

# BIOSECURITY IN PUBLIC AND PRIVATE OFFICE

## A BIOSSEGURANÇA NOS CONSULTÓRIOS PÚBLICOS E PARTICULARES

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### ABSTRACT

**B**iosecurity is currently a concern for all health-related services, including dentistry, since infection control has a relevant importance. In dental practice, health-related occupations have contact with a great number of individuals who are potentially capable to transmit pathogens. This study comprised a descriptive evaluation of the universal precaution measures for infection control adopted by dental practitioners working at public and private offices in the city of Araçatuba, SP. Data collection was performed by a quiz with questions about individual and collective protection equipments. The results showed that the use of caps was reported by 55% of the professionals working at the public sector and 90% for the private sector. The use of masks and gloves was reported by all professionals surveyed; nevertheless, glove change between patients was not reported by 40% of professionals working at the public sector. There were more flaws in public offices as to the use of protective barriers, since except for the use of gloves, gowns and masks, the frequency of use of those barriers was smaller than at private offices.

**Uniterms:** Protective devices; Security measures; Dental Infection control.

### RESUMO

**A** biossegurança, atualmente, é uma preocupação de todos os serviços relacionados à saúde, neles inclui-se a odontologia, visto que o controle de infecção é de importância relevante. Na prática odontológica, as profissões de saúde têm contato com grande número de indivíduos que podem ser potencialmente capazes de transmitir patógenos. O objetivo do presente estudo foi uma avaliação descritiva da aplicação de medidas de precaução universal para controle de infecção entre cirurgiões-dentistas que atuam em consultórios públicos e particulares do Município de Araçatuba/SP. A coleta de dados foi realizada através de questionários contendo perguntas sobre equipamento de proteção individual e coletiva. Os resultados mostram que o uso de gorro foi relatado por 55% dos profissionais que atuam no serviço público e 90% que atuam no serviço privado. O uso de máscara e o uso de luvas foram relatados pelos 40 profissionais entrevistados, no entanto a troca de luvas entre os pacientes não foi relatada por 40% dos profissionais da rede pública. Conclui-se que ainda o setor público apresenta mais falhas em relação ao uso de barreiras protetoras, pois na maioria das questões abordadas a frequência do uso dessas barreiras foram menores em relação ao setor privado.

**Unitermos:** Equipamentos de proteção; Medidas de segurança; Controle de infecção dentária.

### INTRODUCTION

Biosecurity is currently a concern for health-related services, including dentistry, since infection control has a relevant importance (Moraes<sup>11</sup>, 1997).

Infectious diseases are increasingly disseminated; because of that, according to Discacciati, et al.<sup>5</sup> (1999), the

dental professionals still have much to improve in their attitudes, despite the great advances that have been reached over the last years.

With the increase in the number of people with infectious diseases, dentists are concerned and have been adopting some changes in their behavior, with a more intense use of individual and collective protection equipments.

Biosecurity, which includes the procedures to combat the contamination at dental offices, is the key to reduce the risk of infection by HIV or hepatitis among dental practitioners (Couto<sup>3</sup>, 2003).

The first purpose of the procedures for infection control is to prevent the transmission of infectious diseases from patient to professional and from professional to patient. Infectious diseases can be transmitted by equipment contamination and aerosols, besides others, during treatment (Carvalho and Papaiz<sup>1</sup>, 1999).

Davis and Begole<sup>4</sup> (1998) applied 140 questionnaires about individual protection equipments to orthodontists at Illinois, USA and verified that 97% of the interviewees used gloves, 34% used gowns and 5% said they had never used spectacles.

Prevention of infections at dental offices is difficult to some dentists who are not worried about meeting the biosecurity protocol, which has intensified the cross infection cycle (Ferreira<sup>6</sup>, 1995).

In dental practice, health-related occupations have contact with a great number of potentially pathogen-transmitting individuals (Costa Carmo and Dias Costa<sup>2</sup>, 2001).

Universal measures should be thoroughly applied. If such measures are ignored, the health team can act as infection vectors (Shaefer<sup>12</sup>, 1998).

