

DENTAL INJURIES

Percutaneous injuries to dentists



BACKGROUND

Percutaneous injuries (PIs) are among the major occupational risks for those working in health care professions. These injuries can expose the health care practitioner to infection by pathogens such as hepatitis B virus, hepatitis C virus, and HIV, all of which can cause significant morbidity and mortality. The World Health Organization (WHO) estimated that in 2000, 39% of hepatitis C infections, 37% of hepatitis B infections, and 4.4% of HIV infections were the result of occupational exposure to PIs. Dentists are at particular risk because of the many sharp instruments used in dental practice. Among these instruments are needles, burs, scalpels, scalars, surgical elevators, explorers, and orthodontic wires, all of which can cause PIs. Data on the worldwide prevalence of these injuries in dentists are lacking, so a systematic review was undertaken to determine the prevalence of PIs, the geographic area with the highest prevalence, and the dental instrument most often associated with these injuries.

METHODS

The study focused on observational studies identified through a literature search of the Latin American and Caribbean Health Sciences (LILACS), LIVIVO, PubMed (including MEDLINE), Scopus, and Web of Science databases, as well as a partial search of the grey literature on Google Scholar, OpenGrey, and Proquest. The prevalence of PIs in dentists was the primary outcome sought and was expressed as a percentage. The secondary outcomes related prevalence to geographic location, type of PI, sex distribution, and dentist's specialty.

RESULTS

Fifty-five studies were identified, covering a total of 18,267 dentists worldwide. All were observational descriptive studies, with 25 published between 2008 and 2018. The geographic regions represented were South America, the Middle East, Europe, North America, Asia, Africa, and Oceania (Australia). Two were national surveys, 2 were state surveys, 6 were local surveys, and 15 were performed in hospitals.

The period of time covered by the studies ranged from the dentist's entire life to just 24 hours. Fifteen studies covered the dentist's lifetime, 3 focused on 5 years, 2 on 3 years,

23 on 1 year, 5 on 6 months, 1 on 3 months, 1 on 1 month, 2 on 20 days, and 1 on 24 hours. One study focused on the occurrence of 1 PI per week over a 2-week period, and 1 focused on the PIs in dentists from the time they began working at the university. The type of dental instrument causing the PI was detailed in 18 studies.

Thirty-five studies had a high risk of bias, 17 a moderate risk, and 3 a low risk. The overall quality of the evidence was ranked as very low. Studies with a low risk of bias had a pooled prevalence of PI of 34.81%, whereas moderate-risk studies had a prevalence of 51.99% and high-risk studies had a prevalence of 45.56%.

The PI prevalence ranged from 7.80% to 100%. Needle stick injuries were reported in 28 studies and had a prevalence of 4.85% to 100%. When sex was considered, men had PI prevalences from 20% to 68% and women had PI prevalences from 17.36% to 61.54%.

The PIs related to area of practice (general dentist or specialist) were reported in 2 studies. The prevalence among general dentists ranged from 15.09% to 53.49%, and the prevalence among specialists ranged from 7.80% to 89.17%. The type of dental instrument most often associated with PIs was the dental bur. Child bites were responsible for the fewest injuries.

When results were reported by period of time in the study, the pooled prevalence over the dentist's entire career was 57.57%. Other studies yielded 66.74% for 5 years, 39.73% for 3 years, 50.10% for 1 year, 21.09% for 6 months, and 7.72% for 20 days. Meta-analysis for studies reporting on needle stick injuries yielded a prevalence of PIs in 1 year of 29.27% and over the entire career of 11.99%.

The highest prevalence of PI over the course of 1 year was 66.97% for North America, whereas the lowest prevalence over the same period was 31.27% in South America. When PI prevalence was considered over the entire career of the dentist, the prevalence in Europe was highest (71.28%), that in South America was second at 64.31%, and that in the Middle East was 44.92%. Only these 3 continents were available for this analysis (Figure 5).

