

## **FREQUENCY OF ENDODONTIC DIAGNOSES IN PATIENTS TREATED AT THE UNICOC ENDONTIC POSTGRADUATE COURSE 2010-2015**

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### **ABSTRACT**

**General objective:** To establish the frequency of endodontic diagnosis and treatment amongst patients attended in the endodontics postgraduate UNICOC 2010-2015.

**Materials and methods:** Cross-sectional study which included the registries of 204 patients and 272 intervened teeth. Variables of gender, age, health program, endodontic diagnosis, intervened teeth, diagnosis results and treatment carried out were considered. All these information was obtained from clinical histories found during the evaluation period. It was considered a non-risk research.

**Results:** Average age of patients was 41.7 years; there was prevalence of females (62.3%) and of those affiliated to the contribution health system (80.3%). The most recurring diagnosis was pulpal (60%) which was also the most frequent in Chía (88 registries compared to 72 downtown). The most diagnosed tooth was 26 (9.9%) and the most previously treated condition was the conventional endodontic treatment (127 registries, 46.69%).

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**Conclusions:** during the 2010-2015 period in the UNICOC clinics the prevalent diagnosis was pulpal, mainly in the Chía site.

**Keywords:** epidemiological profile, endodontics, pulpal diagnosis, periapical diagnosis.

## INTRODUCTION

Epidemiology is the branch of health that is responsible for studying the distribution and determinants of events related to health and the application of such studies to control diseases and other health problems (1). Considered the basic science for preventive medicine, it has within its activities the realization of epidemiological profiles, in which analyzes are carried out on the frequency of the diseases and the variation of said frequency in different population groups. An important consideration is that diseases that not happened in a random cases; Have causes, many of them of human origin that can be avoided; Leading to the supposition that, through research, many diseases could be prevented if their causes were known (2).

The starting point for initiating epidemiological investigations is the recognition of the disease or event, which

is usually the dependent variable, and then the factors that determine its appearance, magnitude, and distribution would be the independent variables, or exposition. The results obtained allow comparisons between different populations or in the same population over time (3), thus showing the changes that may have occurred and the effectiveness or not of the policies and programs implemented at the regional level.

Now, at the epidemiological level, when endodontic type diagnoses are considered, it is important to note that there is a variability in the cases that can be related to pulp and periapical pathology; Among them are reversible or irreversible pulpitis disease, pulp necrosis, apical periodontitis, condensing osteitis, among others (4,5). In patients with endodontic treatment, one of the most prevalent diagnoses is usually asymptomatic apical

periodontitis, with a percentage higher than 30% (8,9), varying up to about 80% of all teeth with endodontic treatment (6,7 ). Prevalence of asymptomatic irreversible pulpitis with approximately 18%, pulp necrosis (14%), symptomatic irreversible pulpitis (12%), etc., and to a lesser extent symptomatic apical periodontitis with a percentage of 1% ). However, when making the different revisions, it is necessary to emphasize the type and characteristics of the population being served, in order to establish the true comparisons.

The reality is that the diagnosis and treatment of these conditions is a real challenge during clinical practice; Situations that test the skill and knowledge of any clinician can be presented, however by experience, at a given moment, fail to achieve an accurate diagnosis; So that having more research is crucial.

Epidemiologists usually begin their research on the health status of a population based on available information (9) and endodontic lesions are quite common situations, highlighting the prevalence of asymptomatic apical periodontitis with percentages ranging

from 35- 80% (7.8); It was considered that it is of vital importance to determine the epidemiological profile of these diseases among patients who attended the consultation of UNICOC clinics during 2010-2015, with vision of establishing the frequency of these conditions in order to obtain updated knowledge and objective on the subject. Also, to describe the sociodemographic variables and to correlate the diagnoses and treatments of the patients attended in the Postgraduate of Endodontics and thus guide intervention actions that benefit the community that is being attended and the professionals who, when observing the tendencies And interventions, can generate the modifications that are required within their care protocols (10); Because for the Dental School, as an educational institution and entity dedicated to ensuring the oral conditions of the community, it is important to know the behaviors that are having different pathologies, including endodontic type.