Following this thought, White and Galze<sup>14</sup> (1978) evaluated the microbiological contamination of patients after radiographic examination and verified that 77% of the patients presented transfer of *S. pyogenes* and *S. aureus*. Therefore, it is correct to affirm that the use of protective barriers to avoid cross infection is a way to avoid these problems.

The protection equipments must be worn by all health team members in the treatment environment, and the employer must supply them (Teixeira and Santos<sup>13</sup>, 1999).

Carvalho and Papaiz<sup>1</sup> (1999) mentioned that infection control in Radiology is an integral component of patient's care, and prevention of diseases is a responsibility of the operator, which was not evidenced in the study, since 82.9% of interviewees stated not to use thyroid collar and 20% only covered the film.

The present study comprised a descriptive evaluation of universal precaution measures for infection control adopted by dental practitioners working at public and private offices in the city of Araçatuba – SP.

## MATERIAL AND METHOD

The study was performed by application of a quiz with open and closed questions about the use of individual and collective protection equipments, for a descriptive evaluation of the critical areas concerning the infection control standards at public and private offices (Appendix I). The surveyed sample comprised all dental professionals working at the public service, although only 20 answered, and 20 dental professionals working at private offices in the city of Araçatuba, SP. The sample representing the public service should comprise all professionals, according to a list supplied by the Municipal City hall of Araçatuba/SP; however, only 46.67% agreed to participate in the study. The dental professionals working at private offices were randomly chosen by draw from a list of general practitioners in the city of Araçatuba, SP supplied by the Regional Dental Council of the State of São Paulo, excluding those simultaneously working at public and private offices. The questionnaires were delivered personally at the work places and were collected one or two days later.

The data collected were submitted to statistical analysis by the Epi info 6.0 software, with utilization of absolute frequencies, which allowed generation of graphs for a better presentation.

## RESULTS

The results revealed that utilization of caps was reported by 55% of the professionals working at the public sector and 90% for the private sector. At the public sector, 36.4% kept wearing the cap even if they were not treating patients, compared to 16.7% at the private service (Table 1).

As to the supply of spectacles to the patients, 25% of the professionals at public offices and 65% at private offices reported the use of this type of procedure in order to prevent patients from risks (Figure 1).

Both the use of masks and gloves were reported by 100% of the professionals surveyed. Concerning glove change between patients, 40% of the public sector professionals did not report the change, which reflects the lack of resources of the public service (Figure 2).

During patient treatment, 35% and 55% of the dental professionals of the public and private sectors, respectively, reported the use of over-gloves for non-operator procedures

**TABLE 1-** Distribution of dental professionals according to the use of individual protection equipments. Araçatuba - SP, 2003

Aspects/offices	Public	Private
Use of cap	55.0%	90.0%
Keep on wearing the cap even if not treating patients	36.4%	16.7%
Use of over-gloves for non-operator procedures such as picking up the telephone and opening drawers	35.0%	55.0%
Use of gloves	100.0%	100.0%
Use of mask	100.0%	100.0%
Use of gown	95.0%	85.0%

such as picking up the telephone and opening drawers, showing that a great number of professionals, both at the public or private sector, is not concerned about cross infection control (Table 1).

The use of gowns as individual protection equipments was observed by almost all professionals (95%) working at public offices and 85% at private offices (Table 1).

Shields for high- or low-speed turbines and air-water syringe to avoid direct contact with the patient's mouth were used by 20% of the public sector professionals and 60% of the professionals working at the private sector (Figure 3).

During x-ray exposure, the use of lead apron and thyroid collar was reported by 65% and 0% of the dentists at public offices, and 95% and 35% of dentists at private offices, respectively (Figure 4 and 5).

## DISCUSSION

The appearance of a clean neutral white-colored office does not always imply that it is truly disinfected and has sterilized equipments (Ferreira<sup>6</sup>, 1995). An effective dental office should incorporate in its routine the permanent use of the infection control protocol, no matter if it is public or private.

