners regarding Ludwig's angina and its management techniques

MATERIALS AND METHOD

A total of 10 multiple choice questions were formed and distributed to 100 dental practitioners with more than 5 years of experience. All 10 questions will assess the knowledge of dental practitioners regarding Ludwig's angina and awareness of the various management techniques. Table 1 shows the questionnaire which was distributed to the dental practitioners

Table 1: Questionnaire

Question	A	B	C	
1.First person to describe Ludwig's Angina?	Wilhelm Friedrich Von Ludwig	Robert Hooke	Hippocrates	
2.Cause of Ludwig's angina ?	Bacterial	Viral	Fungal	
Causative organism ?	Streptococcus	Enterovirus	Herpes virus	

4. Also commonly known as ?	Pterygoid ace infection	Submandibular space infection	Massetric ace infection	
5. Progressive cellulitis or an Abscess?	Cellulitis	Abscess		
6. Ludwig's angina is due to ?	ntal infection	nunocompromised patients	ersensitivity	
7. Initial line of treatment ?	Incision and drainage	Broad-pectrum antibiotic	racheostomy	
Preferred antibiotic prescribed?	Penicillin	Cephalosporin	etronidazole	
9. Spaces involved?	ubmandibular	Submental	Sublingual	ll three
10. How will you diagnose atient with Ludwigs Angina ?	Clinical presentation	Dental X Rays	tient history	

RESULTS AND DISCUSSION

After all the participants have given their response, their responses were noted and tabulated.

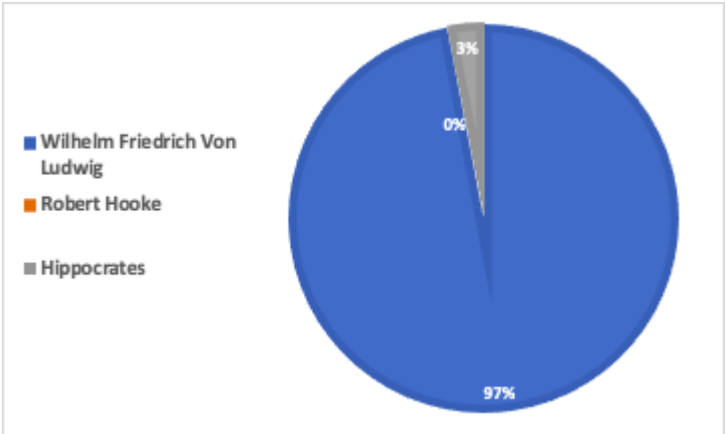

Figure 1: Pie chart shows the awareness of dental practitioners regarding the person who described Ludwig's Angina. 97% of them selected Wilhelm FriedwichVon Ludwig

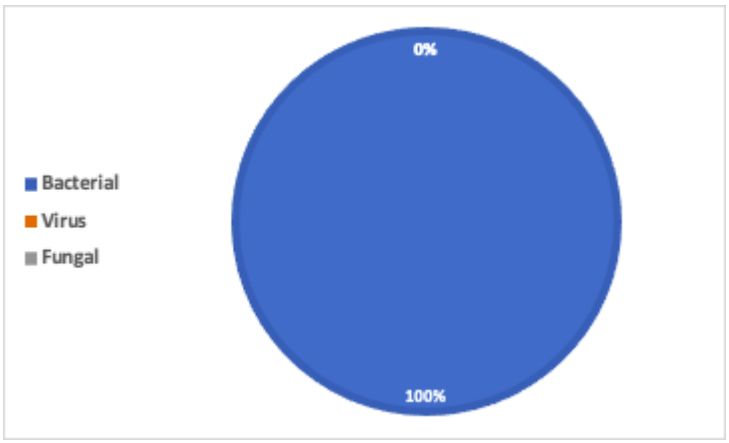

Figure 2: Pie chart shows the awareness of dental practitioners regarding the cause of Ludwig's Angina. 100% of them selected were aware that Ludwig's angina is of bacterial origin

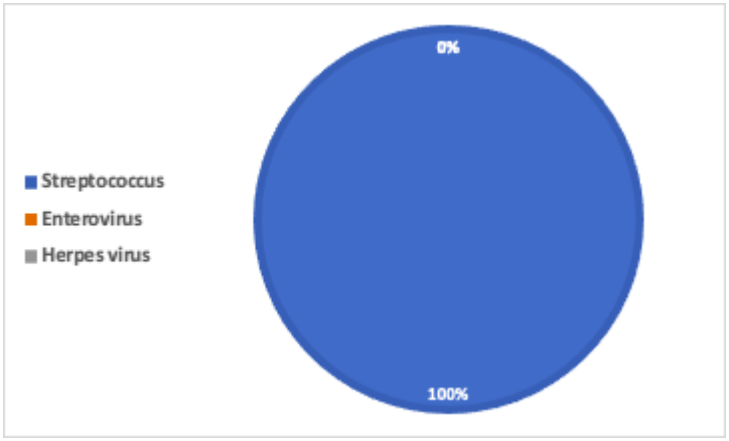

Figure 3: Pie chart shows the awareness of dental practitioners regarding the causative organism of Ludwigs Angina. 100% of them selected were aware that Ludwigs angina is streptococcus

