ORIGINAL ARTICLE

A clinical analysis of airborne infections in the dental offices of India

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ABSTRACT

In India the risk of airborne infections from dental offices to the dentist and patients are high. In our clinical study we have taken the samples from different specialty clinics to know bacterial overloads. We did the analysis to know bacterial colonies at the surfaces of dental clinics in various part of India. Result of study shows, Staphylococcus bacteria were found in all areas of the dental clinics. Total bacterial counts in the air of dental surgery rooms and in non-surgery rooms without direct involvement with dental operations were in the range of 120-280 cfu/m3.

INTRODUCTION

In the developing country like India, the role of dentist in the management of oral diseases is very important. In India the patients come in the dental offices are having many latent disorders which can harm and infects the dental surgeons. For the prevention of these dangerous airborne infections, dental surgeon should have detail knowledge of the diseases as well as post infection considerations. In this clinical analysis many clinical samples were taken on study settle plates from many dental offices and study data club with the other study articles to make this review of literature. The purpose of this study was to ascertain the numbers, types, and antibiotic resistance profiles of organisms arriving on a in a dental clinic by the air-borne route.

METHODOLOGY

The Sampling was done during morning hours (8-12 AM) and all dental wards where
supervisor and students were stationed were sampled. Air contamination was monitored in all parts of dental wards by using a slit-to-agar biological air sampler\(^1\)-\(^7\). This sampler drew air at a high speed through a narrow slit and blew it over a solid nutrient agar plate. The plate rotated at a uniform speed under the slit, and a complete rotation of the plate took 30 to 45 minutes. In each case, the air sampler was placed about 1.5 m from the patient’s mouth at breathing level of dental personnel to calculate total counts of bacteria, fungi, Staphylococci, and Streptococci\(^10\). The plates were placed in an incubator and incubated aerobically for 2 days at 37°C. The total numbers of colony forming units (CFUs) in the range of 30-300 were counted, and the data were expressed as the number of CFU per cubic meter of air sampled\(^1\)-\(^2\).

**RESULTS**
Staphylococcus bacteria were found in all areas of the dental school. The total fungi counts in the air of dental surgery rooms and in general rooms without direct involvement with dental operations were in the range of 1-70 cfu/m\(^3\) and 1-5 cfu/m\(^3\), respectively. The total bacterial counts in the air of dental surgery rooms and in non-surgery rooms without direct involvement with dental operations were in the range of 110-320 cfu/m\(^3\) and 50-148 cfu/m\(^3\), respectively.

**DISCUSSION**
In this study, the air samples of dental rooms have been studied. Presently the use of settle plates is a passive air sampling technique, active air samplers which measure particles suspended in the air during a specific time period can also be used to determine the level of microbial air contamination\(^9\). Active air samplers measure the number of colony-forming units present in 1 m\(^3\) of air collected over a 15 min sampling period (Pasquarella et al., 2000). This method forms the basis for official standards in air control and is often thought to be the more appropriate sampling strategy\(^8\).

Staphylococcus species were found in indoor air of dental school and the active role of dentistry. Microbial contamination of dental surgical areas in the range of 110-320cfu/m\(^3\) is comparable to previous studies\(^1\). There are some criteria for acceptable levels of indoor air. Non-pathogenic microorganisms and bacteria referred to are implicitly ambient or environmental bacteria. However, in regard to pathogenic bacteria and viruses, particularly contagious pathogens, there are no safe limits\(^1\).
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CONCLUSION
The results outlined here have shown that a wide variety of cutaneous, oral, respiratory and environmental bacteria can be detected on settle plates in a dental clinic and that, of those microbes that can be cultivated on routine media in the laboratory, P. acnes, M. luteus and S. epidermidis are the most likely to contaminate surfaces in a dental clinic by the air-borne route.

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REFERENCES

Table 1: Presenting No of Bacterial Colonies with respective bacterial species.

<table>
<thead>
<tr>
<th>Place of sampling</th>
<th>No. Bacterial Colonies / its species</th>
</tr>
</thead>
<tbody>
<tr>
<td>General dentistry</td>
<td>210/ Staphylococcus auricularis, Staphylococcus aureus</td>
</tr>
<tr>
<td>Jaw and mouth Surgery</td>
<td>110/ Staphylococcus auricularis, Streptococcus haemolyticus, Staphylococcus saprophyticus, and Staphylococcus epidermidis</td>
</tr>
<tr>
<td>Endodontics</td>
<td>183/ Staphylococcus auricularis, microcococcus and bacillus cereus</td>
</tr>
<tr>
<td>Orthodontics</td>
<td>320/ Staphylococcus auricularis, Staphylococcus epidermidis</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>210/ Bacillus cereus, Staphylococcus auricularis</td>
</tr>
<tr>
<td>Operative dentistry</td>
<td>168/ Staphylococcus auricularis, Staphylococcus saprophyticus, Staphylococcus aureus and Bacillus cereus</td>
</tr>
<tr>
<td>Periodontics</td>
<td>155/ Staphylococcus saprophyticus, Staphylococcus aureus and Streptococcus haemolyticus</td>
</tr>
<tr>
<td>Pathology</td>
<td>177/ Staphylococcus epidermidis, Staphylococcus auricularis, bacillus cereus and Staphylococcus saprophyticus</td>
</tr>
</tbody>
</table>


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