The results obtained showed that a great part of dental practitioners have basic notions of biosecurity and adopt some measures; however, a few items that demand not only knowledge by the professionals, but also financial resources, lack in the public sector. More flaws were observed in the use of protective barriers in public offices compared to the private, as follows: use of caps by 55% of public sector professionals and 90% at the private sector; glove change observed by 100% of private sector professionals and 60% of public sector professionals; and supply of spectacles for the patients by 25% of public offices and 65% for the private sector.

A similar result was reported in a study conducted by Costa Carmo and Dias Costa<sup>2</sup> (2001), in which glove change was observed by 70.8% of professionals. The non-utilization of caps allows all aerosols resulting from high-speed and other devices to get deposited in the professionals' scalp (Guandalini<sup>7</sup>, 1997 e Teixeira and Santos<sup>13</sup>, 1999).

It is not recommended to use the same glove to treat several patients, since it suffers small damages, thus becoming a deficient barrier (Guandalini<sup>7</sup>, 1997 and Lara<sup>8</sup>, 2002).

Private offices are very often seen as a model of infection control. Nevertheless, the results showed that in issues such as the use of gowns and caps in the clinical environment even if the professional is not treating the patient, the frequency was reported to be lower at private offices than at public offices.

In a study conducted by Davis and Begole<sup>4</sup> (1998), applied to 140 orthodontists of Illinois by a quiz about individual protection equipment, it was found that 97% of the professionals surveyed wore gloves, 34% wore gowns and 5% reported they had never worn safety glasses.

The results of the present study showed that the utilization of shields for high- and low-speed turbines and air-water syringe was not reported as used very often both at public

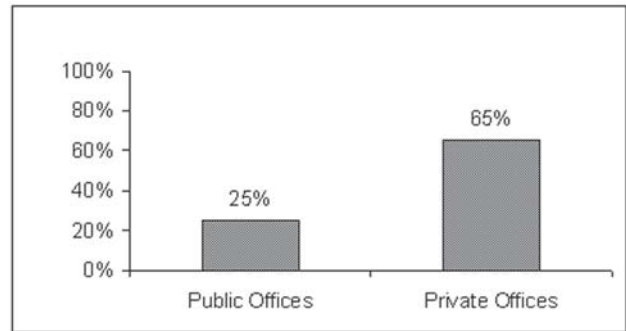


FIGURE 1- Distribution of dental professionals according to the supply of spectacles to the patients. Araçatuba/SP, 2003

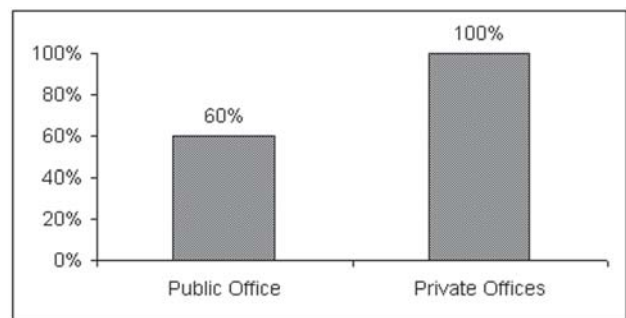


FIGURE 2- Distribution of dental professionals according to glove change between patients. Araçatuba/SP, 2003

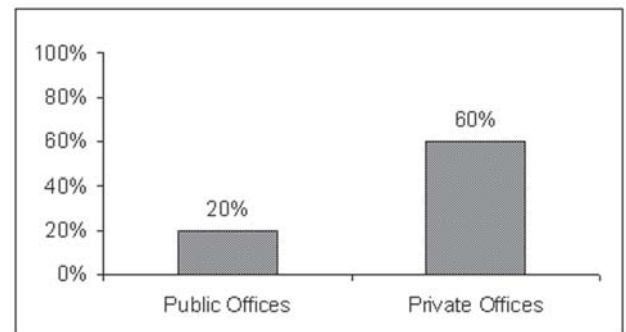


FIGURE 3- Distribution of dental professionals according to the use of shields for high- and low-speed turbines and air-water syringe. Araçatuba/SP, 2003