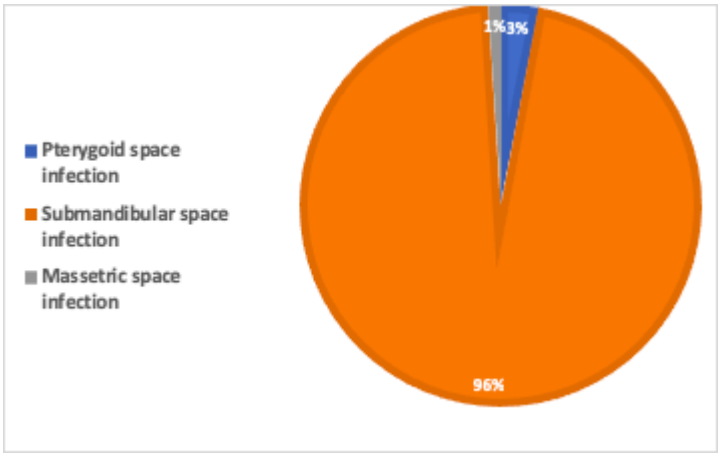

Figure 4: Pie chart shows the awareness of dental practitioners regarding the other name for Ludwig's Angina. 96% of them selected were aware that Ludwig's angina is also commonly known as submandibular space infection

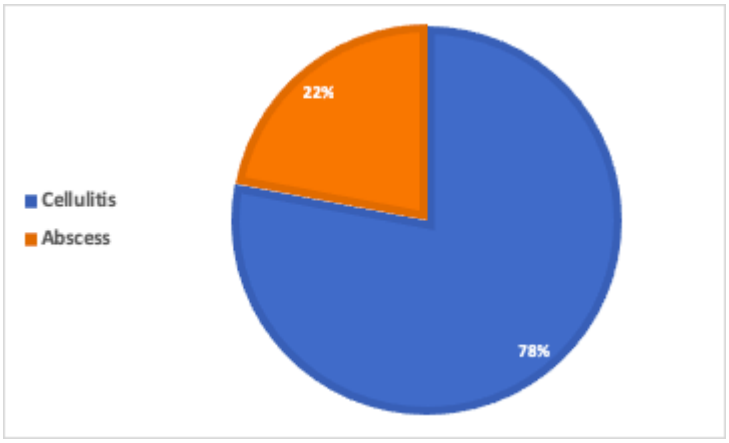

Figure 5: Pie chart shows the awareness of dental practitioners whether Ludwig's Angina is a progressive cellulitis or abscess. 78% of them selected cellulitis.

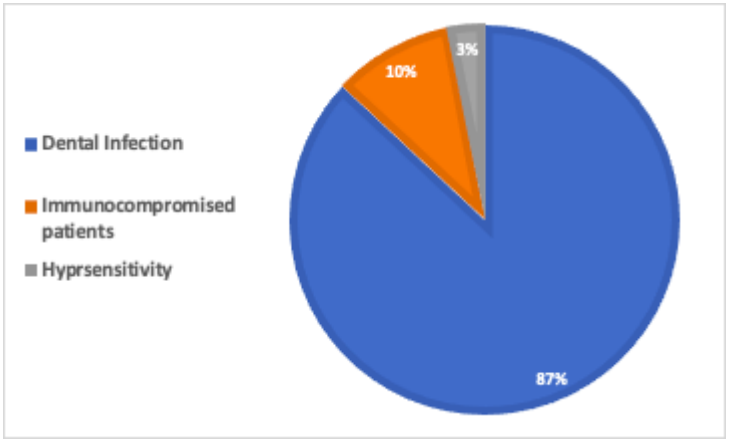

Figure 6: Pie chart shows the awareness of dental practitioners what Ludwig's angina is due to. 87% were aware that Ludwig's angina is due to a dental infection

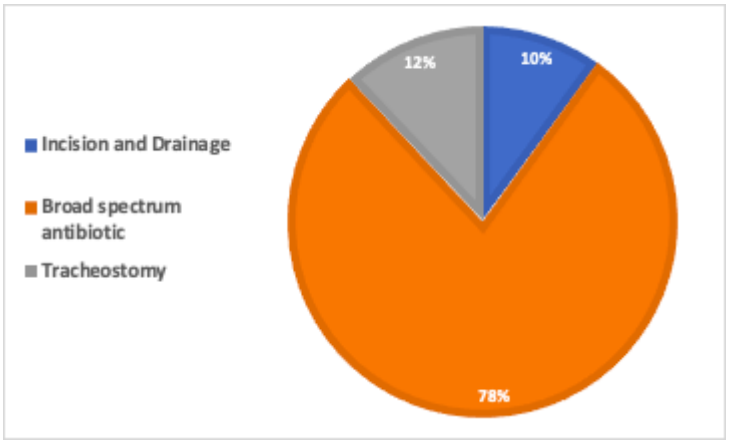

Figure 7: Pie chart shows the awareness of dental practitioners regarding the initial line of treatment. 78% of them were aware that the initial line of treatment is prescription of broad spectrum antibiotics.