## **MATERIALS AND METHODS**

A cross-sectional descriptive study was carried out, where a sample of 204 clinical records was taken. 102 of the Chia Clinic and 102 of Center Clinic, was completed in the endodontic postgraduate of UNICOC. From 2010 to 2015. As there is no record of patients seen in the endodontic postgraduate course, a pilot test was applied where an evaluation of the sample size to be chosen was carried out. Once the final collection instrument was designed, we collected the sample of 5 clinical records per year for a total of 30 clinical histories evaluated by headquarters. The Chi-Squared test was applied where a sample size of 98 clinical histories was shown each site. It was decided to leave the sample for each site in a total of 102 histories (17 per year) to perform the analysis of the study. Inclusion criteria consisting of properly completed endodontic clinical records and annexes of the UNICOC Chia and Centro clinics from 2010 to 2015 and the exclusion criteria were established: Clinical histories and endodontic annexes that were not properly completed and that Are not readable. The project was carried out taking into account the "Scientific, Technical and Administrative Norms for Health Research" that were established

by the Ministry of Health through Resolution No. 08430.

According to the needs of this project, Title 1: General Provisions and Title II of research on human beings, Chapter I, on the ethical aspects of research in human beings, will be specifically considered. According to the characteristics of the study according to Article 11, it is classified as a Risk-Free Investigation, since this study employs retrospective documentary research techniques and methods, where the clinical records of patients treated at the endodontic postgraduate course are reviewed. UNICOC. For data digitization, the Excel 2010 program was used. For univariate analysis, qualitative variables were used for frequencies and percentages, and for the quantitative variables we used averages, medians, standard deviations, minimum and maximum values. For the prevalences of the diagnoses 95% Confidence Intervals were used. To determine associations, Pearson's Chi square was used if the data were greater than 40 and, if not, Fisher's exact test.

## **RESULTS**

After reviewing the clinical records of the patients who attended treatment at the

endodontic postgraduate course at the University Institution Colleges of Colombia - UNICOC, headquarters and Chia during the period 2010 to 2015, a total of 204 patients were found and a total Of 272 operated teeth, of these 134 were for the central headquarters (49.26%) and 138 for the Chia headquarters (50.74%). It is important to note that in the teeth that presented endodontic treatment, these were diagnosed with two diagnoses one pulp and another periapical, as recorded in the medical record.

Considering sociodemographic characteristics, 62.3% (n = 127) belonged to the female gender and 37.7% (n = 77) belonged to the male gender in the center and Chia clinics, with a mean age of 41.7 years; The distribution by age and gender for each clinic is presented in table 1. Regarding affiliation to the general health system, 80.3% (n = 164) were part of the contributory regime, followed by 10.3% (n = 21) who Belonged to the subsidized, followed by none 7.9% (n = 16) and special regime 1.5% (n = 3).

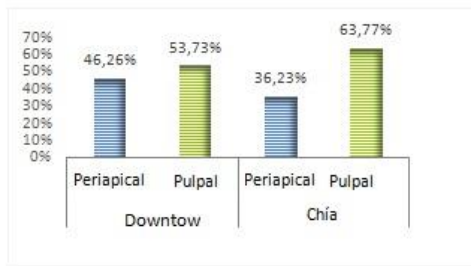
Gender	%	average age	%	average age	%	average age
Male	31,4	40,85	44,1	39,29	37.7	39,9
Female	68.7	45,85	55,9	39,67	62.3	42,9
<b>Total</b>	<b>100</b>	<b>42,86</b>	<b>100</b>	<b>39,88</b>	<b>100</b>	<b>41,7</b>

**Table 1.** Distribution by age and gender of patients receiving endodontic treatment at UNICOC clinics during 2010-2015

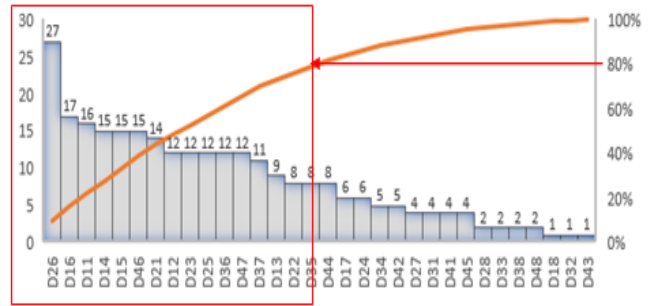
Diagnostic characterization: When considering the periapical and pulp diagnoses generated during the follow-up period, the pulp-type diagnoses prevailed (60%) and in no year presenting special distribution characteristics.

