

Awareness about ocular complications due to dental infections among dentists

Dr. Aashima Gupta¹, Dr. Aswani Kumar², Dr. Nitin Kudyar³, Dr. Ashwini Pratap Gupta⁴, Dr. Sankey Kumar Baidya⁵, Dr. Kapil Paiwal⁶

¹Reader, Department of Oral Medicine and Radiology, Himachal Dental College, Sundernagar HP, India

²Consultant Ophthalmology, Government Medical College, Udhampur, Jammu and Kashmir, India

³Consultant Dental, GMC, Udhampur, Jammu and Kashmir, India (Corresponding author)

⁴PG, Department of Oral Pathology and Microbiology, Triveni Institute of Dental Sciences, Hospital & Research Centre, Bilaspur, Chhattisgarh, India

⁵Reader, Department of Prosthodontics and Crown & Bridge, Hazaribag College of Dental Sciences & Hospital, Hazaribag Jharkhand, India

⁶Professor, Department of Oral & Maxillofacial Pathology, Daswani Dental College & Research Center, Kota, India

Abstract:

Introduction: In extreme cases, ophthalmia, impaired vision, and blindness may develop as a result of a tooth infection. These complexities are often disregarded or given insufficient weight. There are no established protocols for dealing with these ocular issues. This research aimed to gauge dentists' level of familiarity with the ocular problems that might arise from oral infections. Participants were given a questionnaire they may fill out at their own pace. **Materials and methods:** There were 350 participants, and the survey was distributed only over the internet. The information was collected, then SPSS was used to tabulate the findings. **Results:** Only 31% of people in the survey were aware that oral infection may lead to eye problems. The majority of what was learned was gleaned through books. The vast majority of them were curious to learn about control and prevention measures. **Conclusion:** This research highlighted dentists' inability to recognize and treat eye problems. Therefore, educational opportunities like seminars and summer camps are necessary.

Keywords: Complications, Dental, Knowledge, Ocular, Ophthalmia, Infections.

Introduction:

Sinusitis, orbital cellulitis, and parapharyngeal abscess may be brought on by dental infections.^{1,2} A case of ophthalmia and blindness caused by a tooth infection was documented in the literature some years ago.³ And in 1795, the link between tooth decay and vision problems was spelled out. There was a case report of shrunken pupils after the removal of a carious tooth in 1817. Many people with visual impairment have been helped by identifying the underlying reason and having it surgically removed. Recent years have seen a surge in research and discussion around dental focal infection.⁴ The pathophysiology of the infection is complicated by the presence of many bacteria.⁴ Orbital might be more widespread in rural locations because to the general population's higher propensity for carelessness.⁵ Larger risks are associated with pregnancy.⁵ Today, the focus of dental medicine and science

is on ways to keep teeth and gums healthy from the start. Nutrition,⁶ functional exercise,⁷ and other patient-controllable factors will have an impact on public health.⁸ Subasree, Murthykumar, & Others (2016) provide a large body of data and historical records demonstrating a direct causal link between the etiological cause and ocular issues.⁹ Lack of knowledge about the anatomy and functioning of the organ is reported in a study of the medical and dental branches of the health services.¹⁰

The maxillary molar is the most frequent site of involvement, and when it spreads rapidly into the orbit region and blocks off the airway,¹¹ it may be fatal. Parapharyngeal space, a crucial location in the neck, is susceptible to oral infection.¹² Sinusitis, pan sinusitis, ocular cellulitis, and cavernous sinus thrombosis are among other problems that might arise. Prosthodontic and orthodontic implant implantation in the maxilla may be complicated by sinus involvement. Blindness, cerebral

problems, and even death among potential outcomes of orbital cellulitis. It is also possible for the optic nerve to be damaged as a result of compression or inflammation.

Awareness of ocular problems is not addressed in any published literature. In addition, there are currently no established protocols for identifying and treating these problems.¹³ This research was done to educate dentists and other medical professionals about the dangers of dental neglect.

Materials and method:

Using a self-administered questionnaire, dentists and dental students participated in a cross-sectional research that was done through an internet connection. Questions on personal information, general knowledge, and specific skills were included in the survey. There were a total of 12 questions, 6 for each of the two sections. The questionnaire had a total of twelve questions. Seventy emails were sent, with 69 responses received. Thus, 96% of those surveyed participated. Dentists and future dentists were included in the research group. SPSS was used to do statistical analysis on the data.

The questions framed are:

1. "Do you know that ocular complications occur due to dental infection?"
2. If yes, then source of information?
3. Did you notice any ocular complications in

a patient due to dental infection?"

4. If yes, what were the symptoms?
5. How long the symptoms lasted?
6. Which tooth infection is more prone for ocular complication?
7. If you encounter ocular complications due to dental infections, what would be your immediate reaction?
8. How do you prevent ocular complications due to dental infection?
9. If encountered with ocular infection, when do you report to an ophthalmologist?
10. Do you feel a dentist should take ocular complications seriously?
11. Do you think more information should be published about ocular complications?
12. Do you know how to prevent ocular infections due to dental infection?"