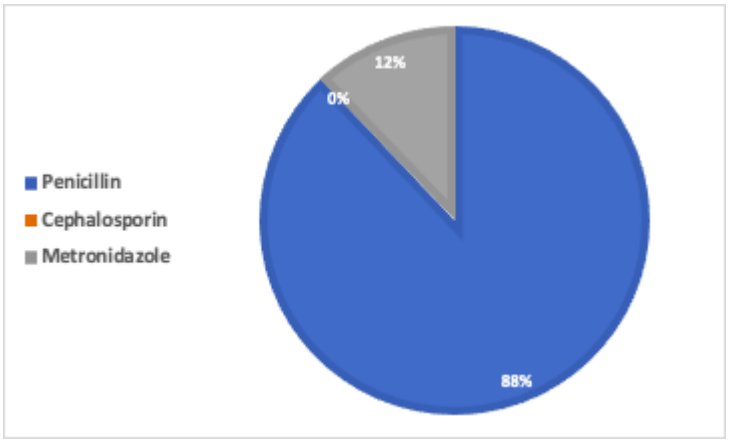

Figure 8: Pie chart shows the awareness of dental practitioners regarding the most preferred antibiotic prescribed for Ludwig's angina. 88% of them were aware that the preferred antibiotic is penicillin.

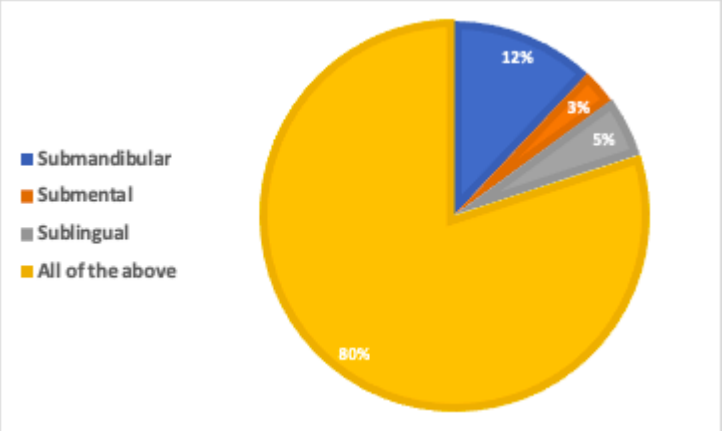

Figure 9: Pie chart shows the awareness of dental practitioners regarding the spaces involved in Ludwig's angina. 80% of them were aware that all the spaces (submandibular, submental and sublingual) are involved in Ludwig's angina

97% of the participants are aware of the man who first describes Ludwig's angina. A study conducted among final year medical and dental students at University of Benin[12] shows that the majority of the students were aware of the term Ludwig's angina. This shows that the awareness regarding the term Ludwig's angina is relatively good. However there has been a study conducted among dental students which showed that only 53.5% of the students were aware that Wilhelm Friedrich Von Ludwig was the main to first describe this condition. [11] Our study showed that 100% of the participants are aware of the causative organism and the main causes of this condition. We can deduce that the importance regarding the knowledge of the causative organism is to differentiate it from other conditions.

This study also shows that 96% of the participants were aware of the other of this condition which is submandibular space infection. The name given is mainly due to the path of spread of infection as it involves the submandibular space. As stated Ludwig's angina is bilateral and can spread rapidly, secondary to being compartmentalized within the submandibular space [6,25] There is another term used to describe Ludwig's angina which is 'bulls neck'. This name was used to describe this condition due to its path of spread of infection.[26] As we know Ludwig's angina spreads via the fascial spaces which are submandibular, submental and sublingual spaces, 80% of the participants have selected all three spaces to be involved in this disease. The participants are aware that this condition involved all three spaces. A similar study was done among dental students [11] which showed that 57.4% of the students selected that the spread of this condition is via the fascial spaces.

The most common confusion regarding this condition is whether to call it cellulitis or abscess, and it is evident that certain participants were still unaware. Only 78% of the participants have selected thatLudwig's angina is a type of cellulitis. There are many literatures available which mention that Ludwig's angina is a life threatening cellulitis.

Knowledge regarding the causative organisms and the spread of this disease will aid in the treatment/management of this disease. About 78% of the participants have chosen broad-spectrum antibiotics as the initial line of treatment. Thus about 88% of the participants are aware that penicillin belongs to the broad-spectrum antibiotic class. As we know that the cause of this disease is due to a bacterial infection, thus antibiotics are the best option to be prescribed. A similar study don't among dental students showed that 57% of the students have chosen penicillin as the preferred prescription for Ludwig's angina [11]

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CONFLICT OF INTEREST

The authors declare no conflict of interest

CONCLUSION

The importance regarding knowledge of various diseases which mainly affects the head and neck region is crucial for dental practitioners. Thus it is essential for the dental practitioners to have knowledge of the conditions and be aware of the managements of these conditions

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