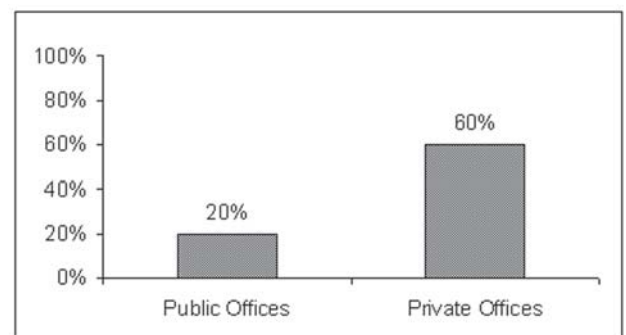
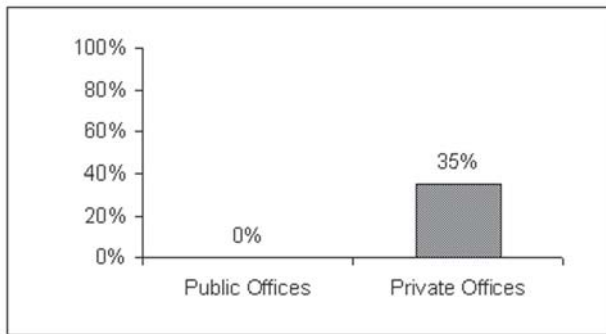


FIGURE 4- Distribution of dental professionals according to the supply of lead apron to patients during x-ray exposure. Araçatuba/SP, 2003



**FIGURE 5-** Distribution of dental professionals according to the supply of thyroid collar to patients during x-ray exposure. Araçatuba/SP, 2003

and private offices, with 20% and 60% respectively; this is a simple and low-cost procedure that should be used by most professionals.

The most important focus of turbine and handpiece contamination is found at the area in touch with mouth fluids (Williams, et al.<sup>14</sup>, 1995; Merchadant and Molinari<sup>10</sup>, 1990 and Magro Filho, Mello and Martins<sup>9</sup>, 1991).

The clinical quality and preparation make a differentiated professional, no matter where he or she works; therefore, the knowledge of dental professionals on biosecurity should be periodically updated.

**CONCLUSION**

In the face of the results obtained, it was concluded that:

- A meaningful part of the professionals, independently of their working place, is not worried about biosecurity procedures and neglect part of them, such as the use of thyroid collars, reported by 35% and 0% of the private and public offices, respectively;

- The public offices showed failure concerning infection control such as glove change, unreported by 40% of professionals due to the lack of resources offered by the sector.

- The adoption of universal precaution measures at private offices as the permanent use of caps and gowns proved to be lower than at the public sector;

- The public offices presented more flaws as to the use of protective barriers; except for the use of gloves, gowns and masks the frequency of use of those barriers was smaller than at private offices. However, a comparative analysis is not possible, due to the sample size; besides, this was a descriptive study.

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**APPENDIX 1- Questionnaire applied to the dental professionals**

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 PROGRAM OF MASTER DEGREE IN PREVENTIVE  
 AND SOCIAL DENTISTRY  
 Center for Research in Collective Health - NEPESCO

Offices: ( ) Public ( ) Private  
 Questionnaire on the use of protective barriers in the dental offices:

1 - Do you use cap during every clinical treatment?  
 ( ) Yes ( ) No  
 2 - Do you keep the cap in the same clinical environment when not treating the patients?  
 ( ) Yes ( ) No  
 3 - Do you use gloves to treat the patients?  
 ( ) Yes ( ) No  
 4 - Do you change gloves between patients?  
 ( ) Yes ( ) No  
 5 - Do you use masks during every clinical treatment?  
 ( ) Yes ( ) No  
 6 - Do you use over-gloves for non-operator procedures such as picking up the telephone and opening drawers?  
 ( ) Yes ( ) No  
 7 - Do you use jacket during every clinical treatment?  
 ( ) Yes ( ) No  
 8 - Do you offer spectacles to the patients?  
 ( ) Yes ( ) No  
 9 - Do you use shields on the high- and low-speed turbines and air-water syringe?  
 ( ) Yes ( ) No  
 10 - Do you offer lead apron to patients during x-ray exposure?  
 ( ) Yes ( ) No  
 11 - Do you offer thyroid collar to patients during x-ray exposure?  
 ( ) Yes ( ) No