

Endodontic Epidemiology: A Systematic Review and Meta-Analysis

Maraga Edith

Department of Community, Preventive Dentistry and Periodontology, School of Dentistry, Moi University, Eldoret, Kenya

Abstract

Pulpitis is a common occurrence in clinical practice. To date, few systematic reviews have evaluated the epidemiology of various treatment modalities in endodontics. The objective of this study is to analyse the epidemiology of endodontics as presented in various publications.

Methodology : Clinical, experimental and review reports were searched in PubMed, Cochrane databases and Google Scholar for scientific literature in November 2019, using the search phrase “endodontic epidemiology”

Results : Of the eight potentially relevant publications, six of which were randomised controlled trials, with no statistically significant results, one was a systematic review and the other was a cross-sectional study.

Conclusion: Endodontic epidemiological studies are being conducted, however the results are not statistically significant. This does not necessarily mean that the results of such studies obtained cannot be applied clinically.

Corresponding author: Maraga Edith, Department of Community, Preventive Dentistry and Periodontology, School of Dentistry, Moi University, Eldoret, Kenya, E-mail: edithkmaraga@gmail.com

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Introduction

Pulpitis is the inflammation of the dental pulp tissue and it is a chronic condition that progresses intermittently with or without acute phases. Reversible pulpitis is pulpal inflammation that should resolve once the aetiological factor, such as defective restoration or caries is removed. While irreversible pulpitis is pulpal inflammation, which does not resolve once the aetiological factor is removed. Reversible pulpitis is triggered by stimulus such as hot, cold, or sweet and lasts for a few seconds. While irreversible pulpitis is the condition that presents with spontaneous, persistent, poorly localised pain [1-2].

Irreversible pulpitis is treated by endodontic treatment in either a single visit or multiple visits [1, 3, 4]. Most

clinicians prefer multiple-visit root canal treatment, since it renders the canal free of pathogenic microbes as opposed to single-visit endodontics, which might not be efficient in reducing endotoxins. Currently, single-visit endodontic treatment has become the option preferred, however, the rationale is being questioned. Literature suggests and advocates for multiple visits so as to reduce the microbes in the canal much as there is no statistical significance in the number of visits [3, 5]. Pain and flare-up occurs post-operatively warranting the use of analgesics pre-operatively in some cases such as ibuprofen and at times dexamethasone post-operatively [6]. Moreover, pain being a subjective phenomenon occurs post-operatively after instrumentation regardless of whether it was done in a single or

multiple sitting. Many patients exhibit various pain thresholds and it for this reason that this study aimed at analysing several epidemiological studies to assess what current literature suggests on the management of post-endodontic treatment pain and flare-up. Some studies suggest that lidocaine use for intraseptal anesthesia has lower success rate in achieving pulpal anesthesia than articaine. However, no other studies could be found to support this view. There has also been argument on the use of manual versus rotary instruments so as to avoid pain and flare-up experienced post-operatively. However, epidemiological studies tend to suggest that there appeared not to be any statistical significance much as the study has only ninety-five patients, which is a small sample size [7-8]. Calcium hydroxide-based medicament is the most preferred since studies have shown that it is effective is eliminating the microbes within the root canal system during endodontic treatment. It has also been shown to have better sealing properties than the resin-based sealants [1, 9].

Methodology

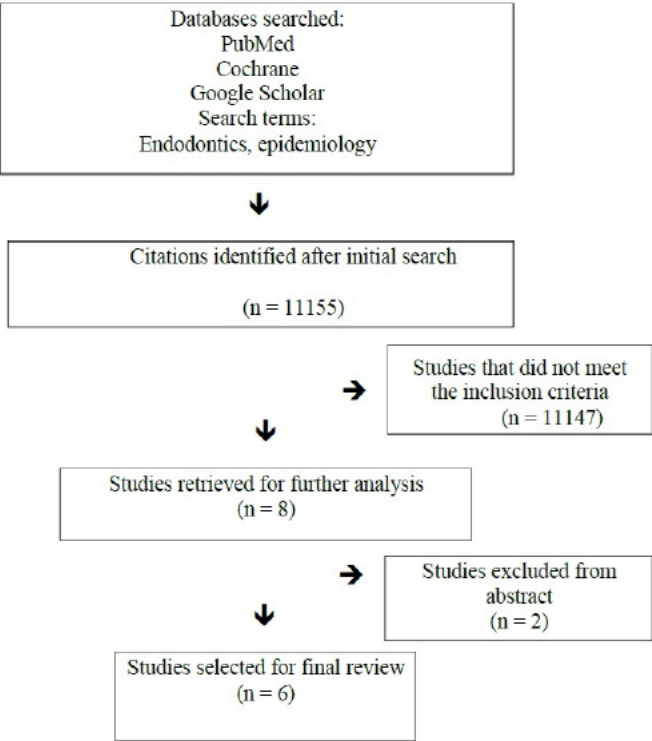


Figure 1: shows the electronic search for literature

that was done from PubMed, Cochrane databases and Google Scholar in November 2019. Filters such as clinical trials, free full text, between 2015 and 2019, with the best match were applied. Restriction was done to include articles in human subjects and written in English.

Results

Serial No.	Author (year)	Type of study	Dura- tion of study	Num- ber of parti- pants or teeth	Statis- tical signifi- cance
1	Wong et al (2015)	RCT	18 months	194 teeth	P = 0.729
2	Riaz et al (2018)	RCT	6 months	60 pa- tients	P = 0.8
3	Asawa- worarit et al (2016)	RCT	4 weeks	34 teeth	P < 0.05
4	Makan- juola (2018)	RCT	1 week	95 pa- tients	P = 0.243
5	Bonar (2017)	RCT	Not men- tioned	100 patients	P = 0.8689
6	Bidar (2017)	RCT	Unclear	78 pa- tients	P = 0.51

Table 1: summarised the results, which yielded eight publications; one systematic review, one cross-sectional study and six randomised controlled trials (RCT), five of which were found to be most relevant.

Five of the studies obtained results that were not statistically significant, while one study that was not conducted in the mouth was statistically significant. The sample size was however small, 34 teeth, to conclusively accept the results

Discussion

Pulpitis is a common occurrence in clinical practice. The results obtained indicate that most of the findings obtained from the randomised controlled trials were

significant result does not necessarily mean that the results cannot be applied clinically [10]. The findings from the endodontic epidemiological studies can be applied to improve practice. It is important to note that in evidence-based practice, the clinician can be the best judge in assessing whether to treat the case in a single or multiple-visit [3, 5]. Pain and flare-up may be inevitable and hence all precautions based on the clinical presentation should be undertaken [8]. As for the use of manual or rotary instruments, this is entirely based on the set up of the clinic.

Conclusion

This systematic review has demonstrated that indeed there are endodontic epidemiological studies being conducted, specifically randomized controlled trials. However, few if any, yielded positive results that were statistically significant.

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