Figure 2 also shows the periapical or pulp distribution, but making the differentiation according to the clinic; However, when looking at the diagnosis individually, a greater amount of pulp type is obtained from the Chia headquarters (88 registers, and headquarters center 72), while the central site contributes the majority of the periapical diagnoses (62 registers and Chia headquarters fifty).

Center Headquarters	Chia Headquarters	TOTAL
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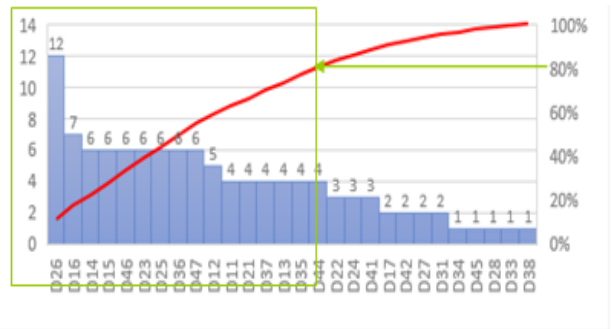


**Figure 2.** Percentage distribution of the types of diagnosis per year according to the care clinic



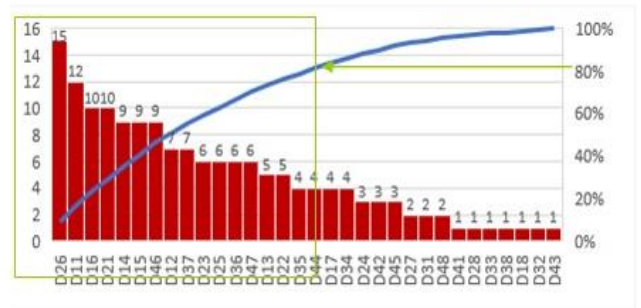
**Figure 3.** Pareto diagram of the diagnosis of tooth endodontics in the clinics of UNICOC

The frequently diagnosed teeth are also observed, in this case highlighting the tooth 26 (27 registers) and supported in figure 3 presenting the information from major to minor, which reveals that although tooth 26 is most frequently diagnosed, 80% of cases include the teeth 16, 11, 14, 15, 46, 21, 12, 23, 25, 36, 47, 37, 13, 22, 35, 44, 17.



**Figure 4.** Pareto diagram of the periapical diagnosis per tooth, in the clinics of UNICOC

The periapical or pulpal diagnoses according to the tooth most frequently involved in each seat are presented in Figures 4 and 5.



**Figura 5.** Pareto diagram of pulpal diagnosis per tooth, in the clinics of UNICOC

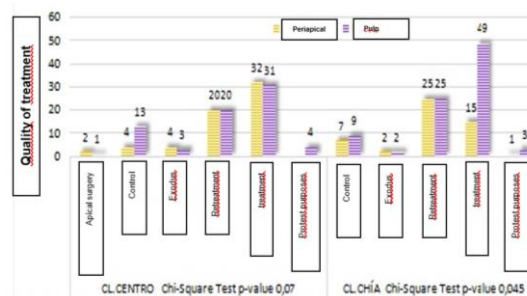
The most frequent diagnosis was the previously treated endodontic treatment (23.16%), followed by asymptomatic apical periodontitis, symptomatic and normal apical tissue with 11.03% for each and pulp necrosis (10.66%) (Table 2)

Diagnostic results	n	%
Acute Apical Abscess.	8	2,94%
Chronic Apical Abscess.	10	3,68%
Pulp necrosis	29	10,66%
Condensing osteitis	3	1,10%
Asymptomatic Apical Periodontitis.	30	11,03%
Symptomatic Apical Periodontitis.	30	11,03%
Normal pulp	17	6,25%
Asymptomatic irreversible pulpitis	22	8,09%
Symptomatic irreversible pulpitis	23	8,46%
Reversible Pulpitis	2	0,74%
Normal apical tissues	30	11,03%
Previously Initiated Treatment	5	1,83%
Previous Endodontic Therapy	63	23,16%
<b>Total</b>	<b>272</b>	<b>100%</b>