Results and discussion:

In all, 350 dentists participated in this survey. This means that 96 percent of the proposal was accepted. Participants' ages as a proportion of the total sample size. Nearly half of the participants are between the ages of 18 and 25, while just over half are between the ages of 26 to 40 and 40 percent were men and 60 percent were girls. Two groups, ages 18 to 25, and 26 to 40, were created. 175 people aged 17–25 and 175 people aged 26–35 are taking part. These are the people whose demographic information was gathered as shown in table 1

Table 1: Percentage distribution of study participants based on gender

Undergraduate		Postgraduate	
Males	Females	Males	Females
45.8	68.4	54.2	31.6

Table 2: Participant distribution according to where they found out about ocular problems.

Source	Percentage
Textbooks	31.0
Journals	13.6
Personal experience	12.4
Colleaugue	5.2
All of the above	27.6
None	10.2

Among the respondents, 31.0% relied on textbooks, 27.6% relied on all of the aforementioned, 13.6% relied on journals, 5.2% relied on colleagues, 12.4% relied on personal experience, and 10.2% relied on none of the aforementioned.

Table 3: Distribution regarding the awareness of the symptoms of ocular complications

Variables	Yes (%)	No (%)
Loss of vision	26.8	10.7
Orbital cellulitis	23.1	15.9
Defective vision	11.8	11.7

Ocular problems have been seen in their dental practice by 61.7% of dentists. The symptoms were unknown to 38.3% of the population. In addition, 23.1% of patients selected orbital cellulitis as a serious consequence, followed by 26.8% who selected vision loss and 11.8% who selected vision impairment.

Table 4: Association between the graduation and management strategies of the study participants about ocular complications.

Management	Undergraduate	Postgraduate
Visit to eye doctor	64.9	35.1
Antibiotics	52.1	47.9
None	54.8	45.2
P value	0.02	0.05

A statistically significant difference was found between the percentage of undergraduates and postgraduates who chose to report to ophthalmologists for effective management techniques (64.9% vs. 35.1%, respectively; Pearson Chi-Square test; $P=0.02$, $P0.05$).

Ocular problems and educational attainment have been linked. When presented with the difficulties, graduate students were more likely than undergraduates to take them seriously. It was shown that postgraduates, as compared to undergrads, showed a significantly higher level of knowledge of the severity of ocular problems (Pearson Chi-Square test, $P=0.02$, $P0.05$).

Ocular consequences from oral infection need experts to have a thorough understanding of the topic and the ability to recognize and treat them. Ocular issues may result from a dental infection because of how easily it can spread. Anatomically speaking, structures closest to the root tips are considered to be the muscle, connective tissue, and sinuses in close proximity. In most cases, infection will migrate from the maxillary sinus via the orbital fissure (Stübinger et al., 2005; Caruso et al., 2006). It is less frequent for cancer to progress via the pterygopalatine areas, the canine fossa, or retrogradely (Poon et al., 2001).

Both students and graduates agreed that seeing an ophthalmologist was the optimal response to a medical emergency involving the eyes.

Students at the undergraduate level, as opposed to those at the graduate level, were more concerned about the importance of education concerning the ocular consequences caused by tooth infection. Between the two of them, there was a discernible statistical gap.

In this research, dentists' awareness and ability to treat ocular problems resulting from tooth infection were evaluated. Our findings highlight the need for further education and training in the area of ocular knowledge, since they point to a generally poor level of knowledge. Fifty percent or more of the participants in our survey were unaware that oral infections might lead to eye problems. Given their frequent interaction with patients, they should have been aware of this. Because of the significance of staying abreast of developments in their field, it is essential that they do so (Duraisamy et al., 2019).

Ocular problems are another possible outcome or side effect of therapy, similar to infections. In addition, local anesthetic administration might lead to problems in the eyes (Liau et al., 2008). Transient blindness following dental extraction, intraocular hemorrhage during dental implant surgery (Krepler, Wedrich, & Schranz, 1996; Brodsky, & Dower, 2001), and retinal tears following teeth cleaning (Ng et al., 2001) were all extremely rare reports in the medical literature.

Ocular issues are thought to be uncommon and temporary, which may explain why dentists don't seem to take them very seriously. However, only a small percentage of those with dental infections have had catastrophic consequences (Mehra, Caiazzo, & Bestgen, 1999). The majority of research that have looked at participants' attitudes and their degree of knowledge have come to the conclusion that the participants' unfavorable attitudes can be changed (Blake et al., 2006; DeCroos et al., 2011). Participants in our research showed more enthusiasm for learning about and taking action to avoid ocular problems, despite their relatively modest levels of knowledge. High-quality, evidence-based research is a priority at our university, which has achieved notable success in many different areas. ((Pc, Marimuthu and Devadoss, 2018; Rameshet *et al.*, 2018; Ezhilarasan, Apoorva and AshokVardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019; Vijayashree Priyadharsini, 2019; Mathew *et al.*, 2020).

Conclusion:

Our research shows that dentists lack sufficient awareness of the ocular consequences that might arise from tooth infection. Their skills in this area also need to be enhanced. Preventing emergencies and other issues requires the inclusion of proper guidelines. Workshops, continuing education (CDE) programs, and seminars may all help spread the word and raise awareness.

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