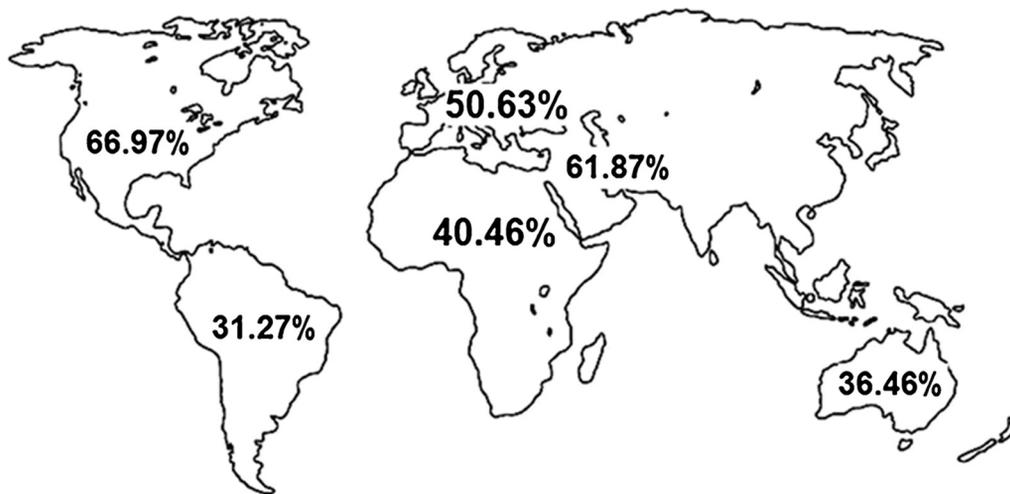


Figure 5. Pooled frequency for PI on dentists in 1 year by continent, performed using MedCalc version 14.8.1. (Courtesy of Pereira MC, Mello FW, Ribeira DM, et al: Prevalence of reported percutaneous injuries on dentists: A meta-analysis. *J Dent* 76:9-18, 2018.)

DISCUSSION

The review and meta-analysis of these 55 observational studies reported a fairly high prevalence of PIs among dentists. The instrument most often involved was the dental bur, and the geographic distribution of PI prevalence showed considerable variance.

Pereira MC, Mello FW, Ribeira DM, et al: Prevalence of reported percutaneous injuries on dentists: A meta-analysis. *J Dent* 76: 9-18, 2018

Reprints available from MC Pereira, Municipal Public Health Office of Florianópolis, Public Health School, Residence Program in Family Healthcare, Professor Henrique da Silva Fontes Ave,

Clinical Significance

Being aware of the danger of the dental bur, as well as other sharp dental instruments, may help provide a basis for developing safety policies for their use. In addition, dentists may want to search for safer devices to avoid PIs. Overall, clinicians need to recognize the importance of work safety and take steps to ensure that fewer incidents causing PIs occur in each dental office.

6100 – Trindade, Florianópolis, Santa Catarina, 88036700, Brazil; e-mail; mateuscperreira92@gmail.com

DENTAL TRAUMATOLOGY

Lateral luxation injury



BACKGROUND

Young patients are more likely to suffer traumatic dental injuries than adults. Among the possible injuries seen are lateral luxation injuries, which consist of a displaced tooth in the palatal/lingual or labial direction and tend to occur in children age 1 to 4 years, with boys involved more often than girls. The alveolar process is fractured, making the tooth immobile. Often these injuries present as periodontal ligament space on eccentric or occlusal radiographs. Percussion can yield an ankylotic sound, and sensibility tests are often negative. Between 29.5% and 57% of all dental injuries are lateral luxation injuries. Even if they are

properly treated with repositioning and splinting, the teeth suffering these injuries may develop long-term complications such as pulp necrosis with infection and periapical inflammation. The prognosis of immature teeth suffering lateral luxation injuries was evaluated.

METHODS

The data were culled in a systematic review from the Medline, PubMed, Scopus, LILACS, EMBASE, and Cochrane databases up to October 2017. Reference lists were also hand searched, with an eventual identification of 6 studies that met the inclusion criteria.