**Tabla 2.** Distribution of diagnostic results seen at UNICOC clinics

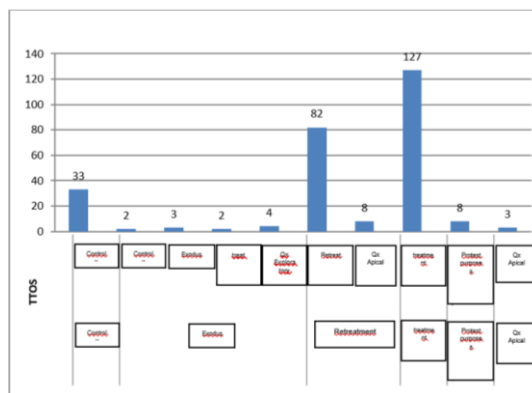
The endodontic treatment previously treated was the most frequent diagnosis (23,16%). It should be noted that this was reported in a percentage with other diagnoses as classified in the UNICOC clinics, corresponding to endodontic treatment previously treated with asymptomatic apical periodontitis in 26 cases (41.3%), endodontic treatment previously treated with normal apical tissue in 28 cases (44.4%) and endodontic treatment previously treated with asymptomatic apical periodontitis in 9 cases (14.3%).

**Characterization by treatment.** After identification of the periapical and pulpal diagnoses, several treatments were performed, with conventional root canal treatment being the most frequent (127 records, 46.69%) (Figure 6).



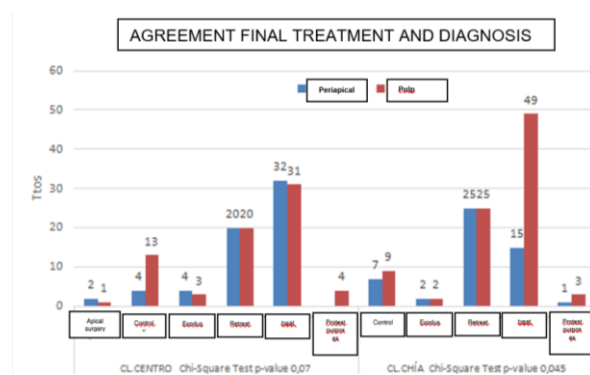
**Figure 6.** Number of treatments performed according to diagnosis and clinic where the care was received.

The presumptive treatment results that most had variations were apical surgery and exploratory surgery. As a presumptive treatment, 11 apical surgeries were found, of which only 3 were performed and the remaining treatments were performed as a final treatment of endodontics. Four exploratory surgeries were performed in which the final treatment was exodontia, as shown in Graph 7. Finally, it was measured with cohen's Kappa with the possibility of existing concordance with presumptive treatment and final treatment. Finding that cohen's Kappa at 5% significance showed that there was evidence of what was presumably diagnosed and treated Same happened with an index of 86 both excellent what was presumptive finally treated. (Graph 7).



**Figure 7.** Concordance of presumptive diagnoses and final treatments performed at UNICOC clinics. Final treatment / Presumptive treatment: Cohen's Kappa Alpha 0.05, CI. Center = 0.95; CI. Chia = 0.86

In Figure 8, the relationship of the type of treatment depending on the diagnosis is either pulp or periapical, where in the chia clinic the most frequent treatment for pulp diagnoses is the conventional treatment of endodontics (49 registers) while for The central site of the conventional endodontic treatment is more frequent in periapical type diagnoses (32 records) and an adequate concordance between the treatments with the respective diagnoses.



**Figure 8.** Concordance of final treatments and diagnoses in UNICOC clinics

## DISCUSSION

The design of the present study that focused on an epidemiological profile on the frequency of endodontic diagnoses and treatments presented at UNICOC clinics during the period 2010-2015; Found that the diagnosis of pulp (60%) generally prevailed, suggesting for this investigation a ratio of 1.5: 1 pulp cases periapical. When looking at each one of the care centers individually, this characteristic presents greater variability for Chia's headquarters with a ratio of 2: 1; While at the center the pulp and periapical diagnoses presented a similar proportion (46.26% and 53.73%, respectively). These results coincide with those reported by Gaviria and Col. In 2012, who, after including 302 clinical records, found that 53% had pulp diagnoses and 47% of periapical type (8). Contrary to this tendency, investigations such as that carried out by Mendiburu and Col in 2016, reported that of the 19 teeth included in their sample that included 12 patients, 26.32% (n = 5) had pulp disease and 73.68% (N = 14) periapical<sup>(11)</sup>. Such a condition may be present because patients go to the endodontist at UNICOC clinics to try to respond to the initial pain that is one of

the first symptoms in these cases; However, it is also possible to state that the center is directed more patients presenting cases with higher levels of severity and requiring endodontic treatment. The situation that is occurring in the institution (and in other universities in the country) is important because it may be indicative that people are becoming more aware of the need for control and intervention in the first moments of the disease and not when this has reached more severe levels that bring with it the need for greater professional, economic and technological resources; Hence the majority of treatments being performed at UNICOC are due to conventional endodontic treatments at both headquarters and at Chia headquarters (n = 63 and n = 64 respectively). It should be emphasized that the most frequent diagnosis was treatment of endodontics previously treated but it does not mean that the most frequent treatment is retreatment of endodontics, since 23.16% of this diagnosis represents the endodontic treatment previously treated with normal apical tissue with 28 cases (44.4%) in which the treatment plan was control in 14 cases and 14 endodontic retreatments, followed by endodontic

treatment with asymptomatic apical periodontitis in 26 cases (41.3%), the treatment for this diagnosis of endodontic retreatment in 24 cases, 1 exodontia and apical surgery and treatment of endodontics previously treated with symptomatic apical periodontitis in 9 cases (14.3%), 7 retreatments and 2 exodontia were performed. For a total of 90 endodontic retreatments performed, for which reason the most frequent treatment is endodontic treatment with 127 cases.

When referring specifically to the results of the diagnoses, the most frequent cases included pre-treated endodontic treatment with 23.16%, and the endodontic treatment with normal apical tissue was the most frequent with 28 cases (44.4%), followed by endodontic treatment With asymptomatic apical periodontitis in 26 cases (41.3%) and endodontic treatment with symptomatic apical periodontitis in 9 cases (14.3%), followed by apical asymptomatic and symptomatic apical periodontitis, both with a similar distribution (11.03% The cases attended). The most frequent cases were asymptomatic and symptomatic apical periodontitis. This situation of prevalence, although in a

smaller percentage, is consistent with that found in investigations such as that developed by Luna and Col in 2009, where asymptomatic apical periodontitis was evident in 79.6% of all teeth with endodontic treatment <sup>(10)</sup>; There are also the results of Mendiburu and Col. Where 57.89% (n = 11) had asymptomatic apical periodontitis and 10.52% (n = 2) symptomatic apical periodontitis, with an important participation of pulp necrosis that occurred in 15.78% (N = 3) of the patients <sup>(10)</sup>. In the study by Nur and Col. (2014), 54.3% of all endodontically treated teeth (522 teeth) showed a healthy periapical structure, while 45.7% (n = 228) showed the presence of Apical periodontitis, although the difference between the two was not statistically significant ( $p > 0.05$ ) <sup>(7)</sup>. At the national level, there is also research by Gaviria and Col. (2012), in patients attended at the dentistry clinics of the El Valle University, in which case it was found that the most prevalent lesion was asymptomatic apical periodontitis (n = 115, 38.1%), followed by asymptomatic irreversible pulpitis (n = 55, 18.2%) <sup>(8)</sup>. However, in this investigation the most prevalent diagnosis was the previously treated endodontic treatment (n = 63; 23.16%); Differing widely with

investigations such as the one developed by Pupo and Col. (2016), who reported this diagnosis only in 8.73% (n = 55) of the cases, since for them it was asymptomatic irreversible pulpitis the diagnosis that prevailed = 198, 31.42%)<sup>(12)</sup>.

The choice of the ideal treatment according to the diagnosis is a decision that is based specifically on the characteristics of the pathology either of the pulp or periapical type, in endodontics there are guides that guide the professional in the decision making as the Guide of clinical practice in Oral health<sup>(13)</sup>. In the case of this investigation it was possible to corroborate that for pulpal diagnoses the ideal treatment is the conventional treatment of endodontics being more evident in the clinic of chia while in the clinic of the center there was no difference Statistically significant where the correlation between diagnosis and treatment is adequate which reflects that in the clinics of UNICOC is being carried out a correct treatment in relation to the diagnosis.

On the other hand, when considering age, Gaviria and Col. indicated that

lesions requiring endodontic treatment were occurring more frequently in the age range of 36 to 45 years with a percentage of 32.1%<sup>(8)</sup>; A value very similar to that clarified in the present study because the average age found was at 41.7 years of age. When considering gender, this research found a distribution of 61.9% for the female gender and 38.1% for the masculine, which also fully agrees with the results clarified here, since the participation of women was 62.3% And that of men in 37.7%; Behavior that could be attributed to the fact that women are more interested in receiving a dental treatment to improve their aesthetics and functionality.

Finally, it was also agreed with Gaviria and Col., when establishing that teeth with the highest frequency of endodontic treatments corresponded to molars (n = 108, 35.8%)<sup>(8)</sup>; As in the case of this research, one of the most reported teeth was 26 (9.9%), followed by 16 (6.3%) and with a significant participation of 46 (5.5%), 36 (4.4%) and 47 (4.4%); All located in the range of 80% that is exhibited in a Pareto diagram and is related to the pattern of eruption of teeth, as they are the first to erupt.

As in other studies, a limitation of the present investigation was related to the way information was obtained, since although the data recorded in the medical records of the patients who attended treatment were important, it would be important to be able to corroborate These results by means of a new interpretation of the same ones by the investigators again observing the radiographs and giving its own valuation.

### **CONCLUSIONS**

At the UNICOC clinics during the period 2010-2015, pulpal diagnoses prevailed, with a ratio of 1.5:1 pulp cases each periapical case.

The mean age of endodontic patients treated during the evaluation period was 41.7 years; Being the feminine gender that had greater participation.

The behavior of the endodontic diagnoses according to the site of care revealed that in both sites pulp diagnoses prevail; However, at Chia headquarters, these have a higher prevalence than in the Center where the pulp and periapical diagnoses have a very similar distribution.

Most treatments that have been performed at UNICOC endodontic clinics are conventional endodontic treatments.

The results of the diagnoses indicated that patients had more frequent endodontic treatment with 23.16% and endodontic treatment with normal apical tissue was the most frequent with 28 cases (44.4%), followed by endodontic treatment with asymptomatic apical periodontitis in 26 (41.3%) and endodontic treatment with symptomatic apical periodontitis in 9 cases (14.3%), followed by asymptomatic apical periodontitis, symptomatic and normal apical tissue, both with a similar distribution (11.03% of cases attended). A fourth place pulp necrosis (10.66%).

The correlation between diagnosis and treatment is adequate which reflects that in the clinics of UNICOC a correct treatment is being carried out in relation to the diagnosis.

### **RECOMMENDATIONS**

Epidemiological profiles are important tools that make clear the trends that are being presented in relation to some diseases or conditions; In the case of endodontic conditions at UNICOC clinics

in Bogota, DC, the results are important for this type of process, where the most severe endodontic cases are present, may indicate that more human resources are needed, Infrastructure, technology and material. In addition, it is necessary to have a database where the patients who were treated in the endodontic postgraduate course are registered since there is no record of having been attended in the postgraduate course and have a better control of the patients. A recommendation to continue this research is related to obtaining the information; In this case it is recommended that future researchers, in addition to filling the information contained in the medical records, make their own assessments after observing the radiographs contained in these stories, giving better management to possible information biases that may arise And monitoring and control of the treatments performed.

#### **ACKNOWLEDGMENTS**

We are especially grateful to Dr. Jorge Eliecer Alfaro González for guiding us in the course of the development of this research, providing us with his knowledge and help at all times. To Dr.

Nancy Pardo and Dr. Guillermo Arenas who allowed us the authorization to access the medical records necessary for the realization of this project.

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